THE PRESIDENT'S SCIENCE ADVISORY COMMITTEE
EXECUTIVE OFFICE BUILDING
WASHINGTON, D.C. 20506

June 2, 1972

USSR

MEMORANDUM FOR

President's Science Advisory Committee

At the June PSAC meeting, it is planned to have presentations and discussions of the recent Agreements between the U.S. and U.S.S.R. involving science and technology. Enclosed are copies of those Agreements and press remarks that are now available. Additional materials will be sent as soon as received.

The purpose of the PSAC discussion will be to inform the Committee of the nature, background and implications of the Agreements and to elicit views and suggestions with regard to specific opportunities for future cooperation under the Agreements. In particular, Dr. David would like to have you give attention to the Science and Technology Agreement, for which he is responsible. He would welcome not only your comments and suggestions with regard to the implementation of the Agreement, but also your support, within and outside of government, of its importance and potential for strengthening U.S.-U.S.S.R. relationships.

David Beckler

David Z. Beckler
Executive Officer

May 26, 1972

PROTOCOL

TO THE INTERIM AGREEMENT BETWEEN THE UNITED STATES OF AMERICA AND THE UNION OF SOVIET SOCIALIST REPUBLICS ON CERTAIN MEASURES WITH RESPECT TO THE LIMITATION OF STRATEGIC OFFENSIVE ARMS

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Having agreed on certain limitations relating to submarine-launched ballistic missile launchers and modern ballistic missile submarines, and to replacement procedures, in the Interim Agreement,

Have agreed as follows:

The Parties understand that, under Article III of the Interim Agreement, for the period during which that Agreement remains in force:

The US may have no more than 710 ballistic missile launchers on submarines (SLBMs) and no more than 44 modern ballistic missile submarines. The Soviet Union may have no more than 950 ballistic missile launchers on submarines and no more than 62 modern ballistic missile submarines.

Additional ballistic missile launchers on submarines up to the above-mentioned levels, in the U. S. - over 656 ballistic missile launchers on nuclear-powered submarines, and in the U. S. S. R. - over 740 ballistic missile launchers on nuclear-powered submarines, operational and under construction, may become operational as replacements for equal numbers of ballistic missile launchers of older types deployed prior to 1964 or of ballistic missile launchers on older submarines.

The deployment of modern SLBMs on any submarine, regardless of type, will be counted against the total level of SLBMs permitted for the U. S. and the U. S. S. R.

This Protocol shall be considered an integral part of the Interim Agreement.

FOR THE UNITED STATES OF AMERICA
RICHARD NIXON
The President of the United States of America

FOR THE UNION OF SOVIET SOCIALIST REPUBLICS
LEONID I. BREZHNEV
The General Secretary of the Central Committee of the CPSU

# # #

May 26, 1972

INTERIM AGREEMENT BETWEEN THE UNION OF SOVIET SOCIALIST REPUBLICS AND THE UNITED STATES OF AMERICA ON CERTAIN MEASURES WITH RESPECT TO THE LIMITATION OF STRATEGIC OFFENSIVE ARMS

The Union of Soviet Socialist Republics and the United States of America hereinafter referred to as the Parties,

Convinced that the Treaty on the Limitation of Anti-Ballistic Missile Systems and this Interim Agreement on Certain Measures with Respect to the Limitation of Strategic Offensive Arms will contribute to the creation of more favorable conditions for active negotiations on limiting strategic arms as well as to the relaxation of international tension and the strengthening of trust between States,

Taking into account the relationship between strategic offensive and defensive arms,

Mindful of their obligations under Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons,

Have agreed as follows:

Article I

The Parties undertake not to start construction of additional fixed land-based intercontinental ballistic missile (ICBM) launchers after July 1, 1972.

Article II

The Parties undertake not to convert land-based launchers for light ICBMs, or for ICBMs of older types deployed prior to 1964, into land-based launchers for heavy ICBMs of types deployed after that time.

Article III

The Parties undertake to limit submarine-launched ballistic missile (SLBM) launchers and modern ballistic missile submarines to the numbers operational and under construction on the date of signature of this Interim Agreement, and in addition launchers and submarines constructed under procedures established by the Parties as replacements for an equal number of ICBM launchers of older types deployed prior to 1964 or for launchers on older submarines.

Article IV

Subject to the provisions of this Interim Agreement, modernization and replacement of strategic offensive ballistic missiles and launchers covered by this Interim Agreement may be undertaken.

more

(OVER)

Article V

1. For the purpose of providing assurance of compliance with the provisions of this Interim Agreement, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.

2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 of this Article.

3. Each Party undertakes not to use deliberate concealment measures which impede verification by national technical means of compliance with the provisions of this Interim Agreement. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices.

Article VI

To promote the objectives and implementation of the provisions of this Interim Agreement, the Parties shall use the Standing Consultative Commission established under Article XIII of the Treaty on the Limitation of Anti-Ballistic Missile Systems in accordance with the provisions of that Article.

Article VII

The Parties undertake to continue active negotiations for limitations on strategic offensive arms. The obligations provided for in this Interim Agreement shall not prejudice the scope or terms of the limitations on strategic offensive arms which may be worked out in the course of further negotiations.

Article VIII

1. This Interim Agreement shall enter into force upon exchange of written notices of acceptance by each Party, which exchange shall take place simultaneously with the exchange of instruments of ratification of the Treaty on the Limitation of Anti-Ballistic Missile Systems.

2. This Interim Agreement shall remain in force for a period of five years unless replaced earlier by an agreement on more complete measures limiting strategic offensive arms. It is the objective of the Parties to conduct active follow-on negotiations with the aim of concluding such an agreement as soon as possible.

3. Each Party shall, in exercising its national sovereignty, have the right to withdraw from this Interim Agreement if it decides that extraordinary events related to the subject matter of this Interim Agreement have jeopardized its supreme interests. It shall give notice of its decision to the other Party six months prior to withdrawal from this Interim Agreement. Such notice shall include a statement of the extraordinary events the notifying Party regards as having jeopardized its supreme interests.

Done at Moscow on May 26, 1972, in two copies, each in the Russian and English languages, both texts being equally authentic.

FOR THE UNION OF SOVIET SOCIALIST REPUBLICS

LEONID I. BREZHNEV
General Secretary of the Central Committee of the CPSU

FOR THE UNITED STATES OF AMERICA

RICHARD NIXON
The President of the United States

# # # #

MAY 26, 1972

Office of the White House Press Secretary
(Moscow, Union of Soviet Socialist Republics)

THE WHITE HOUSE

FACT SHEET

STRATEGIC ARMS LIMITATION
AGREEMENT

The Current Agreements

The ABM Treaty

-- Limits each side to one ABM site for defense of their national capital (Moscow and Washington) and one site for each side for the defense of an ICBM field.

-- There will be a total of 200 ABM interceptors permitted each side, 100 at each site.

-- Radars will be limited to Modern ABM Radar Complexes (called MARCs) six for each side within a circle of 150 km radius around the national capitals; (MARCs are a circle of 3 km diameter, in which radars can be deployed; in practice they can accommodate about one large radar or a few smaller ones).

-- For the ICBM defense fields there will be a total of twenty radars permitted; two of them can be about the size of the two larger radars deployed at Grand Forks; the other eighteen radars will be much smaller.

-- The Soviet ICBM protection site will be at least 1300 km from Moscow. Our comparable site will be at Grand Forks, North Dakota.

-- Other large non-ABM radars that may be built in the future will be restricted to space tracking or early warning and limited in size so as not to create a clandestine ABM potential.

-- The treaty will be of unlimited duration with withdrawal rights if supreme interests are jeopardized, and on six months notice.

The Interim Offensive Agreement

-- Limits ICBMs to those under construction or deployed at the time of signing the treaty or July 1. (This will mean about 1618 ICBMs for the USSR and 1054 for us.) The USSR will field about 300 large SS-9s, but they will be prohibited from converting other ICBM silos to accommodate the large SS-9 types. Other silos can be modified, but not to a significant degree. Modernization is permitted.

-- Construction of submarine launched ballistic missles on all nuclear submarines will be frozen at current levels. The further construction of SLBMs on either side, can only be accomplished by dismantling of an equal number of older land based ICBMs or older submarine launchers.

MORE

(OVER)

-- The Interim Agreement will run for five years (compared to the original Soviet proposal of 18 months), and both sides are committed to negotiating a permanent and more comprehensive agreement.

-- Both sides will abide by the obligations of the agreement once it is signed, though formal implementation will await ratification of the ABM treaty.

# # #

May 26, 1972

TREATY
BETWEEN THE UNITED STATES OF AMERICA
AND
THE UNION OF SOVIET SOCIALIST REPUBLICS
ON THE LIMITATIONS OF ANTI-BALLISTIC MISSILE SYSTEMS

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Proceeding from the premise that nuclear war would have devastating consequences for all mankind,

Considering that effective measures to limit anti-ballistic missile systems would be a substantial factor in curbing the race in strategic offensive arms and would lead to a decrease in the risk of outbreak of war involving nuclear weapons,

Proceeding from the premise that the limitation of anti-ballistic missile systems, as well as certain agreed measures with respect to the limitation of strategic offensive arms, would contribute to the creation of more favorable conditions for further negotiations on limiting strategic arms,

Mindful of their obligations under Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons,

Declaring their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to take effective measures toward reductions in strategic arms, nuclear disarmament, and general and complete disarmament,

Desiring to contribute to the relaxation of international tension and the strengthening of trust between States,

Have agreed as follows:

Article I

1. Each Party undertakes to limit anti-ballistic missile (ABM) systems and to adopt other measures in accordance with the provisions of this Treaty.

2. Each Party undertakes not to deploy ABM systems for a defense of the territory of its country and not to provide a base for such a defense, and not to deploy ABM systems for defense of an individual region except as provided for in Article III of this Treaty.

Article II

1. For the purpose of this Treaty an ABM system is a system to counter strategic ballistic missiles or their elements in flight trajectory, currently consisting of:

(a) ABM interceptor missiles, which are interceptor missiles constructed and deployed for an ABM role, or of a type tested in an ABM mode:

more (OVER)

(b) ABM launchers, which are launchers constructed and deployed for launching ABM interceptor missiles; and

(c) ABM radars, which are radars constructed and deployed for an ABM role, or of a type tested in an ABM mode.

2. The ABM system components listed in paragraph 1 of this Article include those which are:

(a) operational;
(b) under construction;
(c) undergoing testing;
(d) undergoing overhaul, repair or conversion; or
(e) mothballed.

Article III

Each Party undertakes not to deploy ABM systems or their components except that:

(a) within one ABM system deployment area having a radius of one hundred and fifty kilometers and centered on the Party's national capital, a Party may deploy: (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites, and (2) ABM radars within no more than six ABM radar complexes, the area of each complex being circular and having a diameter of no more than three kilometers; and

(b) within one ABM system deployment area having a radius of one hundred and fifty kilometers and containing ICBM silo launchers, a Party may deploy: (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites. (2) two large phased-array ABM radars comparable in potential to corresponding ABM radars operational or under construction on the date of signature of the Treaty in an ABM system deployment area containing ICBM silo launchers, and (3) no more than eighteen ABM radars each having a potential less than the potential of the smaller of the above-mentioned two large phased-array ABM radars.

Article IV

The limitations provided for in Article III shall not apply to ABM systems or their components used for development or testing, and located within current or additionally agreed test ranges. Each Party may have no more than a total of fifteen ABM launchers at test ranges.

Article V

1. Each Party undertakes not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based.

2. Each Party undertakes not to develop, test, or deploy ABM launchers for launching more than one ABM interceptor missile at a time from each launcher, nor to modify deployed launchers to provide them with such a capability, nor to develop, test, or deploy automatic or semi-automatic or other similar systems for rapid reload of ABM launchers.

Article VI

To enhance assurance of the effectiveness of the limitations on ABM systems and their components provided by this Treaty, each Party undertakes:

(a) not to give missiles, launchers, or radars, other than ABM interceptor missiles, ABM launchers, or ABM radars, capabilities to counter strategic ballistic missiles or their elements in flight trajectory, and not to test them in an ABM mode; and

(b) not to deploy in the future radars for early warning of strategic ballistic missile attack except at locations along the periphery of its national territory and oriented outward.

Article VII

Subject to the provisions of this Treaty, modernization and replacement of ABM systems or their components may be carried out.

Article VIII

ABM systems or their components in excess of the numbers or outside the areas specified in this Treaty, as well as ABM systems or their components prohibited by this Treaty, shall be destroyed or dismantled under agreed procedures within the shortest possible agreed period of time.

Article IX

To assure the viability and effectiveness of this Treaty, each Party undertakes not to transfer to other States, and not to deploy outside its national territory, ABM systems or their components limited by this Treaty.

Article X

Each Party undertakes not to assume any international obligations which would conflict with this Treaty.

Article XI

The Parties undertake to continue active negotiations for limitations on strategic offensive arms.

Article XII

1. For the purpose of providing assurance of compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.

2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 of this Article.

3. Each Party undertakes not to use deliberate concealment measures which impede verification by national technical means of compliance with the provisions of this Treaty. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices.

Article XIII

1. To promote the objectives and implementation of the provisions of this Treaty, the Parties shall establish promptly a Standing Consultative Commission, within the framework of which they will:

(a) consider questions concerning compliance with the obligations assumed and related situations which may be considered ambiguous;

(b) provide on a voluntary basis such information as either Party considers necessary to assure confidence in compliance with the obligations assumed;

(c) consider questions involving unintended interference with national technical means of verification;

(d) consider possible changes in the strategic situation which have a bearing on the provisions of this Treaty;

(e) agree upon procedures and dates for destruction or dismantling of ABM systems or their components in cases provided for by the provisions of this Treaty;

(f) consider, as appropriate, possible proposals for further increasing the viability of this Treaty, including proposals for amendments in accordance with the provisions of this Treaty;

(g) consider, as appropriate, proposals for further measures aimed at limiting strategic arms.

2. The Parties through consultation shall establish, and may amend as appropriate, Regulations for the Standing Consultative Commission governing procedures, composition and other relevant matters.

Article XIV

1. Each Party may propose amendments to this Treaty. Agreed amendments shall enter into force in accordance with the procedures governing the entry into force of this Treaty.

2. Five years after entry into force of this Treaty, and at five-year intervals thereafter, the Parties shall together conduct a review of this Treaty.

Article XV

1. This Treaty shall be of unlimited duration.

2. Each Party shall, in exercising its national sovereignty, have the right to withdraw from this Treaty if it decides that extraordinary events related to the subject matter of this Treaty have jeopardized its supreme interests. It shall give notice of its decision to the other Party six months prior to withdrawal from the Treaty. Such notice shall include a statement of the extraordinary events the notifying Party regards as having jeopardized its supreme interests.

Article XVI

1. This Treaty shall be subject to ratification in accordance with the constitutional procedures of each Party. The Treaty shall enter into force on the day of the exchange of instruments of ratification.

2. This Treaty shall be registered pursuant to Article 102 of the Charter of the United Nations.

Done at Moscow on May 26, 1972, in two copies, each in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA
RICHARD NIXON
President of the United States of America

FOR THE UNION OF SOVIET SOCIALIST REPUBLICS
LEONID I. BREZHNEV
General Secretary of the Central Committee of the CPSU

# # # #

May 26, 1972

TREATY
BETWEEN THE UNITED STATES OF AMERICA
AND
THE UNION OF SOVIET SOCIALIST REPUBLICS
ON THE LIMITATIONS OF ANTI-BALLISTIC MISSILE SYSTEMS

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Proceeding from the premise that nuclear war would have devastating consequences for all mankind,

Considering that effective measures to limit anti-ballistic missile systems would be a substantial factor in curbing the race in strategic offensive arms and would lead to a decrease in the risk of outbreak of war involving nuclear weapons,

Proceeding from the premise that the limitation of anti-ballistic missile systems, as well as certain agreed measures with respect to the limitation of strategic offensive arms, would contribute to the creation of more favorable conditions for further negotiations on limiting strategic arms,

Mindful of their obligations under Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons,

Declaring their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to take effective measures toward reductions in strategic arms, nuclear disarmament, and general and complete disarmament,

Desiring to contribute to the relaxation of international tension and the strengthening of trust between States,

Have agreed as follows:

Article I

1. Each Party undertakes to limit anti-ballistic missile (ABM) systems and to adopt other measures in accordance with the provisions of this Treaty.

2. Each Party undertakes not to deploy ABM systems for a defense of the territory of its country and not to provide a base for such a defense, and not to deploy ABM systems for defense of an individual region except as provided for in Article III of this Treaty.

Article II

1. For the purpose of this Treaty an ABM system is a system to counter strategic ballistic missiles or their elements in flight trajectory, currently consisting of:

(a) ABM interceptor missiles, which are interceptor missiles constructed and deployed for an ABM role, or of a type tested in an ABM mode:

more (OVER)

(b) ABM launchers, which are launchers constructed and deployed for launching ABM interceptor missiles; and

(c) ABM radars, which are radars constructed and deployed for an ABM role, or of a type tested in an ABM mode.

2. The ABM system components listed in paragraph 1 of this Article include those which are:

(a) operational;
(b) under construction;
(c) undergoing testing;
(d) undergoing overhaul, repair or conversion; or
(e) mothballed.

Article III

Each Party undertakes not to deploy ABM systems or their components except that:

(a) within one ABM system deployment area having a radius of one hundred and fifty kilometers and centered on the Party's national capital, a Party may deploy: (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites, and (2) ABM radars within no more than six ABM radar complexes, the area of each complex being circular and having a diameter of no more than three kilometers; and

(b) within one ABM system deployment area having a radius of one hundred and fifty kilometers and containing ICBM silo launchers, a Party may deploy: (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites. (2) two large phased-array ABM radars comparable in potential to corresponding ABM radars operational or under construction on the date of signature of the Treaty in an ABM system deployment area containing ICBM silo launchers, and (3) no more than eighteen ABM radars each having a potential less than the potential of the smaller of the above-mentioned two large phased-array ABM radars.

Article IV

The limitations provided for in Article III shall not apply to ABM systems or their components used for development or testing, and located within current or additionally agreed test ranges. Each Party may have no more than a total of fifteen ABM launchers at test ranges.

Article V

1. Each Party undertakes not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based.

2. Each Party undertakes not to develop, test, or deploy ABM launchers for launching more than one ABM interceptor missile at a time from each launcher, nor to modify deployed launchers to provide them with such a capability, nor to develop, test, or deploy automatic or semi-automatic or other similar systems for rapid reload of ABM launchers.

Article VI

To enhance assurance of the effectiveness of the limitations on ABM systems and their components provided by this Treaty, each Party undertakes:

(a) not to give missiles, launchers, or radars, other than ABM interceptor missiles, ABM launchers, or ABM radars, capabilities to counter strategic ballistic missiles or their elements in flight trajectory, and not to test them in an ABM mode; and

(b) not to deploy in the future radars for early warning of strategic ballistic missile attack except at locations along the periphery of its national territory and oriented outward.

Article VII

Subject to the provisions of this Treaty, modernization and replacement of ABM systems or their components may be carried out.

Article VIII

ABM systems or their components in excess of the numbers or outside the areas specified in this Treaty, as well as ABM systems or their components prohibited by this Treaty, shall be destroyed or dismantled under agreed procedures within the shortest possible agreed period of time.

Article IX

To assure the viability and effectiveness of this Treaty, each Party undertakes not to transfer to other States, and not to deploy outside its national territory, ABM systems or their components limited by this Treaty.

Article X

Each Party undertakes not to assume any international obligations which would conflict with this Treaty.

Article XI

The Parties undertake th continue active negotiations for limitations on strategic offensive arms.

Article XII

1. For the purpose of providing assurance of compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.

2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 of this Article.

3. Each Party undertakes not to use deliberate concealment measures which impede verification by national technical means of compliance with the provisions of this Treaty. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices.

Article XIII

1. To promote the objectives and implementation of the provisions of this Treaty, the Parties shall establish promptly a Standing Consultative Commission, within the framework of which they will:

(a) consider questions concerning compliance with the obligations assumed and related situations which may be considered ambiguous;

(b) provide on a voluntary basis such information as either Party considers necessary to assure confidence in compliance with the obligations assumed;

(c) consider questions involving unintended interference with national technical means of verification;

(d) consider possible changes in the strategic situation which have a bearing on the provisions of this Treaty;

(e) agree upon procedures and dates for destruction or dismantling of ABM systems or their components in cases provided for by the provisions of this Treaty;

(f) consider, as appropriate, possible proposals for further increasing the viability of this Treaty, including proposals for amendments in accordance with the provisions of this Treaty;

(g) consider, as appropriate, proposals for further measures aimed at limiting strategic arms.

2. The Parties through consultation shall establish, and may amend as appropriate, Regulations for the Standing Consultative Commission governing procedures, composition and other relevant matters.

Article XIV

1. Each Party may propose amendments to this Treaty. Agreed amendments shall enter into force in accordance with the procedures governing the entry into force of this Treaty.

2. Five years after entry into force of this Treaty, and at five-year intervals thereafter, the Parties shall together conduct a review of this Treaty.

Article XV

1. This Treaty shall be of unlimited duration.

2. Each Party shall, in exercising its national sovereignty, have the right to withdraw from this Treaty if it decides that extraordinary events related to the subject matter of this Treaty have jeopardized its supreme interests. It shall give notice of its decision to the other Party six months prior to withdrawal from the Treaty. Such notice shall include a statement of the extraordinary events the notifying Party regards as having jeopardized its supreme interests.

Article XVI

1. This Treaty shall be subject to ratification in accordance with the constitutional procedures of each Party. The Treaty shall enter into force on the day of the exchange of instruments of ratification.

2. This Treaty shall be registered pursuant to Article 102 of the Charter of the United Nations.

Done at Moscow on May 26, 1972, in two copies, each in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA

RICHARD NIXON

President of the United States of America

FOR THE UNION OF SOVIET SOCIALIST REPUBLICS

LEONID I. BREZHNEV

General Secretary of the Central Committee of the CPSU

# # # #

MAY 24, 1972

Remarks by Dr. Edward E. David, Jr., Science Adviser to the President, on the U. S. - U. S. S. R. Agreement on Cooperation in the Fields of Science and Technology

Today, Secretary of State Rogers and the Chairman of the State Committee of the U. S. S. R. Council of Ministers for Science and Technology, signed an agreement on scientific and technological cooperation. The agreement will enable Soviet and American specialists to solve major common problems to benefit both the U. S. and the U. S. S. R. The operation of the agreement will be based on mutual benefit and reciprocity.

By working together, we will accelerate scientific and technological progress. An important effect will be more vigorous activity here in the U. S. in such research as: new sources of energy, management and systems science, wise use of natural resources, weather modification, superconductivity, high energy physics, and basic science. Another domestic effect is likely to be more commercial activity based on new technology and pointed toward world-wide needs and desires for a higher living standard and life quality. While it is too early to say exactly what activities will be undertaken jointly, the number of opportunities is large and the Commission which will establish these new activities will begin its work within a matter of weeks.

For the past 14 years, the U. S. and U. S. S. R. have engaged in limited cooperation as part of our Exchanges Agreement. Under this Agreement, individuals and groups were exchanged between both public and private institutions, but there have been few joint research activities. This new agreement sets up for the first time a high-level Commission to establish cooperative projects and to see that they are carried out satisfactorily for both countries. This agreement complements the separate Agreements signed yesterday on cooperation in health and the environment.

Scientific and technical cooperation may take the form of:

--joint programs and projects in basic and applied sciences;

--exchange of research results and technical information;

--joint conferences and symposia;

--exchanges of scientists and engineers;

--contacts between U. S. firms and Soviet enterprises.

These various mechanisms will be used as appropriate in individual cases.

Implementation of Agreement and Timing

The Agreement calls for setting up a U. S. -U. S. S. R. Joint Commission on Scientific and Technical Cooperation. The Executive Agent on the U. S. side will be my office--the Office of Science and Technology in the Executive Office of the President--and on the Soviet side, the State Committee of the U. S. S. R. Council of Ministers for Science and Technology . The Joint Commission will explore, identify

and establish cooperative programs in science and technology. Furthermore, it will monitor the execution of agreed programs and seek to assure their proper implementation.

I expect to meet in the near future with my Soviet counterpart Chairman to agree on guidelines and procedures for the Commission. I expect the U. S. side to have some 4-5 core members with an additional 3-4 members selected for specific meetings depending on agenda. U. S. members will come from government, industry, universities, and private foundations as appropriate.

The Commission will meet at least once a year in the U. S. S. R. and U. S. alternately. Secretariats will be established on both sides to maintain contacts between sessions. For each cooperative program direct contacts will be established between the responsible U. S. agency and its Soviet counterpart. The Joint Commission will, in turn, follow closely the progress of the cooperation.

The potential of this Agreement for promoting scientific and technological problem-solving is augmented by an equally important contribution; namely, the establishment of tangible links between our nations and their citizens. This will provide one more element in moving toward the President's goal of achieving a world of peace and cooperation. I firmly believe we in science and technology can make a very positive contribution to this goal through our common language and our respect based upon mutually-recognized accomplishment.

AGREEMENT BETWEEN THE GOVERNMENT OF THE UNITED STATES OF AMERICA AND THE GOVERNMENT OF THE UNION OF SOVIET SOCIALIST REPUBLICS ON COOPERATION IN THE FIELDS OF SCIENCE AND TECHNOLOGY

The Government of the United States of America and the Government of the Union of Soviet Socialist Republics;

Recognizing that benefits can accrue to both countries from the development of cooperation in the fields of science and technology;

Wishing to assist in establishing closer and more regular cooperation between scientific and technical organizations of both countries;

Taking into consideration that such cooperation will serve to strengthen friendly relations between both countries;

In accordance with the Agreement between the United States of America and the Union of Soviet Socialist Republics on Exchanges and Cooperation in Scientific, Technical, Educational, Cultural, and Other Fields, signed April 11, 1972, and in order to develop further the mutually beneficial cooperation between the two countries;

Have agreed as follows:

ARTICLE 1

Both Parties pledge themselves to assist and develop scientific and technical cooperation between both countries on the basis of mutual benefit, equality and reciprocity.

ARTICLE 2

The main objective of this cooperation is to provide broad opportunities for both Parties to combine the efforts of their scientists and specialists in working on major problems, whose solution will promote the progress of science and technology for the benefit of both countries and of mankind.

ARTICLE 3

The forms of cooperation in science and technology may include the following:

a. Exchange of scientists and specialists;

b. Exchange of scientific and technical information and documentation;

c. Joint development and implementation of programs and projects in the fields of basic and applied sciences;

d. Joint research, development and testing, and exchange of research results and experience between scientific research institutions and organizations;

e. Organization of joint courses, conferences and symposia;

f. Rendering of help, as appropriate, on both sides in establishing contacts and arrangements between United States firms and Soviet enterprises where a mutual interest develops; and

g. Other forms of scientific and technical cooperation as may be mutually agreed.

ARTICLE 4

1. Pursuant to the aims of this Agreement, both Parties will, as appropriate, encourage and facilitate the establishment and development of direct contacts and cooperation between agencies, organizations and firms of both countries and the conclusion, as appropriate, of implementing agreements for particular cooperative activities engaged in under this Agreement.

2. Such agreements between agencies, organizations and enterprises will be concluded in accordance with the laws of both countries. Such agreements may cover the subjects of cooperation, organizations engaged in the implementation of projects and programs, the procedures which should be followed, and any other appropriate details.

ARTICLE 5

Unless otherwise provided in an implementing agreement, each Party or participating agency, organization or enterprise shall bear the costs of its participation and that of its personnel in

cooperative activities engaged in under this Agreement, in accordance with existing laws in both countries.

ARTICLE 6

Nothing in this Agreement shall be interpreted to prejudice other agreements in the fields of science and technology concluded between the Parties.

ARTICLE 7

1. For the implementation of this Agreement there shall be established a U.S.-U.S.S.R. Joint Commission on Scientific and Technical Cooperation. Meetings will be convened not less than once a year in Washington and Moscow, alternately.

2. The Commission shall consider proposals for the development of cooperation in specific areas; prepare suggestions and recommendations, as appropriate, for the two Parties; develop and approve measures and programs for implementation of this Agreement; designate, as appropriate, the agencies, organizations or enterprises responsible for carrying out cooperative activities; and seek to assure their proper implementation.

3. The Executive Agent, which will be responsible for assuring the carrying out on its side of the Agreement, shall be, for the United States of America, the Office of Science and Technology in the Executive Office of the President and, for the Union of Soviet Socialist Republics, the State Committee of the

U.S.S.R. Council of Ministers for Science and Technology. The Joint Commission will consist of United States and Soviet delegations established on an equal basis, of which the chairmen and members are to be designated by the respective Executive Agents with approval by the respective Parties. Regulations regarding the operation of the Commission shall be agreed by the chairmen.

4. To carry out its functions the Commission may create temporary or permanent joint subcommittees, councils or working groups.

5. During the period between meetings of the Commission additions or amendments may be made to already approved cooperative activities, as may be mutually agreed.

ARTICLE 8

1. This Agreement shall enter into force upon signature and shall remain in force for five years. It may be modified or extended by mutual agreement of the Parties.

2. The termination of this Agreement shall not affect the validity of agreements made hereunder between agencies, organizations and enterprises of both countries.

DONE at Moscow this 24 day of May, 1972, in duplicate, in the English and Russian languages, both equally authentic.

FOR THE GOVERNMENT OF THE UNITED STATES OF AMERICA:

FOR THE GOVERNMENT OF THE UNION OF SOVIET SOCIALIST REPUBLICS:

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

FACT SHEET

Briefing on U.S.-U.S.S.R. Cooperation in Science & Technology Agreement

---

The new U.S.-Soviet Agreement on Science and Technology establishes -- at the top levels of the two governments -- a new basis for future cooperative efforts.

Significance of the agreement lies in the following:

- o That cooperation will help both countries by finding solutions to common problems.
- o That mutual benefit, benefits to both parties, is to be the primary basis for all joint efforts carried out under the agreement.
- o That the President's commitment of earlier this year to turn science and technology to the service of man can now be carried out more expeditiously on the international front.
- o That research and development aimed at goals such as new sources of energy; management and systems science; use of natural resources; weather modification; high energy physics and other scientific ventures will be more vigorously pursued in the United States; and,
- o That commercial activity based on new technology and addressed to world-wide needs and desires will be stimulated here in the U.S.

Previous U.S.-Soviet contacts in science and technology have been largely based on exchange agreements going back to 1958. They have taken place on agency-to-agency, institution-to-institution and person-to-person levels. Now, for the first time, new joint activities will be developed, evaluated and coordinated at the executive levels of government.

The agreement establishes a U.S.-U.S.S.R. Joint Commission on Scientific and Technical Cooperation. The responsible agency for the United States is the Office of Science and Technology in the Executive Office of the President. The Soviet lead agency is the State Committee of the U.S.S.R. Council of Ministers for Science and Technology.

The Commission's framework will be developed in the near future. The first meeting will take place sometime thereafter at a time to be agreed upon. The agreement itself will have a lifetime of five years and may be renewed.

Though specific areas of mutually beneficial effort will not be identified until the Commission becomes functional, there are many possibilities. As examples, these could include:

Energy research -- in which each country has specific areas of expertise.

Arctic research -- in which both the Soviet Union and the U.S. are expanding their knowledge; or,

Management science --in which the United States has made significant strides of value to other nations.

Other possibilities include atmospheric sciences, including weather modification; superconductivity; mining technology; marine resources; and many other areas of both fundamental and applied sciences.

The Science and Technology Agreement will augment more specific and separate agreements in the areas of health and environment which were signed yesterday (Tuesday).

Excluded from the Agreement are joint activities in areas deemed sensitive by either country for national security reasons.

Both nations will endeavor to facilitate such ventures as:

- o Exchanges of scientists and technologists;
- o Exchanges of scientific and technical information;
- o The development and implementation of programs and projects in both basic and applied fields of science;
- o Joint efforts and exchanges between their research institutions and organizations;
- o The development of courses, symposia, and conferences;
- o Establishing contacts between American firms and Soviet State Enterprises where a mutual interest develops.
- o And, other cooperation such as a continuing review of those efforts which may develop in the future.

The new Agreement is one more step in a gradual move from a period of confrontation to one of negotiation and cooperation between the two scientific and technological giants. By placing primary emphasis on "the mutual benefits" to be gained from cooperation, it minimizes the effects of otherwise conflicting demands in the different social, economic and political value systems.

One direct benefit is that of accomplishing jointly that which neither is likely to undertake alone. Another is the liklihood of synergistic relationships in which the combined efforts of the two parties will produce greater results than either could expect from unilateral efforts.

The procedures of the Commission will be agreed to at a meeting between Dr. Edward E. David, Jr., Director of the Office of Science and Technology and President Nixon's Science Adviser, and his still-to-be-named counterpart in the U.S.S.R.

Meetings will be held at least once a year and will alternate between Washington and Moscow.

MAY 24, 1972

FACT SHEET

AGREEMENT ON COOPERATION IN THE FIELDS OF SCIENCE AND TECHNOLOGY

Today's Agreement on Cooperation in the Fields of Science and Technology augments and expands by formal agreement United States and USSR cooperation on the exchange and development of scientific and technological information. The Agreement became effective immediately upon signature by Secretary of State Rogers and Chairman of the State Committee for Science and Technology, V.A. Kirillin, and remains in force for five years.

Although some exchange of scholars and information was provided for under the 1971-1972 Agreement on Exchanges and Cooperation in Scientific, Educational, Cultural and Other Fields (signed April 11, 1972), today's action will broaden both participation by U.S. and Soviet citizens, and the range of areas in which cooperation may ensue. The Exchanges and Cooperation Agreement provides for visits of three to four weeks by 21 delegations (consisting of four to six persons each) from each side. The exchange is designated for 18 areas such as irrigation projects, conservation of water resources, coal mine safety, highway safety.

Today's agreement allows for delegation exchanges in number sufficient to meet the needs of a designated research area, and could as much as double those permissable under the Exchanges and Cooperation Agreement. Any area of non-sensitive, basic or applied research -- including management science -- may be considered by the Commission for cooperative efforts under the agreement.

The possibility of a formal agreement in this area by the two countries was discussed by Secretary Stans during his November 20 - December 1 visit last year. Since then, Dr. Edward David, Science Adviser to the President and Director of the Office of Science and Technology, has been in consultations with the USSR. He plans to visit the Soviet Union in the near future to resume discussions on the implementation of the agreement.

Outline of the agreement:

The agreement provides for cooperative exchange through:

-- Exchange of scientists and specialists;

-- Exchange of scientific and technical information and documentation;

-- Joint development and implementation of programs and projects in the fields of basic and applied sciences;

-- Joint research, development and testing, and exchange of research results and experience between scientific research institutions and organizations;

MORE

-- Organization of joint courses, conferences and symposia;

-- Rendering of help, as appropriate, on both sides in establishing contacts and arrangements between United States firms and Soviet enterprises where a mutual interest develops; and

-- Other forms of scientific and technical cooperation as may be mutually agreed.

A Joint Commission of six to eight members (the exact number will be worked out between the parties) will be established, chaired on the U.S. side by Dr. Edward David. Members from the U.S. will be selected by the Office of Science and Technology, and drawn from government, academic, and industry resources. Meetings will be convened not less than once a year in Washington and Moscow alternately. The Commission will make judgements on areas in which cooperation is recommended, and designate the appropriate agencies and firms to implement the agreements.

The government agencies responsible for supervising the implementation of the agreement are the Office of Science and Technology in the U.S. and the State Committee of the USSR Council of Ministers for Science and Technology in the Soviet Union.

# # #

FOR IMMEDIATE RELEASE MAY 24, 1972

PRESS CONFERENCE
OF
DR. EDWARD E. DAVID, JR.
SCIENCE ADVISOR TO THE PRESIDENT

EXECUTIVE OFFICE BUILDING

AT 2:00 P.M. EDT

MR. CLAWSON: As you know, there was an agreement signed on science and technology today in Moscow. I have with me Dr. Edward E. David, Jr., Science Advisor to the President, who will make a short statement and then go to questions and answers.

DR. DAVID: I want to apologize for setting the beginning of this at 1:45, but I was in conference with the Vice President and couldn't get here exactly at that time.

As you have heard, there has been this signing and you have information on it in your packets of information there. There are, I think, four documents. The only possible confusion, I think, is the fact there are two fact sheets, one for Washington and one that was handed out in Moscow. They are somewhat different. (Laughter). So two sets of facts, hopefully not inconsistent.

This Agreement which we hold great store in will enable Soviet and American specialists to solve some major common problems which can benefit both the United States and the Soviet Union. The operation of the Agreement will be based strictly on a mutual benefit and reciprocity.

By working together, by our two countries working together, I think we can accelerate scientific and technological projects. An important effect of this cooperation will be a good deal more vigorous activities here in the United States on research, management and systems science, wide use of natural resources, weather modification, superconductivity, high energy physics and basic science. That is a sample list, not necessarily an exclusive list.

Another domestic effect is likely to be more commercial activity based on new technology and pointing toward world-wide needs and desires for a higher living standard and a better life quality.

While it is too early to tell exactly what activities will be undertaken jointly between our scientists and engineers, the number of opportunities we see is very large indeed and the Commission which will establish these new activities will begin its work within a matter of weeks.

MORE

I expect to meet in the very near future with my Soviet counterpart chairman to agree on guidelines and procedures for this Commission and for its work and I expect the U.S. side to have four or five core members with an additional four or five members selected according to the agenda for the particular meeting and the subject of that meeting of course. We have not selected members as yet, but we would expect they would come from government, industry, universities and private foundations, as appropriate.

The Commission will meet once a year in the USSR and in the United States alternatively. Secretariats will be established on both sides to maintain contact between sessions.

For each cooperative program that we establish, direct contacts will be established between the responsible U.S. agency and its Soviet counterpart. The Joint Commission will, in turn, follow closely the progress of the cooperation.

The potential of this Agreement for promoting scientific and technological problem-solving, which is what I have talked about up to now, I think, will be augmented by an equally important contribution, namely, the establishment of tangible links between our nations and their citizens.

This will provide one more element in moving toward the President's goal of achieving a world of peace and cooperation. I firmly believe that we in science and technology can make a very positive contribution to this goal through our common language and our respect based on mutually recognized accomplishment.

I will be glad to answer your questions.

Q Dr. David, yesterday there was announced an Agreement on Health in which a bilateral commission was to be formed, an Agreement on the Environment, for which a bilateral commission was to be formed. Now you have one on science and technology with a bilateral committee. You have one on space and so forth. Isn't there a certain amount of duplication and overlapping here?

DR. DAVID: No, I think what we will find is that these various activities compliment each other rather well and while we expect the interface to be smooth, there will be some minimal amount of overlap, but they are independent agreements and will be operated independently. You can be sure we will exchange information on a very intimate basis so that the amount of overlap will be very minimal indeed.

I think if you look at Chairman Train's conference yesterday and Secretary Richardson's, you will find the subject matter they mention is disjointed from the subject matter mentioned here.

Q I don't know. Joint programs and projects in basic and applied sciences would embrace both environmental considerations and medical considerations.

DR. DAVID: I was thinking about the specifics I mentioned here, such as high energy physics, superconductivity, wide use of natural resources, systems science, management science, all of those things fall clearly under this Agreement and it is clear, too, there are things that fall very definitely under the Environmental Agreement and others under the Health Agreement. So we will see some overlap, but very minimal overlap. I think it is a good arrangement to have these committees and Agreements which augment each other.

Q In your contact over the past months, have you seen any direct benefits to the U.S. or USSR in specific fields of technology, for example, fusion, say? Have you had contact in that field?

DR. DAVID: Yes, I have. As you probably know the Tokamak principle in the fusion area was first demonstrated in the Soviet Union. That was transferred to the western countries. We have a number of experiments which are going on as a result of that work which was begun in the Soviet Union.

So we already see a field in which there has been a major augmentation of world-wide work on a very important topic for the world as a whole, namely, an almost unlimited supply of energy through the fusion process. That is a very good example the one you bring up.

Q Since there has already been a good deal of cooperation on fusion, what more can you get out of what you are going to do now?

DR. DAVID: There are many other areas of cooperation that are possible other than just fusion, for example, there is work in high energy physics. The large Soviet accelerated Serpukhov and our accelerators here in the United States, including the large one at Western Illinois, that is a good candidate. We already have some cooperation there. We might see that cooperation expanded if it is appropriate.

We will have to decide exactly what we do from here on on the basis of joint decisions with our Soviet counterparts. I have mentioned some other areas. Wide use of natural resources and techniques for the use of resources wisely is an important area where they have interesting activities which we think we can benefit from and they can benefit from some of ours.

The whole management and systems science area is one I think is right. Weather modification is another and superconductivity. The ones I mentioned here I think are the ones I thought of almost spontaneously and I think they provide a good sample list As I say, we will have to decide after talking to our Soviet counterparts exactly which fields are ripe at the present time.

Q What is different about this agreement as opposed to the present agreements, is it basically that you are talking about joint research efforts rather than just exchange of personnel?

DR. DAVID: That is a very good point. There are some other distinctions, too, but let me reemphasize your point, namely, in the past we have looked upon international science and technology as based primarily on the camaraderie of scientists and engineers and I can attest that that is very effective, because I have a number of professional colleagues in the Soviet Union who are in my own field of research and with whom, over the years, I have had close personal and professional contacts.

That is an important element and we don't intend to allow that to lie fallow. But, on the other hand, there have been relatively few attempts to try to solve common problems through common research efforts. And what we would hope is that this Agreement will enable us to expand in that area and to find real effective areas of cooperation.

Q Some Soviet scientists have had a great deal of difficulty traveling outside the Soviet Union to meetings of an international nature. Do you think this Agreement will facilitate that?

DR. DAVID: This is a good point. This committee will be a very high level committee. It is not a committee, rather a commission, and it will have access to the highest levels of governments on both sides. This is something we and the Soviets both felt was extremely important, because just factors of that sort have to be considered at the highest level of government if we are going to push agreements like this through and if they are going to be effective.

I hope and expect we will see much freer interchange of information and people.

Q You hope it will facilitate traveling?

DR. DAVID: That is what I hope.

Q You said one thing, common problems for common research. You are suggesting two things. Some problems are so big we don't have the money to do it and perhaps both countries should get together to put in money on each side to solve these problems. Is that what you are suggesting?

DR. DAVID: That is one possible way of implementing these things. Another possible way is for us to take the amount of research that needs to be done and divide it up, allow the Soviets to do part of it and we will do part of it and we will pool the results.

It wouldn't necessarily result in any exchange of money or it wouldn't be because we couldn't do something, but just that it would be more economical for us to cooperate.

Q Is that what you think will happen?

DR. DAVID: That is the kind of thing we hope will happen. There can be joint facilities set up, too, where both parties would take an active role in it. I think several things can happen. The one I mentioned first seems to me to be a prime contender.

Q Would this be limited to an exchange of information when working together of federal American scientists and federal Soviet scientists or could there be private interest people such as people from your alma mater?

DR. DAVID: No, we would look at this very broadly and say we are not putting any restrictions on it at all a priori. Whatever seems to be appropriate for the work we want to do we will take scientists and engineers and talented people from wherever we can find them to accomplish these purposes and I think the Soviets look at it that way, too.

Q Can you elaborate on what you mean by holding out the prospect of more domestic commercial activity based on this?

DR. DAVID: If you just take the fact that we expect to see some problems solved more rapidly through collaborative effort, you can see there might very well be large amounts of industrial activity stimulated by the results of these problem-solving efforts and I merely go back to the fusion area, if we solve it a good deal more rapidly, this means we will see more activity on a commercial level in the fusion generators much earlier than we would otherwise.

So we will see a stimulation of that kind. What we would expect is to see results of research and developments feed into commercial products sooner and perhaps more readily. The market will be different and the market may be bigger.

Q Going back over the last decade there is a problem with the cooperation of the Soviets primarily on matters of security, in other words, people here are afraid we would disclose information that would give information to the Russians in a military sense. Has the situation changed any in that regard?

DR. DAVID: I think we have to examine closely our national interests and all of our international science and technological activities. I think we take a quid pro quo attitude. We want to be certain it is a give and take proposition and not a take and take proposition on either side.

That doesn't mean when we give up one blue chip they give up a blue chip that looks exactly the same. It means we can trade a blue chip for a red one that is just as valuable to us.

I say quid pro quo, but not necessarily quid pro quo in kind. We take a slightly broader view, I think, than the question implies.

Q Dr. David, two or three times you have mentioned the fusion research as being very significant. Do you anticipate the U.S. and Soviet cooperation in fusion research might accelerate the day this would be practical?

DR. DAVID: I would hope so.

Q How much?

DR. DAVID: That is hard to judge. Scientists you know never like to predict when something is going to come out of the laboratory full blown as a commercial product. And we have not yet demonstrated the break-even experiment in fusion, but I would hope it would accelerate the break-even experiment in fusion by a considerable time.

Q This emphasis on fusion cooperation, does this mean or indicate that the United States and the Soviet Union now will both zero in on the Tokamak principle at the exclusion of all other possibilities?

DR. DAVID: No, I doubt that. I don't want to give the impression this Agreement is set up for the purpose, the sole purpose of increasing our activity and our cooperation in fusion. There are many other areas. I picked that one because that is an area in which we have already derived some benefit from what has been done there.

There are many other areas even in the power field, for example, where they are doing things of interest to us. For example, in the magneto hydrodynamic area, the breeder reactor area and in the solar energy area, we are doing things in each of these areas that are of interest to the Soviet Union.

But the energy area is a prime one. We have also heard and I know you have read about weather modification experiments that have been done in the Soviet Union and we are doing weather modification experiments in the National Science Foundation and other areas. There will be some cooperation there perhaps.

Again I say I don't want to predict these things. I want to make it clear that I am giving examples of things that appear plausible to me, subjects that appear plausible to me for joint work. We have to agree with our counterparts over there before any of this becomes a reality.

As I said in my statement, that will begin soon.

Q This management and systems science reference, does that mean computer systems?

DR. DAVID: It has more to do with trying to solve problems of allocation of resources of trying to predict the behavior of complicated systems than it does with computers per se. Computers are often a tool in management science and systems science. But this is not referring to cooperation on the production of computers necessarily or on the usage of computers directly. Management and systems science are both disciplines in their own right and computers are merely a tool in these.

Q Do you foresee the possibility of any joint ventures between the U.S. and USSR in say, Southeast Asia or Latin America, the developing world?

DR. DAVID: We have not looked at the question of what cooperative efforts there might be in other parts of the world, other than the Soviet Union and the United States. On the other hand, I would certainly not rule out joint efforts to help other countries. I wouldn't rule out joint efforts located in ohter countries. But neither have we particularly talked about those in our negotiations.

Q What implication does this Agreement have for U.S. corporate involvement, industry involvements, if any?

DR. DAVID: I think to the degree industry here feels there are enterprises in the Soviet Union from which they feel they have something to learn and something to contribute, we can help implement those through this Agreement.

Q This would be a factory-to-factory arrangement?

DR. DAVID: As I said, we would hope to identify areas and then assign the agency responsible or allow the industry that is on our side interested to make the arrangements and carry through the program and the job of the Commission would be to watch what goes on and be sure it is carried out expeditiously and to the advantage of both parties.

Q Isn't this roughly what the science attaches of embassies are already doing?

DR. DAVID: Science attaches are more information gathering, easing the way for visitors, keeping us informed about what is going on in science in other countries, rather than implementing of actual joint projects and agreements.

Q You mean the Commission would have a supervisory role?

DR. DAVID: It would certainly be able to take action if the carrying out of an agreement or the carrying out of a joint project were not going well or if it were going too slowly, if we wanted to accelerate or make it more effective, this Commission would watch what is going on, if it is not going satisfactory to either side, we would bring that up to the Commission and could presumably cause the right thing to happen from there on.

It is not supervisory in the sense that it would supervise the day to day work or set the program in a specific detailed way, but it certainly is going to watch what happens and to be certain that the outcome is acceptable to both sides and is moving along at a pace which is acceptable to both sides.

Q Any technology assessments associated with this?

DR. DAVID: We have not talked about technology assessments. I have talked about systems science and management science and technology assessment and the analysis techniques that go with that are certainly related. I wouldn't think it impossible by any manner or means technology assessments would be one of the subjects we could talk about and cooperate in, the methodologies and anything on a world-wide scale that affects both countries.

Q Do we have an agreement with any other country like this?

DR. DAVID: That is a good question. I am not sure I know the answer. No, we do not my good advisor says. This is the only one.

Q Is the current program, space program, totally dependent on fossil fuel?

DR. DAVID: Would you repeat the question?

Q Is our space program totally dependent on fossil fuel?

DR. DAVID: I don't think it is, no. The question of where the power comes from, the manufacture of rocket fuels and things of that sort, I am sure it is somewhat amorphous. You can't really say, but to the extent nuclear power does supply part of the power needs in this country, we do make use of nuclear power.

If you are referring to the direct launch of rockets and whether chemical fuels are the only fuels we use at the present time in terms of actual launch vehicles, the answer is yes.

On the other hand, in some of our satellites we do have small power supplies called snaps, which are nuclear in character.

Q Are the Russians equally supplied with oil reserves as the U.S. or do they have more?

DR. DAVID: The Soviets have very large supplies of fossil fuels, particularly gas and oil and I believe these supplies, if I recall my figures correctly, are larger than our reserves.

Q Do you have any evidence of feelings about whether or not the Soviets are experiencing large unemployment among their scientists and engineers, anything on their counterparts?

DR. DAVID: No, I do not think there is an unemployment problem in the Soviet Union among their scientists and engineers according to the information we get.

Q Do you know how much breeder reactors the Soviets have in operation now?

DR. DAVID: I don't know hos many they have in operation. There are two, I have been informed, under construction. One is very near operation, if it is not started already.

Q Would is head of the US-USSR Committee for Science and Technology?

DR. DAVID: It is Mr. Kirillin.

Q What kind of effect do you think this Agreement might have on private American research grant possibilities?

DR. DAVID: That is a little hard to say, but I do think that as the scope of science expands through a cooperative arrangement of this kind, we can see areas in which new work in this country would be required so that I would expect to see at least diversions of resources into new work which might be stimulated by this Agreement.

In fact, I guess I can't mention the actual proposal, we have had one proposal already of this variety.

Q How about research monies into the Soviet Union?

DR. DAVID: It is hard to say exactly, but I would not expect to see us investing in Soviet research. I would expect to see each side support that contribution the country is making on its own and essentially no transfers of funds.

Q Would the funding come both from industry and various departments here?

DR. DAVID: It certainly could. It will undoubtedly start with federal funding of our own and piggybacking on the research and activities we have already ongoing.

Q Is this an additional outlay from preliminary talks with your counterpart what range of financing you already run into both in setting up the Commission and preliminary research?

DR. DAVID: We don't think setting up the Commission is going to be a very costly thing. We don't see any difficulty about financing that at all. The question of large new joint projects we have not yet approached, so it is hard to tell what those words really mean in terms of money. I think we will start with what exists and try to build on it.

Q What other areas of American research do you think the Russians would be particularly interested in, things like computers, electronics, or what?

DR. DAVID: Certainly they have evident interest in a great deal of our technology, computers is certainly an area in which they are quite interested and I think that is a very good one. Electronics, solid state electronics and integrated circuits is another. I think they are quite interested also in what I would call less strategic areas, such as -- have I got time?

MR. CLAWSON: Sure, go ahead.

DR. DAVID: Such as high energy physics, for example.

MR. CLAWSON: I think our other briefers have arrived.

END

FOR IMMEDIATE RELEASE MAY 24, 1972

PRESS CONFERENCE
OF
THE VICE PRESIDENT;
DR. JAMES C. FLETCHER, ADMINISTRATOR, NASA;
GLYNN S. LUNNEY, ASSISTANT TO THE MANAGER FOR OPERATIONAL, EXPERIMENT AND GOVERNMENT FURNISHED EQUIPMENT, NASA;
AND
DR. EDWARD E. DAVID, JR.,
SCIENCE ADVISOR TO THE PRESIDENT

THE VICE PRESIDENT: Please be seated.

Today the President signed, with Premier Kosygin of the Soviet Union, some important agreements concerning our space program and their space program. Discussions on this subject have been under way since the fall of 1970 and one of the most interesting of these agreements concerns itself with a joint docking mission, a rendezvous and docking mission which is scheduled to take place in 1975.

These matters of the peaceful use and exploration of outer space are extremely critical to both our nations and we have here with us today, in addition to General McDivitt, Dr. Fletcher, the Administrator of NASA, who will brief you thoroughly on these matters and then answer your questions.

Jim.

DR. FLETCHER: Thank you, Mr. Vice President.

I do have here with me, as the Vice President mentioned, General Jim McDivitt, who is an astronaut and former project manager for the APOLLO program and I also have with me Glynn Lunney, who is the Program Director for the international rendezvous and docking mission.

We, needless to say, are very pleased that the President has been able to meet with the officials of the Soviet Union and to provide what we think is by far the most meaningful cooperation in space achieved ever by these two nations.

We have been discussing the possibilities of cooperation of this sort for some years, particularly intensively for the last two years and as the President has announced, we have jointly agreed to firm many of these tentative commitments into a definitized program and have begun to set up a timetable with the Soviet Union for carrying out some of these events.

Perhaps the most dramatic of these events will be a rendezvous and docking of the APOLLO command service module. This is the same module that orbits the moon when the limb descends to the moon and returns. This module then is used to return the astronauts back to earth. The vehicle we will be docking with will be the Soyuz spacecraft, which is the primary manned spacecraft used by the Soviet Union.

MORE

These two vehicles at the present time are not compatible. They are not compatible because they don't have the docking mechanism. They are not compatible because they have different atmospheres. Theirs is a normal atmosphere, ours is a low pressure oxygen, almost pure oxygen atmosphere and there are certain communications and electronics incompatibilities.

In order to make these compatible, we found that the U.S. had to construct what we call a docking module, which is this little device that sits in between the two and the docked device will look something like this. The sequence will be first we will launch on a Saturn 1B, which is an older version of the Saturn missile, both the command service module and the docking adaptor. Then we will make a maneuver at 100 miles or so altitude, much the same as we do with the lunar excursion model, go in and pick out the docking adaptor from the Saturn and then continue on in orbit.

Meanwhile, the Soviets will launch their Soyuz spacecraft and rendezvous or at least move their altitude to something like 150 miles. We won't be at the same altitude, but hopefully we will be far enough north so too much maneuvering will not be required.

We will then have to perform the rendezvous mission which will be primarily carried out, I suspect, with the equipment developed in the United States. This is guidance and instrumentation designed to bring these two close together. And then they will dock with a new kind of a docking mechanism we call androgynous, because it doesn't consist of a prop and a drogue, a point and a whole. It is an inverse docking mechanism so they can dock with us or we can dock with them either way. It is a universal docking system which Glynn Lunney may want to show you afterwards which will apply not only to this particular docking mission, but all succeeding spacecraft that we develop and presumably the Soviets develop, so that we do have the capability, over a long period, of rendezvousing and docking with each other's spacecraft.

You may wonder why we would proceed that way. There has been concern for many years that we did not have a rescue capability in case something went wrong in space, that we each would have the option of rescuing the other. Future spacecraft beyond 1975, which is the planned date for this mission, will all have the capability.

There are some fringe benefits from this program. It does have the impact of requiring 4,400 people to be employed that would not otherwise be employed, primarily from the aerospace industry, partly to prepare the command service model and the Saturn 1B launch device, but also to construct the new docking adaptor.

In addition to that, it will keep the APOLLO team together, which, as you know, has done rather spectacularly well over the last several years, keep it together on through 1975 in preparation for the first launch of the shuttle which occurs in 1978.

It will have the major impact in employment in the aerospace industry.

It will also have the implied commitment that missions of this sort will continue in the future and, if we are successful, we can avoid duplication between the Soviet Union and ourselves in their carrying out one aspect of a program and we carrying out another and presumably both countries will be much more efficient thereby.

All of us at NASA are very optimistic this new cooperative effort in the exploration of space may lead to greatly increased cooperation on still other programs. In my mind it will be the most visible, Soviet used cooperative effort of any kind in history since it will involve cosmonauts and astronauts working together on a very complex mission in space while the whole world is watching, presumably on television via satellite relay.

Thank you very much.

Now we have Mr. Lunney and General McDivitt and Dr. David, all whom are capable of answering questions or I will be glad to field them myself.

Q Dr. Fletcher, could you answer one question. You said the Soyuz and APOLLO will come together. I thought there was a Salyut in between.

DR. FLETCHER: There is no Salyut involved in this mission. This is an APOLLO CSM with a Soyuz with a docking adaptor in between.

Q That is a rather recent change, isn't it, the elimination of the Salyut?

DR. FLETCHER: Yes. Several months ago we had the thought that after the Soviets had launched their first Salyut we would try to rendezvous with their Salyut. In fact, they made the suggestion, but they went back to the drawing boards and they found that was a very complicated mission because it involved not just the two launches, their Soyuz and our APOLLO, but a third of their Salyuts. So that is three separate launches that had to be coordinated.

Their Salyut then would have had to dock with their own spacecraft, their Soyuz, plus our own, so it would have had two docking mechanisms and then the electronics began to get more and more complicated. This seemed like the first thing to try.

Q How can you work together? There is not much room in the Soyuz and the APOLLO for six men.

DR. FLETCHER: It is not clear that it will be six men. It is quite possible we will only use four, two in each. It is likely -- we have not worked out the mission details -- but it is likely two men will move from the APOLLO CSM into the adaptor, wait for the pressure to be equalized and then move on into the Soyuz.

After they perform various missions and tests primarily designed to approve the docking system, but also to prove that rescue is possible, then one or more Soviets, we don't know how many cosmonauts will come back through the docking adaptor into the CSM and there is just barely room for four people in the CSM. Whether that will take place or not is still subject to some question.

Q How about training of the crews?

DR. FLETCHER: There is a young lady that spoke up.

Q What are the astronauts and cosmonauts going to do up there besides this mechanical type of thing? Is there going to be any science at all involved?

DR. FLETCHER: The primary mission will be to prove out the docking system and to prove out the rescue capability. There will be some experiments done by the U.S. We have not defined what these experiments will be, but we feel as long as we are up in orbit and there are many useful things to do, that we ought to do some of these experiments. We have not defined the experiment package yet, we don't know what experiments the Soviets have in mind.

Q It has been planned, Dr. Fletcher, for the American end of this mission to continue for several days, 12 or 14 days perhaps, as an earth resources experiment. Is that still in the picture?

DR. FLETCHER: That was never planned, but it was in the picture, Bill. The plan is still to do experiments after we complete the rendezvous and prove out the rescue, to spend maybe another seven to 10 days doing experiments and earth resources experiments are very good candidates for that.

Q At least a part of this $250 million might be justified to Congress on the basis of earth resources rather than on the basis of the bilateral rendezvous.

DR. FLETCHER: It might be, but I would say that is a secondary mission. The primary mission is the docking and the rescue demonstration.

Q Could you break down the $250 million for us?

Q What point did -- I presume it was the Russians -- drop the Salyut out of this program, because as recently as February when North American was studying this, they never even considered it to --

DR. FLETCHER: I think the first time we were pretty sure that they had decided not to go with the Salyut was in April of this year when they proposed that the Soyuz be substituted and Glynn Lunney was involved in the discussions and it was quite apparent to us, after they showed us the pictures, that it would have been a much more difficult job for them to do the Salyut than the Soyuz.

Q You said after 1975 all spacecraft committed by this country would be equipped with this?

DR. FLETCHER: With the docking adaptor, yes.

Q Does this presume then each shuttle that flies will have a docking module aboard?

DR. FLETCHER: Yes.

Q How much does a docking module cost?

DR. FLETCHER: It won't have a docking module, it will have the adaptor aboard, the adaptor itself, just the end of the docking module. I don't know what the cost is. It is nominal. Glynn, would you want to guess?

MR. LUNNEY: The development costs of the docking mechanism itself would have to be done in the program, in the shuttle program, so that what we are doing here is really a little bit of early development. The actual size, that is the scale that we find the shuttle will probably be a little larger than the scale we are flying here, but we, at the present time, are planning that the shuttle will have such a docking mechanism module.

Q As you probably are aware, Dr. Charles Sheldon sent a report to Congress this week stating that he believed the Soviet Union had three new military space projects under way. Could you tell us, (a) what they are in your judgment and (b) if the military uses of space and military space programs have been on the agenda in Moscow and have been discussed?

DR. FLETCHER: I don't want to avoid the answer to the question, but I think we in this country have made a sharp division between the military space program and the civilian space program. Actually, I am very honest about this. I don't know what the plans are in the Defense Department for such meetings. All of our meetings, I can say this unequivocally, all of our meetings with the Soviets have been on the civilian aspects of space. This includes the manned space plus the various joint working groups on the unmanned space programs.

Q Have there been any military discussions whatsoever in Moscow?

DR. FLETCHER: I can't answer that, but none that involved NASA.

Q Will two Americans or three Americans take off in the APOLLO or three or two Soviets in the other ship and then how will they -- will they break off and go back in their own ships?

DR. FLETCHER: Yes, there will be two or three, probably only two, because it gets a little crowded with four people in the CSM, will take off from our side and two from their side. Our two will move over into their spacecraft and then one or two of them will come back through the docking adaptor and spend some time in our spacecraft, will do these experiments, which means really checking out each other's equipment in space and then they will return to their own spacecraft.

We will then return with our astronauts and they will return with their cosmonauts and land in the normal fashion. That is the present program. I hope we are not committed to that program. We have still got a lot of details to work out.

Q Isn't that going to look a whole lot like the Marx brothers' stateroom scene, you know, with all those people walking back and forth? Somebody said before there is really not much room in one of these modules for the number of people you contemplate being up there. How is it going to work?

DR. FLETCHER: I can't give the details. Glynn, would you like to respond?

MR. LUNNEY: When we were in Moscow we went in the simulator that the Soviet cosmonauts train in, the simulator for the Soyuz spacecraft. In front of the Soyuz spacecraft they have a module which they call an orbital module which is designed for work and rest area. It is a sphere that is on the order of 7-1/2 feet in diameter and the way they are going to equip their particular spacecraft, it looks like they are trying to keep that volume as clear as possible.

They also indicate that they think they will fly two cosmonauts.

On that basis and from being in that particular module, it looks like it is roomy enough to bring two of our men over. We may well decide that one of our men will stay in that area and take one of their cosmonauts over to the APOLLO, which would, at that time, have only three men in the APOLLO.

We think we can work out a reasonable sequence of transferring people.

DR. DAVID: I might add one other thing. Our CSM's fly right now with three people in them with pressure suits on because we do a lot of work with pressure suits. It is not inconceivable if you fly with one person less or two U.S. astronauts that you could certainly put another one in and it would not be any more crowded than it is now.

And if you make a few modifications, you could put two more in and it wouldn't be too crowded. We have a relatively large spacecraft.

DR. FLETCHER: Just to give you the picture, Bill, this is the docking adaptor itself and I don't know whether that is an average man or whatever, but it gives you some idea even in the docking adaptor, there is room for a couple of people without too much trouble, and probably three. Of course, the CSM is much larger.

Q Would a man have to be biligual?

DR. FLETCHER: Yes, we are planning that that be the case. Both the astronauts and the cosmonauts will have to be bilingual. We are not sure of the exact procedures, but they have to be extremely bilingual in terms of the various parts and pieces of each other's spacecraft.

The normal conversation might be carried out with the astronauts talking in their own language and the cosmonauts talking in their own language, but listening in the other's language.

Q That presumes a communication linkup, too.

DR. FLETCHER: Yes, very much so. That is one of the very important aspects of the various negotiations that we have been going through, the communications linkup.

Q This very recent change on the part of the Soviet Union to go from the space station to the Soyuz spacecraft, did they also not explain that this is really not a practical solution to try to dock two manned spacecraft to the Salyut?

DR. FLETCHER: I will have to defer to Glynn Lunney on that one.

MR. LUNNEY: Let me give a little bit longer answer to that question.

Over the period of about a year and a half or two years, a number of possibilities have been considered for what is now being called a test mission. Early enough it would have been possible that we could have entertained the idea of a Soyuz visiting the Skylab, but time went by and that really wasn't a possibility and really was not proposed.

Early in the discussions we thought about the possibility of docking the two spacecraft together, the APOLLO and command service module. Then in June of 1971, after the Salyut had flown, the Soviets proposed that as a possibility for study. At the time we discussed it, it was very clear that both sides had to consider both the technical feasibilities of it and secondly, the economic feasibility of it.

In the winter of last year, we discussed with the Soviets how we could technically, that is, how we could technically and mechanically perform a mission with the APOLLO and the Salyut and we agreed we were very close to the answers on that question.

However, we parted with the understanding we still had to evaluate the economic feasibility.

In the spring of this year, the members of the Academy of Sciences that we are dealing with in the Soviet Union, indicated that their studies showed that both technical problems and economic problems for them in adapting the Salyut to handle two spacecraft, one on either end, would have been very difficult, would have been difficult to do technically because they would have had to move all the propulsion modules which are presently in what I will call the back end of the Salyut. They would have had to move those somewhere else and it would have been into a major redesign. They also indicated there would have been some problem with the control of that large a mass of vehicles stacked together.

So in their judgment they decided and recommended to us that they would prefer to use the Soyuz spacecraft rather than go into this kind of a modification program.

Q They reached this decision in April, just a few weeks ago?

DR. FLETCHER: Yes, in April.

Q On this docking adaptor you have, Dr. Fletcher, is the Soviet Union also going to develop one of these, otherwise how could we rescue them or they rescue us?

DR. FLETCHER: This, as I mentioned, is only a demonstration device. They will build, presumably, on all of their future spacecraft the docking mechanism. This is the so-called androgynous system and so will we.

So we have the capability of meeting physically. The only other problems are the communications and the compatibility of the two atmospheres. I would imagine we will have to play that on a case by case basis. We don't have firm ideas on how that will be done on future spacecraft.

Q Doctor, could you comment on the deep space capability of this rescue effort or are you talking strictly in terms of earth orbit?

DR. FLETCHER: I think strictly now in terms of earth orbit. There is no talk now of either rescuing the other from anything beyond that because, at the present time, the Soviets have no missions on the boards that we have seen beyond earth orbit.

Q You brought up two things that I would like to direct to General McDivitt, if I might. These questions which probably fall in this realm. First, assuming a problem in outer space and one of the two prime functions is being rescued, is it possible for one man to fly an APOLLO spacecraft, launch it and pick up the two cosmonauts who are in distress and bring back the three men?

DR. DAVID: Yes, it is possible. When we go to the moon and land two men on the lunar surface there is always that possibility, no matter how small it is, there is always that probability they will not come up off the lunar surface and we have to have the capability that the remaining man can fly that spacecraft back home.

In the concept of how you would rescue from a Skylab mission, we would send a two-man crew and bring back three men. We can get five people in there, but you have got to make some modifications to the spacecraft. Yes, one man can fly it.

The reason we fly a crew of three on APOLLO is because we have the lunar module along with it. Also, it is easier. You can split up the work load. But if everything goes wrong, one man can fly it without any problem at all.

Q In reference to the incompatibility of the atmospheric pressurization within the two capsules, could you outline what the differential is starting with the basis of how we cabin pressurize our fighters, do we do the same in the space modules?

DR. FLETCHER: Airplanes are pressurized with air at some pressure less than atmospheric. The Soviets use a pressurization system which is akin to what we have on the ground here. It is almost air at sea level pressure, 15 psi. We use 5 psi, 100 percent oxygen when we are in flight.

So you have got to get from 15 psi to 5 psi without getting the bends. As you know, when you go up very quickly in airplanes, if you don't denitrogenate, you can get the bends. So you have got to get into this airlock which is a lock like you have between different levels of water and you have got to get the people denitrogenated and the pressure decreased if you are going from the high level nitrogen atmosphere or nitrogen-oxygen atmosphere, you have to bring the pressure down gradually and you have got to get them denitrogenated and if you are going the other way, you have got to bring the pressure up gradually and get some nitrogen in the atmosphere because 100 percent oxygen at 15 psi is very flamable.

It is very difficult to make a safe spacecraft that way, so we have got to get from these two levels, one high pressure and one low pressure and one high oxygen content and the other low oxygen content.

Q Would that take several hours or can that be done quickly?

DR. FLETCHER: Normally when you are going from -- before launch when we get ready to fly we usually pre-breathe for a couple of hours.

Q Does that pressurization system you described in ours, isn't that quite similar within certain limits and with some refinements to what is now used in a high performance fighter today? The psi differential up to a certain altitude?

DR. FLETCHER: Yes, but in an airplane it is air and in our spacecraft it is 100 percent oxygen.

Q I think General McDivitt may be able to answer this question, having to do with a plane change. If the Russians launch from Tyuratam and we launch from the Cape somebody is going to have to make a rather hefty plane change before this rendezvous can take place and it sounds like from Dr. Fletcher's description of the launch sequence of events that it will be the Russians doing it. Is this correct?

MR. LUNNEY: No, you have the problem right. You didn't get the right solution. The problem is in order to effect a rendezvous, the Soviets would have to launch their spacecraft in the same plane as ours. That is, we would have to launch into a higher inclination than we normally use. We are planning to launch into an inclination around 51.6 which is the operating inclination of the Soyuz.

Perhaps everyone doesn't know what that means. I am talking about the inclination of the orbital plane to the equator. We would launch into a plane which was 51.6 degrees inclined up from the equator which twice a day, or really one opportunity a day, that plane would pass over the launch site of the Soviet Union at which time they would launch.

Q You would launch northeast or southeast from the Cape.

MR. LUNNEY: We would launch northeast.

Q Would the Soviets have to dogleg on that?

MR. LUNNEY: The dogleg that is being talked about, I was asked if the Soviets would have dogleg. Our launch would be in a straight azimuth into that particular orbit. The orbital mechanics are such that if one wants to have a longer launch within one can do some doglegging, which really amounts to steering into the plane, so that you have a few more minutes than you would normally have. Whether the Soviets will do that or not, I don't know yet.

Q What about recovery, does that put any constraints on recovery?

MR. LUNNEY: No, because the 51.6 degree inclination at that time will not be too new to us because we will fly Skylab at 50 degrees and we are making all the preparations to take care of recovery from orbit at that inclination.

Q In the Atlantic or Pacific?

MR. LUNNEY: In the Atlantic.

Q Doesn't our spacecraft end up being more or less the control ship in that case?

MR. LUNNEY: What?

Q The control ship that is doing most of the work?

MR. LUNNEY: We have to go through a process of rationally arriving at conclusions which derive from the facts and the situation that we have on hand and not one, as perhaps you have suggested, of appearance. We think that we will launch the APOLLO spacecraft first because it will have a longer earth orbital life time than the particular configuration the Soviets have chosen to use.

Secondly, once we are launched we can probably provide a daily launch window, a daily launch opportunity for the Soyuz. Once they launch and establish their spacecraft in an orbit, we will proceed to rendezvous with the techniques we have developed in the APOLLO, along with some new radio equipment we have developed for this flight and for future flights with the APOLLO being the active vehicle.

When we dock, as you will probably hear later, the docking mechanisms can be operated with either ship being active. Right now we plan to dock and stay docked and I believe we will have subsequent testing of the docking mechanism after the visiting period. So we would probably redock several more times to get a complete test of the docking mechanism.

Q How much money do you need in the fiscal 73 budget to carry this out? Would you have to get a supplemental or can you squeeze it out?

DR. FLETCHER: The total cost of the project is $250 million. We are not sure at this time that we will need additional money in fiscal 73 because most of fiscal 73 will be in volume in design work and not fabrication. We are not sure of that, however.

But, at the present time, we have no plans for asking for supplementary increases for fiscal 73. The big increase, of course, will come in fiscal 74 and fiscal 75. That is where most of the money will be necessarily spent.

Q How much for each year?

DR. FLETCHER: I don't have the exact dollar amount for each year. In fact, this has not been scrubbed as we say in NASA, as well as some other projects. I am a little uneasy about even the $250 million. This is our best guess with only a few people being involved. Roughly speaking, though, I would guess something of the order of $100 million in fiscal 74 and another $100 million in '75 and don't ask me where the other $50 million goes.

Q What can you say about Russian-American flights beyond this one? Is this an open ended program on which some more may be added or is this a discrete one-shot operation with nothing beyond it?

DR. FLETCHER: Thank you for the question. I should have mentioned that this is the first in a series of programs with the later flights not designed. The wording of the Agreement is such that it is open ended, that we allow for new agreements, not just on docking, but other cooperative space agreements as time goes on.

Q Do you plan that any of this $250 million of additional effort will be parceled out to industry or will it be entirely NASA, inhouse and also those 4,400 jobs you retain, are those exclusively NASA positions or are any of those in private industry?

DR. FLETCHER: I am sorry, I should have said that. The 4,400 jobs are private industry and the $250 million is private industry. That is what we call the R&D part of our budget. There will be additional jobs -- I think I mentioned that -- that will be retained in NASA, particularly from the APOLLO launch crew and also some dollars to go with that.

Q Is there a second mission in '76 on which you might do some manufacturing and that sort of thing?

DR. FLETCHER: We have no commitments for another mission in 1976 at the present time.

Q Dr. Fletcher, are you or Mr. Lunney, realizing you haven't worked out a flight plan, could you give us some idea of what you are thinking about in terms of the time elements involved here from the time of the launch of the APOLLO on through the end of the Soyuz-APOLLO trip?

DR. FLETCHER: Yes, I think Glynn can go through that sequence.

MR. LUNNEY: Starting with the launch of the APOLLO we will try to establish an orbit and a set of conditions which will permit from, on approximately 24-hour cycles thereafter, launch opportunities from the Soviet Union. It won't be exactly 24 hours, but once it gets started, it will be every 24 hours. From that time on with that opportunity we then have to select a nominal day on which to launch.

We may choose to nominally launch the first opportunity. The Soviets may choose to nominally launch the first opportunity or for some reason we may decide that perhaps the second one is the first to try to use. We will then have that kind of opportunity each day and once the Soyuz is launched and established in an orbit and the people that have worked on this envision a rendezvous sequence which will take on the order of one day, approximately one day.

Once docked, we are working on a time limit with a duration of up to two days. The exact number of hours would depend on the activities that are defined for the crew, the experiments they would have to conduct, any subsequent testing we would do on the docking mechanism, et cetera. This APOLLO launch, at least one day. The next day before the Soyuz launch and perhaps more.

After the Soyuz launch, it will be at least another day before the docking and once docked it will be on the order of up to two days.

Q What about the visit duration back and forth?

MR. LUNNEY: Within the two days duration docked, we will have to find the right length of time for each party to spend in the other party's ship and what the exact sequence is. We really have not worked that out yet.

Q Is there much instrumentation -- are there tremendous differences in the instrumentation in the two cockpits? A few years back you could go into any airplane in the world and not find a great deal of difference in the way the altimiter looked with vertical tapes and things like this. I am wondering will an astronaut have a tremendous orientation problem? I know he will do it before he ever goes up, but is there a real difference?

MR. LUNNEY: Is there a difference? Yes, I think I would say the cockpits of the two ships look reasonably different. On the other hand, much of the information that is on them is the same and part of the discussions that we have had and the agreement that we have is the necessary training and familiarization that would have to be conducted so both crews were comfortable in the environment and, secondly, and absolutely, so they would know how to perform any emergency or even normal actions that would be required of them while in the other ship.

Q Are you saying we would have a Soyuz simulator here and they would have an APOLLO simulator there?

MR. LUNNEY: No, I think we will provide the training, but I think that will be done by sending, if necessary, and we think it will be, our crews to the Soviet Union and vice versa.

DR. FLETCHER: There may be a mock-up, mightn't there, Glynn, sent from the Soviets to our own Houston facilities and then vice versa. A mock-up is not the same as a simulator.

Q Regarding the 4,400 jobs, would all those be at North American Rockwell and all the $250 million going to North American Rockwell?

DR. FLETCHER: I can't answer that question, but I think it is likely a major fraction would go to North American Rockwell.

Q Earlier today there was an announcement that at four o'clock there would be a briefing at NASA. Does this supercede that?

DR. FLETCHER: No.

Q What is that going to be about?

DR. FLETCHER: There will be other technical people involved in that and it will involve some of the same material, but somewhat different.

Q How much are the Soviets putting up in this joint project?

DR. FLETCHER: We have not discussed dollars with the Soviet Union at all. Presumably what it would cost them would be the price of modifying their Soyuz spacecraft and the cost of an additional Soyuz spacecraft. How much that is we have no idea.

Q How much will the docking module cost and is the United States footing the bill for the entire project?

DR. FLETCHER: The docking module is not split out of that $250 million. It is perhaps half of that. Glynn?

MR. LUNNEY: I think it is going to be considerably less than that.

Let me make this point to you. In the future we intend to operate our spacecraft at one atmosphere as the Soviets are doing today. That is to say when we get to the age of the shuttle we will both be operating at the same pressures. Presently the Soviets are operating at that pressure while we are operating at the lower pressure.

In order to perform such a mission, it is our conclusion and my conviction the proper way to do it is for us to design and build the docking module in order to assure, one, that we can safely transfer our men back and forth and that coming down to the lower atmosphere, which takes the time, that we have put the design into it that we would be satisfied with it.

So the docking module was never a question of bilaterally sharing a cost of solution. We see the docking module as an integral part, our United States part of being able to do this mission and operate safely with the two different cabin pressures.

Q Is there an element of suspicion in that approach, Glynn, that you maybe wouldn't like the Russians to build this thing because their standards might not be the same as ours?

MR. LUNNEY: No.

I think that in order to bring our people across and bring them back, that we need some way to modulate the pressure, let them pre-breathe. We are the ones who have to bring our men back to the lower pressure environment and in that sense, it is entirely logical to me that we provide the system that provides that safety in that return of our astronauts.

Q Isn't that going to be a problem in going through into the two gas system?

DR. FLETCHER: You mean to modify the APOLLO itself?

Q Yes.

DR. FLETCHER: That is simply a more expensive proposition.

By the way, I want to correct one thing I said. I said this is approximately half. Glynn assures me it is much less than half of the total cost.

Q What is the cost?

MR. LUNNEY: I would guess it is about 15 to 20 percent of the $250 million.

Q Could you break down the $250 million for us?

DR. FLETCHER: I don't think we better. We are at a very early stage in the process of negotiating with a contractor to do this and I think it is entirely too premature to break down that dollar figure.

Q Does that mean you have selected them?

DR. FLETCHER: It means we have a pretty good idea who it will be. It will probably be North American Rockwell who builds the CSM.

Q It won't be a bid job?

DR. FLETCHER: Probably not, not in this case.

Q Do you anticipate there will be enough training for this mission so American astronauts could in an emergency land a Soyuz and the Soviet cosmonauts could in an emergency land an APOLLO?

DR. FLETCHER: I don't think the thinking has gone on that far. Glynn, you can guess on that if you want.

MR. LUNNEY: So far we have taken the approach that both the design of the equipment and the training of the men would only be required in the sense we are trying to solve the rendezvous and docking problem. We are not training to know how to fly their ship through its entire spectrum of phases, nor are they trying to learn how to fly ours.

Q Are you shooting at a specific month or quarter of the year?

DR. FLETCHER: No, there is no specific date. Even 1975 is "iffy". It is approximately 1975.

Q This is literally a brief rendezvous between the manned space flight programs of the United States and the Soviet Union. Do you have any indications it might really broaden out, if, for instance, you get an invitation to Baykonur or some place like that. I mean the people of our space program?

DR. FLETCHER: I want to correct one thing you said at the beginning. This is not just a cooperative program between our manned space program and theirs.

Q I meant this particular mission.

DR. FLETCHER: This particular mission is. I would guess it would be broadening in other areas, yes, as time went on, but no commitment at the present time.

Q Following that, is any American finally going to get to visit Baykonur?

DR. FLETCHER: I can't guarantee that. Do you want to guess on that one?

MR. LUNNEY: "Finally" is such a long word.

Q During this mission?

MR. LUNNEY: We don't know.

Q Repeat the question again?

DR. FLETCHER: Would an American be invited to Baykonur, which is the place they put together these Soyuz spacecraft and I think Glynn's answer is we just don't know.

Q Have the Russians expressed any reservations about full media coverage of this mission?

DR. FLETCHER: No, except in this sense. We agreed to abide by the policies of each other's known policy with regard to media coverage.

Q Does that mean we won't find out when they are going to launch?

DR. FLETCHER: No, we agreed to abide by ours and they agreed to abide by theirs. So when we release things, we will do it in our normal way and when they release things, they will do it in their normal way. Obviously there are some loose ends that have to be worked out.

Q In the depressed aerospace industry, what is the rationale for going sole source to North American for, say, $50 million worth of a docking module, rather than going out on bid?

DR. FLETCHER: I think the rationale will have to be developed and we have not completely made that commitment. (Laughter).

Q How do you reach the point of negotiation?

DR. FLETCHER: Basically I am guessing that it will have to go to North American because any other contractor would cost much, much more. They know how to do it.

Q Are you negotiating with North American now for this?

DR. FLETCHER: We are not actively negotiating, but I would guess the thinking will begin right after this meeting.

THE PRESS: Thank you.

END (AT 2:50 P.M. EDT)

MAY 23, 1972

AGREEMENT ON COOPERATION IN THE FIELD OF ENVIRONMENTAL PROTECTION BETWEEN THE UNITED STATES OF AMERICA AND THE UNION OF SOVIET SOCIALIST REPUBLICS

The Government of the United States of America and the Government of the Union of Soviet Socialist Republics:

Attaching great importance to the problems of environmental protection;

Proceeding on the assumption that the proper untilization of contemporary scientific, technical and managerial achievements can, with appropriate control of their undesirable consequences, make possible the improvement of the interrelationship between man and nature;

Considering that the development of mutual cooperation in the field of environmental protection, taking into account the experience of countries with different social and economic systems, will be beneficial to the United States of America and the Union of Soviet Socialist Republics, as well as to other countries;

Considering that economic and social development for the benefit of future generations requires the protection and enhancement of the human environment today;

Desiring to facilitate the establishment of closer and long-term cooperation between interested organizations of the two countries in this field.

In accordance with the Agreement between the United States of America and the Union of Soviet Socialist Republics on Exchanges and Cooperation in Scientific, Technical, Educational, Cultural, and Other Fields in 1972-1973, signed April 11, 1972, and developing further the principles of mutually beneficial cooperation between the two countries;

Have agreed as follows:

ARTICLE I

The Parties will develop cooperation in the field of environmental protection on the basis of equality, reciprocity, and mutual benefit.

ARTICLE 2

This cooperation will be aimed at achieving the most important aspects of the problems of the environment and will be devoted to working out measures to prevent pollution, to study pollution and its effect on the environment, and to develop the basis for controlling the impact of human activities on nature.

It will be implemented, in particular, in the following areas:

- air pollution;
- water pollution;
- environmental pollution associated with agricultural production;
- enhancement of the urban environment;

MORE

- preservation of nature and the organization of preserves;
- marine pollution;
- biological and genetic consequences of environmental pollution;
- influence of environmental changes on climate;
- earthquake prediction;
- arctic and subarctic ecological systems;
- legal and administrative measures for protecting environmental quality.

In the course of this cooperation the Parties will devote special attention to joint efforts improving existing technologies and developing new technologies which do not pollute the environment, to the introduction of these new technologies into everyday use, and to the study of their economic aspects.

The Parties declare that, upon mutual agreement, they will share the results of such cooperation with other countries.

ARTICLE 3

The Parties will conduct cooperative activities in the field of environmental protection by the following means:

- exchange of scientists, experts and research scholars;
- organization of bilateral conferences, symposia and meetings of experts;
- exchange of scientific and technical information and documentation, and the results of research on environment;
- joint development and implementation of programs and projects in the field of basic and applied sciences;
- other forms of cooperation which may be agreed upon in the course of the implementation of this Agreement.

ARTICLE 4

Proceeding from the aims of this Agreement the Parties will encourage and facilitate, as appropriate, the establishment and development of direct contacts and cooperation between institutions and organizations, governmental, public and private, of the two countries, and the conclusion, where appropriate, of separate agreements and contracts.

ARTICLE 5

For the implementation of this Agreement a US-USSR Joint Committee on Cooperation in the Field of Environmental Protection shall be established. As a rule this Joint Committee shall meet once a year in Washington and Moscow, alternately. The Joint Committee shall approve concrete measures and programs of cooperation, designate the participating organizations responsible for the realization of these programs and make recommendations, as appropriate, to the two Governments.

Each Party shall designate a coordinator. These coordinators, between sessions of the Joint Committee, shall maintain contact between the United States and Soviet parts, supervise the implementation of the pertinent cooperative programs, specify the individual sections of these programs and coordinate the activities of organizations participating in environmental cooperation in accordance with this Agreement.

ARTICLE 6

Nothing in this Agreement shall be construed to prejudice other agreements concluded between the two Parties.

ARTICLE 7

This Agreement shall enter into force upon signature and shall remain in force for five years after which it will be extended for successive five year periods unless one Party notifies the other of the termination thereof not less than six months prior to its expiration.

The termination of this Agreement shall not affect the validity of agreements and contracts between interested institutions and organizations of the two countries concluded on the basis of this Agreement.

DONE on May 23, 1972 at Moscow in duplicate, in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA:

FOR THE UNION OF SOVIET SOCIALIST REPUBLICS:

# # #

FOR IMMEDIATE RELEASE MAY 23, 1972

PRESS CONFERENCE
OF
RUSSELL E. TRAIN, CHAIRMAN
AND DR. GORDON MacDONALD
COUNCIL ON ENVIRONMENTAL QUALITY

AT THE WHITE HOUSE
AT 3:16 P.M. EDT

MR. BALL: Our briefing is on the record and will be in two parts, covering two agreements reached in the Soviet Union today between that country and the United States. They are the Environmental Agreement and the Agreement on Health.

The Agreement on Environment was signed today, in the Kremlin, by the President and by Chairman of the Presidium of the USSR, Supreme Soviet Podgorny. And we are going to have some comments on this and to take your questions, the Chairman of the Council on Environmental Quality, Russell Train.

And you have both some copies of his remarks and a fact sheet on the Agreement.

Q Is that the Agreement being handed out there?

MR. BALL: No, this is not. We will have it for you after it is transmitted.

Q Is anyone briefing over there?

MR. BALL: There has been a briefing there by the Soviets and by Ron Ziegler on the Agreement, but you are going to hear additional comments on the developments of this which were not covered over there.

MR. TRAIN: Gentlemen, I understand that the text of the Agreement is not yet ready and probably will not be ready until tomorrow morning. Is that correct?

MR. BALL: Yes, at the latest.

MR. TRAIN: And at that time I think it will be available at the Council on Environmental Quality, 722 Jackson Place.

The United States-Soviet Environmental Agreement signed today in Moscow by President Nixon and President Podgorny is an historic event in several respects:

First it represents the first comprehensive environmental agreement between major world powers.

MORE

It covers an extraordinarily broad number of subjects.

The Agreement calls for joint programs and actual cooperative effects on projects and thus is significantly different from the usual and traditional cultural and scientific exchange kind of relationship.

The Agreement specifies that our two nations will work together on the development of non-polluting technologies, on their introduction into regular use, and on studies of the economic implications of such technologies.

Now, I emphasize this Agreement is not simply a ratification of some kind of an existing program. We do not have such a program today. This is a whole new ball game with the Soviet Union.

The Environmental Agreement represents a major effort by two world powers to work together on matters of everyday concern to our peoples, and, thus, heralds a new era of international relationships. From the outset of his Administration, the President has given a high priority to international environmental cooperation. The U.S. has assumed a leadership role in this regard, and, while today's Agreement with the USSR is unquestionably the most significant element to date in the furtherance of this policy, it is part of a consistent pattern of international environmental cooperation which we have been pursuing, as evidenced most recently by the Great Lakes Water Quality Agreement signed in Ottawa in April by President Nixon and Prime Minister Trudeau.

As you know, the President has recently named me as Chairman of the U.S. Delegation to the United Nations Conference on the Human Environment, starting in Stockholm on the fifth of June and the United States is committed to making that conference a success.

The Agreement which has been signed today provides for long-term cooperation in 11 specific areas of mutual interest. These are: air pollution, water pollution, environmental pollution associated with agricultural production, enhancement of the urban environment, preservation of nature and the organization of preserves, marine pollution, biological and genetic consequences of environmental pollution, influence of environmental changes on climate, earthquake prediction, arctic and subarctic ecological systems, legal and administrative measures for protecting environmental quality.

And I think in a number of these areas this will be the first such cooperative effort entered into by the Soviet Union with another nation.

Implementation of the Agreement will be through a joint U.S.-Soviet Committee which will meet once a year, alternately in Washington and Moscow. The Committee will include representation on the U.S. side of the various agencies involved in the different subject areas. It would be my expectation that these arrangements and active implementation of the Agreement will get under way very rapidly.

MORE

Now the background for today's signing I think is of interest. There have been informal indications for some time of possible Soviet interest in extended environmental cooperation with the United States. Last fall, our Council recommended that the possibilities of such an Agreement be actively explored and in November the President designated me to chair an inter-agency task force to go into this matter actively.

This group met periodically at the Council over the ensuing weeks, and a large number of possible subjects for cooperative effort were examined. Tentative agreement was reached on the different subject areas and in March, I was authorized, in cooperation with the State Department, to open discussions with the Soviet Government.

I then met several times with Ambassador Dobrynin and found a very positive interest. He asked at that time that the United States provide at least a tentative draft of a possible environmental agreement for transmittal to his government.

This was done in mid-April and shortly thereafter, Ambassador Dobrynin conveyed to me the favorable reaction of his government. And he indicated that the Soviet Government was generally agreeable to the draft we had supplied and extended an invitation to us to send a small team to Moscow to work out the details of an agreement.

We accepted this invitation and on May 4th through 6th, a four-man team, headed by Dr. Gordon MacDonald, a member of the Council on Environmental Quality, met in Moscow with Soviet representatives. Dr. MacDonald, who is here with me and will be happy to answer questions along with me from you, was accompanied by three experts from the staff of the Council and also from the State Department. The negotiators on the Soviet side were Mr. Gvishiana, Deputy Chairman, State Committee on Science and Technology and K.V. Ananichev, Section Chief, Department of International Economic and Scientific-technological Organizations, State Committee on Science and Technology. Agreement was reached at that time and approval given by our respective governments.

Gentlemen, that concludes my opening remarks.

Q Who were the three Americans?

MR. TRAIN: Mr. Willian Hayne on the Council on Environmental Quality, Mr. William Salmon of the State Department and Mr. Gayle Richmond of the State Department.

Q Was this announced at the time?

MR. TRAIN: No, this trip was conducted without public announcement.

Q Why?

MR. TRAIN: I think the main reason was that we weren't sure how the negotiations would come out and whether it would be possible for the President to announce an agreement at the discussions in Moscow. And any final release of that information had to wait until the actual signing, which was this morning.

Q Mr. Train, as you know very well, East-West differences promise to be an obstruction at the Stockholm conference or at least a problem. Do you have any indication from your conversations with the Soviet representatives that they may be stalling on that point as well?

MR. TRAIN: The development of the Environmental Agreement between the United States and the Soviet Union has been conducted completely separate from any talks about the Stockholm conference. And they are not tied together. The negotiations for this Agreement started long before that particular problem arose. I think it is quite plain and we are very hopeful that the conclusion of this Agreement signals the existence of a very positive climate in terms of East-West relationships on environmental matters generally. And I would certainly hope that this would extend to the Stockholm meeting. We are still hopeful that the Eastern bloc and the Soviet Union will be present at Stockholm.

Q Are we changing our position on accepting East Germany as a full member with voting rights in Stockholm?

MR. TRAIN: There has been no change to my knowledge of the U.S. position on this. We are simply supporting the position of the U.N. General Assembly that voted to extend invitations only to those countries that are members of the U.N. or of specialized agencies of the U.N.

Q You mentioned joint programs and specific projects, can you give us some idea in what areas this committee might be working?

MR. TRAIN: Well, I mentioned some 11 subject areas.

Q Any specific plans?

MR. TRAIN: For example, in the field of urban environment and urban planning, we feel that here is an area where the U.S. may benefit from a positive cooperative program dealing with comprehensive city planning and the entire environmental picture, including mass transit, open space, prevention of urban sprawl, things of this sort. And I think this kind of project can be very possible for us, as well as for the other side.

I would expect that there would be joint economic studies, which I think will be exceedingly interesting. I think this is the first occasion of this kind that I know of at least where the U.S. and the Soviet Union will cooperate jointly in a social-science area such as we have described. The discussion of the legal institutions, for example, involved in both countries, both with very different institutional bases, is part of the kind of project that will be under way. Likewise, of course, joint efforts in research, technology research and development and things of this sort.

Q By joint efforts in research, do you mean actually a joint program or just sharing of information?

MR. TRAIN: Both. This Agreement very definitely envisages not only sharing of information, but a very strong step beyond that into actual joint work on joint projects.

Q Can you give us some specific examples of what you are talking about?

MR. TRAIN: Gordon, would you pick up with some of these that you might have in mind.

DR. MacDONALD: Well, there are a number of areas that are possibilities. At the present time, we have only defined the general subject matter, but for a specific example, let's take the question of climate modification. This is an area in which we have developed some experience with regard to what cities do to climatic conditions. The Soviets are very much interested in what large water resource projects do to climate. And I think this is a specific example where there would be joint research, not just an exchange of information.

I think you can go down the list of all 11 subjects and find similar specific examples. None of these has been agreed upon in detail. This will await the first meeting of the Joint Commission where the specific details will be worked out.

Q Mr. Train, what first step will you take to implement the terms of this Agreement?

MR. TRAIN: Well, the first step will be a decision presumably by the President as to who will chair the Joint Committee on the U.S. side and the appointment of a coordinator and these will be the essential first steps to getting the cooperative efforts under way.

As I said, we are hopeful this will get under way very soon, this summer, or certainly early in the autumn.

Q Mr. Train, did the question at all of Soviet gas, natural gas supplies, and our need for clean energy come up at all?

DR. MacDONALD: No, that question was not discussed specifically other than in the context that the Soviet problems with respect to air pollution differ from those of the U.S. in that in many of their major cities, both industry and residential and commercial heating is done through natural gas. They face different problems.

Q We could use the gas.

DR. MacDONALD: That was not included in the discussion.

MR. TRAIN: We do see this Agreement as having trade ramifications obviously, as technology is shared between our different countries, it is quite possible that there will be markets opening up for the sale or licensing of U.S. technology in the anti-pollution area.

Q Do you have any examples of that?

MR. TRAIN: Now you are trying to anticipate what is going to be happening under the Agreement, which is a little hard to do.

Q We are trying to find out what is important about it.

MR. TRAIN: What is important about it?

Q What will it do.

MR. TRAIN: I think from the Soviet side it will be exceedingly helpful to them in improving their entire national approach to both air and water pollution, particularly in the application of technology.

On our side, I think that we will benefit from joint cooperation in the areas particularly of land use, land use planning, urban environments, where they have a good deal of experience. We will benefit also in terms of arctic research, arctic and subarctic ecological research. Problems, for example, of pipeline construction in arctic environments, a field in which they have a lot more experience than we have.

Q Pipeline?

MR. TRAIN: I said pipeline.

Likewise, they have done, as I understand it, quite a bit of research on the human pathology of air pollutants and water pollutants, and here is an area where we feel we can also benefit from their experience.

Q Why is it that the text of this will not be ready until tomorrow morning?

MR. BALL: We have now learned that it is being cabled and we will have it Xeroxed and available, hopefully with an hour or an hour and a half.

Q Do we know if the Russians have any oil pipelines running across arctic tundra and do we know, if they do, what effect on the environment they have?

MR. TRAIN: I don't know that we have very clear information on this. They do have, not a 48-inch pipeline, but I think a smaller hot oil pipeline, that has been giving them some problems. And I believe that the Agreement which was signed today certainly opens up the possibility of a far better exchange of information on this sort of problem.

Q Was there a briefing in Moscow today about this?

MR. TRAIN: I believe that Ron Ziegler is giving a briefing. He has given a briefing.

Q Mr. Train, how is it possible to derive a mutual benefit in the economic studies when you are dealing with two diverse systems?

MR. TRAIN: Well, this is probably the interesting aspect of the problem. It is quite clear that despite the fact that we have differing systems, their a socialist system and ours a capitalist system, that there are forces at work, market forces at work under both systems which result in maximizing production at the expense of the environment. This seems to occur under both economic systems. And I think we can both learn by an analysis of these economic phenomena.

Likewise, the Soviet of course have a tax system. I think they will probably be interested on their side in the possible use of tax devices in other ways of approaching their pollution problems.

Q What kind of tax?

MR. TRAIN: I don't want to anticipate what they might do, but this kind of thing certainly would be discussed.

Q Would wildlife issues possibly be included under the umbrella of preservation of nature?

MR. TRAIN: Very definitely wildlife is very definitely a part of the concerns covered by this Agreement. As you know, we have been having discussions on polar bears and other things of this sort and I would be very hopeful that this will spur on effective agreements in areas such as that.

Q Will the United States be willing to instigate large-scale research on zero economic growth policies?

MR. TRAIN: I certainly believe that -- I don't know that this subject has come up with the Soviets. My own personal view is that this is a very appropriate area for discussion and economic analysis, both nationally and among nations.

Q In the wildlife issue, did the subject of whaling come up, a major industry there and the fact that we are trying to preserve the whale?

MR. TRAIN: I don't believe the subject of whaling was a subject of specific discussion in Moscow. As you know, there is a meeting of the International Whaling Commission in London in the last week of June, the week after the Stockholm conference, and I am attending that as a Special Representative of the President. The Soviets will be there at that meeting. They are one, as you know, of the two major whaling nations, the Soviets and Japan.

Q Dr. MacDonald, do you have any indication that the Soviet Union knows something about hot oil pipeline construction in the arctic that we don't that ought to be cranked into the Trans-Alaska plan?

DR. MacDONALD: No, we don't know specifically. I think all that we can say right now is that they have had some experience with the transport of oil under arctic conditions and that an exchange or receipt of that experience would be valuable in the continued planning of the Alaskan pipeline.

Q Mr. Train, is this Agreement, or is the understanding of what it will be, is this limited essentially to the development and exchange of information or does it entail possibly more concrete cooperation, such as attempting to coordinate environmental policies, regulations and so forth which might apply to international trade?

MR. TRAIN: It very definitely goes beyond exchange of information. I think this is a crucial point to get across. The Agreement is directed in many instances to actual problem-solving, mutual cooperation on specific projects. Now these projects have not yet been designed. The Commission or Committee that the Agreement calls for has not yet been established. So I can't tell you just what those projects are going to be.

But the whole thrust of this Agreement is to go beyond mere exchanges of information and mere exchanges of experts and government research. We have, as you know, an exchange agreement, at the present time, a scientific and cultural exchange agreement and the basic nature of that is simply that kind of exchange, back and forth, between the two nations.

This is intended to go substantially beyond that into specific concrete joint cooperative projects.

Q If you can't give us specific examples of what the two countries will do, can you give us an example of the kinds of things they could do that go beyond exchange of information?

MR. TRAIN: Well, we have, for example, with the United Kingdom, at the present time, a joint project on the chemical treatment of municipal sewage and we are working with the U.K. in England on the development of a pilot plant, utilizing some of our expertise and some of their money in a joint effort to see if there are some promising new approaches to the more economical and effecient treatment of municipal waste. And the Federal Republic of Germany is also cooperating with us on that particular project, but from a different standpoint, from the oxygenzation standpoint, rather than chemical treatment.

And this is the kind of example, actual joint effort on a particular project.

Q A year or so ago when the SST issue was before the Congress, one of the arguments used by the proponents of an American SST was it didn't do any good for us not to build it, because other nations, including the Soviet Union, were building a supersonic transport. Can you foresee this Agreement leading to the kind of cooperation where the environmental experts of both nations will get together and say this is a bad thing for the total world environment and therefore neither the United States nor Russia would build them and they will use their influence to stop other nations, such as England and France. Can this happen?

MR. TRAIN: Yes. I certainly believe this Agreement is an important step in furthering effective exchange of information, effective research, as I have said, among nations and very specifically in promoting far more effective technology assessment of new technology of international importance before it is introduced into general use.

I certainly would expect that subjects such as the upper atmosphereeffects of aircraft operation are well within the ambit of this Agreement.

DR. MacDONALD: I would like to add that in the discussions in Moscow the subject did come up and it was agreed that this was one of the subjects appropriate to discuss under the question of changes of foreign climate.

MR. TRAIN: I think this will give you an indication of the wide ranging nature of this Agreement. It is not a limited kind of thing. It is really quite open ended. And while there are 11 specified areas where we want to particularly develop, work with the Soviets and they with us, as you see them, they are quite broad. And there is a very real opportunity as new needs develop to, at the same time, work together in a very positive and productive fashion.

THE PRESS: Thank you, Mr. Train.

END

FOR IMMEDIATE RELEASE MAY 23, 1972

PRESS CONFERENCE
OF
ELLIOT L. RICHARDSON
SECRETARY OF HEALTH, EDUCATION, AND WELFARE
DR. MERLIN K. DuVAL
ASSISTANT SECRETARY FOR SCIENTIFIC AFFAIRS
AND
DR. ROGER O. EGEBERG
SPECIAL CONSULTANT TO THE PRESIDENT

AT THE WHITE HOUSE
AT 3:40 P.M. EDT

MR. BALL: The second agreement signed today in Moscow was an agreement on health. The Secretary of HEW is here, Secretary Richardson, to comment on the Agreement and again take questions that you have.

Mr. Secretary.

SECRETARY RICHARDSON: Thank you, Neal.

I would like to ask Dr. DuVal, Assistant Secretary of Health for Scientific Affairs and Dr. Roger Egeberg, Special Consultant to the President, to stand here with me so that they will be pre-positioned to respond to the questions that I can't answer.

I am glad to note that aside from a few of us bureaucrats, there are also a few journalists that are still in Washington.

We are very proud of the signature today of the Agreement on which I believe you have both the text and the fact sheet. This Agreement essentially builds on and elevates the status of previous agreements in the health field. It also supplements those agreements by covering some new and important ground.

The most significant things to be noted as the respects in which this Agreement goes beyond, the exchange of letters between Minister Venedictov and myself on February 11 of this year, are first that the Agreement provides for direct and regular contact between U.S. and Soviet medical institutions and organizations.

Second, it facilitates the exchange of equipment, pharmaceutical products and technological developments.

Third, it affords international organizations, specifically the World Health Organization, the opportunity to draw on the knowledge gained by the parties in the course of their joint effort.

And finally, and I think at least as important, it provides by its terms for its automatic extension for further five-year periods unless either party terminates it.

MORE

I think with this preliminary characterization of what we think is its significance for regular long-range cooperation between the United States and the Soviet Union in the field of health, I would only add that it represents a very deep interest and commitment on the part of the President.

I remember that back many months ago when we were discussing in the Oval Office the legislation on cancer that was then being considered by the Congress, the President urged specifically that we seek opportunities for international exchange in that field. And you note that this Agreement by its terms does refer to oncological diseases, which I understand to be the medical term for all the forms of cancer.

I will be glad to answer any questions.

Q Mr. Secretary, are the Russians particularly expert in any one of these three initial focal fields?

SECRETARY RICHARDSON: Yes, they do have very significant work. Dr. Egeberg and the Director of the National Institutes of Health, Dr. Marston; the Director of the National Heart and Lung Institute, Dr. Cooper, were among the members of the U.S. delegation who met with the Soviet scientists, their counterparts, and who worked out the basic terms of this Agreement, as well as the specific opportunities for collaborative effort, have explored the areas in which there is the opportunity for profitable exchange in the field. We recognize that they are engaged in areas of investigation from which we can learn and that there are corresponding areas in which they can benefit from us.

Q Mr. Secretary, there is one field in which the Russians are generally conceded, I believe, to be ahead of us and that is in the general delivery of health care to the total population. And I don't see that listed in here as one of the subjects. Might we not benefit from some of their experiences and why is that not included here in the list of topics that you are going to stress?

SECRETARY RICHARDSON: It is a subject that can be included in future discussions. It certainly is an area in which our members of the delegation took a great deal of interest while they were there. Dr. Egeberg has spent quite a lot of time visiting Soviet medical services and one of the things that we are particularly interested in and which they have developed, it is fair to say, greater capacity than we have, is the ability to reach remote areas through reliance upon trained subprofessionals and this certainly is a direction in which we are going to need to move in the United States, tying these subprofessionals into medical centers, or to clinics where they can maintain communication with doctors via television and radio.

Q Was that meeting in Moscow kept secret?

SECRETARY RICHARDSON: No, the meeting in Moscow has not resulted in specific announcement yet of the areas or the details of cooperative arrangement. This is only because the formulation of those agreements are still to be worked out in final form.

Q Was the fact of the meeting announced at the time?

SECRETARY RICHARDSON: Yes, we had a briefing here announcing the delegation and on February 11, we issued a release which announced the terms.

Q Was the meeting from March 27 to 31 in Moscow announced at the time?

SECRETARY RICHARDSON: It was certainly announced that the delegation was going. We had a briefing at HEW with Ambassador Dobrynin and with all the members of the U.S. delegation who responded to questions, at that time, about what they expected to discuss.

Q If you have a copy of the fact sheet with you, could you tell us whether Dr. Egeberg's opposite number's name is spelled correctly, at the top of page two?

SECRETARY RICHARDSON: No, it isn't. I meant to mention that. I am glad you caught it. It should be V-e-n-e-d-i-c-t-o-v.

Q I find it hard to see the difference between the Agreement signed today in Moscow and the one signed here and in Moscow on February 11th. It seems to me in reading the press releases issued February 11th, there is really great similarity between the two.

SECRETARY RICHARDSON: There is. The differences are first, whereas that was an exchange of letters between Ministry, this is a government-to-government agreement. And as I said earlier, one of the significant features is as distinguished from the Laces-Arubin or the Cultural Exchange Agreement, this, which has to be renegotiated periodically, this government-to-government agreement would continue for successive five-year periods unless denounced on either side in the meanwhile.

But it also covers, as I said earlier, some features which significantly go beyond the letters. And just to recapitulate, these include provisions for regular contacts between U.S. and Soviet medical institutions and organizations as distinguished from ad hoc arrangements directed specifically to areas of disease.

Secondly, that it provides for exchanges of equipment, pharmaceutical products and technological developments, which was not covered in the earlier letters. That it has specific reference to cooperation with and furnishing information to international organizations and it specifies the World Health Organization.

Those are the respects in which, as I said, in general, I would characterize it as elevating the status of and supplementing the February 11th letters.

Q Is this Agreement and also the one that Russell Train discussed, are they subject to ratification by the Senate or are they in force as of now?

SECRETARY RICHARDSON: They are now in force. No, they are what I call, I think, executive agreements.

Q The other question has to do with -- you just mentioned pharmaceutical products, the exchange of pharmaceutical products. On the United States side at least we have some proprietary considerations, patent rights and other things like that of the people who own these pharmaceutical products. How is that going to be handled?

SECRETARY RICHARDSON: I honestly can't tell you the answer to that. I assume that where any royalty or other similar arrangements are involved that they would be respected.

I might just ask Dr. Egeberg, since the question was raised about the discussions with the Soviet members of the Joint Committee in March, to tell you a little bit about that, with particular reference to the area of occupational health, which was one not originally identified in the letters, but which it has been agreed would be an area of mutual cooperation.

Dr. Egeberg.

DR. EGEBERG: We raised the question of several additional fields of cooperation. At first the Soviets had felt that it would be safest to approach the basic sciences in the three areas you have heard of, but on our last visit there, we raised the question of working together in the field of occupational health and they were glad to accept that one. We didn't have experts in that field along with us, so we couldn't go as far in that as we have in these other three.

They raised the question of the study of influenza and other viral diseases. They raised that one and wanted to include it and we thought that would be good. And we raised the question, and they, too, of the basic biological or chemical research into schizophrenia. And then broadening it out a little bit more along the lines that we could discuss the question of delivery of health care. So that is included in our plans for the future.

Q I would like to go back to my first question. What areas will this cover that the Soviets are experts in? Don't we lead the world in research on heart disease and cancer? What are they going to come back at with us?

SECRETARY RICHARDSON: Well, if you were adding up an overall score, I think we might well feel that the totality of our work in these very broad areas, cardiovascular and oncological diseases and so on, is ahead of them, but this doesn't mean that there are not scientists in institutes of research in the Soviet Union that have taken a high degree of interest in particular areas in which that work is not making significant scientific contributions from which we can benefit.

The exchanges in areas of scientific investigation generally involve the opportunity for people to work together in lines where one person is working down a track in which his inquiries are developing information that can shed light on what someone else is doing.

The most outstanding examples of excellence in Soviet research are in, for example, virology as it applies to cancer. I think this is one of the things that Dr. Marstan emphasized in our original briefing before the U.S. delegation went there. Genetics, again, in the context of cancer and other diseases, medical instrumentation, are all examples of areas in which we can learn from what the Russians are doing.

Q Mr. Secretary, on the fact sheet, paragraph 5, Item 4, means of cooperation will include direct contact between individual scientists, scientific medical societies and editorial boards of medical journals. Doesn't this pretty well exist already? Isn't there a pretty free exchange of information, scientific literature, between the two countries? And how will the situation be improved as a result?

SECRETARY RICHARDSON: Well, of course, the exchange of journals and scientific papers is highly developed, but the direct contact between individual scientists and societies, that is contemplated here, can build upon what is now a somewhat sporadic kind of situation in which individual initiative may play a large part.

What we are recording here really is a government-to-government agreement that will make specific provisions for governmental organizations and support of this kind of exchange. You know that it is anticipated by the Agreement that there will be some significant expenditures involved and it provides in Article 6 that the financing of any arrangements,undertaken pursuant to the Agreement, will be carried out on a reciprocal basis, worked out by the Joint Committee.

In other words, both governments now would get back of and underwrite activities along these lines which have not had that kind of top level governmental support.

Q Has the Joint Committee been appointed yet and if so, who are our representatives?

SECRETARY RICHARDSON: Yes, it has been. The Co-Chairmen are Dr. Egeberg and Dr. Venedictov. The other members for the United States you have, I think.

DR. EGEBERG: The members for the United States specifically are so far Dr. Robert Marstan of the National Institutes of Health, Dr. Theodore Cooper, head of the Heart and Lung Institute; Dr. Baker, head of the Cancer Institute and Dr. David Rall,head of the Environmental Research Institute down in the Golden Triangle of California.

Then on their side, aside from Dr. Venedictov, is the Deputy Minister of Health and Chairman of the Scientific Council on Cardiology of their Academy of Medical Science and the Director of the Institute of Experimental and Clinical Oncology of the USSR Academy of Medical Science and the Director of the Institute of General and Communal Hygiene, who is interested in the environmental part. Those are the three or four basic people on each side.

Q These would probably be appointed to chair a working group like Dr. Cooper on cardiology and like that?

DR. EGEBERG: Dr. Cooper met with his opposite and they had probable a total of eight or ten people discussing it while they were there.

Q Are there any specific proposals for this joint development on new types of medical equipment and drugs?

SECRETARY RICHARDSON: I don't know of anything yet on that front.

DR. EGEBERG: Just in the chemotherapy of cancer.

Q Has there been any preliminary discussion on how the ownership of any of these developed equipments and drugs might be sorted out? The Soviet Union, undoubtedly, would put it under government ownership. Do we have any mechanism to put it under?

SECRETARY RICHARDSON: Dr. Egeberg says that will be dealt with at the third meeting.

Q Do they have something we don't have?

DR. EGEBERG: They have something we don't have and we have something they don't have. And the broader your ability to test, the better.

THE PRESS: Thank you.

END (AT 4:10 P.M. EDT)

FOR IMMEDIATE RELEASE MAY 30, 1972

OFFICE OF THE WHITE HOUSE PRESS SECRETARY

THE WHITE HOUSE

PRESS CONFERENCE
OF
JOHN EHRLICHMAN
ASSISTANT TO THE PRESIDENT FOR DOMESTIC AFFAIRS
AND
PETER G. PETERSON
SECRETARY OF COMMERCE

AT 12:19 P.M. EDT

MR. BALL: Before leaving for Russia, the President directed that a meeting of the Domestic Council be held immediately following the Summit meetings. This was done today at 11:00 a.m., in the Cabinet Room. The meeting, which was chaired by the Vice President, wound up at about 12:10.

Its purpose was to discuss the domestic impact of the Agreements reached with the USSR, and John Ehrlichman, Assistant to the President for Domestic Affairs and also Executive Director of the Council, the Domestic Council, is here with Secretary Peterson to brief you on that meeting and take your questions.

MR. EHRLICHMAN: The principal thrust of the briefings -- and perhaps, first, I better tell you who briefed and then tell you what they said.

First of all, the Chairman of the Environmental Quality Council, Russell Train, and also a member of that Council, Gordon MacDonald, talked about the Environmental Agreement. The Administrator of NASA, James Fletcher, briefed on the Space Agreement. Dr. Edward David, the President's Science Advisor, talked about the Science and Technology Agreement. Secretary Richardson briefed on agreements in the health area and Secretary Peterson then talked about trade agreements.

I will talk about all but Secretary Peterson's briefing and he can tell you what he had to say.

Virtually every one of these Agreements involves the creation of a bilateral commission, consisting of representatives of the Soviet Government and our government. To take as an example, the Commission on the Environment, representatives of virtually every domestic department of the United States Government will be involved or represented on that Commission in one way or another. The kinds of things that will be considered and developed, the kinds of agreements that will be developed by this Environmental Commission will touch virtually every one of our domestic departments.

MORE

(OVER)

So the President felt that it was important as soon as possible following the Russian visit, for the Domestic Council to meet and for every Cabinet officer, on the Domestic Council, to understand the implications of the Agreements and the participation that might be required by his respective department or agency in this effort.

And so, Russ Train took them through a little history of the negotiations, a quick review of some of the subjects that would be covered by the Commission on the Environment, some idea of the scope of the matters that would be covered. Dr. Fletcher did the same thing with regard to the Space Agreement. Incidentally, I might mention in passing that he and Under Secretary Silberman had a colloquy about the employment impact of the Space Agreement, which was at least new to me.

They said that the Space Agreement and particularly the joint docking safety and rescue project would involve at its peak the creation of 4,400 jobs. The peak year being 1974. It also involves the retention of about 1,500 employees, principally in the States of Florida and Alabama. The largest percentage of the 4,400 new jobs would be in the State of California.

The Agreement on Science and Technology will involve, as Dr. David pointed out, a number of joint activities and a much broader exchange of information on a quid pro quo basis, on an exchange of information basis, on a broad range of subjects. He used as his example to describe how this work, the problems that both nations face in the area of energy supply and talked informatively about some of the Russian research and development projects that are under way in that area, which will be of great interest to this country.

Secretary Richardson, in the health area, discussed the Joint Committee, which, incidentally, already exists and had been created by an exchange of correspondence between Secretary Richardsom and the Soviet Minister of Health back in February of this year. This Joint Committee's Chairman on our side is Dr. Egeberg, Special Consultant to the President on Health. As I think you know, they are already in discussion of collaboration on problems of health, disease and cancer and environmental health problems and the scope of these joint activities in the health area will be considerably expanded as a result of the Agreement now consummated.

Then the Vice President called on Secretary Peterson, who talked about the implications of the Trade Agreement and commented also on some of the comment that has been made recently in reaction to the Trade Agreement. And I would like to yield to him, at this time, so that he can you directly what that discussion was.

SECRETARY PETERSON: I mentioned to the Vice President and the Domestic Council that it seemed to me from reading reports on the progress of the trade talks that there had been -- at least my reaction from having participated very intensively with Minister Patolochev before he left -- a sense of almost manufactured disappointment and perhaps a certain inflation of expectation over anything I think anyone had expected who had been involved in the discussions.

I should give you some background here. Secretary Stans, as you know, laid a good foundation, a very good one indeed, on his trip in '71. By definition, his was a exploratory trip, kind of a scouting trip and as such had to deal in rather general terms. Minister Patolochev came here and our meetings started, I believe, on May 8th or 7th. All together we spent about 30 hours together in very intensive discussion. He did not return to the Soviet Union until Wednesday evening, May 17th, and obviously there was very little time there between the time he got there and the beginning of the Summit.

If you want to analogize to the SALT talks, it is perhaps worth pointing out that the SALT talks were 2-1/2 years in preparation. They negotiated in exquisite and I am sure at times excruciating detail. And it is also true that some of the issues we are dealing with here, on the trade and commercial front, are very complex issues.

The President called Sunday morning to review progress. He indicated they had been through each of the major issues, that he felt they had closed the gap on some of the important issues. It is also clear there is some hard bargaining that lies ahead. I think he has considerable hope that the joint U.S.-Soviet Commercial Commission, that will have its first meeting in July, will begin making significant progress.

I think just a little background would be useful before we go into the joint U.S.-Soviet Commercial Commission. Sometimes I think there is a natural tendency to build up expectations of the large structure of trade and commerce, without realizing that it is necessary first to build a foundation and that many of the things that we take for granted in our commercial relationships with many countries simply do not obtain in the case of the Soviet Union.

In short, there are certain fundamentals that first have to be laid down.

I am sure you know at the present time, our trade with the Soviet Union in '71 is on the order of a couple of hundred million dollars. Compare that to our total exports and imports, which in '72 will probably be a number approaching $90 billion. Consider also that we are dealing here with a non-market economy, and we, of course, are market enterprise economy.

Now such things, for example, as marketing and marketing facilities. If we are greatly going to expand trade, we have to have facilities for doing it, business facilities of various kinds.

How do we handle arbitration procedures? Things that we take for granted with countries that have similar traditions and law. How are we going to handle patents, licenses, copyrights, if we are going to exchange, for example, technology or know-how. It is very important that we have the terms well understood.

I am simply trying to convey to you what I believe to be the case and that is that while there are important opportunities that lie ahead, there is some of this important foundation laying that simply has to take place. And we expect to make major progress in the Joint Commercial Commission meeting that meets in July. The President has asked me to chair that meeting and we will have on the Commission a variety of representatives from our government.

I think I will go, John, just to the communique very briefly and just outline some of what it says about the Commercial Commission, so that perhaps I can elaborate on a couple of points.

It says, for example, that this Commission will negotiate an overall Trade Agreement, including reciprocal most favored nation treatment.

Well, first the idea of the Trade Agreement is one that is rather new to our country, but it is certainly a tradition with the Soviet Union. They have now over 90 Trade Agreements with various countries in the world. I think they consider it important as a way of ratifying their position, ratifying a sense of movement toward normalization of trade.

On most favored nation treatment and I think it is very significant to document the fact that the gap has been closed and that progress is being made, that we have here the President of the United States saying that there will be negotiations on most favored nation treatment. This in itself is evidence, I think, of significant progress.

You will remember, I believe, that most favored nation treatment requires Congressional approval and I discussed with the Domestic Council some of the considerations that might be required there in order to get Congressional approval.

We have met with various leaders, talked with leaders of Congress and the Senate. They have a variety of concerns, for example, about such issues as dumping of products in this country and it is important that we negotiate a most favored nation agreement that meets some of the concerns that some people have, since the approval of Congress is a requirement.

The second thing it indicates here in the communique is arrangements for the reciprocal availability of government credit.

Here it is important to indicate that the President does have the authority to determine the eligibility of the country for Ex-Im credits. This does not require Congressional approval, however, as I am sure you know, Congress does approve the annual levels of authorization for Ex-Im credit and we would expect that they, too, would be interested in what the circumstances were of the credits that were being offered.

This in turn relates to the lend-lease issue, which is being negotiated in a parallel way under the chairmanship of Willis Armstrong, Assistant Secretary of the State Department. But as you have surmised, it is our opinion that before we extend new credits to the Soviet Union, it is only appropriate that we take care of the problem of old credits, at least have made arrangements for the solution of that problem.

It says also that we will make provisions for the reciprocal establishment of business facilities to promote trade.

As I indicated earlier, if one is really going to foresee a substantial expansion in commerce, it will be necessary for American companies to have access to offices that are appropriate, to communications facilities, to appropriate travel arrangements, to the ability to see appropriate people in the Soviet Government, and we just think it is important to settle some of those outstanding matters as part of the process of normalization of trade.

I am sure you know that -- a number of you have told me who have been in the Soviet Union -- there is a potential here for some frustration and for some problems and for some tension and I think both sides agree it is important to try to get some of these criterion arrangements laid out for the expansion of facilities on both sides, both Soviet facilities here and our facilities there.

The document also mentions that we will establish arbitration mechanisms. I think I have already covered that.

It then talks about monitoring the spectrum of US-USSR commercial relations, resolving issues that may be of interest to both parties, such as patents and licensing. This is particularly important, obviously, as we move into areas involving technology.

Finally, and of considerable importance, is the study of possible US-USSR participation and development of resources and manufacture and the sale of raw materials and other products.

The Soviet Union, as you know, has very large resources and reserves, a variety of raw materials, large amounts of gas, petroleum, timber, iron ore and a variety of other projects. One of the areas that this Commission will explore is appropriate ways in which these interesting projects could be financed and just what all the arrangements would be.

The sale of raw materials to the United States is an area of which on the one hand, under appropriate conditions, could meet our growing need for raw material and energy and, on the other hand, could afford the Soviet Union an opportunity to earn more foreign exchange with which to buy other products that they wish to buy from the United States.

I mentioned earlier that some of these issues are complex. I think the example of energy is a good example of such an issue. The President, some months ago, asked the Domestic Council to review this country's overall energy policy. Under Mr. Ehrlichman's leadership, there are a variety of task forces that are dealing with a variety of important issue that deal with the energy question and it seems appropriate, for example, that we relate any decisions that are made, vis a vis the Soviet Union, to some kind of an integrated strategy with regard to U.S. energy policy. But we certainly have indicated our willingness to explore, not only energy joint venture arrangements of various kinds, but also other products.

I think that is about it. The first meeting will be held in July. We do not know yet the precise date. But I hope that gives you some background, at least, on what has been going on.

Q On lend-lease, what are the amounts? What are we asking for? And was there any closing of the gap on this in Moscow between what we say Russia should pay and what Russia says she is willing to pay?

SECRETARY PETERSON: I have never felt that we should conduct our negotiations in public. I guess this is the public here.

Q The reports say that they have agreed on one-half billion.

SECRETARY PETERSON: I just cannot and will not confirm or deny any specific number. I would just caution you, however, to remember that an appropriate of the lend-lease issue is not just a question of the total principle that is involved and that is clearly one issue upon which negotiations have taken place and in which, I would say, there was a closing of gap at the Summit meeting.

But there are also very important aspects of the total settlement that deal with interest rates and the term of payment and that, in any event, until we had a total settlement that was satisfactory, it would be most premature to say that we had arrived at an agreement on lend-lease, even if your speculated number were accurate.

Q Could you start with the amount that was left over after World War II, I don't think that is a negotiation secret. At least as a framework to start with.

SECRETARY PETERSON: Since these negotiations are being handled by State, I think that is the appropriate place to get that kind of detailed information. I would only say that one guideline, of course, that would be used in setting the number, is not only a definition of what is meant by the kinds of goods that are involved, consumer versus other kinds of goods, but what was the settlement that was made with other countries. And that would be one very important guideline, I think, in arriving at a settlement.

But since these negotiations are being handled by Mr. Armstrong, I would suggest you talk to him about those details.

Q How urgent is the Soviet need for grain? Is that likely to be the first item on your trade agenda?

SECRETARY PETERSON: Well, they will have to comment on their urgency. Their Agriculture Minister was over here. Secretary Butz, as you know, returned the visit to the Soviet Union. They do have a publicly announced program of a very substantial increase in meat consumption at the present time. I think Secretary Butz told us this morning that their meat consumption is approximately a third of ours. There is an objective, I believe, to increase that meat protein consumption, publicly announced,about 25 percent. And due to the fact there have been some problems, as I understand, with weather and climate and due to the interesting fact, incidentally, that feed grains, as Secretary Butz tells me, have a unique requirement of periods of high temperature and substantial amounts of humidity. And apparently, the Soviet Union cannot depend on that kind of climate in adequate amounts to make its sources completely dependable.

I think it is clear they have a need. It is clear that this is an item that was discussed in the Soviet Union and will continue to be discussed, I am sure. It is an item, incidentally, that will again be negotiated by the Department of Agriculture. The man there who has been heading those negotiations, a man named Clarence Palmby. They will all however be on our Commission, since obviously some of these items relate one to another. But I would expect that to be a very early item.

Q Can they wait until July for this?

SECRETARY PETERSON: Well, they will have to decide how long they can wait. It is quite possible there will be some negotiations pre-July on that subject.

Q Who will be on the Commission on this side?

SECRETARY PETERSON: That has not been fully decided yet. There will be representative of a number of departments who have an important role to play, but at the moment, we are not ready to announce the composition of the group. It will be a multi-agency commission within the U.S. Government.

Q Could you characterize, in very general terms, your reaction to the talks in Moscow on trade. You mentioned almost manufactured disappointment and possibly inflated expectations and said that President Nixon said it was possible to close the gap on some more issues.

SECRETARY PETERSON: I would say that the Summit has indeed come very close and in some ways exceeded my own expectations of what could be achieved there, given the number of issues and the complexity of the issues. I think it is most significant, most significant, that the President and the Soviet leaders did agree to set up an official negotiating body, to negotiate issues that for 20 years or more have, for all practical purposes, not been particularly negotiable. And obviously, the very fact that they are willing to put them on an agenda marks a decision by the President that under the proper conditions, we truly can be entering into a new era in our commercial relationships.

So, far from being disappointed, I think real progress was made there and I think and I have every expectation that you will see over the coming months continue progress to be made in this commercial field.

But please appraise any progress against the context of 20 years of very, very limited commercial relationships.

Q You are speaking very cautiously about possible trade agreements with the Soviets and you use the example of long drawn out SALT talks. Are you saying that it could take 2-1/2 to three years to have the kind of comparable trade agreements with the Soviets that we have in nuclear arms.

SECRETARY PETERSON: Well, I hate to pick a number. It would look like I am making an invidious comparison with some of my colleagues. Businessmen, while we are known as impatient -- that is probably a redundancy to refer to someone as an impatient businessman -- I would have to say that I would expect substantial progress to be made before 2-1/2 years are out.

On the other hand, I would not want to set up an expectation that at our first meeting in July we would have solved all the problems that have not been resolved in 20 years.

So, I think I would be thinking in the framework of months, but not 2-1/2 years before substantial progress would be made. I wouldn't want to be any more precise than that.

Q How often do you expect the Commission to meet? When would you expect the next meeting in Washington to be?

SECRETARY PETERSON: These are subjects of joint agreement, obviously, on both sides. Let's just talk about the first meeting. I would expect the first meeting to be rather similar in many ways to the meetings that we had here. They were very intensive and I think very constructive and they got very specific.

I would visualize meetings that might range over a period of a week or two, for example, of very intensive sessions. And I think the timing of the next session should not be commented on at this time, both because it is a subject that the Soviets should participate in, but that it is obviously influenced by the problems that remain and the progress that we have made there.

Frankly, at this point, I think the Soviets and the United States understand each other's positions in a fairly specific way and I wouldn't want to make any guesses now as to how often the meetings are going to be held. The first meeting will be an extended, intensive session.

Q Sir, you mentioned raw materials in Russia and Russia might export to the United States and thereby get credits that she might buy products from the United States. Could you give some idea of your view of what types of products Russia might be interested in purchasing from us with these credits?

SECRETARY PETERSON: Aside from grains, of course, which have already been commented on, some of the projects in which they have a particular interest are certain kinds of machinery, certain kinds of machine tools, in particular, certain projects that have an early starting date. For example, they have an interested in something called the Kama River Truck Project, where presumably credits might be made available, where the Soviet Union, I am sure, would like to meet their timetable and their schedule.

I would say aside from grain in the initial period, we would see a good deal of the balance on various kinds of machinery and capital goods, which, of course, is a field in which the United States typically does extraordinarily well.

Q Like capital goods. Would that include trucks?

SECRETARY PETERSON: It might include trucks, but it would include machinery, for example, that in turn could be used to make other equipment.

I would want to mention, incidentally, that our discussions have been held in a commercial context and I think it has been very clear that nothing that we are talking about would affect the security criteria or anything of this sort. All of these discussions are progressing in a normal commercial framework and not in the framework of changing any of the criteria of how we define the security interests of each country.

Q So we won't have inflated expectation and manufactured disappointment, can you give us some idea of the magnitude of expectation based on things going smoothly. Supposing your bargaining goes well over the next one, two, five years. Are we talking about a one-fold, two-fold, ten-fold, 50-fold increase in trade?

SECRETARY PETERSON: Well, the precise number -- it depends obviously a great deal on the amounts of credit that are available, what projects they come up with, whether they indeed meet our credit standards, how good our marketing facilities are, it is just an enormous number of factors here. At the present time, as I say, the trade going both ways is about $200 millions of dollars. It would be my own view that over the next several years, let us say, three years, something of that sort, we would still likely be talking in the range of hundreds of millions of dollars, increasing substantially from the current level, but still not at the level, at least in that time frame, of billions of dollars of trade. And, still, incidentally, very important in terms not only of our economic relationships, but our political relationships.

Mr. Levine?

Q Mr. Secretary, You mentioned earlier the possibility of separate talks on feed grain if the Soviets so desire. Are you indicating that a separate agreement could be reached outside of the realm of the overall agreement that the Joint Commission will be taking up?

SECRETARY PETERSON: That is certainly possible that a grain agreement could be negotiated separately. I did, at the same time, say that some of these issues, Mr. Levine, are linked, some in our mind, some in their mind, and it is possible,of course, that they wish to link the purchase of grain to some other item. That is their prerogative.

But, as a matter of principle, I see no reason whatsoever that there couldn't be a separate grain agreement.

Q Has there already been a step up in activity under the consular agreement that was signed a couple of years ago, preparation for this. Are we setting up any more consular offices?

SECRETARY PETERSON: Well, I would say the major factor that will cause the '72 number to be substantially larger than the '71 number is this very large grain deal, which, you recall, was about $135 million.

Other than that, while there has been some growth, it has not been dramatic in the last few years.

Q Mr. Secretary, a senior Russian trade official was quoted in the Times this morning as saying there was an immense possibility, for example, of trade between the two countries if we would rethink our concepts about foreign trade. For example, he said if we sold plant and equipment for an auto manufacturing plant in the Soviet Union, they would be happy to, as I gather it, resell us the finished product which we could then market in Europe. How does that sort of arrangement strike you?

SECRETARY PETERSON: Don't interpret my comments to suggest that over the longer term trade could not increase very substantially, because that is the second largest economy in the world and they could decide as a matter of top policy to rely much more on trade than they have up to now.

Up to now the policy has been, relatively speaking, more self-sufficient. For example, the Soviet Union, I think, in '71, their trade only involved about two percent of their GNP. Their total exports to all western nations, I think, was on the order of 2.5 or 2.7 billion.

So one of the major factors is under the Soviet Union's control. If they decide to encourage projects with the outside world, that could certainly cause an expansion.

Implicit, however, in your question is to me the important question of how to finance this level of trade. I think it would be useful for you to get some idea as to how much credit this country has available through its various facilities. The Ex-Im Bank, for example, I think its total credit is in the range of about -- depending on how precisely you want to measure it -- between $10 billion and $14 billion. So some of these projects, if they involved extraordinarily large amounts of money, one would have to ask the question where the financing was going to come from.

But in principle, we don't have any kind of barriers or hangups that I am aware of on participating with the Soviet Union in a variety of joint projects, both on the raw material side and the manufactured side.

Q Do you have a reading on the Senate reaction to the SALT agreement and do you anticipate any substantial opposition in the Senate?

MR. EHRLICHMAN: I just don't have any reading at this time.

Q Do you anticipate any?

MR. EHRLICHMAN: Well, that is so far outside the course and scope of my employment, I would hesitate to comment on it.

Q Have you gone into the question of budget impact of any of these agreements. For example, let's take the joint flight thing. Is this going to cost us more money because we are going into a new one? Do we save money because we are not going to do it ourselves?

MR. EHRLICHMAN: No, as a matter of fact, that came up this morning and Dr. Fletcher commented that it could be done within the existing NASA budget.

Q How about any of the others?

MR. EHRLICHMAN: And by existing, I mean the one that is on the books now. As far as out-years are concerned, he didn't say and I don't know, but I gathered from the general thrust of his comment, that no material increases in projected NASA budgeting were going to be required by this proposal.

He described the docking module, this intermediate module, and it is obvious, at least from a hardware standpoint, it is a fairly modest undertaking. But he also described some of the training and coordinating aspects and there clearly are going to be some rather novel training problems and coordination problems involved, which he said could be handled within their existing budget.

Q At times like this the White House sometimes gives out analyses of public opinion. Do you have any reading yet on cables coming in?

MR. EHRLICHMAN: No.

Q You mentioned some employment gains which you saw resulting from the Summit developments. Can you make an assessment of the employment losses that will result from things like cutting down the ABM construction?

MR. EHRLICHMAN: No. I don't know if we read the same papers, but I gathered it might be running the other way, but I am not informed on that.

SECRETARY PETERSON: John, I might say I noticed a slight inflection in the gentleman's voice when he referred to my use of the phrase "manufactured disappointment and inflation of expectation." Let me clarify this.

It might sound as though this is a comment to suggest somebody has intentionally brought about that kind of result. I don't mean to suggest that at all. I think it is probably only natural that in an environment of the Summit, when there are a lot of discussions going on, people might have assumed that we expected a lot of these items to be resolved. I just want to reaffirm the fact that prior to going to the Summit, after very extensive discussions within our Government, the President, Peter Flanigan, Henry Kissinger, the various State Department people working here, I do not think that there was any high expectations that these important issues would get resolved at the Summit.

They are simply too early in the negotiating stage and too complex and too interlinked. I perhaps am defensive, but that comment could have misinterpreted and I don't wish to have it misinterpreted.

Q Aside from what I would consider technical problems, such as the lend-lease I think is a technical problem, are the two real big things here the Soviet willingness to abandon the theory of self-sufficiency and to link itself to foreign trade and two, the availability of credit to the United States. Would you say those are the two very major difficulties in a great leap forward in trade?

SECRETARY PETERSON: I wouldn't use the word difficulties to describe at least one of them. I think the Soviet Union is indicating that in a world that is getting much more complex, much more sophisticated, there are important know-how and technologies around the world that are very useful to expand its own domestic economy.

The meat thing that we referred to earlier is just one of a variety of examples. I think there is ample evidence that important leaders in the Soviet Union have decided that improving their standard of living, by enhancing their economic development, is moving up in their priority objectives. Once that determination is made, it is only natural that they look to other industrialized countries as a source of products and know-how. Much in the same way, incidentally, that all the western industrialized countries have learned that there is something to this notion of international specialization and there are countries that do certain things better than others.

This is just speculation, but I would assume to some extent that decision, that judgment, has already been made, that that kind of expansion is in the interests of the Soviet Union. An important issue is the most-favored nation issue, not only economically, but symbolically.

THE PRESS: Thank you.

END (AT 1:02 P.M. EDT)

THE WALL STREET JOURNAL, Tuesday, July 18, 1972

Biggest Soviet Contract With U.S. Firm, $3 Billion, Slated by Occidental Petroleum

A WALL STREET JOURNAL *News Roundup*

Occidental Petroleum Corp. is expected to announce today the biggest transaction ever negotiated between an American company and the Soviet Union, it was learned from a Kremlinologist source with Radio Free Europe in Munich.

Dr. Armand Hammer, chairman of Occidental, will hold a press conference in London today to unveil a "truly major" development, a spokesman for the company said. Beyond that, the company refused to comment on the report.

The transaction involved is likely to be the previously reported one in which Russia is seeking foreign capital to help develop its vast new Tyumen oil fields in Siberia and to build a pipeline across Siberia to the Pacific Ocean, where the oil would chiefly be exported to Japan.

The project is expected to involve about $3 billion and to include Japanese companies in the consortium undertaking it. Russia previously asked the Japanese for about $1 billion in loans for that project. Gulf Oil Corp. previously expressed interest in participating in that project. But Gulf said in Pittsburgh that it wasn't in the Occidental transaction and it didn't know what the Occidental business encompassed.

The Soviet Union is the only major industrial nation that is self-sufficient in oil and gas. The U.S. recently became a net importer of both key energy commodities. But the Russians are short of foreign exchange and trail in some key areas of oil technology. There have been predictions that they will become net importers of oil by 1980.

Russia previously indicated it wanted massive amounts of U.S. capital to help develop its Siberian oil and gas fields and would pay through exports of oil and gas. Tenneco, Inc., Texas Eastern Transmission Corp. and Halliburton Co. previously disclosed they were discussing with the Russians a possible major project to develop and export vast gas deposits in Siberia.

It's expected that Occidental and its consortium will provide the Soviet with the pipeline pipe needed for the oil project and that they will receive crude oil in payment.

Dr. Hammer isn't a stranger to Soviet Russia. On his graduation from the Columbia University medical school in 1921 and already a millionaire, he read about the famine in Russia and decided to practice medicine there. On arrival, however, he learned the big need wasn't for doctors but for food, so he made a deal with the Russian government to lease vessels and import grains and other foodstuffs. In return, he traded for caviar, furs, lumber, hides and other Russian commodities.

Dr. Hammer stayed in Russia for nine years. Part of the time he acted as sales representative for 36 U.S. companies, including Ford Motor Co. and the former Underwood Typewriter Co. When he found Russia didn't make pencils, he set up its first pencil factory, hiring master pencil makers from Germany. Later he sold this business to the Soviet government.

In Russia, Dr. Hammer also traded and bought art treasures, including many formerly belonging to the czars. This led to his establishment of the Hammer Galleries in New York, which is still a leading art gallery. In 1932, he wrote a book on his Russian experiences, "The Quest of the Romanov Treasure."

Dr. Hammer and Occidental have often been noted for controversies that have shaken up the oil industry. Once a rather tiny domestic oil company, Occidental became the largest oil producer in Libya, and it led the invasion of foreign markets by new independent companies challenging the traditional international oil companies. This battle for markets caused price-cutting havoc for about a decade. Recently, however, Occidental has suffered sharp production cutbacks ordered by the Libyan government, and independents haven't fared as well abroad.

Occidental also was the focus of a major battle in the U.S. over oil import controls with its proposal to build a refinery in Maine that would be exempt from such controls through use of a so-called foreign trade zone. While that project hasn't been approved, it triggered similar proposals by other companies and a lengthy industry fight that hasn't ended.

About 90% of the Soviet Union's energy resources are estimated to lie in inhospitable siberia, but about three-fourth's of the country's population and four-fifths of its industry are in the western part of the country. The Russians have also become a bit nervous about the need to accelerate Siberian development in the face of possible designs by China on those vast areas, many of which were seized from ancient Chinese regimes.

Russia claims the Tyumen area has the biggest oil field in the Soviet Union and the biggest gas field in the world. It has talked about exporting up to 800,000 barrels of oil a day to Japan from that area. Japan gets most of its three million barrels of oil daily from the Middle East and wants to diversify its sources of supply.

THE WALL STREET JOURNAL, Tuesday, July 18, 1972

Biggest Soviet Contract With U.S. Firm, $3 Billion, Slated by Occidental Petroleum

A WALL STREET JOURNAL *News Roundup*

Occidental Petroleum Corp. is expected to announce today the biggest transaction ever negotiated between an American company and the Soviet Union, it was learned from a Kremlinologist source with Radio Free Europe in Munich.

Dr. Armand Hammer, chairman of Occidental, will hold a press conference in London today to unveil a "truly major" development, a spokesman for the company said. Beyond that, the company refused to comment on the report.

The transaction involved is likely to be the previously reported one in which Russia is seeking foreign capital to help develop its vast new Tyumen oil fields in Siberia and to build a pipeline across Siberia to the Pacific Ocean, where the oil would chiefly be exported to Japan.

The project is expected to involve about $3 billion and to include Japanese companies in the consortium undertaking it. Russia previously asked the Japanese for about $1 billion in loans for that project. Gulf Oil Corp. previously expressed interest in participating in that project. But Gulf said in Pittsburgh that it wasn't in the Occidental transaction and it didn't know what the Occidental business encompassed.

The Soviet Union is the only major industrial nation that is self-sufficient in oil and gas. The U.S. recently became a net importer of both key energy commodities. But the Russians are short of foreign exchange and trail in some key areas of oil technology. There have been predictions that they will become net importers of oil by 1980.

Russia previously indicated it wanted massive amounts of U.S. capital to help develop its Siberian oil and gas fields and would pay through exports of oil and gas. Tenneco, Inc., Texas Eastern Transmission Corp. and Halliburton Co. previously disclosed they were discussing with the Russians a possible major project to develop and export vast gas deposits in Siberia.

It's expected that Occidental and its consortium will provide the Soviet with the pipeline pipe needed for the oil project and that they will receive crude oil in payment.

Dr. Hammer isn't a stranger to Soviet Russia. On his graduation from the Columbia University medical school in 1921 and already a millionaire, he read about the famine in Russia and decided to practice medicine there. On arrival, however, he learned the big need wasn't for doctors but for food, so he made a deal with the Russian government to lease vessels and import grains and other foodstuffs. In return, he traded for caviar, furs, lumber, hides and other Russian commodities.

Dr. Hammer stayed in Russia for nine years. Part of the time he acted as sales representative for 36 U.S. companies, including Ford Motor Co. and the former Underwood Typewriter Co. When he found Russia didn't make pencils, he set up its first pencil factory, hiring master pencil makers from Germany. Later he sold this business to the Soviet government.

In Russia, Dr. Hammer also traded and bought art treasures, including many formerly belonging to the czars. This led to his establishment of the Hammer Galleries in New York, which is still a leading art gallery. In 1932, he wrote a book on his Russian experiences, "The Quest of the Romanov Treasure."

Dr. Hammer and Occidental have often been noted for controversies that have shaken up the oil industry. Once a rather tiny domestic oil company, Occidental became the largest oil producer in Libya, and it led the invasion of foreign markets by new independent companies challenging the traditional international oil companies. This battle for markets caused price-cutting havoc for about a decade. Recently, however, Occidental has suffered sharp production cutbacks ordered by the Libyan government, and independents haven't fared as well abroad.

Occidental also was the focus of a major battle in the U.S. over oil import controls with its proposal to build a refinery in Maine that would be exempt from such controls through use of a so-called foreign trade zone. While that project hasn't been approved, it triggered similar proposals by other companies and a lengthy industry fight that hasn't ended.

About 90% of the Soviet Union's energy resources are estimated to lie in inhospitable Siberia, but about three-fourth's of the country's population and four-fifths of its industry are in the western part of the country. The Russians have also become a bit nervous about the need to accelerate Siberian development in the face of possible designs by China on those vast areas, many of which were seized from ancient Chinese regimes.

Russia claims the Tyumen area has the biggest oil field in the Soviet Union and the biggest gas field in the world. It has talked about exporting up to 800,000 barrels of oil a day to Japan from that area. Japan gets most of its three million barrels of oil daily from the Middle East and wants to diversify its sources of supply.

THE WALL STREET JOURNAL, Tuesday, July 18, 1972

Biggest Soviet Contract With U.S. Firm, $3 Billion, Slated by Occidental Petroleum

A WALL STREET JOURNAL *News Roundup*

Occidental Petroleum Corp. is expected to announce today the biggest transaction ever negotiated between an American company and the Soviet Union, it was learned from a Kremlinologist source with Radio Free Europe in Munich.

Dr. Armand Hammer, chairman of Occidental, will hold a press conference in London today to unveil a "truly major" development, a spokesman for the company said. Beyond that, the company refused to comment on the report.

The transaction involved is likely to be the previously reported one in which Russia is seeking foreign capital to help develop its vast new Tyumen oil fields in Siberia and to build a pipeline across Siberia to the Pacific Ocean, where the oil would chiefly be exported to Japan.

The project is expected to involve about $3 billion and to include Japanese companies in the consortium undertaking it. Russia previously asked the Japanese for about $1 billion in loans for that project. Gulf Oil Corp. previously expressed interest in participating in that project. But Gulf said in Pittsburgh that it wasn't in the Occidental transaction and it didn't know what the Occidental business encompassed.

The Soviet Union is the only major industrial nation that is self-sufficient in oil and gas. The U.S. recently became a net importer of both key energy commodities. But the Russians are short of foreign exchange and trail in some key areas of oil technology. There have been predictions that they will become net importers of oil by 1980.

Russia previously indicated it wanted massive amounts of U.S. capital to help develop its Siberian oil and gas fields and would pay through exports of oil and gas. Tenneco, Inc., Texas Eastern Transmission Corp. and Halliburton Co. previously disclosed they were discussing with the Russians a possible major project to develop and export vast gas deposits in Siberia.

It's expected that Occidental and its consortium will provide the Soviet with the pipeline pipe needed for the oil project and that they will receive crude oil in payment.

Dr. Hammer isn't a stranger to Soviet Russia. On his graduation from the Columbia University medical school in 1921 and already a millionaire, he read about the famine in Russia and decided to practice medicine there. On arrival, however, he learned the big need wasn't for doctors but for food, so he made a deal with the Russian government to lease vessels and import grains and other foodstuffs. In return, he traded for caviar, furs, lumber, hides and other Russian commodities.

Dr. Hammer stayed in Russia for nine years. Part of the time he acted as sales representative for 36 U.S. companies, including Ford Motor Co. and the former Underwood Typewriter Co. When he found Russia didn't make pencils, he set up its first pencil factory, hiring master pencil makers from Germany. Later he sold this business to the Soviet government.

In Russia, Dr. Hammer also traded and bought art treasures, including many formerly belonging to the czars. This led to his establishment of the Hammer Galleries in New York, which is still a leading art gallery. In 1932, he wrote a book on his Russian experiences, "The Quest of the Romanov Treasure."

Dr. Hammer and Occidental have often been noted for controversies that have shaken up the oil industry. Once a rather tiny domestic oil company, Occidental became the largest oil producer in Libya, and it led the invasion of foreign markets by new independent companies challenging the traditional international oil companies. This battle for markets caused price-cutting havoc for about a decade. Recently, however, Occidental has suffered sharp production cutbacks ordered by the Libyan government, and independents haven't fared as well abroad.

Occidental also was the focus of a major battle in the U.S. over oil import controls with its proposal to build a refinery in Maine that would be exempt from such controls through use of a so-called foreign trade zone. While that project hasn't been approved, it triggered similar proposals by other companies and a lengthy industry fight that hasn't ended.

About 90% of the Soviet Union's energy resources are estimated to lie in inhospitable siberia, but about three-fourth's of the country's population and four-fifths of its industry are in the western part of the country. The Russians have also become a bit nervous about the need to accelerate Siberian development in the face of possible designs by China on those vast areas, many of which were seized from ancient Chinese regimes.

Russia claims the Tyumen area has the biggest oil field in the Soviet Union and the biggest gas field in the world. It has talked about exporting up to 800,000 barrels of oil a day to Japan from that area. Japan gets most of its three million barrels of oil daily from the Middle East and wants to diversify its sources of supply.

THE WALL STREET JOURNAL, Tuesday, July 18, 1972

Biggest Soviet Contract With U.S. Firm, $3 Billion, Slated by Occidental Petroleum

A WALL STREET JOURNAL *News Roundup*

Occidental Petroleum Corp. is expected to announce today the biggest transaction ever negotiated between an American company and the Soviet Union, it was learned from a Kremlinologist source with Radio Free Europe in Munich.

Dr. Armand Hammer, chairman of Occidental, will hold a press conference in London today to unveil a "truly major" development, a spokesman for the company said. Beyond that, the company refused to comment on the report.

The transaction involved is likely to be the previously reported one in which Russia is seeking foreign capital to help develop its vast new Tyumen oil fields in Siberia and to build a pipeline across Siberia to the Pacific Ocean, where the oil would chiefly be exported to Japan.

The project is expected to involve about $3 billion and to include Japanese companies in the consortium undertaking it. Russia previously asked the Japanese for about $1 billion in loans for that project. Gulf Oil Corp. previously expressed interest in participating in that project. But Gulf said in Pittsburgh that it wasn't in the Occidental transaction and it didn't know what the Occidental business encompassed.

The Soviet Union is the only major industrial nation that is self-sufficient in oil and gas. The U.S. recently became a net importer of both key energy commodities. But the Russians are short of foreign exchange and trail in some key areas of oil technology. There have been predictions that they will become net importers of oil by 1980.

Russia previously indicated it wanted massive amounts of U.S. capital to help develop its Siberian oil and gas fields and would pay through exports of oil and gas. Tenneco, Inc., Texas Eastern Transmission Corp. and Halliburton Co. previously disclosed they were discussing with the Russians a possible major project to develop and export vast gas deposits in Siberia.

It's expected that Occidental and its consortium will provide the Soviet with the pipeline pipe needed for the oil project and that they will receive crude oil in payment.

Dr. Hammer isn't a stranger to Soviet Russia. On his graduation from the Columbia University medical school in 1921 and already a millionaire, he read about the famine in Russia and decided to practice medicine there. On arrival, however, he learned the big need wasn't for doctors but for food, so he made a deal with the Russian government to lease vessels and import grains and other foodstuffs. In return, he traded for caviar, furs, lumber, hides and other Russian commodities.

Dr. Hammer stayed in Russia for nine years. Part of the time he acted as sales representative for 36 U.S. companies, including Ford Motor Co. and the former Underwood Typewriter Co. When he found Russia didn't make pencils, he set up its first pencil factory, hiring master pencil makers from Germany. Later he sold this business to the Soviet government.

In Russia, Dr. Hammer also traded and bought art treasures, including many formerly belonging to the czars. This led to his establishment of the Hammer Galleries in New York, which is still a leading art gallery. In 1932, he wrote a book on his Russian experiences, "The Quest of the Romanov Treasure."

Dr. Hammer and Occidental have often been noted for controversies that have shaken up the oil industry. Once a rather tiny domestic oil company, Occidental became the largest oil producer in Libya, and it led the invasion of foreign markets by new independent companies challenging the traditional international oil companies. This battle for markets caused price-cutting havoc for about a decade. Recently, however, Occidental has suffered sharp production cutbacks ordered by the Libyan government, and independents haven't fared as well abroad.

Occidental also was the focus of a major battle in the U.S. over oil import controls with its proposal to build a refinery in Maine that would be exempt from such controls through use of a so-called foreign trade zone. While that project hasn't been approved, it triggered similar proposals by other companies and a lengthy industry fight that hasn't ended.

About 90% of the Soviet Union's energy resources are estimated to lie in inhospitable siberia, but about three-fourth's of the country's population and four-fifths of its industry are in the western part of the country. The Russians have also become a bit nervous about the need to accelerate Siberian development in the face of possible designs by China on those vast areas, many of which were seized from ancient Chinese regimes.

Russia claims the Tyumen area has the biggest oil field in the Soviet Union and the biggest gas field in the world. It has talked about exporting up to 800,000 barrels of oil a day to Japan from that area. Japan gets most of its three million barrels of oil daily from the Middle East and wants to diversify its sources of supply.

RECORD OF DISCUSSIONS

between Dr. Edward E. David, Jr., Science Adviser to the President of the United States of America and Director of the Office of Science and Technology in the Executive Office of the President, and Academician V. A. Kirillin, Deputy Chairman of the U.S.S.R. Council of Ministers and Chairman of the State Committee of the U.S.S.R. Council of Ministers for Science and Technology (July 2 - July 8, 1972).

Discussions were held between Dr. David and Academician Kirillin concerning implementation of the Agreement Between the Government of the United States of America and the Government of the Union of Soviet Socialist Republics on Cooperation in the Fields of Science and Technology, signed on May 24, 1972, at the Moscow Summit meeting.

Also taking part in the discussions were, from the U.S. side, Dr. James B. Fisk, President of Bell Telephone Laboratories; Dr. Eugene G. Fubini, President of Fubini Consultants, Ltd.; Dr. John V.N. Granger, Deputy Director, Bureau of International Scientific and Technological Affairs, Department of State; and other staff members of the Office of Science and Technology and of the Department of State.

From the Soviet side participants included Academician M. D. Millionshchikov, Vice President of the U.S.S.R. Academy of Sciences; Academician V. A. Trapeznikov, First Deputy Chairman of the State Committee of the U.S.S.R. Council of Ministers for Science and Technology; Dr. S. M. Tikhomirov, Deputy Chairman of the State Committee of the U.S.S.R. Council of Ministers for Science and Technology; and other staff members of the State Committee and the Ministry of Foreign Affairs of the U.S.S.R.

The two sides noted with satisfaction that the Agreement of May 24, 1972, provides a good basis for the long-term development and expansion of scientific and technological cooperation between the two countries. For the purpose of implementing this Agreement, they considered a number of questions concerning the structure and organization of the U.S.-U.S.S.R. Joint Commission, to be created in accordance with Article 7 of the Agreement, as well as possible areas and forms of cooperation.

The two sides reaffirmed the objectives of their proposed scientific and technical cooperation, as set forth in the Agreement. These are to assist and develop scientific and technical cooperation between both countries on the basis of mutual benefit, equality and reciprocity, and to provide broad opportunities for both sides to combine the efforts of their scientists and specialists in working on major problems, whose solution will promote the progress of science and technology for the benefit of both countries and of mankind.

Recognizing that the achievement of common goals in the development of science and technology depends on a close working relationship between scientists and specialists, the two sides will encourage and facilitate the development of direct contacts between qualified individuals and organizations of the two countries.

The two sides discussed procedural questions concerning the work of the Joint Commission, the first meeting of which will be held in Washington, D.C., in October, 1972.

The two sides also discussed a number of specific areas of common interest which show promise for direct cooperation. U.S.-U.S.S.R. ad hoc working groups will be established as soon as possible in the following areas:

(1) Energy Research and Development, including:

(a) magnetohydrodynamics;

(b) fusion;

(c) atomic energy and nuclear reactors;

(d) solar energy;

(e) geothermal energy;

(f) energy transmission;

(g) utilization of waste heat; and

(h) increasing the efficiency of thermal power stations.

(Working groups in the energy area will be convened only for topics not covered by the Memorandum on Cooperation Between the U.S. Atomic Energy Commission and the U.S.S.R. State Committee for the Utilization of Atomic Energy.)

(2) Application of Computers in Management;

(3) Agricultural Research;

(4) Production of substances employing microbiological means;

(5) Water Resources;

(6) Research in the Field of Chemical Catalysis.

These working groups will develop specific proposals for cooperative programs. Their reports and recommendations will be submitted to the Executive Agents in each country no later than two weeks before the date of the first meeting of the Commission for its consideration. Working groups in additional areas may be established by the Commission at its meetings or by agreement between the Executive Agents on both sides, in the period between meetings of the Commission.

The Commission will monitor the progress of joint programs established under the Agreement to assure that obstacles which may arise are promptly and effectively dealt with.

Following an exchange of views between Dr. David and Academician M. V. Keldysh, President of the U.S.S.R. Academy of Sciences, on cooperation in oceanological research, it was decided that the U.S. National Science Foundation and the U.S.S.R. Academy of Sciences would designate representatives to meet in the near future to discuss possible Soviet technical and financial participation in the program of deep ocean drilling to be carried out with the U.S. research vessel D/V GLOMAR CHALLENGER operated by Scripps Institute of Oceanography.

Desiring to achieve cooperation in the area of scientific and technical information, the two sides decided as a first step to convene in the near future a symposium on this subject between the National Science Foundation and the All-Union Scientific Research Institute for Scientific and Technical Information.

The two sides emphasized their desire to realize as quickly as possible tangible results under the Agreement. In this connection, they will render assistance in establishing closer and more regular contacts between individual scientists and specialists, and also research institutions and technical organizations of the two countries.

The subjects discussed in the course of this meeting will be reviewed by the Joint Commission in its first meeting.

Edward E. David, Jr.
Director, Office of Science and Technology, Executive Office of the President, United States of America

V. A. Kirillin
Chairman, State Committee of the U.S.S.R. Council of Ministers for Science and Technology

Washington, July 28, 1972

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

FOR IMMEDIATE
RELEASE
Friday, July 28, 1972

For further information contact:
John H. Lannan (202)395-3514

WASHINGTON---American and Soviet officials outlined today six scientific and technological areas in which their nations will try to cooperate jointly in an attempt to solve common problems.

They are energy, agriculture, chemistry, water resources, microbiology and computer usage. All will be taken up by the U.S.-U.S.S.R. Joint Commission on Scientific and Technical Cooperation which was called for in the Agreement on Cooperation in the Fields of Science and Technology signed during President Nixon's Moscow Summit, May 24.

The Commission will hold its first meeting in Washington in the latter part of October.

The science and technology agreement marks the first time the two nations have developed an intergovernmental mechanism by which they can jointly conduct a broad range of scientific and technological efforts directed toward common goals.

A document establishing the framework for the new U.S.-U.S.S.R. Joint Commission was signed here today. The document was a "Record of Discussions" held between U.S. and Soviet delegations in Moscow July 2-8.

In addition to setting the framework for the Joint Commission, the discussions also opened the door to possible Soviet participation in the U.S.-sponsored deep sea drilling program, a vastly successful effort to study the makeup of the earth's crust by boring into the bottoms of the world's oceans.

Dr. Edward E. David, Jr., President Nixon's Science Adviser and the leader of the eight-man delegation which worked out the details in Moscow earlier this month, signed for the United States. The ceremony took place at the White House in the presence of President Nixon and Soviet Ambassador Anatoliy F. Dobrynin.

V.A. Kirillin, Deputy Chairman of the U.S.S.R. Council of Ministers and David's Soviet counterpart as Chairman of the State Committee for Science and Technology (SCST), signed a similar document in Moscow with U.S. Ambassador Jacob D. Beam in attendance

Until now, interactions between American and Soviet scientists and technologists were conducted under exchange agreements dating back to 1958. Primarily, these have been exchanges of individuals or delegations.

"The new agreement does not supersede the current Exchanges Agreement," Dr. David said. "In fact, it broadens the existing arrangements as well as making possible new direct contacts between scientists, agencies within each government and between American industrial firms and Soviet state enterprises."

He emphasized that the Commission will approve and monitor the present areas proposed for cooperation and consider new possibilities. In all cases, he pointed out, the cooperation "will be on the basis of mutual benefit, equality, and reciprocity."

The Science and Technology Agreement and the Commission are designed to "combine the efforts of...scientists and specialists" involved in major problems. It is expected that solutions reached jointly will be achieved sooner and less expensively than if each nation attacked its problems alone.

Working groups in all six areas have already been established on both sides.

Each group will develop specific proposals for cooperative work for consideration at the Commission's first meeting.

Areas being considered in the energy field include magnetohydrodynamics (MHD), fusion (thermonuclear), atomic, solar, geothermal and other forms of power generation as well as power transmission and increased generation efficiency.

Agricultural research efforts will be drawn from a list of proposals already exchanged.

Efforts in computer applications will be directed toward the use of computers and cybernetic techniques for management purposes.

Water resources are of interest to both governments because of common concerns in irrigation, recycling, flood control, ground water levels and other areas.

In microbiology, the production of protein through microbial techniques will be looked at as a source of food for both human and animal consumption along with the possible synthesis of other substances.

The Commission's initial ventures into chemistry will be in the field of chemical catalysis in both basic and applied research.

The governmental executive agencies responsible for the Commission are David's Office of Science and Technology and Kirillin's State Committee on Science and Technology.

Another outcome of the negotiations in Moscow will be a joint symposium on scientific and technical information.

Named Joint Commission members on the American side were:

> Dr. David, Chairman; Dr. James B. Fisk, President of the Bell Telephone Laboratories; Dean Harvey Brooks, National Academy of Sciences and Harvard University; Dr. H. Guyford Stever, Director of the National Science Foundation; and Herman Pollack, Director of the State Department's Bureau of International Scientific and Technological Affairs.

Drs. David and Fisk were members of the U. S. delegation which went to Moscow July 2-8, along with Dr. Eugene Fubini of the E. G. Fubini Consultants, Ltd., of Arlington, Virginia, and Dr. John V. N. Granger of the State Department.

The Soviet side was represented during the July negotiations by Kirillin; M. D. Millionshchikov, Vice President of the U. S. S. R. Academy of Sciences; V. A. Trapeznikov, First Deputy Chairman of the SCST; and S. M. Tikhomirov, Deputy Chairman of the SCST.

Kirillin, Trapeznikov, Millionshchikov, First Deputy Minister of Higher and Secondary Specialized Education N. F. Krasnov and D. N. Pronskiy, Director of the SCST Department of Foreign Relations, were named as the Soviet members of the Joint Commission.

###

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

AUG 7 1972

FACT SHEET
U.S.-U.S.S.R. JOINT COMMISSION ON SCIENCE AND TECHNOLOGY

A record of discussions held in Moscow July 2-8 was signed here and in Moscow today.

The signing sets the framework for the U.S.-U.S.S.R. Joint Commission on Scientific and Technical Cooperation. The Commission will be the keystone of the Agreement on Cooperation in the Fields of Science and Technology which was signed May 24 at the Moscow Summit.

The record of discussions was the outcome of a week of negotiations in Moscow by an eight-man U.S. team and its Soviet counterpart. The sessions were a follow-up to the original Summit talks on science and technology.

o The first meeting of the Commission will be in Washington in the latter part of October.

o Working groups have been established in both countries and will be jointly preparing for the first Commission sessions.

o The areas in which joint cooperative programs of mutual benefit will be worked out are:

-- Energy, including nuclear, thermonuclear, magnetohydrodynamic, solar, geothermal and other forms of power;

-- Agriculture, in which both nations have already proposed a number of projects;

-- Computer applications, in the field of management;

-- Water resources, with special relevance to water supplies, flood control, irrigation, recycling and ground water levels;

-- Microbiology, with special emphasis on production of protein and other compounds by microbiological techniques;

-- Chemical catalysis on both basic and applied research levels.

o Named to the Commission by the U.S. side were:

-- Dr. Edward E. David, Jr., Science Adviser to the President, Chairman;

-- Dr. James B. Fisk, President of Bell Telephone Laboratories;

Dean Harvey Brooks, Dean of the School of Engineering, Harvard University (representative of the National Academy of Sciences).

Dr. H. Guyford Stever, Director, National Science Foundation;

Herman Pollack, Director, State Department Bureau of International and Scientific Technological Affairs.

The document signed today is in the spirit of the Summit agreement in that all the projects and project areas are to be "on the basis of mutual benefit, equality and reciprocity."

The new arrangements provide the first intergovernmental framework for the conduct of mutually beneficial, broad-scale scientific and technological efforts of value to both nations and the world at large.

Dr. David signed the document at the White House, with Soviet Ambassador Anatoliy F. Dobrynin in attendance. V. A. Kirillin, Deputy Chairman of the U.S.S.R. Council of Ministers and Chairman of the State Committee for Science and Technology, signed in Moscow in the presence of U.S. Ambassador Jacob D. Beam.

###

AGREEMENT BETWEEN THE GOVERNMENT OF THE UNITED STATES OF AMERICA AND THE GOVERNMENT OF THE UNION OF SOVIET SOCIALIST REPUBLICS ON COOPERATION IN THE FIELDS OF SCIENCE AND TECHNOLOGY

The Government of the United States of America and the Government of the Union of Soviet Socialist Republics;

Recognizing that benefits can accrue to both countries from the development of cooperation in the fields of science and technology;

Wishing to assist in establishing closer and more regular cooperation between scientific and technical organizations of both countries;

Taking into consideration that such cooperation will serve to strengthen friendly relations between both countries;

In accordance with the Agreement between the United States of America and the Union of Soviet Socialist Republics on Exchanges and Cooperation in Scientific, Technical, Educational, Cultural, and Other Fields, signed April 11, 1972, and in order to develop further the mutually beneficial cooperation between the two countries;

Have agreed as follows:

ARTICLE 1

Both Parties pledge themselves to assist and develop scientific and technical cooperation between both countries on the basis of mutual benefit, equality and reciprocity.

ARTICLE 2

The main objective of this cooperation is to provide broad opportunities for both Parties to combine the efforts of their scientists and specialists in working on major problems, whose solution will promote the progress of science and technology for the benefit of both countries and of mankind.

ARTICLE 3

The forms of cooperation in science and technology may include the following:

a. Exchange of scientists and specialists;

b. Exchange of scientific and technical information and documentation;

c. Joint development and implementation of programs and projects in the fields of basic and applied sciences;

d. Joint research, development and testing, and exchange of research results and experience between scientific research institutions and organizations;

e. Organization of joint courses, conferences and symposia;

f. Rendering of help, as appropriate, on both sides in establishing contacts and arrangements between United States firms and Soviet enterprises where a mutual interest develops; and

g. Other forms of scientific and technical cooperation as may be mutually agreed.

ARTICLE 4

1. Pursuant to the aims of this Agreement, both Parties will, as appropriate, encourage and facilitate the establishment and development of direct contacts and cooperation between agencies, organizations and firms of both countries and the conclusion, as appropriate, of implementing agreements for particular cooperative activities engaged in under this Agreement.

2. Such agreements between agencies, organizations and enterprises will be concluded in accordance with the laws of both countries. Such agreements may cover the subjects of cooperation, organizations engaged in the implementation of projects and programs, the procedures which should be followed, and any other appropriate details.

ARTICLE 5

Unless otherwise provided in an implementing agreement, each Party or participating agency, organization or enterprise shall bear the costs of its participation and that of its personnel in

cooperative activities engaged in under this Agreement, in accordance with existing laws in both countries.

ARTICLE 6

Nothing in this Agreement shall be interpreted to prejudice other agreements in the fields of science and technology concluded between the Parties.

ARTICLE 7

1. For the implementation of this Agreement there shall be established a U.S.-U.S.S.R. Joint Commission on Scientific and Technical Cooperation. Meetings will be convened not less than once a year in Washington and Moscow, alternately.

2. The Commission shall consider proposals for the development of cooperation in specific areas; prepare suggestions and recommendations, as appropriate, for the two Parties; develop and approve measures and programs for implementation of this Agreement; designate, as appropriate, the agencies, organizations or enterprises responsible for carrying out cooperative activities; and seek to assure their proper implementation.

3. The Executive Agent, which will be responsible for assuring the carrying out on its side of the Agreement, shall be, for the United States of America, the Office of Science and Technology in the Executive Office of the President and, for the Union of Soviet Socialist Republics, the State Committee of the

U.S.S.R. Council of Ministers for Science and Technology. The Joint Commission will consist of United States and Soviet delegations established on an equal basis, of which the chairmen and members are to be designated by the respective Executive Agents with approval by the respective Parties. Regulations regarding the operation of the Commission shall be agreed by the chairmen.

4. To carry out its functions the Commission may create temporary or permanent joint subcommittees, councils or working groups.

5. During the period between meetings of the Commission additions or amendments may be made to already approved cooperative activities, as may be mutually agreed.

ARTICLE 8

1. This Agreement shall enter into force upon signature and shall remain in force for five years. It may be modified or extended by mutual agreement of the Parties.

2. The termination of this Agreement shall not affect the validity of agreements made hereunder between agencies, organizations and enterprises of both countries.

DONE at Moscow this 24 day of May, 1972, in duplicate, in the English and Russian languages, both equally authentic.

FOR THE GOVERNMENT OF THE UNITED STATES OF AMERICA:

FOR THE GOVERNMENT OF TH UNION OF SOVIET SOCIALIST REPUBLICS:

USSR

5/7/71

CHAPTER 4

NATIONAL SECURITY

In the late '70's and early '80's, the security of the United States and its allies will continue to depend strongly on advanced science and technology. Our future national security requirements cannot be specified with certainty, but adequate options to cover future threats can and must be provided by a large scale, creative, well-managed research and development program. To this end, we must preserve and enhance the broad technological resources of the United States and to use them efficiently in cooperation with our allies so as to provide the security systems needed for our common defense.

Although national security requires strategic and tactical forces whose weapons systems must be kept modern by technological advances, its dependence on science and technology is much broader than this. For example, we must have the technological means for surveillance over the activities of potentially unfriendly nations, in order to know the nature of the threats to our nation and to plan effectively to counter them. We agreed to a limited ban on nuclear testing with confidence that its terms could be monitored by our technical surveillance systems. The current strategic arms limitation talks with the Soviet Union are based on our own ability to verify Soviet compliance with the terms of the agreement. National security also requires rapid communications. Many Presidential decisions, for example, require timely information

which can only be provided by secure and reliable communications to many places throughout the world.

The sections that follow examine the changing role of science and technology in national security, the future needs for substantial, well managed R&D programs devoted to national security and the objectives towards which these programs must strive. Finally, we consider the principal policy problems and issues involved in the successful implementation of the needed technical program and the policy directions for the future.

Science and Technology in the Changing International Political-Military Environment

Since World War II, science and technology have profoundly affected the distribution of relative military power and hence, to some extent, of political power among the nations of the world. In fact, they have changed the fundamental meaning of national security and the ways in which it can be achieved.

The research and development program well-known as the Manhattan Project resulted in the development of the world's first atomic weapons. These weapons, though small in power in comparison to those available today, were almost unbelievably strong in comparison to previous weapons -- at least 15,000 times as effective. The use of two such weapons in long-range bombers brought the war with Japan to a close and established the United States as the unchallenged military

power in the world. Had such weapons been developed first by our enemies in World War II, the subsequent history of the world would have been vastly different.

The significance of atomic weapons was fully appreciated by other nations and the United Kingdom, Russia and France acquired them in a relatively short time (and in recent years, Red China), thereby improving their political-military positions relative to that of the U.S., but even more so relative to non-nuclear nations. Tremendous resources were used, especially by the U.S. and the U.S.S.R., to improve both the means of delivery and the weapons themselves. Larger atomic weapons were produced, and these were replaced by hydrogen weapons. Long-range bombers were replaced by bombers with intercontinental range. The latter were supplemented by intercontinental ballistic missiles and then by submarines launching airborne and ballistic missiles. Missiles in soft sites were replaced by missiles in hardened sites. All of these changes occurred as one nation moved to achieve a superior military posture with respect to another.

Technology produced such awesome strategic weapons that the character of the needed defenses underwent a basic change. In earlier eras, a defense that destroyed as little as one-tenth of an attacking force was successful. But a city defense which destroys nine out of 10 nuclear weapons directed at the city fails catastrophically. As a consequence of limitations in defensive technologies, we have come to

rely more on our ability to deter nuclear wars than on our ability to fight them.

We and the U.S.S.R. continue to improve the accuracy with which nuclear weapons can be delivered. For soft targets such as cities, this change is unimportant. For fixed, hard targets such as missile silos, improvements in accuracy are very significant and greatly reduce the number of warheads needed to destroy a target. Both countries are also increasing the number of targets attackable by a single missile carrying multiple warheads which, as accuracy increases, will pose ever more severe threats to the security of fixed targets. We and the Soviet Union are improving our strategic submarine forces, increasing the number of warheads deliverable by them and increasing the delivery ranges. Defenses against bombers and defenses against missiles are also under development, being deployed, and being improved. There are major efforts in both countries devoted to anti-submarine warfare. In each of these areas there are opportunities for significant technical improvement; we must strive to take full advantage of them.

There is little doubt that U. S. strategic forces are sufficiently strong to withstand a first strike by the U.S.S.R. and then successfully to perform the retaliatory functions assigned to them. In view of the strong efforts being devoted to military research and development by the Soviet Union, there is continuing need for a substantial strategic research and development program so that our forces can have the improved technical capabilities needed to carry out these functions in the future.

The future forces needed to do this will be somewhat different from those which now exist. The combination of increased accuracy and large multiple warheads such as might be deployed on the Soviet SS-9 and later missiles will greatly increase the vulnerability of our land-based Minuteman ICBM systems. We may either have to improve the defenses of our ICBM's, improve their hardening, or increase the strength of other components of our strategic forces, or perhaps increase our capacity to fire on warning should other options prove infeasible. The future "strategic" research and development program will encompass these and other options, as well as programs needed to maintain the effectiveness of our submarine and aircraft systems. Nonetheless, there are clear prospects for continued strategic balance, so that an agreement in the strategic arms limitation talks would seem to be in our joint interests.

With nuclear strategic stability in prospect, differences in tactical military capabilities might well become more important. In tactical armament, technology has also had a great impact. Some tactical weapons systems, even highly advanced surface-to-air missiles, have been made relatively ineffective through the development of countermeasures. In Vietnam, for example, aircraft losses per sortie to the SA-2 system were reduced by a factor of 50 when appropriate electronic countermeasures were used by the U.S. Other systems such as aircraft and surface-to-surface missiles have had their range

greatly increased, their accuracy significantly increased, and the destructive effect of their warheads or bombs significantly enlarged. A substantial research and development program covering a number of technical areas will be required to keep vital the U. S. general purpose tactical forces.

The United States has a continuing need to assist its NATO allies in providing tactical nuclear capabilities sufficient to deter tactical nuclear conflicts. Here, too, technology is advancing. Crucial problems in the conduct of tactical nuclear operations involve the adequacy of communications systems and capabilities to destroy military targets with minimum damage to adjacent non-military areas. Implementation of the new NATO Integrated Communications Systems will permit more rapid and secure political consultation by all NATO leaders, and will enable responsible officials to command and control nuclear forces with greater assurance. Satellite communications technology has made this possible at very modest costs.

It is now possible to develop systems to deliver tactical weapons with greatly increased accuracy, and a consequent lowering of explosive yield and collateral destruction where nuclear warheads are involved. Some of the technology on which these systems might be based is already being applied in the highly accurate tactical Walleye and Laser Guided Bomb systems, which use non-nuclear explosives.

Technologies such as these are becoming more productive while other defense technologies are becoming less productive. The promising technologies must be exploited by the U.S. and its allies, if we are to be able to deter or conduct effective conventional military in the future. Examples are: electronic countermeasures; microelectronics; terminal homing systems; computers; digital communications; lasers; electro-optical sensors; seismic, infrared and other sensors; and satellites for communication relays, navigation, reconnaissance, etc. Technological areas becoming less productive include manned vehicles of all types (aircraft, armored vehicles, etc.), mass fire systems, slow-ship systems and the like.

Technological trends such as those cited can change the character of the forces we deploy, and determine their future effectiveness. If we fail to improve our general purpose forces by incorporating into them the feasible technological advances or fail to deemphasize technologies that are becoming relatively unproductive by failing to seek further improvements to offset the rapid expansion and upgrading of Soviet forces, U.S. general purpose forces could rapidly become obsolete and relatively ineffective. Thus, the general purpose forces also require the support of a substantial, well-managed R&D program.

Issues in Providing Technical Support to National Security

The principal issues we foresee in continuing to provide adequate scientific and technological support to our nation's security include:

-- Coordinating U.S. technical efforts with those of our allies.

-- Coordinating U.S. agency programs.

-- Choosing the expenditure level for defense R&D.

-- Balancing cost, risk, and system performance for defense equipment.

-- Establishing priorities within the overall defense R&D program.

-- Maintaining adequate research supporting national defense.

-- Providing technical support for arms limitation and arms control.

-- Preserving and strengthening the broad scientific and technological base supporting national security.

Coordinating Our Technical Efforts with Those of our Allies

President Nixon has stated three principles underlying our foreign policy:

-- Peace requires partnership.

-- Peace requires strength.

-- Peace requires a willingness to negotiate.

As the President has said, "We seek a sharing of responsibility with our allies in our common defense and development. Our allies now have the ability to contribute to their own defenses. . ."

Whereas the U.S. devotes at least $9 billion per year for research and development in support of our common defense ($8.09 billion for the DOD and at least $1 billion out of the $1.5 billion AEC program) our NATO allies and Japan devote about $1.25 billion to their national security research and development efforts. Yet the total industrial research budget for the U.S. of the order of $14 billion is not significantly different from the total industrial research investment of our NATO allies and Japan. Clearly, the U.S. has been shouldering the major burden of providing technological support for the security of the free world.

We should attempt to make our combined efforts more productive by: (1) encouraging our allies to devote more of their research and development efforts to national security; (2) broadening the coordination and seeking to eliminate unnecessary duplication in defense research and development efforts; and (3) seeking a wider sharing of technical military information.

Coordination of U.S. Agency Programs

The policies established by the President determine the direction and scale of the scientific and technological programs pursued by the various agencies for national security purposes. Although the research and development programs of several federal agencies contribute at least tangentially to national defense, the most direct contributions are

made by the Department of Defense, the Atomic Energy Commission, NASA and the CIA. The technical programs of all these agencies are coordinated within the Executive Office of the President by the National Security Council, the Office of Management and Budget, and the Office of Science and Technology. The OST has the task of providing the NSC and the President with independent judgments on technical needs and on the effectiveness of technical programs in the national security area.

Allocation of Resources for National Security R&D

Problems in the allocation of resources for national security R&D can be considered in four levels of analysis:

First, priorities are set by the agencies concerned with national security to match the needs of their assigned missions. Priorities within the Defense Department's research and development program tend to be based upon interpretations of the likelihood and significance of various potential threats, or the probable importance of possessing various capabilities, both in the short and long run. Within the AEC budget, initial priorities reflect the nuclear warhead requirements of the DOD and other applications of atomic energy. The NASA budget reflects relative priorities between programs such as aeronautics, communications, and propulsion technologies which have applications to both military and non-military functions, and many components of the space program which have no national security application. Within

the CIA, priorities must be established between the needs for information bearing directly on national defense and broader intelligence requirements in political and economic areas.

A second level of analysis concerns the broader issue of priorities among the research and development efforts of all of the agencies whose work relates to national security.

A third set of questions is concerned with trade-offs between research and development and operational programs, i.e. the balance among R&D expenditures, investments in standing forces and existing national security systems, and the production of new systems. Much of the trade-off between research and development and operational programs is done within each of the military services and other national security agencies.

The most complicated level of analysis concerns the question of "how much is enough?" for all national security programs in relation to other national needs. As the President said in his 1971 Foreign Policy Message, "we have examined our defense problems within the total context of the domestic and international political and economic environments . . . . (and) our priorities must reflect our pressing domestic problems . . . defense expenditures will require a smaller share . . . than in any year since 1950." The resulting shifts in allocated resources can be expected to affect the relative investments in research and development between national security and domestic programs.

At none of these levels of assessment can one be confidently precise. There is no comprehensive, reliable formula for setting goals and budgets for the research and development necessary for our national security. Nevertheless, building upon many years of work by many persons throughout the country, both in the Executive and Legislative branches of government, alternative national policies can now be formulated with somewhat greater clarity. The FY-1972 programs reflect such policies and contain the best judgments that could be made in this difficult area; but the resource allocation problems that remain are among the most pressing for the next year.

The Level of Defense R&D

There are many factors which must be taken into account in determining an appropriate level of Defense research and development. The Defense programs must provide for the modernization of existing forces as well as the development of new options for the deployment of future offensive and defensive forces. Such options are necessary both to investigate promising approaches and to anticipate technical choices yet to be made by potential enemies. The more intense the military research and development efforts of such nations might be, the broader the range of alternative systems we might have to counter. Thus, the desired level of U.S. effort is related to that of potentially hostile nations. The level chosen for FY 1972 reflects this dependence, as well as other factors.

Congress has been requested to appropriate $8.47 billion in total obligational authority for Defense R&D (research, development, test and evaluation) and related facilities in FY 1972, an increase of $909 million compared with the funds appropriated for FY 1971. Taking into account the rise in costs and the substantial planned increase in military and civilian pay, the request will amount to a net increase of about 6 per cent in actual new obligational authority.

The FY 1972 Defense research and development request is a departure from a trend of roughly constant R&D funding over the past several years, when measured in current dollars. Table I compares past

appropriations for R&D (but not for facilities and special accounts) with the FY-72 DOD request for new funds. The total DOD budget has risen from $50.8 billion in 1964 to $75.3 billion in 1971, or an increase of approximately 50 per cent. Over the same period, the R&D budget has grown from $7.05 billion to $7.45 billion, and then receded to $7.11 billion for an average current dollar increase of about 3 per cent. Thus, the relative effort devoted to research and development has not kept pace with increases in the total DOD budget over this time. Taking inflation into account, the net effort devoted to research and development, in fact, has declined by approximately 49 per cent over the seven-year period.

TABLE I

Obligations for Defense R&D*

Fiscal Year	Obligations for R&D (in billions)	Total Obligations (in billions)	Per Cent of Total Obligations/R&D
1964	7.05	50.8	14.0
1965	6.43	50.7	12.7
1966	6.89	65.7	10.5
1967	7.24	72.5	10.0
1968	7.29	75.9	9.6
1969	7.75	79.1	10.0
1970	7.45	76.8	9.7
1971	7.14	75.3	9.5
1972	7.95	79.2	10.0

*These data include test and evaluation but do not include facilities and special programs not normally included in the RDT&E appropriation request.

The projected FY 1972 increase was found to be necessary to provide needed modernization of forces, reasonable flexibility for the deployment of weapon systems in the future, and to increase the breadth and vigor of the research and development program to offset the momentum of the Soviet technological program.

Analyses by the intelligence community and by the DOD indicate that the Soviet Union has been increasing its expenditures for military and space research and development at the consistent rate of about 10 to 12 per cent per year for almost two decades. Because of Soviet secrecy and because of the complexity of technological and economic assessments, it is difficult to judge the actual Soviet investment or its outcome. Nevertheless, there is reason to believe that the Soviet Union apparently is devoting substantially more funds to military research and development than the U.S., even at our projected FY 1972 level. This is, of course, a strategically important matter which continues to receive intensive review.

We do not expect, nor do we necessarily require, technological superiority in every area, nor do we necessarily need a larger number of scientists and engineers. If the Soviet Union focuses its attention on an area we judge to be relatively unimportant to us, their R&D capability may produce excellent equipment in this area that will likely outperform ours (such as in heavy lift helicopters). This and other differences in national priorities are expected since the overall

defense problems of the U.S. and the U.S.S.R. differ in fundamental ways.

The DOD's increased effort in R&D in FY 1972 is designed to maintain -- and, in some areas, regain -- the flexibility needed to meet our security needs. Some of the increased effort will be devoted to the maintenance of additional flexibility in our strategic deterrent forces. For example, programs are proceeding for the development of an improved strategic aircraft (B-1) to replace the aging B-52's, and a new longer range strategic submarine system (ULMS). Part of the added funds will be devoted to several new tasks to enable our land and air forces to cope with rapidly improving Soviet tactical forces. For example, we shall improve our ability to penetrate and destroy Soviet type air defenses, and improve the overall effectiveness of the individual soldier in land combat. Another part of the increase will be assigned to meeting our goal of controlling the seas against a rapidly growing Soviet submarine threat. We shall expand our program of ocean surveillance and control, and will accelerate programs for the development of large high-speed surface-effect and hydrofoil craft. Finally, some of the new effort will develop simplified, less expensive equipment to assist our allies and to increase the efficiency of our own soldiers. The Freedom Fighter is a case in point.

Although choosing a proper overall level of funding is an important and difficult problem in its own right, many of the individual programs are highly controversial. The Congress, and hence the American people must be convinced that these programs are needed and the funds well used. In the past two years substantial cuts have been made by the Congress in Administration requests for Defense research and development funds. In view of the growth of the Soviet military R&D efforts, continued cuts could endanger the long range security of our country. Yet even if the needed funds are made available, difficult problems remain in determining the relative emphasis to be given to cost, risk, and performance, and in assessing the priorities among the various research and development program elements.

Cost, Risk and Performance of DOD Equipment

A central issue affecting our future national security posture is the increasing cost of defense-related equipment. In a period in which the nation wishes to devote less resources to the defense mission as-a-whole and to increase its attention to civilian affairs, the cost of weapons systems is greatly increasing. For example, each F-15 aircraft being developed to counter the new Soviet tactical aircraft is expected to cost between $9 and $10 million. This is about three times the cost of the older aircraft the F-15 is replacing, and perhaps 10 times the cost of

tactical aircraft of two generations before. The Mk-48 torpedo is expected to cost perhaps six to eight times as much as the torpedo which it will replace. Ships and submarines are becoming more expensive, as are surface-to-air missile systems.

Important factors in increasing costs are the incorporation of the new and advanced technology needed to match or exceed the performance being built into potentially hostile military systems, together with the tendency to develop systems capable of performing many functions. To build the most effective weapons systems, we must work in advanced technical areas in which knowledge is incomplete. In some cases significant but unforeseen performance improvements are made in the course of research and development, which would increase estimated costs. In other cases, unforeseen problems will arise that may also increase costs. Sometimes, cost reductions occur.

A trend in U.S. weapons system design has been toward providing systems that are capable of performing as many different kinds of missions as possible. Thus, we have aircraft that are designed to be simultaneously capable of close air support, deep interdiction, reconnaissance, jamming, and at the same time outclass each potential enemy aircraft in speed, rate of climb, take-off length, etc.

The result has been substantial cost increases and thus smaller numbers of items finally procured. In many weapons programs, the trade-off between simplicity, low cost, and large numbers versus multifunction, high cost and small numbers has not been adequately understood.

Burdensome administrative procurement and review procedures also contribute to the inflation of the number of personnel and overhead costs associated with the management of U.S. weapons programs. Improvements in management techniques (such as the "prototype before you buy" principle) should help reduce the possibility and scale of large cost overruns such as have occurred in the past.

In addition to such cost considerations, it is desirable to seek entirely new ways to do the military tasks at hand to avoid spiraling costs. Offensive weapons systems, for example, are designed to overcome a known or expected enemy defense. The next generation of enemy defense is designed with that offensive weapon system in mind, and increasing technical sophistication is added to overcome it in turn. Consequently, when the offensive weapon system is redesigned, it must be made more complex and more sophisticated if it is to overcome the more sophisticated defense.

This cycle of ever-increasing complexity is accompanied by a cycle of ever-increasing cost. When, through R&D, new ways are found to perform the same task, a new cost (and effectiveness) cycle may be started since the counters to the new system generally are not yet developed. In this way, ballistic missiles made obsolete our forward-based strategic aircraft and new costs and effectiveness cycles were started. Tactical aircraft and air defenses may provide good illustrations of this process in the future. The development of surface-to-surface missiles may be the best answer to the cost reduction problem in some areas of present tactical aircraft applications.

Ultimately, of course, the spiral of cost escalation must be ended through the international negotiation of arms limitation. We and the Soviet Union have embarked on this course in respect to strategic arms.

Ultimately, of course, the spiral of cost escalation could possibly be ended through the international negotiation of arms limitation. We and the Soviet Union have embarked on this course in respect to strategic arms. Even with unqualified success in these and other negotiations, however, we shall require, probably for many years after, an increased rather than reduced budget for defense research and development. Not only must we be prepared for abrogation of any treaty by other nations, but we must also search for better means -- usually technological means -- to determine whether the treaty is being honored.

Priorities in Defense R&D

The decision to increase funding for defense R&D in FY 1972 does not imply that a decision has already been made that more military systems are needed in the field, nor that any particular systems will be deployed at some time in the future. It reflects an assessment of the country's growing need to preserve the technological flexibility that might be required in the future and an assessment of the implications of the Soviet Union's continued large commitments to military R&D.

Between FY 1970 and FY 1972, the DOD funds devoted to the final stage of operational systems development have declined by about $800 million. During the same period, DOD funds devoted to earlier stages of development - exploratory, advanced, and engineering development - have increased by about $1.3 billion. It is expected that this trend will continue with increasing emphasis on exploratory and prototyping work aimed at defining the elements of feasible weapons systems and shortening the lag in responding to new Soviet capabilities.

There is another significant trend in the DOD funding priorities for research and development: increasing emphasis on R&D related to tactical forces, with a comparable decrease in strategic-related R&D. Although strategic threats are by no means declining and could increase unless the arms talks are successful, more of our limited resources are being assigned to fulfilling the urgent needs of our tactical forces, and to meeting the goals of the Nixon Doctrine. Hence, from FY 1970 to FY 1972, funds

for strategic R&D have declined from 33 to 30 percent of the total R&D effort, while the share of funds for tactical R&D increased from 35 to 39 percent.

Research Supporting National Defense

The role of research underlying development in supporting national defense has been examined many times since the successful technological efforts in World War II. Questions have been raised about this role in the past few years, questions about policies, management, and funding levels.

The DOD and AEC (and, more recently, NASA) have for many years been major sponsors of the nation's research in the physical and engineering sciences. The essential reason for this sponsorship is clear. These agencies have found that development programs become more effective if they are closely associated with supporting research programs. Close contact with the moving frontier of science makes development genuinely advanced and fosters the rapid incorporation of new ideas and new technology into the applied program.

In continuing its supporting research effort, the DOD will emphasize many fields, including the oceanographic and meteorological sciences, computer sciences, additional areas of sensor technology and of advanced computer techniques, aircraft propulsion technologies, surface effect ship technologies, and new materials for a variety of possible applications. The budgetary priorities reflect the recommendations of the President's Blue Ribbon Defense Panel for greater attention to these areas of research underpinning the next generation of advanced technology.

Some observers believe that basic scientific research has no place in the Defense Department's program, arguing that support for the basic sciences should come only from civilian agencies. However, the pattern of several mission-oriented agencies of the federal government supporting basic research provides substantial benefits. It is more likely that the existence and significance of the results of fundamental research will be understood in the mission agency if the agency participated in the support of the work. This assures an effective coupling between research and practice, and provides the basis of a continuing input of new means to improve the agency's capability to accomplish its mission. Mission agency support of basic science--strengthened and balanced by the NSF--can also provide the aggregate competitive vigor within which R&D serving all agencies can thrive. The DOD should continue to be a participant in this pluralistic pattern.

During the last two years the DOD thoroughly reviewed its basic and applied research programs to make sure that its current programs are relevant to its needs. Less than 5 percent of the total Defense research and development funding is currently devoted to basic scientific investigations. Further, the DOD share of the total federal support for research at universities is now about 12.5 percent, while the DOD share of the total federal support for all R&D is about 50 percent. The dollar level of DOD support to universities was held constant in the FY 1972 budget.

As a result of its review of its basic research projects in the face of budgetary stringencies, the DOD decided to withdraw its support of a number of projects which were not sufficiently coupled with immediate national security needs to warrant continued DOD support. Some of these meritorious projects have been continued under the sponsorship of the National Science Foundation or other agencies. A notable example is the Material Science Laboratories formerly supported by the DOD Advanced Research Projects Agency and now largely supported by the National Science Foundation.

The role of the DOD in the support of research on university campuses has been particularly controversial. In the case of unclassified work at universities, the most direct argument in favor of sustaining DOD sponsorship is simply that many university investigators are among the most competent in their fields and are also interested in the challenging technical problems relevant to defense missions. There appears to be no reason why, as a matter of policy, the Defense Department should not support the efforts of some of our most talented academic scientists and their students. Classified work may be another matter. Some universities as a matter of principle may not wish to participate in classified research and development activities. This is a question for decision by each institution.

The broad components of federal policy regarding basic and applied research supporting national security are clear. Such research is needed now and may be needed at increasing levels in the future. Wherever the

research can be carried out most effectively, and where the institutions approve, there should continue to be contractual arrangements to make that work possible. The freedom of choice of each individual investigator and institution must, of course, be respected. Within this framework, we can insure the strength and vigor of the scientific base required for successful national security programs.

Arms Limitation and Control

Preparations for the Strategic Arms Limitation Talks (SALT) between the U. S. and USSR have already affected the technical programs of many agencies of government, especially those of the Department of Defense, the CIA, and the Arms Control and Disarmament Agency. But, these effects are small compared with those that would occur if a broad agreement to limit strategic arms is reached.

The United States' support of strong research and development programs in strategic weapons systems for many years has developed a thorough understanding of which strategic systems now seem possible, which are best suited to various strategic purposes, and, in general, which measures and systems are available to the U. S. to counter available and projected USSR strategic systems.

In preparing for SALT, the most important areas in which our understanding was incomplete were (1) net technical assessments of the relative strengths of various U. S. and USSR postures and (2) the capability of the U. S. to verify whether a given agreement was, in fact, being adhered to by the USSR.

Many of the difficulties associated with net technical assessments were caused by the obvious assymetries in the U. S. and USSR posture previously discussed: differences in geography, differences in chosen weapons systems, differences in the nuclear capabilities of allies to the major powers, and even differences in philosophies of defense.

Assessing the possibility of verifying various illustrative agreements proved to be equally difficult. In some cases, the capability of current and projected national intelligence systems to detect the existence and capabilities of enemy forces was not known, especially if a concerted effort to obscure activities were made. In other cases, the issue was to consider what new systems could be devised to assist verification. We have greatly strengthened our grasp of verification capabilities, and hence our confidence regarding which types of agreements the U. S. might safely negotiate.

Research and development can provide the potential for slowing the arms race in several important ways. A vigorous R&D effort will decrease the probability of a technological surprise, and thus decrease the uncertainty with which we can assess the likely performance of weapons systems now deployed or likely to be deployed. Furthermore, extensive military R&D can lower the risks of an arms control treaty being abrogated and decrease the danger should such an abrogation occur. Military R&D can also help reduce the momentum of the arms race by providing options for qualitative improvements in our capability instead of limiting our

choices to merely increases in the levels of standing forces or in numbers of weapons. Finally, a broad R&D program can promote effective arms control by deepening our understanding of the many relationships between defense and arms control activities. Merely because technology demonstrates the feasibility of a specific weapon or system does not mean that the weapon or system will, or should, be produced. Production decisions are critical in an arms race and should be understood as such.

Sources of Strength - Our National Base

The scientific and technological strength of the U. S. to support our security goals resides in the base of scientists and engineers working on defense-related matters in government, private industry and in the universities, and in the institutions and institutional arrangements built up to serve national security needs over the years. There are approximately 500,000 technically trained civilian personnel currently in defense-related activities. There is at present no shortage of the trained manpower needed for the conduct of technical programs in the national security area. The total civilian manpower utilized by the Department of Defense is expected to be reduced by 22,000 in FY 1972, and the total defense-related employment in industry is expected to decline by approximately 80,000. Thus, considerable specialized manpower trained in defense-related employment will become available for unrelated non-defense activities. Part of this manpower, perhaps 15 percent, will be technically trained.

Since World War II, a pattern of institutions and institutional arrangements has been established to serve the country's needs for research and development in national security. While there are some reasons to modify this pattern, it has generally served the country admirably.

The DOD has depended upon essentially private industry for much of the technological and managerial competence to produce our aircraft, ships, and electronics. This pattern has provided a flexibility and readiness difficult to achieve in any other way. Contracting with industrial firms allows the greatest capability to be brought to bear on a particular problem, thus reducing overhead and regidity of organization.

In general:

-- Industrial groups tend to carry out practically all of the final stages of development and engineering and all production of systems required for national defense.

-- Academic and governmental laboratories as well as industrial groups are involved in the applied research and initial stages of development of systems needed for national security.

-- University groups have tended to be the major participants in the earliest stages of research and development, although industrial groups have made important contributions. A number of Federal Contract Research Centers and independent non-profit groups have also made significant contributions in basic and applied research.

It may be that, as many foreign observers have noted, the fundamental strength of the American R&D community is the flexibility with which we can combine resources as new problems emerge and new talents elect to apply themselves to these problems. The technological base which supports national security is an essential national asset which the country must strive to preserve and strengthen.

Stability in Funding. To a large extent, the continued excellence of the R&D base depends on our ability to retain intact the skilled R&D teams that have made major contributions to our overall security. They may have worked for the DOD or for the AEC, or they may have engaged in high technology R&D sponsored by NASA. The continuity of these groups depends strongly on stability in funding, and we must minimize the "fits and starts" of funding if we are to maintain the teams we shall need. On the other hand, we must assure that research and development funds are used in the most effective way. To this end a new examination of the effectiveness of the various Service laboratories in comparison with that of the industrial, university, and federally financed research centers is indicated.

Conversion of Defense Resources to Civilian Use. Another issue in the maintenance of the U. S. technological base concerns the many problems to be faced in attempts to convert defense and space-oriented R&D resources - including manpower and facilities - to other useful purposes as our defense and space needs change. We have faced such problems

recently in transferring the NASA Electronics Record Center at Cambridge, Mass., to the Department of Transportation, and in transferring the biological facilities at the Pine Bluff Arsenal to the HEW. In both cases, the tasks to be performed by the new agencies were sufficiently similar to the previous defense or NASA oriented tasks that some of the personnel could be retained and only modest modifications to facilities were required. This will not always be the case. R&D priorities in individual agencies may make transfer difficult or impossible even in situations where the research tasks which might be performed by these agencies appear to be very similar to those performed by Defense or NASA.

Some Policy Directions

We are in the midst of change and our national defense policies must reflect new threats, new opportunities and new national priorities. It is hard to overestimate the effects of the changing events and changing attitudes of the last few years. On the one hand the massive Soviet deployment of strategic missiles has for the first time caused many to believe that our strategic deterrence capability might be threatened and to urge that we expand or otherwise strengthen the capability of our future forces. The growing Chinese capability in nuclear weapons and missiles augments that concern. On the other hand, there are strong pressures to put a greater share of our national resources into the amelioration of social problems leaving a smaller share to cope with what many believe to be an increasing military capability aligned against us. A recent reassessment of NATO

suggests that additional conventional capability is needed if Western Europe is to be defended against a non-nuclear attack.

The President has stated that in the future we will emphasize military assistance that helps nations defend themselves rather than providing direct U. S. manpower. To the extent that this posture requires the provision of weapons, we are less well prepared than we could be. Our own forces are configured to defend us in a large scale conflict against a technologically sophisticated enemy and our weapons systems reflect that posture. We do not have a variety of weapons capable of being effectively used and maintained by relatively untrained and technologically unsophisticated allies. Thus, to carry out the "Nixon Doctrine" we must devote some effort to the development of weapons specifically designed to be effective when used by a less developed ally.

The Nixon Doctrine has changed our posture of support for nations threatened by an internal attack organized and aided from outside. This and other policy changes affect the scope, the internal priorities, and, in fact, essentially all aspects of the national research and development as it pertains to national security. Many issues arise that must be addressed and settled soon. Only a few of these have been discussed in this report. As it has in the past two decades, technology will probably dominate many considerations of defense and arms control in the 1970's. What, then, shall be our principal policies and aims?

First, it seems clear that sustained effort must be devoted to national security R&D - to avoid strategic inferiority, to provide effective tactical forces, to achieve the purposes of SALT, to fulfill the Nixon Doctrine, and, not least, to insure that no future President lacks the technical choices and the insights that might be necessary to protect our security.

Second, the management of our defense research and development programs must be improved to maximize the return from available funds, with appropriate attention to program costs, risks, and performance.

Third, the broad technological base of the U. S. and our allies which contributes so much to the security of our nation must be kept superior to that of the Soviet Union and its allies.

Fourth, we must be prepared to convert some national security R&D resources to civilian uses when opportunities arise, whether because of success of arms control agreements or because of the needs of pressing domestic problems.