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WITHDRAWAL SHEET

Ronald Reagan Library

DOCUMENT NO. AND TYPE	SUBJECT/TITLE	DATE	RESTRICTION
1. memo	Jay Keyworth to Ed Meese, re National Academy of Sciences (NAS) report on carbon dioxide build-up (partial of page 1)	10/21/83	P-5 } <i>open</i>
2. memo	page 2 of item #1	10/21/83	P-5 } <i>open</i>
3. memo	C. David Hartmann to Chairman, TTIC, re new NAS study proposed (2 pp)	5/18/84	P-1 B1
4. memo	Ralph Devries to Jay Keyworth, re meeting on 6/21/84 on major materials facilities study (partial)	6/20/84	P-5 - <i>open</i>
5. memo	Stan Hillard to G. Keyworth, re meeting (7/31) on setting topics for NAS study on worldwide comparison of status in key scientific areas (2 pp)	7/27/84	P-1 B1 <i>CCB 11/2/84</i>
COLLECTION:			
KEYWORD, GEORGE A. II: Files			kb
FILE FOLDER:			
NAS National Academy of Science[s] [2 of 5] Box 7 of 27			1/6/95

RESTRICTION CODES

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

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

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

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

- F-1 National security classified information [(b)(1) of the FOIA].
- F-2 Release could disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA].
- F-3 Release would violate a Federal statute [(b)(3) of the FOIA].
- F-4 Release would disclose trade secrets or confidential commercial or financial information [(b)(4) of the FOIA].
- F-5 Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA].
- F-7 Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA].
- F-8 Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA].
- F-9 Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA].

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THE WHITE HOUSE

WASHINGTON

October 21, 1983

MEMORANDUM FOR ED MEESE

FROM: JAY KEYWORTH 

SUBJECT: National Academy of Sciences (NAS) Report
on Carbon Dioxide (CO₂) Build-Up

NAS has just completed a report done under contract to OSTP regarding atmospheric CO₂ build-up which is likely to get considerable press attention. This concerns the so-called "greenhouse" effect which some scientists worry will cause climate changes and possibly other environmental impacts in the future.

The report was mandated by legislation stemming from the last Administration's Energy Security Act of 1980. Bill Nierenberg is chairman of the NAS panel that produced the report. Unlike Bill's acid rain report, this one does not call for any action other than continued study. In fact, it specifically advises against any action because of the lack of scientific knowledge regarding any potential effects of atmospheric CO₂ build-up.

An in-house EPA report which professes to be a compendium of other scientific reports was rushed out yesterday probably to steal the limelight from the Nierenberg report. It is both highly speculative and irresponsible in that it suggests that there will be temperature rises of 9°F by the end of the next century and that this will cause disastrous climatic changes and flooding. It even lists a cut-off of all coal consumption by the end of this century as one remedy which may be needed. In contrast, the Nierenberg report states that even if CO₂ levels were doubled and maintained indefinitely, it would cause a temperature rise of only 3 to 8°F with the low end more likely. You should be aware that although temperature rises of a couple of degrees do have the potential of causing significant changes, these would occur over a very long time frame.

Although the Nierenberg report, like any other, has the potential for being misinterpreted, I believe it is a sound report which should help defuse worst-case fears of

the impacts of the greenhouse effect. It seems to me that as part of our effort to show that the President is sensitive to and on top of environmental issues, it would be useful for Nierenberg to give the President and Bill Ruckelshaus a 15 to 20 minute presentation in the Oval Office with appropriate press coverage. If you agree, I will arrange for the briefing.

Agree _____

.Disagree _____

THE WHITE HOUSE

WASHINGTON

October 31, 1983

Dear Frank:

Thank you for bringing me up to date on your continuing effort to enhance the working relationship between universities and the Federal Government. As I stated in my letter to you last May, I believe the forum approach which the Ad Hoc Committee on Government-University Relationships in Support of Science recommended is worth trying. It is important that some mechanism exist to facilitate government-university dialogue.

In reading your letter of September 25 I get the impression that the original concept of a forum, which I endorse, may be turning into something different. I am concerned that if the Roundtable focuses on its perception of actions to be taken by the Federal Government it will become indistinguishable from the plethora of lobbying groups that already exist. We will then lose the opportunity for that open and candid dialogue which we all agree is desirable.

I applaud your choice of Dale Corson to chair the Roundtable, and I think he can do an excellent job of guiding the forum type of activity that is needed. However, if the nature of the Roundtable has changed according to my perception, I have serious reservations about its value in improving understanding between government and academia.

Yours truly,



G. A. Keyworth
Science Advisor to the President

Dr. Frank Press
President
National Academy of Science
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE WASHINGTON, D. C. 20418

OFFICE OF THE PRESIDENT

July 12, 1983

The Honorable George Keyworth
Director
Office of Science and Technology Policy
Executive Office of the President
Washington, D.C. 20500

Dear Jay:

Some time when you are in New York,
it would be nice if you could stop by
to see Isidor Rabi. He wants to talk
to you about CERN, U.S. high energy
physics, and the like. As one of the
wise old men of American physics, this
may be something that you would find
useful and enjoyable.

Yours sincerely,



Frank Press
President

RECEIVED

83 JUL 13 P 5:42

OSTP
MAIL ROOM

NAS

THE WHITE HOUSE
WASHINGTON

November 9, 1983

Dear Congressman Broyhill:

In accordance with the Energy Security Act of 1980, the Office of Science and Technology Policy contracted with the National Academy of Sciences to assess potential impacts of atmospheric carbon dioxide build-up. With funds from the Department of Energy, the National Science Foundation, and the Office of Science and Technology Policy, the National Academy of Sciences has produced the enclosed report.

This report stands out as the best and most comprehensive assessment of the so-called "greenhouse effect" available today. I am pleased to officially transmit it to you. If you would find it useful, we would be happy to discuss the report further at your convenience.

Sincerely,



G. A. Keyworth
Science Advisor to the President

The Honorable James T. Broyhill
Committee on Energy and Commerce
RHOB-2340
United States House of Representatives
Washington, D.C. 20515

Enclosure

THE WHITE HOUSE

WASHINGTON

November 9, 1983

Dear Senator Packwood:

In accordance with the Energy Security Act of 1980, the Office of Science and Technology Policy contracted with the National Academy of Sciences to assess potential impacts of atmospheric carbon dioxide build-up. With funds from the Department of Energy, the National Science Foundation, and the Office of Science and Technology Policy, the National Academy of Sciences has produced the enclosed report.

This report stands out as the best and most comprehensive assessment of the so-called "greenhouse effect" available today. I am pleased to officially transmit it to you. If you would find it useful, we would be happy to discuss the report further at your convenience.

Sincerely,



G. A. Keyworth
Science Advisor to the President

The Honorable Bob Packwood
Chairman, Committee on Commerce,
Science, and Transportation
SROB-259
United States Senate
Washington, D.C. 20510

Enclosure

THE WHITE HOUSE
WASHINGTON

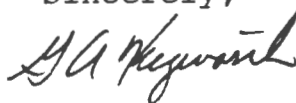
November 9, 1983

Dear Congressman Dingell:

In accordance with the Energy Security Act of 1980, the Office of Science and Technology Policy contracted with the National Academy of Sciences to assess potential impacts of atmospheric carbon dioxide build-up. With funds from the Department of Energy, the National Science Foundation, and the Office of Science and Technology Policy, the National Academy of Sciences has produced the enclosed report.

This report stands out as the best and most comprehensive assessment of the so-called "greenhouse effect" available today. I am pleased to officially transmit it to you. If you would find it useful, we would be happy to discuss the report further at your convenience.

Sincerely,



G. A. Keyworth
Science Advisor to the President

The Honorable John D. Dingell
Chairman, Committee on Energy
and Commerce
RHOB-2221
United States House of Representatives
Washington, D.C. 20515

Enclosure

THE WHITE HOUSE

WASHINGTON

November 9, 1983

Dear Congressman Fuqua:

In accordance with the Energy Security Act of 1980, the Office of Science and Technology Policy contracted with the National Academy of Sciences to assess potential impacts of atmospheric carbon dioxide build-up. With funds from the Department of Energy, the National Science Foundation, and the Office of Science and Technology Policy, the National Academy of Sciences has produced the enclosed report.

This report stands out as the best and most comprehensive assessment of the so-called "greenhouse effect" available today. I am pleased to officially transmit it to you. If you would find it useful, we would be happy to discuss the report further at your convenience.

Sincerely,



G. A. Keyworth

Science Advisor to the President

The Honorable Don Fuqua
Chairman, Committee on Science
and Technology
RHOB-2321
United States House of Representatives
Washington, D.C. 20515

Enclosure

THE WHITE HOUSE

WASHINGTON

November 9, 1983

Dear Senator Hollings:

In accordance with the Energy Security Act of 1980, the Office of Science and Technology Policy contracted with the National Academy of Sciences to assess potential impacts of atmospheric carbon dioxide build-up. With funds from the Department of Energy, the National Science Foundation, and the Office of Science and Technology Policy, the National Academy of Sciences has produced the enclosed report.

This report stands out as the best and most comprehensive assessment of the so-called "greenhouse effect" available today. I am pleased to officially transmit it to you. If you would find it useful, we would be happy to discuss the report further at your convenience.

Sincerely,



G. A. Keyworth
Science Advisor to the President

The Honorable Ernest F. Hollings
Committee on Commerce, Science,
and Transportation
SROB-119
United States Senate
Washington, D.C. 20510

Enclosure

THE WHITE HOUSE

WASHINGTON

November 9, 1983

Dear Senator Johnston:

In accordance with the Energy Security Act of 1980, the Office of Science and Technology Policy contracted with the National Academy of Sciences to assess potential impacts of atmospheric carbon dioxide build-up. With funds from the Department of Energy, the National Science Foundation, and the Office of Science and Technology Policy, the National Academy of Sciences has produced the enclosed report.

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Sincerely,



G. A. Keyworth
Science Advisor to the President

The Honorable J. Bennett Johnston
Committee on Energy and
Natural Resources
SDOB-360
United States Senate
Washington, D.C. 20510

Enclosure

THE WHITE HOUSE
WASHINGTON

November 9, 1983

Dear Senator McClure:

In accordance with the Energy Security Act of 1980, the Office of Science and Technology Policy contracted with the National Academy of Sciences to assess potential impacts of atmospheric carbon dioxide build-up. With funds from the Department of Energy, the National Science Foundation, and the Office of Science and Technology Policy, the National Academy of Sciences has produced the enclosed report.

This report stands out as the best and most comprehensive assessment of the so-called "greenhouse effect" available today. I am pleased to officially transmit it to you. If you would find it useful, we would be happy to discuss the report further at your convenience.

Sincerely,



G. A. Keyworth
Science Advisor to the President

The Honorable James A. McClure
Chairman, Committee on Energy
and Natural Resources
SDOB-360
United States Senate
Washington, D.C. 20510

Enclosure

THE WHITE HOUSE

WASHINGTON

November 9, 1983

Dear Congressman Winn:

In accordance with the Energy Security Act of 1980, the Office of Science and Technology Policy contracted with the National Academy of Sciences to assess potential impacts of atmospheric carbon dioxide build-up. With funds from the Department of Energy, the National Science Foundation, and the Office of Science and Technology Policy, the National Academy of Sciences has produced the enclosed report.

This report stands out as the best and most comprehensive assessment of the so-called "greenhouse effect" available today. I am pleased to officially transmit it to you. If you would find it useful, we would be happy to discuss the report further at your convenience.

Sincerely,



G. A. Keyworth
Science Advisor to the President

The Honorable Larry Winn, Jr.
Committee on Science and Technology
RHOB-2321
United States House of Representatives
Washington, D.C. 20515

Enclosure

NAS

THE WHITE HOUSE
WASHINGTON

December 9, 1983

Dear Frank:

Thank you for your letter of November 18 concerning the proposed Government-University Research Roundtable. You may be assured that the concept continues to have my full support, and I look forward to participating.

Yours truly,



G. A. Keyworth
Science Advisor to the President

Dr. Frank Press
President
National Academy of Sciences
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

NATIONAL ACADEMY OF SCIENCES
NATIONAL ACADEMY OF ENGINEERING

2101 CONSTITUTION AVENUE
WASHINGTON, D.C. 20418

January 6, 1984

Dr. George A. Keyworth, Jr.
Director
Office of Science and Technology Policy
Executive Office of the President
Old Executive Office Building
Washington, DC 20500

Dear Jay:

You are cordially invited to attend a signing ceremony and reception honoring Vice Chairman Zhao Dongwan of the State Science and Technology Commission, People's Republic of China, on January 11, 1984 from 4:00 to 5:00 p.m., in the Members' Room of the National Academy of Sciences, 2101 Constitution Avenue, Northwest.

On this occasion we will sign a Memorandum of Understanding between the State Science and Technology Commission and the Academies of Sciences and Engineering in the area of applied science and technology. This program is designed to build closer ties between China's ministerial research and development organizations and American counterparts in industry and academe.

Please respond to Joan Delli Carpini (202/334-2735) by Monday, January 9. We hope that you will join us on this important occasion.

Sincerely yours,



Frank Press, President
National Academy of Sciences



Robert M. White, President
National Academy of Engineering

NHS

ACADEMY INDUSTRY PROGRAM of the NATIONAL RESEARCH COUNCIL

2101 Constitution Avenue, NW Washington, D.C. 20418

FRANK PRESS
President, National Academy of Sciences

February 10, 1984

ANNE G. KEATLEY
Director

ROBERT M. WHITE
President, National Academy of Engineering

Co-chairmen

Dr. George A. Keyworth, II
Director
Office of Science and Technology Policy
Old Executive Office Building
17th and Pennsylvania Avenue, N.W.
Washington, D.C. 20500

ADVISORY COMMITTEE

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Eastman Kodak Co.

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RALPH E. GOMORY
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JOHN W. LACEY
Control Data Corp.

GEOFFREY PLACE
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ROLAND W. SCHMITT
General Electric Co.

HOWARD E. SIMMONS, JR.
E. I. DuPont de Nemours & Co.

HOWARD A. SLACK
Atlantic Richfield Co.

JOHN E. STEINER
The Boeing Co.

JACOB C. STUCKI
The Upjohn Co.

ALBERT D. WHEELON
Hughes Aircraft Co.

Dear Jay:

In view of the far-reaching foreign policy and trade effects of export control policy, the National Academies of Sciences and Engineering will convene a group of top policymakers from government, industry, and academia on Tuesday, February 14, to consider the implications of export control policy for U.S. advanced technology capacity and international trade competitiveness. Attached is an agenda and list of participants. Our original invitation of January 9 apparently was lost.

We would like to invite you to join us for dinner that evening, when debate on this issue will continue in a roundtable discussion. If you are able to attend the dinner, I would like to invite you to participate in the discussion. You are most welcome to join any portion of the seminar, as well. The program will be held in the National Academy of Sciences Lecture Room, with registration at 9:00 a.m. Cocktails will follow at 5:45 p.m. and dinner at 6:15 p.m. in the Great Hall.

As you know, this subject is especially timely since Congress has under consideration legislation amending the Export Administration Act, which has been extended through February 29, pending further Congressional action. The seminar program will be interactive, with speakers presenting issues and

Dr. George A. Keyworth, II
February 10, 1984
Page two

varying points of view for discussion. Participants will include top technical people from advanced technology firms, policy-makers from the Executive Branch and Congress, attorneys, and individuals from universities.

The staff officer responsible for this program, Anne Keatley, will be in touch with your office directly concerning your participation, or you may reach Mrs. Keatley at 334-2431.

Sincerely,



Robert M. White
President
National Academy of
Engineering



Frank Press
President
National Academy of
Sciences

National Academy of Sciences
National Academy of Engineering
Academy Industry Program Seminar

Export Controls: Reconciling
National Objectives

February 14, 1984

National Academy of Sciences
Lecture Room
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

Tentative Agenda

9:00 a.m. - Registration

9:30-10:00 a.m.

Overview: Richard A. Meserve, Esq., Attorney,
Covington and Burling

10:00-12:00 noon

Session I: Discussion on the Justification for and
Consequences of Controls

Chairman: Dr. Frank Press, President, National
Academy of Sciences, and Chairman,
National Research Council

Discussants: Mr. John N. McMahon, Deputy Director,
Central Intelligence Agency

The Honorable William Schneider, Jr.,
Undersecretary for Security Assistance,
Science and Technology, Department of State

Dr. Roland W. Schmitt, Senior Vice
President, Corporate Research and
Development, General Electric Company

(Coffee break mid-morning)

12:00-1:15 p.m. - Lunch
NAS Refectory

1:15-2:45 p.m.

Session II: Discussion on Controls on Technical Data

Chairman: Dr. Dale Corson, President Emeritus,
Cornell University

Discussants: Dr. Paul E. Gray, President, Massachusetts
Institute of Technology

Dr. Edith Martin, Deputy Undersecretary of
Defense, Research and Advanced Technology

Peter D. Trooboff, Esq., Partner,
Covington and Burling

2:45-3:00 p.m. Coffee break

3:00-5:30 p.m.

Session III: Discussion on the Creation of An Effective
and Efficient Control System

Chairman: To be announced.

Discussants: The Honorable Lionel Olmer, Undersecretary
of Commerce for International Trade

Dr. Stephen Bryen, Deputy Assistant
Secretary, International Economics, Trade
and Security Policy, Department of Defense

Mr. John Copeland, Director, International
Projects, Motorola Inc.

Mr. Hugh Donaghue, Vice President,
Government Programs and International
Trade Relations, Control Data Corporation

5:30 p.m. Cocktails

6:30 p.m. Dinner
National Academy of Sciences Great Hall

Roundtable Discussion

Academy Industry Program
February 14, 1984

Attendees

INDIVIDUAL/AFFILIATION	SEMINAR	LUNCH	DRINKS	DINNER
William Archey Acting Assistant Secretary for Trade Administration Department of Commerce	X	X	X	X
Marlene Beaudin Associate Executive Officer National Academy of Engineering	X			
Halsey Beemer Executive Director International Advisory Panel on the Chinese-University Development Project National Research Council	X	X	X	X
Alfred E. Brown Consultant National Research Council	X	X	X	X
Stephen Bryen Deputy Assistant Secretary International Economics, Trade and Security Policy Department of Defense	X		X	X
Leonard F. Buchanan Vice President, Engineering and Program Development General Dynamics Corporation	X	X	X	X
Ronald B. Campbell, Jr. Vice President and Chief Technical Officer Xerox Corporation	X	X	X	X
William Carey Executive Director American Association for the Advancement of Science	X	X		
Thomas Christiansen Manager, International Trade Relations Hewlett-Packard Company	X	X	X	X
Calman J. Cohen Vice President Emergency Committee for American Trade	X	X	X	X

INDIVIDUAL/AFFILIATION	SEMINAR	LUNCH	DRINKS	DINNER
John Copeland Director, International Projects Motorola, Inc.	X			
George C. Corcoran Assistant Commissioner, Enforcement U.S. Customs Service Department of the Treasury	X	X	X	X
Joseph A. DeRose Program Director of Public Affairs International Business Machines	X	X		
Hugh Donaghue Vice President, Government Programs and International Trade Relations Control Data Corporation	X	X	X	X
Joseph D. Duffey Chancellor University of Massachusetts, Amherst	X	X	X	X
Philip Eisenberg	X	X	X	X
John L. Ellicott Partner Covington and Burling			X	X
Arnold B. Finestone President Dartco Manufacturing Company	X	X	X	X
Herb Friedman Chairman Commission on Physical Sciences, Mathematics, and Resources National Research Council	X	X	X	X
Robert Fuller Vice President, Science & Technology Johnson & Johnson			X	X
Geoffrey A. Gleason Legislative Director for Representative Gerald B. H. Solomon	X	X	X	X
Martin Goland President Southwest Research Institute	X	X		

INDIVIDUAL/AFFILIATION	SEMINAR	LUNCH	DRINKS	DINNER
Ronnie Goldberg Second Vice President Chase Manhattan Bank Trade and Export Finance	X	X	X	X
Michel Gouilloud Executive Vice President of Technology Schlumberger, Ltd.	X	X	X	X
Paul Gray President Massachusetts Institute of Technology	X	X	X	X
Ruth Greenstein Associate General Counsel National Science Foundation	X	X	X	X
Wendell W. Gunn Special Assistant to the President Office of Policy Development The White House			X	X
Alan Hammond Consultant National Research Council	X	X	X	X
John Hardt Associate Director Office of Senior Specialists Congressional Research Service	X	X	X	X
Robert E. Herzstein, Esq. Partner Arnold & Porter	X	X	X	X
Alan Hoffman Executive Director The Committee on Science, Engineering, and Public Policy	X	X	X	X
George Holliday Specialist in International Trade and Finance Congressional Research Service	X	X	X	X
Ben Huberman The Consultants International Group, Inc.	X			X
Paris Jenalis Director and Assistant Director Research and Laboratory Management Department of Defense	X	X	X	X

INDIVIDUAL/AFFILIATION	SEMINAR	LUNCH	DRINKS	DINNER
Lionel S. Johns Assistant Director Energy Materials and International Security Office of Technology Assessment	X	X	X	X
Arden Judd Staff Vice President Dresser Industries	X	X		
Anne Keatley Director, Academy/Industry Program	X	X	X	X
Donald O. Kiser President GTE Laboratories, Inc.	X	X		
John Kiser, III Kiser Research Inc.	X	X		
Edward A. Knapp Director National Science Foundation			X	X
John E. Koehler Director of Resources Planning Hughes Aircraft	X	X	X	X
John W. Lacey Executive Vice President Technology and Planning Control Data Corporation	X	X	X	X
Fred C. Leavitt Director, Science & Technology Policy Dow Chemical Company	X	X	X	X
Talbot S. Lindstrom Deputy Undersecretary of Defense for International Programs and Technology Department of Defense	X	X	X	X
Harold Luks Minority Consultant Subcommittee on International Economic Policy and Trade House Committee on Foreign Affairs	X	X	X	X
William L. Lurie President Business Roundtable	X	X	X	X

INDIVIDUAL/AFFILIATION	SEMINAR	LUNCH	DRINKS	DINNER
R. Roger Majak Staff Director Subcommittee on International Economic Policy and Trade House Committee on Foreign Affairs	X	X		
Charles L. Marinaccio Minority General Counsel Committee on Banking, Housing and Urban Affairs United States Senate	X	X	X	X
Edith Martin Deputy Undersecretary of Defense Research and Advanced Technology Department of Defense	X	X	X	X
Larry McCray Associate Executive Director Commission on Physical Sciences, Resources National Research Council	X	X	?	?
Boyd McKelvain Manager, National Technology Affairs General Electric Company	X	X	X	X
John McMahon Deputy Director Central Intelligence Agency	X		X	X
Allan Mendelowitz Associate Director National Security and International Affairs General Accounting Office	X	X	X	X
Stephen A. Merrill Director, Technology and International Business Project Center for Strategic and International Studies Georgetown University	X	X	X	X
Larry Mitchell Director Advisory Committee on U.S.S.R. and Eastern Europe National Research Council	X	X	X	
Philippe W. Newton TRW, Inc.	X	X	X	X

INDIVIDUAL/AFFILIATION	SEMINAR	LUNCH	DRINKS	DINNER
Geoffrey C. Nicholson Director, Technology & New Products, International Operations Minnesota Mining and Manufacturing Company	X	X	X	X
Lionel Olmer Undersecretary International Trade Commission Department of Commerce	X	X	X	X
Henry Owen The Consultants International Group, Inc.	X		X	X
M. N. Papadopoulos Vice President Shell Development Company	X	X	X	X
Robert Park Executive Director, Public Affairs American Physical Society	X	X	X	X
Jack Peltason President American Council on Education		X	X	X
Frank Press President, National Academy of Sciences Chairman, National Research Council	X	X	X	X
William R. Prindle Director of Administrative and Technical Services Corning Glass Works	X	X	X	X
Kevin Quigley Budget Examiner National Security and International Affairs Office of Management and Budget	X	X	X	X
Victor Rabinowitch Executive Officer Office of International Affairs National Research Council	X	X	X	X
Frederick C. Robbins President, Institute of Medicine	X	X		
William Rohde Acting Director Strategic Investigations Division U.S. Customs Service Department of the Treasury	X	X	X	X

INDIVIDUAL/AFFILIATION	SEMINAR	LUNCH	DRINKS	DINNER
William A. Root Retired (Department of State)	X	X	X	X
Robert M. Rosenzweig President Association of American Universities	X	X	X	X
Roland W. Schmitt Sr. Vice President Corporate Research and Development General Electric Company	X	X	X	
William Schneider, Jr. Undersecretary for Security Assistance, Science and Technology Department of State	X	X	X	X
Greta Schuessler Executive Director, Report Review Committee National Research Council	X		X	
Peter Sharfman Program Manager International Security and Commerce Program Office of Technology Assessment	X	X	X	X
Paul Sitton Assistant to the President National Academy of Sciences	X	X	?	?
Howard A. Slack Senior Vice President Atlantic Richfield Company	X	X	X	X
Philip M. Smith Executive Officer, National Research Council	X	X	X	X
Loren Sorenson Manager, Export Services Varian Associates, Inc.	X	X	X	X
H. Guyford Stever President Universities Research Association	X	X	X	X
Robert Stratton Vice President, Corporate Staff and Director Central Research Laboratories Texas Instruments	X	X	X	X

INDIVIDUAL/AFFILIATION	SEMINAR	LUNCH	DRINKS	DINNER
Jacob C. Stucki Vice President, Pharmaceutical R&D The Upjohn Company	X	X	X	X
Phillip J. Sullivan Vice President, Government Relations Lockheed Corporation	X	X	X	X
Dale Tahtenin Deputy Assistant Secretary for Trade and Controls Department of State	X	X	X	X
Blucher S. Tharp Senior Counsel Technology & Intellectual Property Atlantic Richfield Company	X	X	X	X
Thomas E. Thomason Deputy Manager Washington Executive Office Bechtel Power Corporation	X	X	X	X
Peter D. Trooboff, Esq. Partner Covington and Burling	X	X	X	X
Richard E. Wainerdi President Gulf Research & Development Company	X	X	X	X
Mitchell Wallerstein Special Assistant for Policy and Planning Office of International Affairs National Research Council	X			
Robert, M. White President, National Academy of Engineering Vice Chairman, National Research Council	X	X	X	X
M. P. Wilson Executive Director, Corporate Analysis Division Bell Telephone Laboratories	X	X	X	X

THE WHITE HOUSE

WASHINGTON

April 2, 1984

Dear Frank:

I appreciated receiving from you the NRC report GROUNDWATER CONTAMINATION. As noted in the report, there are now numerous locations where environmental damage has already occurred to some of our most important aquifers. In these cases, mobilization of our scientific and technical resources came too late to prevent the contamination. I believe it is imperative that public, industry and government become more aware of this issue and that effective programs to prevent or minimize groundwater contamination by toxic substances be instituted.

The NRC report undoubtedly will enhance public awareness and prompt the industrial and scientific communities to address remedial and research programs. I'm pleased to report that both the Council on Environmental Quality and the Environmental Protection Agency have initiated programs designed to develop research data, monitoring techniques and clean-up technologies.

Thank you for sending the report, and I would be pleased to receive any future reports prepared by NRC on this subject.

Yours truly,



G. A. Keyworth
Science Advisor to the President

Dr. Frank Press
Chairman
National Research Council
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

NAS

NATIONAL ACADEMY OF SCIENCES

2101 Constitution Avenue Washington, D.C. 20418

202/334-3305

April 11, 1984

The Honorable George A. Keyworth, II
Science Advisor to the President
Director, Office of Science
and Technology Policy
Room 360
Executive Office of the President
Washington, D.C. 20500

Dear Dr. Keyworth:

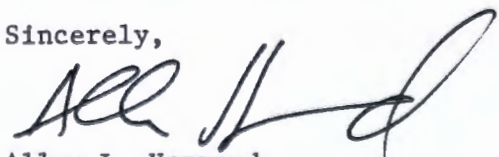
I am writing to confirm your conversation with Frank Press regarding an article for our new journal, Issues in Science and Technology. We are delighted that you will write this piece, one of three that we plan to publish together on the subject of ballistic missile defense: a review of the technical possibilities by James Fletcher; and a discussion of the strategic issues, the arguments for and against undertaking development of a defensive system, by you and Pief Panofsky.

Your article should make the case for attempting development of a defensive system and should address such questions as the benefits to be gained, the scope and costs (economic and in terms of trained man-power) of the proposed effort, and the parameters of success (specifically, should the goal be population defense? Area defense? What degree of leakage is acceptable?). You should also give us your personal estimate of the chances of achieving the technical goals, and of the risks entailed by the effort to do so -- such as the chances of triggering a renewed offensive arms race.

Some practical matters to keep in mind: the critical audience for this journal is not the scientific community but rather decision-makers in government, industry and the non-profit sector, many of whom will not be familiar with the details of this topic and for whom it will be necessary to be explicit about the meaning of technical and strategic concepts. The article should not exceed 7000 to 8000 words; and I would hope to receive it by about 1 June.

Please do not hesitate to call me at the number above if you have any questions or would like to discuss the article further; you may also want to discuss with the other authors (particularly Jim Fletcher) what they will cover to avoid unnecessary duplication. I look forward to reading the article.

Sincerely,



Allen L. Hammond

NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE WASHINGTON, D. C. 20418

OFFICE OF THE PRESIDENT

May 4, 1984

The Honorable George A. Keyworth II
Science Advisor to the President
Old Executive Office Building
Washington, D.C. 20506

Dear Dr. ~~Keyworth~~: *Jay*

In view of your special interest in American education and its linkage to business and labor needs, I hope you will be able to join a small group of national education experts and policymakers for dinner here at the Academy on the evening of Tuesday, May 22.

The dinner symposium is concerned with a major and often ignored issue in American education -- the needs of the high school graduate entering the work force. The occasion is a preview of the report, "High Schools and the Changing Workplace: The Employer's View." This report was prepared by a panel of the Committee on Science, Engineering, and Public Policy, a joint committee of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

High school graduates are the largest segment of the U.S. work force and, as such, their education is a critical factor in the competitive strength of the United States economy as well as in their own careers. Yet, the several reports that have been issued in the past two years have focused mainly on the college-bound student. The report to be presented to you on May 22 addresses directly the educational needs of high school graduates from the perspective of employers, both public and private.

With us on that evening will be the chairman of the distinguished panel that produced the report, Richard Heckert, vice chairman and chief operating officer of E. I. du Pont de Nemours & Company, and other members of the panel who will summarize the report and respond to your questions. A listing of the panel membership is attached. The report will be released publicly the

following day, through press conferences in Washington, Detroit, and Los Angeles, as well as by a direct mailing to over 30,000 people involved and concerned with the effectiveness of precollege education, including educators, employers, and federal, state, and local officials throughout the country. This evening then offers you a unique opportunity to discuss a report which we expect will make a significant contribution to the reformation of American education that is now under way.

The program will begin at 6:30 p.m. on Tuesday, May 22, with cocktails in the Rotunda of the National Academy of Sciences. Dinner will be at 7:00 in the Lecture Room, with a briefing and discussion beginning at 8:00 and ending no later than 9:30 p.m.

We hope that you can join us for this evening. Please call Audrey Ward at 202/334-2116 to let us know if you will attend.

Sincerely,



Frank Press
President

NATIONAL ACADEMY OF SCIENCES
NATIONAL ACADEMY OF ENGINEERING INSTITUTE OF MEDICINE
COMMITTEE ON SCIENCE, ENGINEERING, AND PUBLIC POLICY

PANEL ON SECONDARY SCHOOL EDUCATION
FOR THE CHANGING WORKPLACE

2101 Constitution Avenue, N.W.
Washington, D.C. 20418
(202) 334-~~XXXX~~2168

Panel Members

Richard E. Heckert, Vice Chairman and Chief Operations Officer, E.I.
Dupont De Nemours and Company (Chairman)

John T. Casteen III, Secretary of Education, State of Virginia, Richmond,
Virginia

Loretta Cornelius, Deputy Director, Office of Personnel Management,
Washington, D.C.

William J. Dennis, Director of Research, National Federation of
Independent Business, Inc., Washington, D.C.

Rosalyn Franta, Vice President, Nutrition and Chemistry, Kellogg Company,
Battle Creek, Michigan

Ronald Kutscher, Associate Commissioner, Office of Economic Growth and
Employment Projects, Bureau of Labor Statistics, Washington, D.C.

Henry M. Levin, Director, Institute for Research on Education, Finance and
Governance, Stanford University, School of Education, Stanford,
California

Aubrey C. Lewis, Vice President, Personnel and Governmental Affairs,
F.W. Woolworth, New York, New York

Sherman McCoy, Deputy Executive Director and Chief Operating Officer, D.C.
General Hospital, Washington, D.C.

Richard H. Neumann, Deputy Manager of Personnel, Bechtel Group, Inc., San
Francisco, California

Margaret Roberts, Director, Research Planning Services Office, Ford Motor
Company, Dearborn, Michigan

Markley Roberts, Economist, Department of Economic Research, AFL-CIO,
Washington, D.C.

FRANK PRESS

PRESIDENT

NATIONAL ACADEMY OF SCIENCES
2101 CONSTITUTION AVENUE, N.W.
WASHINGTON, D.C. 20418

(202) 334-2100

Panel Members
Page Two

Frederick A. Roesch, Senior Vice President for Personnel, Citibank, N.A.,
New York, New York

Fred S. Rodriguez, Manager of Personnel, Ground Systems Group, Hughes
Aircraft Company, Fullerton, California

G. Thomas Sicilia, Director, Accession Policy, Department of Defense,
The Pentagon, Washington, D.C.

William P. Steinberger, Vice President, Vocational Education Services,
Control Data Corporation, Minneapolis, Minnesota

Mary L. Tenopyr, Division Manager, Human Resources Employment Research
and Development, American Telephone and Telegraph, Basking Ridge, New
Jersey

David C. Thomas, Director of Member Services, Milk Marketing, Inc.,
Strongsville, Ohio

Rita Walters, Board Member, Los Angeles Unified School District, Los
Angeles, California

Charles Wilson, Superintendent, Community School District #2, New York,
New York

60 : 014 8 AM

GEAR

NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE WASHINGTON, D. C. 20540

OFFICE OF THE PRESIDENT

May 7, 1984

Letters to the Editor
The Washington Post
1150 15th Street, N.W.
Washington, D.C. 20071

To the Editor:

Your editorial of May 6 questioning the wisdom of the forthcoming National Academy of Sciences discussions with its Soviet counterpart is regrettable for it betrays a misunderstanding of the history and reasons for scientific relationships between two great scientific communities.

Particularly disturbing is your implication that the Academy can be used as a surrogate for Soviet attempts to influence the U.S. presidential election. The Academy's policy of political neutrality continues to be key to its 120 year relationship with our government. Although the Academy is a private organization and sets its own policies, it does so in consultation with the government.

In recent years, our formal scientific relations with the Soviet Academy of Sciences, which go back more than 25 years, have deteriorated for a number of reasons. In 1980 we suspended bilateral symposia with the Soviet Academy because of our deep concern for our foreign associate Andrei Sakharov, although exchanges of individual scientists have continued at a reduced level.

Despite our continuing concern for Sakharov, there are some issues of such deep importance to the future of mankind that we have felt it necessary to continue talking about them with our Soviet counterparts. In this regard, arms control and international security are certainly of high priority. Our members feel very strongly about this issue. It is for this reason that we established the Committee on International Security and Arms Control to discuss the technical issues of arms control with Soviet scientists, who share this concern for international peace. Results of these discussions are conveyed to respective governments through private briefings.

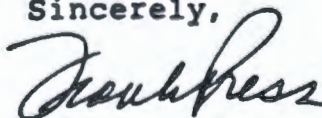
Now we believe that the times call for a new type of interaction with Soviet scientists--one based on cooperation by outstanding working scientists in forefront, nonsensitive fields of science in which the two countries are the most advanced in the world.

Although formal cooperative agreements are presently in force in several important fields between our own government and the Soviet government, we are the only academy of the industrialized democracies without an active formal agreement.

Our decision to participate in discussions with the Soviet Academy is not a recent or an easy one. It is the result of extensive consultations with members of the Academy and others in the scientific community and takes into account their sincere concern for human rights.

I must point out that no institution has been more active in its concern for Sakharov and other scientists who are victims of repression in many parts of the world. The establishment of our Committee on Human Rights in 1976 was a concrete expression of this concern. The treatment of our scientific colleagues will always be a modulating factor in the relationship between the American and Soviet scientific communities. Unfortunately, without formal channels of communication, knowledge of Soviet scientific progress is impeded, as is our ability to communicate humanitarian concerns.

Sincerely,



Frank Press
President

RECEIVED

84 MAY 9 P 2:02

OSTP
MAIL ROOM

File

NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE WASHINGTON, D. C. 20418

Mario

R

OFFICE OF THE PRESIDENT

May 24, 1984

The Honorable George A. Keyworth, II
Science Advisor to the President
Director, Office of Science and
Technology Policy
Executive Office of the President
Washington, D. C. 20500

Dear Jay:

In view of your concerns about U.S.-Soviet relations, I wanted you to have a copy of the attached statement which I am releasing today.

Yours sincerely,



Frank Press
President

Enclosure

K Read.

news from the NATIONAL ACADEMY OF SCIENCES

The National Academy of Sciences is an organization of distinguished scientists and engineers concerned with the furtherance of science and its use for human welfare. Although the Academy is not a government agency, it is called upon by its Congressional charter of 1863 to serve as an official adviser to the Federal Government in matters of science and technology.

2101 CONSTITUTION AVENUE, N.W., WASHINGTON, D.C. 20418

AREA CODE 202 334-2000

Date: May 24, 1984

Contact: Barbara Jorgenson,

(202) 334-2138 (o), (301) 439-0562 (h)

FOUR SCIENCE ACADEMIES MAKE PLEA ON BEHALF OF SAKHAROV

FOR IMMEDIATE RELEASE

WASHINGTON - The U.S. National Academy of Sciences, along with the science academies of Great Britain, France, and Sweden, has asked the Soviet Academy of Sciences to intercede on behalf of Andrei Sakharov and his wife, Elena Bonner.

In a cable sent this morning (Thursday, May 24), the four academies urged the Soviet Academy "to act as effectively as possible to help Academician Sakharov and his wife in getting the health care they require and request, and subsequent permission to devote themselves again to their scientific work."

The cable also concluded that "such a move would significantly reinforce the bonds among scientists of all nations."

In commenting on the joint action, Frank Press, president of the U.S. National Academy of Sciences, said, "A negative outcome to the Sakharov situation will have serious consequences for future relations between Soviet scientists and the international scientific community. This cable is a unique initiative on the part of the four academies and reflects the depth of concern worldwide for the fate of Sakharov and Bonner."

(OVER)

"For our own part," Dr. Press continued, "we are monitoring the Sakharov situation daily. From the first day of the hunger strike, we have been involved in activities and a reappraisal of the situation. For example, we have already privately expressed our concerns to senior officials of the Soviet Academy who were visiting here and to the Soviet ambassador. They are aware that this situation will affect our final decision about whether to explore with the Soviet Academy a new agreement for scientific cooperation."

Joint scientific symposia were suspended by the U.S. National Academy of Sciences following the exile of Sakharov to Gorki in 1980. Exchanges of individual scientists, however, continued. Although the formal exchange agreement between the two academies expired in 1982, these individual exchanges have continued.

Signing the cable with the U.S. National Academy of Sciences was the Academie des Sciences de L'Institut de France, the Royal Swedish Academy of Sciences, and the Royal Society of London.

More than 1350 members of the U.S. academy were notified of the joint cable by telegram today.

A copy of the joint cable is attached.

#

bj: 1,8,13,15,S

Academician A.P. Aleksandrov
President, Academy of Sciences of the USSR
Telex 411964 ANS BU

The Royal Society of London, the Academie des Sciences de L'Institut de France, the Royal Swedish Academy of Sciences, and the National Academy of Sciences of the United States of America express their concern and deep feelings regarding the worsening of the state of health of Academician Andrei Sakharov and of his wife Elena Bonner. They solemnly call upon their eminent colleagues of the USSR Academy of Sciences to act as effectively as possible to help Academician Sakharov and his wife in getting the health care they require and request, and subsequent permission to devote themselves again to their scientific work. Such a move would significantly reinforce the bonds among scientists of all nations.

Frank Press
President
National Academy of Sciences

Sent 5/24/84

TO BE CABLED 12:00 P.M., THURSDAY, JUNE 7, 1984

Academician A.P. Aleksandrov
President
Academy of Sciences of the USSR
Telex #411964 ANS SU

I mentioned on May 8 to some of your senior colleagues how impossible it would be to discuss a new agreement between our academies given the deep concern the members of the U.S. National Academy of Sciences have about the circumstances of Foreign Associate Andrei Sakharov. I have delayed until the last moment a final decision in the hope that the situation would be positively resolved in a manner that all of us would recognize.

Since this hoped-for development has not occurred, I believe it is to our mutual advantage to postpone the visit of our delegation until a climate more favorable for positive discussions exists.

Frank Press
President
National Academy of Sciences
USA

NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE
WASHINGTON, D. C. 20418

June 7, 1984

The attached cable was sent to Moscow at 12 noon EST today.

The message will not be released to the press until Friday,

June 8, at 10:00 a.m.

Tech. Transfer

**EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20508**

June 7, 1984

NOTE FOR JAY KEYWORTH

FROM: MARIO FIORI

Mario Fiori

We received attached from Diane Dornan, NSC Deputy Director for International Programs. I asked McTague to look into this new study and following is pertinent:

- From Alan Hoffman we learn that study is in very early stages i.e. no chairman, incomplete funding (650-700 K\$ required).
- From Corson - Roland Schmitt is pushing this. Corson thought it would be a responsible study and thought that Wallerstein, study director, will be quite objective.
- From Schmitt - he said that issue is so important that "all buttons should be pushed simultaneously." He sees the study as a factual-historical review of the impact of regulations on tech transfer.

K Knowles

File

RONALD W. REAGAN LIBRARY

THIS FORM MARKS THE FILE LOCATION OF ITEM NUMBER 3 LISTED ON THE
WITHDRAWAL SHEET AT THE FRONT OF THIS FOLDER.

May 10, 1984

FOR ACTION
New ProjectCOMMITTEE ON SCIENCE, ENGINEERING, AND PUBLIC POLICYStudy of the Impact of National Security Controls on International
Technology Transfer

SUMMARY: The Committee on Science, Engineering, and Public Policy (COSEPUP) proposes an eighteen month study of the impact of national security controls on domestic and international technology transfer. It follows on and complements an earlier COSEPUP study entitled "Scientific Communication and National Security," that focussed primarily on the impact of national security controls on the open dissemination of unclassified scientific information generated via government support of university-based research.

The study will be carried out by a COSEPUP-appointed study panel of approximately twenty individuals from private industry, academia, labor, government, law and other involved sectors, including individuals knowledgeable of international dimensions. The primary audience will be leaders of government and industry, labor, university research administrators and scientists, and members of the press. The secondary audience will be individual researchers, foreign governments, and international organizations that are concerned with this set of issues.

ORIGIN: In September 1982 the Corson Panel issued its report, "Scientific Communication and National Security," which focused on the impact of export controls and other regulatory instruments on the open dissemination of unclassified scientific information. At the time of its report, the Panel acknowledged that it had not had sufficient opportunity or resources to investigate in depth the impacts of export controls on the private sector. At the same time, however, the Panel noted that "restraints on scientific communication can limit the efficiency with which important information is transmitted to and within industrial firms. The applications of new results from the research community outside the universities will thus be impeded, possibly leading to higher internal research costs or to the loss of world market shares as the U.S. product performance falls behind that of foreign competitors." However, since the concerns of private industry are generally much closer to the point of R&D application, there may be greater justification for national security controls on the dissemination of commercial products, data, or know-how, particularly in areas of "dual use" technology.

The government has continued to gather evidence of and express concern about unwanted technology transfer in the period since the

release of the Corson report. At the same time the concerns of private industry have been heightened both by recent regulatory proposals from the Executive Branch and by certain language proposed for incorporation within the Export Administration Act currently under consideration by Congress. For example, in recent testimony before the Permanent Subcommittee on Investigations of the Senate Committee on Governmental Affairs, the Industry Coalition on Technology Transfer expressed its strongly held "conviction that U.S. export control regulations increasingly fail to reflect the realities of technology transfer and the international marketplace."

As a result, many in government, science, and high technology industries now perceive a growing dilemma. On the one hand, leaders of high technology industry feel trapped between what they see as a cumbersome and archaic system of export controls, which adds substantially to the cost and time parameters involved in conducting overseas business, and an increasingly competitive international marketplace where product innovations offer only short-lived "windows of opportunity" that may be neutralized by regulatory delays and cost increases. On the other hand, government officials feel torn between the desire to promote US international trade and the need to safeguard militarily critical technical information, much of which has been developed at public expense.

The previous study on "Scientific Communication and National Security" represented a carefully balanced assessment of the costs and benefits of open dissemination of scientific ideas and technical data outside the borders of the United States. It was, in fact, an outgrowth of the historic concern of the institution with the advancement of science and technology. The study proposed herein would continue the Academy's examination of these flows when they occur through private industrial channels, and it would also consider the problems associated with transferring products, processes and "embedded technology." Moreover, although the Corson study was principally concerned with the impact of restrictions on the university research community, the welfare of the university sector and private industry are inextricably linked by the fact that the universities are the source of manpower for industrial R&D and that universities are increasingly undertaking proprietary research on contract to private industry. A second Academy concern relates to the fact that, since the private sector is responsible for a substantial portion of the applied research and development activities undertaken both in the United States and abroad, the imposition of rigorous export controls can have an effect on the pace and direction of the US and global research effort. Finally, the Academy complex has long been concerned with the problem of promoting effective international cooperation in science and technology. The recent concerns about proprietary and national security matters serve only to heighten the importance of this traditional Academy focus.

PROPOSED PLAN OF ACTION: COSEPUP proposes to undertake a study of the impact of national security controls on domestic and international

technology transfer. The study will be conducted over an eighteen month period by a COSEPUP-appointed study panel of approximately twenty individuals from private industry, academia, labor, government, law, and other distinguished citizens who are representative of the national debate. Panel members will be selected on the basis of their balance, diversity, and familiarity with various aspects of the export control issue, including the international dimensions of the problem.

The objectives of the study are contained in the following charge to the panel approved by COSEPUP:

"The Panel on National Security Controls on International Technology Transfer shall:

(1) Examine the international environment for a few selected areas of industrial R&D, such as microelectronics, to provide insight into:

- a. the problems of regulating the availability of "dual-use" technologies
- b. the international competitive status of these technologies and range of practices in the CoCom countries to promote their use.
- c. the role of technology transfer and the interdependence of R&D activities among industrialized countries of the Free World
- d. the role of foreign nationals in "sensitive" industrial R&D activities

(2) Assess the control problem for the Free World industrialized countries, i.e., what is being lost through commercial channels, how, and to whom? -- in order to provide a basis for establishing priorities among alternative control measures.

(3) Assess the effectiveness of the current control scheme employed by the member states of CoCom and, in particular, investigate the views of and constraints of the non-U.S. members of CoCom.

(4) Review and assess the impacts on U.S. high technology industry of current export control policies and proposed regulatory changes.

(5) Examine the current assignment of policymaking responsibilities on export control matters within the federal government. Consider the practicability and desirability of a new government regulatory infrastructure capable of balancing the military, commercial, scientific and educational interests affected by export control decisions.

(6) Consider new approaches to the export control problem for adoption as appropriate by private industry, the US government, and by industries and governments in other CoCom states."

The following are illustrative of the questions likely to be addressed by the Panel in responding to the charge set forth above:

- o What is the current state of affairs with respect to the application of export controls on high technology industries?
- o What trends can be identified in the R&D growth rates in high technology fields?
- o What is the current (and future) contribution to U.S. national security of private industrial R&D in high technology areas?
- o What is the current (and future) economic potential of high technology in the dual use category? How do other CoCom states view this problem?
- o What is the role of foreign national manpower in U.S. industrial R&D?
- o What critical military advantage is being gained by the Warsaw Pact from industrial sources?
- o Is there a justification for dual standards for control of technology transfer, one governing university-based R&D and the other governing industrial R&D? Is such a dual system practicable?

ANTICIPATED RESULTS: The principal outcome of this study will be a report responsive to COSEPUP's charge to the panel. Its principal objective will be to develop and present an objective assessment of the costs and benefits of national security controls on high technology industry that safeguard the legitimate military interests of the United States and the NATO Alliance yet which permit efficient industrial R&D and technological innovations in the United States as required - both for national defense and for the attainment of economic goals - and development of a coherent and uniform control system among the allied CoCom states. The primary audience for the study will be leaders of government and industry, labor, university research administrators and scientists, and members of the press. The secondary audience will be individual researchers, foreign governments, and international organizations that are concerned with this set of issues.

EXPENDITURES AND SOURCES OF FUNDS: Estimated expenditures for an eighteen month study are as follows:

<u>Salaries and Wages</u>		
Professional	\$78,445	
Secretary	<u>36,350</u>	\$114,795
<u>Fringe Benefits</u>		27,551
<u>Overhead</u>		92,525
<u>Consultants, Other Temporary Personnel</u>		112,800
<u>Travel Expenses</u>		136,220
<u>Other Direct Costs</u>		102,400
<u>General & Administrative Costs</u>		<u>60,974</u>
		Total \$647,265

May 10, 1984

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Funds will be requested from government agencies, professional societies, industrial trade organizations, industrial foundations, and the National Research Council.

PREVIOUS COSEPUP ACTION: The proposed study was discussed and approved by COSEPUP at its meeting of April 27-28, 1984.

REQUESTED GOVERNING BOARD ACTION: Authorization is requested to accept up to \$650,000 in external funding for an eighteen month study.

RESPONSIBLE STAFF OFFICER: Dr. Mitchel B. Wallerstein, Study Director, Committee on Science, Engineering, and Public Policy, NAS 246, Ext. 2424.

Attachment
COSEPUP Membership List

NATIONAL ACADEMY OF SCIENCES
NATIONAL ACADEMY OF ENGINEERING INSTITUTE OF MEDICINE

COMMITTEE ON SCIENCE, ENGINEERING,
AND PUBLIC POLICY

2101 Constitution Avenue Washington, D. C. 20418
202/334-2424

List of Members

George M. Low, President, Rensselaer Polytechnic Institute (Chairman)

Linda H. Aiken, Vice President for Research, The Robert Wood Johnson Foundation

Jacob Bigeleisen, Leading Professor, Department of Chemistry, State University of New York, Stony Brook

Floyd E. Bloom, Director and Member, Division of Pre-Clinical Neuroscience & Endocrinology, Scripps Clinic and Research Foundation

Emilio Q. Daddario, Wilkes, Artis, Hedrick and Lane, Attorneys at Law

Gardner Lindzey, President and Director, Center for Advanced Study in the Behavioral Sciences

Edward A. Mason, Vice President-Research, Standard Oil Company (Indiana)

John L. McLucas, Executive Vice President and Chief Strategic Officer, Communications Satellite Corporation

Elizabeth C. Miller, Van Rensselaer Potter Professor of Oncology, McArdle Laboratory for Cancer Research, University of Wisconsin

Gilbert S. Omenn, Dean, School of Public Health and Community Medicine, University of Washington, Seattle

Leon T. Silver, Division of Geological and Planetary Sciences, California Institute of Technology

Herbert A. Simon, Professor of Computer Science and Psychology, Department of Psychology, Carnegie-Mellon University

I. M. Singer, Professor, Mathematics Department, University of California, Berkeley

F. Karl Willenbrock, Cecil H. Green Professor of Engineering, School of Engineering and Applied Science, Southern Methodist University

Ex Officio

Frank Press, President, National Academy of Sciences

Robert M. White, President, National Academy of Engineering

Frederick C. Robbins, President, Institute of Medicine

COSEPUP Staff

Allan R. Hoffman, Executive Director

Barbara A. Candland, Administrative Assistant

Renee A. Lewis, Senior Secretary

NATIONAL SECURITY COUNCIL

May 30, 1984

TO: JAY KEYWORTH

FROM: DIANE DORNAN *DD*

FYI.

Attachment
TTIC letter (TTIC-C-319)
18 May 1984, New NAS
Study Proposed

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NAS +
USSR

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file

NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE
WASHINGTON, D.C. 20418

June 7, 1984

The attached cable was sent to Moscow at 12 noon EST today.
The message will not be released to the press until Friday,
June 8, at 10:00 a.m.

TO BE CABLED 12:00 P.M., THURSDAY, JUNE 7, 1984

Academician A.P. Aleksandrov
President
Academy of Sciences of the USSR
Telex #411964 ANS SU

I mentioned on May 8 to some of your senior colleagues how impossible it would be to discuss a new agreement between our academies given the deep concern the members of the U.S. National Academy of Sciences have about the circumstances of Foreign Associate Andrei Sakharov. I have delayed until the last moment a final decision in the hope that the situation would be positively resolved in a manner that all of us would recognize.

Since this hoped-for development has not occurred, I believe it is to our mutual advantage to postpone the visit of our delegation until a climate more favorable for positive discussions exists.

Frank Press
President
National Academy of Sciences
USA

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20508

June 20, 1984

MEMORANDUM FOR JAY KEYWORTH

FROM:

RALPH DEVRIES

RMD *Kc*

SUBJECT:

Meeting on June 21, 11:00 a.m. with Frank Press,
Bill Spindell, Dean Eastman, and Fred Seitz re
Major Materials Facilities Study

- Fred Seitz chaired the Communist Party of America (better known as the National Academy of Sciences) review of the prioritization of major new facilities in the material sciences.
- They are coming tomorrow to brief us on the results of that study.
- We have no intelligence as to what the list looks like.

NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE WASHINGTON, D. C. 20418

OFFICE OF THE PRESIDENT

June 19, 1984

The Honorable George A. Keyworth
Director
Office of Science and Technology Policy
Executive Office of the President
Washington, D.C. 20500

Dear Jay:

We talked about the possibility of a major Academy study (CORSON II) dealing with technological communication and national security as it affects American industry and government interests. Obtaining DOD support as we did with CORSON I is very important to us, symbolically if not materially. Our plans are to seek diversified support of a number of government agencies as well as industry and philanthropic agencies. I hope you will see fit to get in touch with Secretary Taft in support of this project.

Yours sincerely,



Frank Press
President

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ACADEMY INDUSTRY PROGRAM
of the
NATIONAL RESEARCH COUNCIL

2101 Constitution Avenue, NW Washington, D.C. 20418

FRANK PRESS
President, National Academy of Sciences

ANNE G. KEATLEY
Director

ROBERT M. WHITE
President, National Academy of Engineering

November 8, 1984

Co-chairmen

The Honorable George A. Keyworth II
Science Advisor to the President and Director,
Office of Science & Technology Policy
Old Executive Office Building
17th & Pennsylvania Avenue, N.W.
Washington, D.C. 20500

Dear George:

On February 27 and 28, 1985, the National Academies of Sciences and Engineering will hold a two-day symposium on biotechnology to be held at the National Academy of Sciences in Washington, D.C. We would like to invite you to participate in the program, one of a series of Academy Industry Program forums designed to bring together leaders from industry, government, and universities to exchange views on important national issues related to science and technology.

The symposium, which falls on the tenth anniversary of the Asilomar Conference, will focus on three major issues of biotechnology: risk, regulation, and commercialization. The program will be interactive with speakers presenting issues and varying points of view for discussion.

The first day of the symposium, Wednesday, February 27, will include discussions on the state of the biotechnology science and the advances we can expect in the future; the benefits and risks associated with biotechnology and the environmental, ethical, and legal impacts; the current status of biotechnology regulation and requirements for a stable regulatory environment. The session on Thursday, February 28, will analyze the issues, both domestic and international, that impact on commercialization of biotechnology in the U.S., including personnel availability and training; intellectual property law; antitrust policies; government

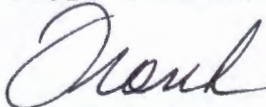
Page Two
November 8, 1984

funding of basic and applied research; health, safety, and environmental regulation; the special problems of smaller biotechnology companies; biotechnology initiatives in Japan, France and Germany, and other related topics.

Additional information will be sent to you when program details are firm. In the meantime, we hope that you will reserve February 27 and 28 on your calendar and will return the enclosed postcard to inform us of your availability on those dates.

If you have any questions, please contact Mrs. Anne Keatley, Director, Academy Industry Program, National Academy of Sciences, 2101 Constitution Avenue, N.W. 20418.

Yours sincerely,



Frank Press
President
National Academy of Sciences

Enclosure

MAIL ROOM
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34 OCT 13 PM 2: 21

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NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE WASHINGTON, D. C. 20418

File Both China '84
and NAS

OFFICE OF THE PRESIDENT

Dr. George A. Keyworth II
Director
Office of Science and Technology
Policy
Executive Office Building
Washington, DC 20500

7 September 1984

Dear Jay:

I have enclosed materials describing the Joint NAS/NAE China initiative about which we spoke on the phone. The program's purpose is to bring high-level research and development personnel from American industry into protracted scientific dialogue with counterparts in Chinese production ministries on topics concerning applied science and technology. In my view, the scientific ties between Chinese universities and American universities, ties between Academies in the two countries, and the government-to-government bilaterals, are all quite vigorous. The one conspicuous gap has been in linking America's industrial scientists to the very substantial R & D resources in China's powerful production ministries. In terms of the strength of our future bilateral relationship, scientific exchange, the prospects for Chinese modernization, and long-term commercial opportunities for American firms, the Joint NAS/NAE program fills an important void.

The initial three seminars which we have scheduled with China's State Science and Technology Commission focus on critical scientific/technological bottlenecks in China's modernization effort. The American side derives from these seminars what it very much needs--an understanding of specific Chinese problems in key sectors of the economy and a knowledge of the organizations and people who make decisions in Beijing. The Chinese, in turn, gain assistance in upgrading their R & D apparatus and choosing among all the technological options they face. I believe, as I know you do, that it is essential that the Chinese choose wisely and that their modernization effort succeed.

I would greatly appreciate any help you can provide us in gaining financial support for this program. Of our total \$650,000 budget, we have been successful in raising private sector support in the approximate amount of \$450,000. If we can find government support for the remaining \$200,000, this would assure the program's success.

Dr. George A. Keyworth II
7 September 1984

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This initiative has the potential for contributing significantly to the Science and Technology Agreement between the United States and China. I hope you agree that including this program in your upcoming Joint Commission presentations with the Chinese will contribute to a strong US position.

With sincere thanks,



Frank Press
President

Attachments

MINUTES OF THE WORKING GROUP
ON COOPERATION IN APPLIED SCIENCE AND TECHNOLOGY

We both sides hereby reaffirm the principles of the Memorandum of Understanding on Applied Science and Technology Cooperation, signed in Washington D.C. on 11 January, 1984. As specified in Article Three of that Memorandum, and at the invitation of the State Science and Technology Commission of the P.R.C., the U.S. Working Group headed by Professor W. Rosenblith, Foreign Secretary of the National Academy of Sciences of the U.S., visited China. The Working Groups of both sides held discussions in Beijing from February 16 - 18. The Working Groups held a plenary session on February 16 and sub-group discussions on February 17. During the course of the discussions, the Chinese side proposed the following areas for cooperation: coal mining technology; desulfurization and central coating of coal; improvement of coal combustion efficiency in boilers; energy conservation in iron and steel production; the production and use of fuel methanol; quality assurance in food processing and storing; techniques of hybridoma and monoclonal antibody and its application in vegetable disease resistance breeding; breeding disease resistant cotton by genetic engineering; postharvest loss technology with respect to fruits and vegetables; the meat cold chain; new technologies in the commercial production of soybean foods; and the transfer of scientific research to industrial production. The U.S. side expressed great interest in the proposals of the Chinese side and both sides demonstrated a willingness to strengthen cooperation in the field of applied science and technology on the basis of equality and mutual benefit.

Through the discussions, the two sides agreed on the following programs to be undertaken during 1984 and 1985:

Agreed Upon Seminar Topics

1. "Seminar on Postharvest Food Losses in Fruits and Vegetables"

Location	: China
Date	: October 1984
Number of Participants	: Up to 10 from the U.S. side; 25-30 from the Chinese side.

2. "Seminar on Coal Use : Desulfurization and Conversion to Methanol Fuels"

Location	: China
Date	: April 1985
Number of Participants	: 10 participants from each side and no more than 10 observers from each side.

3. "Seminar on Transfer of Science and Technology To Production"

Location	: United States
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Date : August 1985
Number of Participants : About ten persons from each side.

Details on each of the above seminar activities are provided in the attached three appendices.

The two sides agreed that a chairman for each seminar activity will be designated by the respective Coordinating Committees in consultation with the other. The co-chairmen will be responsible for seminar planning and liaison, including the appointment of a rapporteur. In addition to the activities outlined in the appendices, the co-chairmen may identify and recommend additional cooperative activities that would be essential to the success of the seminar.

Moreover, the two sides agreed that the expenses for the above-mentioned programs shall be borne in the following equitable manner. For official participants, the host side shall cover food, lodging, accommodation and transportation costs and the sending side shall cover international travel costs to the nearest point of entry to the meeting site.

The seminar should facilitate the maximum possible interaction among all participants. Both sides recognize that knowledge is often transmitted more effectively in informal settings than in formal sessions. Both sides will make their best efforts to arrange seminars in which all participants will share common residence and dining facilities.

Both sides expressed satisfaction with the results of the discussions and look forward to the smooth continuation of cooperative programs. Both sides also desire to explore the possibility of cooperation in other potential projects such as those listed above.

The two Coordinating Committees will maintain sufficient contact to assure the success of this program and to overcome difficulties should such arise. The two sides look forward to the establishment of mutually beneficial relations.

The two sides agreed that the next working group meeting will be held in the U.S. in September or October 1985.

Chairman, U.S. Working Group

Chairman, Chinese Working Group

February 18, 1984.

APPENDIX I

AGRICULTURE AND FOOD PROCESSING SUBGROUP REPORT

General

The subgroup met on February 17, cochaired by Mr. Yin Zonglun and Mr. William Brown. After considering the proposals for possible activities in agriculture and food processing presented in the February 16 plenary meeting, the group agreed that a joint seminar should be held on a topic that will benefit agricultural production and lead to ongoing interaction between U.S. and Chinese organizations.

Seminar Topic

The group suggested that the seminar should focus on postharvest food losses in fruits and vegetables.

Specific seminar topics would be postharvest losses of citrus fruit, apples, pears and tomatoes. Improved ways of crop handling, storing and processing would be discussed.

Seminar Schedule

The group suggested that a five-day seminar be held in China possibly in Beijing or Hangzhou, October 22 - 26, 1984. Holding the seminar in China would give the U.S. participants a necessary exposure and understanding of the problems involved. Accordingly, they should have several days of field visits before the seminar begins. The time coincides with the harvest time for the subject crops.

Seminar Organization

Cochairmen for the seminar should be chosen by April 1, 1984. If possible, the U.S. cochairman should visit his counterpart in China by mid-May to discuss a work plan and to identify background papers from each side.

Since the U.S. papers may need to respond to specific Chinese interests, background papers from China should be available by July 15. U.S. papers should be available by September 15. This schedule will enable participants from both sides to have translated papers available prior to the seminar.

Participants from the Chinese side will come from the ministries and other organizations concerned with the production, processing, and marketing of the subject commodities. People who work at the field or plant level may constitute a part of the maximum of 25 - 30 total participants. U.S. participants will come from appropriate industrial organizations, universities and research institutes, or government agencies, probably with a total of not more than 10 persons.

Possible Future Activities

The working group participants discussed a proposal that was presented at the plenary session on biotechnology techniques for the diagnosis of certain plant diseases. It was felt that the state of biotechnology is such that a seminar on that topic might not be very productive at present. Developments are occurring very rapidly, however. Therefore, if the first seminar on an agricultural topic proves to be successful and ongoing relationships in this program continue, a seminar 2 - 3 years hence on the application of biotechnology to agricultural productivity might be useful.

February 18, 1984.

FOSSIL FUEL AND ENERGY CONSERVATION SUBGROUP REPORT

General

The subgroup met and agreed that the next step for cooperation will be the undertaking of a seminar.

Topic for Seminar - "Seminar on Coal Use : Desulfurization and Conversion to Methanol Fuels".

Specific Topics to be Presented : (suggested)

1. Methanol Production and Use as a Transport Fuel

A. Methanol Production

1. Coal Gasification Technologies applicable for methanol production.
 - a. Product spectrum.
 - b. Influence of coal characteristics on gasifier selection.
 - c. Influence of the coal delivery system on gasifier selection.
 - d. Comparison of capital and operating costs.
 - e. Environmental considerations.

2. Methanol Syntheses

- a. Process alternatives (status of development, capital and operating costs).
- b. Product comparisons of alternative processes.
- c. Assessment of new technologies and problems of scale up.

B. Methanol uses as a fuel for internal combustion engines (gasoline and diesel)

1. Assessment of the role for mixed alcohols as mixtures in fuels for internal combustion engines.
2. Application of methanol only systems.
3. Methanol and higher alcohols as octane improvement systems.

2. Coal Desulfurization Technology

- A. Mechanical coal desulfurization methods including heavy media, water cyclones, high gradient magnetic separation,

and electrostatic processes.

- B. Chemical coal cleaning methods such as solvent refined coal, Meyers process and other advanced methods for organic sulfur removal.
 - C. Evaluation of costs and the technical status of the above systems as applicable to processing coal for power generation, and residential and commercial use.
3. Methodology for Evaluation, Selection and Implementation of Appropriate Technology
- A. Consideration of economic models used for the evaluation of alternative technologies.
 - B. Techniques to establish priorities in research and development programs.
 - C. Methods for implementation of projects and technologies as defined above.

Logistics

- 1. Location : Suggested location of the seminar will be China. The specific city will be selected by the cochairmen.
- 2. Time : The time will be April 1985 as determined by the cochairmen.
- 3. Size of Delegation : 10 delegation members from each side, and up to 10 observers from each side may attend. Most of the delegation members will be expected to present papers.
- 4. Cochairmen : The two cochairmen and two rapporteurs will be selected by the respective Steering Committees with consultation.

The two cochairmen and 2-3 selected seminar participants from each side will meet in the U.S. prior to the seminar to finalize the details. In connection with the meeting, the cochairmen may arrange visits to facilities relevant to the seminar. The preseminar visits will provide background for preparation of the

working group papers. The
cochairmen will be named prior to
June 1, 1984.

5. Plan for Seminar

- :** It is proposed that the seminar last 5 days of which one day would be dedicated to working group sessions to jointly prepare a paper on topic selected by co-chairmen.

Both sides will present papers.

- 6. Technical papers will be available prior to the meeting in English. The final report, including reports of the working groups, will be published in English following the seminar. The report will include recommendations for follow-on activities in the field of coal technology.**

February 13, 1984.

TRANSFER OF SCIENCE AND TECHNOLOGY TO PRODUCTION
SUBGROUP REPORT

General

The subgroup met and agreed on the general format and on a number of specific topics for a seminar to be called Seminar on Transfer of Science and Technology to Production

Objectives of the seminar are as follows :

- a) To demonstrate the utility of policy research and show the implications of such research for the formulation of public policy;
- b) To promote the technology transfer from research into production;
- c) To enhance the mutual understanding between the two countries which will contribute to increased exchanges including trade;
- d) To explore possible areas for future joint cooperation in science and technology policy research.

Specific Topics to be Presented

Chinese Presentations at the Joint Symposium

- A) Review papers on recent developments in the technology transfer from research into production in China including :
 - a. agriculture
 - b. industry
 - c. technology transfer from abroad.
- B) Case studies provided by the Municipal Science and Technology Commission of Chongqing, Sichuan Province, including the industrial and agricultural sectors and the role of the municipality in promoting the development of neighboring rural areas.
- C) Case studies provided by the City Science and Technology Commission of Changzhou including the industrial and agricultural sectors and the role of the municipality in

promoting the development of neighboring rural areas.

3. U.S. Presentations at the Joint Symposium

- A. Experiences and general guidelines for the establishment of a technology-intensive zone - an industrial park, including a comparison of the experiences of the U.S. and other developed or industrialized countries/regions from the perspective of regional government officials, engineer developers, and university leaders.
- B. Cooperation between universities/research institutes and the enterprises, including the various types of cooperation, funding or contracting mechanisms, and rewards paid to the research institutes for important research achievements or innovations.
- C. Development trends in R & D management of large companies for a better integration of research with production. What are the main considerations in order to achieve a balanced combination of
 - centralization and decentralization of R & D activities;
 - vertical and horizontal linkages; and
 - supply-push and demand-pull models.
- D. A general discussion of the role of new, small companies in technology innovation :
 - a) technology suitable for development by new, small companies;
 - b) the role of the government in supporting small business;
 - c) the role of venture capital in providing capital for start-up companies.
- E. Case studies on the role of the U.S. Government agencies in promoting technology development and technology transfer, such as :
 - a) NASA for development of space and related spin-offs;
 - b) COMSAT for satellite communications;
 - c) developments in agriculture which led to the change from the family farm to agro-business.

4. Presentations and Format for the Seminar

- A. The seminar will involve about ten persons from each country and will be held in the United States in approximately August or September 1985. The seminar will last about one week, possibly including visits to some case study sites in the United States.
- B. Approximately one year prior to the September 1985 symposium an advance team of two or three persons will visit China for a total period of about one week to meet with the Chinese Cochairman and others and to visit some of the case study sites.

5. Follow-on Activities

- A. Both sides hope that there will be follow-on activities in the science policy area, but specific discussion in this regard will await a formal review of the program late in 1985.
- B. Both sides agree that the papers presented should aim at publication, with each side being responsible for publication in its own country. Editorial changes made in papers must be approved by each individual author.

February 18, 1984.

China-U.S. Science Cooperation Blooming

In the cause of modernization, Chinese undertake exchanges of students, scholars, and joint research

During his recent visit to China, President Reagan announced a nuclear cooperation agreement that could give the Chinese extensive access to U.S. nuclear technology (*Science*, 11 May, p. 582). Less noticed were his references during the trip to other science and technology agreements that are already a flourishing feature of China-U.S. relations.

An estimated 10,000 Chinese students and scholars are now in this country under the agreements. The number of intergovernmental protocols in science and technology has risen to 22. And the Chinese have increased the volume and variety of science and technology activities by forging arrangements with U.S. industry and professional organizations outside the formal agreements.

On balance, the China-to-U.S. traffic in students and scholars under these agreements has clearly been heavier than the reverse flow. A U.S. decision was made early that reciprocity would be defined differently than it was, for example, in the agreements on cooperation in science and technology with the Soviet Union. With the Soviets, a precise person-for-person, month-for-month exchange came to be the rule. In respect to China, the U.S. working rule has been that cooperation, on balance, benefits the United States. As President Reagan's science adviser George A. Keyworth, II, put it in testimony before a House Foreign Affairs subcommittee last August, "It's in our fundamental interest to advance U.S. relations with China—and cooperation in science and technology is essential to that relationship."

Cooperation has taken two main forms—exchanges of students, scholars, and research scientists, and joint research projects. Before diplomatic relations between the two countries were reestablished in 1979, the Committee on Scholarly Communication with the People's Republic of China, based in the National Academy of Sciences, played a key role in the rapprochement in science. Observers say that meetings between senior U.S. academic scientists and their Chinese counterparts were influential in shaping the exchanges.

Of the roughly 10,000 Chinese here under the exchanges, about two-thirds are students and the rest visiting scholars. The impression is that the proportion of students is increasing. According

to David M. Lampton, an Ohio State Sinologist on leave with the Academy's China committee, the disciplinary make-up of the group also has progressively broadened. The first group of students were concentrated heavily in the basic sciences. Subsequently, a greater interest in the applied sciences and engineering became evident. And, recently, more students have pursued studies in economics, finance, management, and the social sciences. This is attributed to a Chinese realization that such skills are needed to deal with problems of development and international finance.

As a sign of the practical turn the relationship has taken, the U.S. Academies of Sciences and Engineering in February jointly signed an agreement for a new Science, Technology and Economic

exchange into them. An important source of funding has been a series of loans for education through the World Bank. Two-thirds of an initial \$200-million loan was earmarked for purchase of scientific equipment for 28 Chinese universities counted on to assume greater responsibility for teaching and research in science and technology. The balance was designated for faculty development, including support for the exchanges. Two subsequent loans for \$84 million each, one for agriculture education, the other for the development of polytechnics and an existing television university, are similarly divided. And all require substantial Chinese matching funds.

While the exchanges are building rapidly, the Chinese lag far behind the countries sending the most students to the



NAS president Frank Press (seated right) and NAE president Robert M. White flank China's state science committee vice chairman Zhao Dongwan at January signing of new agreement.

Program of Cooperation with China's production ministries. The first major activities will bring together U.S. and Chinese scientists and engineers for seminars on reducing crop losses, coal use, and transfer of technology to production.

The costs of the education exchanges are substantial. Currently, half the students are estimated to be supported by the Chinese government and half by non-government patrons. Private support comes mainly from a mixture of foundation funds and scholarships and with a substantial portion emanating from sponsors of Chinese background in this country or elsewhere outside China, many of whom finance students who are relatives. Chinese graduate students are also strongly encouraged by their government to obtain support through teaching and research assistantships.

The Chinese government has given a high priority to the exchanges and directed substantial amounts of scarce foreign

United States. An Institute of International Education survey for 1982-1983 showed that Taiwan had over 20,000 students here. Iran continued to have the biggest contingent—26,000.

The other major dimension of Sino-U.S. cooperation in science and technology—joint research projects—has been primarily organized and funded under the intergovernmental agreements. These have generally taken longer to get under way. From agreeing on a subject of mutual scientific interest to identifying specific areas of research and thrashing out the details of how to proceed may take 3 or 4 years and many are now in early stages of implementation.

A chronic problem on the U.S. side with bilateral science and technology programs is that they are created by Executive Order and lack legislative sanction and, therefore, annual congressional appropriations. As a result, funding for bilaterals has to be wrung out of

the regular budgets of the agencies. The agencies usually manage to eke out funds for administrative costs and travel expenses, but the U.S. share of joint research must be funded in the free-for-all competition for federal research funds.

The National Science Foundation (NSF) has therefore played a special role in science bilaterals. NSF's annual spending on international science cooperative activities has been running at about \$10 million, of which \$1.5 million—the largest dollar share for any single country—currently goes to China.

While Sino-American cooperation is booming, the relationship is not without difficulties. There are U.S. qualms that the Chinese government underfunds its exchange students, for example, but most of the frictions seem to arise in other areas. Reciprocity has been an issue, for example, in negotiations over an agreement on the exchange of technical information. The U.S. agency involved is the National Technical Information Service (NTIS), which disseminates technical reports on research funded by the federal government. The Chinese have taken full advantage of access to NTIS services, becoming the second biggest user nation after Canada with a standing order for two microfiche copies of virtually everything NTIS publishes.

When the agreement came up for renewal, U.S. officials complained that the United States did not have access to comparable Chinese material, but, in effect, was simply permitted to subscribe to Chinese journals and similar publications. The discussion is still in progress.

Similar complaints have been raised by other U.S. agencies about the inability or unwillingness of the Chinese to provide access to particular people or information. Some Americans think that the Chinese persist in equating requests for information with spying.

There have, however, been improvements in Chinese flexibility in dealing with U.S. requests, particularly since the Chinese government decentralized authority to make arrangements under the protocols. American observers also say that the Chinese have been most free-wheeling in seeking cooperation with U.S. professional organizations, industry groups, and individual companies.

At this point, at least, there is agreement on both sides that the relationship is thriving. As a U.S. industry observer put it, borrowing one of those lyrical Chinese nature similes that Americans seem to find irresistible, cooperation is growing "like bamboo shoots after the spring rain."—JOHN WALSH

**NATIONAL ACADEMY OF SCIENCES
NATIONAL ACADEMY OF ENGINEERING**

2101 CONSTITUTION AVENUE
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NAS/NAE

Science, Technology, and Economic Development Program

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Postharvest Food Loss Seminar
China, November 1-10, 1984

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