UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Productivity, Technology and Innovation
Washington, D.C. 20230
(202) 377-1984

MAR 18 1985

Honorable Mary Ann Gilleece
Deputy Under Secretary of Defense
(Acquisition Management)
Pentagon, Room 3E144
Washington, D. C. 20301

Dear Ms. Gilleece:

I have received the joint letter of March 4, 1985, concerning the efforts of the Federal Coordinating Council on Science, Engineering and Technology (FCCSET) Committee on Intellectual Property to develop a policy framework within which more detailed Government procurement and assistance regulations dealing with technical data would be drafted and evaluated. As you recall, this effort was initiated at the request of Dr. Keyworth, the President's Science Advisor, and I am enclosing a copy of his original request.

This effort is not intended to conflict with or in any way limit the Federal Acquisition Regulation (FAR) authorities of the National Aeronautics and Space Administration (NASA), the Department of Defense (DOD), and the General Services Administration (GSA). However, as I trust you agree, the FAR is written against a backdrop of statutory and administrative policies that are often set outside the FAR system as such. For example, the FAR patent provisions must conform to the President's Memorandum and applicable statutes, including Chapter 18 of Title 35 and regulations issued thereunder. Similarly, if FCCSET or another higher authority can reach agreement on basic technical data principles, there would appear to be no reason why the FAR drafters should not be expected to conform the FAR to those principles.

The concerns expressed in Dr. Keyworth's letter remain valid. For years it has proven impossible to develop Federal Procurement Regulations (FPR) or FAR coverage in the technical data area for the civilian agencies. And there have been significant differences in the approaches adopted by DOD, NASA, Department of Energy (DOE), and other agencies that have issued regulations or other policy directives. We believe a major reason for this is the failure to reach agreement on basic objectives and principles.

There is also legitimate concern whether existing regulations give sufficient weight to the policy objectives of this Administration. In particular, this Administration is strongly committed to the principle that private investment and development of Government supported research should be encouraged--as evidenced by the issuance of the President's 1983 Memorandum on Government Patent Policy.

Because of the obvious interest your agency has in technical data issues, we hope that you will continue to provide input and comments during the development of the Statement.

Sincerely,

(signed)
Bruce Merrifield

D. Bruce Merrifield

Attachment

cc: Honorable George A. Keyworth II (White House)
Dr. Andrew Pettifor (OSTP)
Mr. Allan Beres (GSA)
Mr. Stuart J. Evans (NASA)

OPTI/FTMP/Norm Latker/Jesse Lasken/rh 3/14/85
bc: Dr. Merrifield
Egils Milbergs
Dr. Williams
Norm Latker
Chron
Read

THE WHITE HOUSE

WASHINGTON

March 19, 1984

Dear Bruce:

The allocation of rights to various technical data, developed in the performance of government contracts, is an issue with significant implications for future government-industry relationships. It is driven, for example, by the government's need to minimize the costs of the products and services it buys, as well as by industry's desire to maximize profits and maintain any competitive advantage. It is fundamental to the government's continued ability to obtain the services of the best of the private sector.

I believe that this is an issue of sufficient importance that any codification of the government's position on this issue, as in the technical data section of part 27 of the proposed Federal Acquisition Regulations, requires a thorough analysis and discussion by the various agencies, and by the private sector. I believe that the FCCSET Intellectual Property Committee would be an appropriate vehicle for examining the various kinds of technical data, for agreeing on the various government objectives in seeking access to, or protecting the proprietary nature of that data, and for developing the basis for an acceptable set of draft regulations for the government's rights to such data. Please keep me informed of your progress.

Yours truly,

Jay Keyworth

G. A. Keyworth
Science Advisor to the President

Dr. D. Bruce Merrifield
Assistant Secretary for Productivity,
Technology and Innovation
Department of Commerce
Washington, D.C. 20230

RECEIVE
MAR 2 1984
D. BRUCE MERRIE

Analysis of DOD Concerns as Stated in Secretary Weinberger's March 19, 1985 Letter

Concern--The statement would "prohibit efforts to negotiate for the right to obtain and use for competitive procurement purposes proprietary technical data pertaining to commercial or future commercial items for which defense has requirements."

Response--Sections 4 and 5 contain such limitations. However, they are based on language in Public Law 98-525 (and similar language in PL 98-577) which states at section 1202 that the Secretary of Defense should--

"...ensure that persons that have developed products or processes offered or to be offered for sale to the public are not required, as a condition for the procurement of such products or processes by the Department of Defense, to provide to the United States technical data relating to the design, development, or manufacture of such products or processes (except for such data as may be necessary for the United States to operate and maintain the product or use the process if obtained by the United States as an element of performance under the contract)."

However, as a result of Secretary Weinberger's letter we have added references to 10 USC 2320(c) in section 5 which gives DOD greater latitude than others in this area.

Concern--The statement would "require the government to limit its use of technical data pertaining to items developed with less than total government funds to such an extent that competition would be severely inhibited if not precluded."

Response--Again, section 5 places limitations on the right of the government to use proprietary data of a contractor for reprocurement when the data relates to a commercial product developed at private expense. However, it authorizes the use of form, fit, and function data relating to such commercial products for competitive purposes. We have also added the reference to 10 USC 2320(c) to satisfy Secretary Weinberger's concern. Other than data relating to privately developed commercial products, the draft statement does not prevent DOD from obtaining any type of technical data for competitive procurement purposes that relates to noncommercial products developed with partial government and partial contractor funding. Thus, if a contractor has used internal funds to begin the development of a noncommercial, military product the Statement would in no way prevent DOD from negotiating for technical data relating to this item.

Concern--The statement will "prohibit the government's requiring contractors to deliver technical data pertaining to items developed totally at government expense unless there is a specific need for the data. This prohibition appears to extend to follow-on contracts even though data needs not initially apparent may have become known."

Response--We do not understand the basis for this statement. It appears to relate to the second paragraph of section 3 of one of our early drafts which advised agencies not to order expensive "manufacturing data" unless they foresee a need for it. This would not have affected DOD, since in most cases we assume DOD would be procuring the development of an item with an expectation of procuring it in the future if the item proves effective. Revised section 3 (now section 5) no longer contains the same language. In any case neither the earlier version or the current version should prevent DOD from obtaining technical data for procurement purposes in items wholly developed at government expense.

Concern--The statement would "preclude the acquisition of rights in software developed under a contract at government expense unless such software was a specific end product required by the contract. This, too, can serve as a bar to competitive procurement in certain situations."

Response--To fully respond it would be useful to know what type of "situations" are envisioned. However, in actual fact the statement does not precude the acquisition of rights in software unless it was a specific end product. Section 7 begins by stating the government only gets rights in software that is required to be delivered. The statement does not preclude an agency from specifying that software will be delivered.

It does state, however, that "normally" the delivery of software should not be required unless a purpose of the award is the creation of software. This is not an absolute requirement, but we believe it is a sound general rule. Scientists and engineers are constantly writing and altering computer programs to facilitate work under government R&D grants and contracts. In most cases the government is more interested in the end results than obtaining copies of software that was developed incidental to the carrying out of the work. Thus, it makes little sense in most cases for agencies to require delivery of such software. Furthermore, when a researcher sees a wider commercial market for his software, its delivery to the government will undermine his marketing efforts since it may become available to competitors through the Freedom of Information Act.

The first paragraph of section 7 may, in fact, require a change in DOD policy. The Defense Acquisition Regulation (DAR) Supplement now says that DOD will only acquire rights in computer software to meet its needs. However, it then goes on to state that DOD will take unlimited rights in computer software developed in the course of experimental, developmental, or research work specified under a contract. No explanation is given as to why DOD has such a broad need. We believe this may be the major policy issue presented by the draft Statement.

DRAFT

Government Data Policy Statement (Revised 3/27/85)

This statement provides guidance concerning the acquisition of technical data and software under government grants and contracts, except prime contracts for the operation of government-owned research or production facilities. However, it applies to subcontracts under such contracts. It is intended to (i) provide agencies with the flexibility to acquire technical data and software needed to fulfill their missions (ii) avoid unnecessary costs that result from the ordering of unneeded technical data; (iii) encourage the commercialization of new products and processes by contractors through the protection of technical data; and (iv) encourage the most qualified commercial concerns to participate in government research and development programs. It does not affect the classification of technical data and software for national security purposes.

Section 1. Definitions. As used in this Statement--

(a) "technical data" means recorded information of a scientific or technical nature. It does not include software or financial, administrative, cost and pricing, management data, and other information incidental to contract administration;

(b) "manufacturing data" means technical data and software used for the manufacture of a product or performance of a process on a commercial scale;

(c) The term "contract" includes subcontracts and the term "contractor" includes subcontractors; and

(d) "software" means computer programs, computer data bases, and documentation thereof.

Section 2. Treatment of Proposals. Proposals that have not been incoporated in an award shall be treated as confidential and not disclosed outside the government without the submitter's permission except for evaluation purposes. Parts of proposals that are incorporated in awards and which contain trade secrets or commercial or financial information shall also be treated as confidential if properly marked. Agencies shall not discriminate against marked proposals.

Section 3. Scope of Data Rights Clauses. Technical data delivery requirements should normally be fully set out at the time of contracting, but deferred ordering provisions may be used to add additional deliverables. Any rights which the government obtains to technical data will be limited to rights in data specifically required to be delivered or prepared.

Section 4. Supply Contracts. Agencies procuring standard commercial products may obtain technical data necessary for operation, maintenance or repair but not for reprocurement purposes. Notwithstanding, manufacturing data should not normally be sought.

Section 5. Engineering Development Contracts. Contracts for engineering development should be structured to prevent the disclosure of proprietary technical data related to commercial products or processes developed at private expense by contractors. For example, agencies should normally accept form, fit, and function data in lieu of manufacturing data. Or, if manufacturing data is needed, the contractor shall be allowed to mark as proprietary any data that relates to commercial products or processes developed at private expense; and the right of the government to use and disclose the data shall be specified in the contract, and shall not include the right to use the data for reprocurement purposes (except for Defense Department contracts to which 10 USC 2320(c) is applied). Use of deferred delivery provisions should also be considered. A competitive procurement of an item developed under an engineering development contract should not include in the solicitation any proprietary manufacturing data that relates to a product or process developed at private expense by a contractor which is offered or to be offered for sale commercially by the contractor (except when 10 USC 2320(c) was applied to such data).

Any technical data delivered under an engineering development contract that relates to an item develped wholly under the contract shall be taken without restrictions if competitive acquisition of the item is anticipated. When competitive acquistion is not anticipated, the contractor will be allowed to retain ownership of any such data delivered, and the agency shall reserve an unrestricted, royalty-free right to use or have its contractors use the technical data for governmental purposes (excluding publication outside the government). However, if mission needs require and this is consistent with PL 98-525 or 577, agencies may also acquire publication and other rights. Other technical data not related directly to items developed under the contract normally shall be taken without restrictions.

Section 6. Contracts for Basic and Applied Research. Agencies will normally take technical data delivered under a basic or applied research contract with the unlimited right to use and publish such data, subject to any other provisions of the contract related to inventions and patents. However, if the research involves a contractor's privately developed products or processes or if it is otherwise agreed to by the parties, proprietary data of the contractor shall be protected.

Section 7. Assistance Awards. Agencies normally should not require delivery of technical data under grants or cooperative agreements except as necessary to verify the awardee's performance. The awardee normally will be allowed to retain all

rights in technical data delivered or produced under such awards, including the right to publish and/or assert copyright, although the agency may acquire a nonexclusive, royalty-free, and worldwide license to use such technical data that is delivered or published by the awardee for internal government purposes. When considered necessary to meet program objectives or statutory requirements, agencies may also (i) reserve the right to publish technical data delivered under a grant or cooperative agreement if the awardee fails to publish the results of the research within a reasonable time and/or (ii) expand the government's license to cover State and local governments.

Section 8. Software. Unless its delivery is specifically required, agencies shall not normally acquire rights in software generated under contracts or grants. Delivery of software shall not normally be required unless a purpose of the award is the creation of software. If software has commercial potential, agencies should normally accept license rights in lieu of ownership; and consideration should be given to allowing software documentation to be maintained on the contractor's premises.

When an agency acquires existing proprietary software, it shall accept appropriate conditions limiting its right to use and disclose the software. This includes cases when proprietary software is modified to accommodate particular agency needs.

Software within the definition of "manufacturing data" at section 1(b) is subject to sections 3-7 and not this section.

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Productivity, Technology and Innovation
Washington, D.C. 20230
(202) 377-1984

MAR 18 1985

Honorable Mary Ann Gilleece
Deputy Under Secretary of Defense
(Acquisition Management)
Pentagon, Room 3E144
Washington, D. C. 20301

Dear Ms. Gilleece:

I have received the joint letter of March 4, 1985, concerning the efforts of the Federal Coordinating Council on Science, Engineering and Technology (FCCSET) Committee on Intellectual Property to develop a policy framework within which more detailed Government procurement and assistance regulations dealing with technical data would be drafted and evaluated. As you recall, this effort was initiated at the request of Dr. Keyworth, the President's Science Advisor, and I am enclosing a copy of his original request.

This effort is not intended to conflict with or in any way limit the Federal Acquisition Regulation (FAR) authorities of the National Aeronautics and Space Administration (NASA), the Department of Defense (DOD), and the General Services Administration (GSA). However, as I trust you agree, the FAR is written against a backdrop of statutory and administrative policies that are often set outside the FAR system as such. For example, the FAR patent provisions must conform to the President's Memorandum and applicable statutes, including Chapter 18 of Title 35 and regulations issued thereunder. Similarly, if FCCSET or another higher authority can reach agreement on basic technical data principles, there would appear to be no reason why the FAR drafters should not be expected to conform the FAR to those principles.

The concerns expressed in Dr. Keyworth's letter remain valid. For years it has proven impossible to develop Federal Procurement Regulations (FPR) or FAR coverage in the technical data area for the civilian agencies. And there have been significant differences in the approaches adopted by DOD, NASA, Department of Energy (DOE), and other agencies that have issued regulations or other policy directives. We believe a major reason for this is the failure to reach agreement on basic objectives and principles.

There is also legitimate concern whether existing regulations give sufficient weight to the policy objectives of this Administration. In particular, this Administration is strongly committed to the principle that private investment and development of Government supported research should be encouraged--as evidenced by the issuance of the President's 1983 Memorandum on Government Patent Policy.

Because of the obvious interest your agency has in technical data issues, we hope that you will continue to provide input and comments during the development of the Statement.

Sincerely,

(signed)
Bruce Merrifield

D. Bruce Merrifield

Attachment

cc: Honorable George A. Keyworth II (White House)
Dr. Andrew Pettifor (OSTP)
Mr. Allan Beres (GSA)
Mr. Stuart J. Evans (NASA)

OPTI/FTMP/Norm Latker/Jesse Lasken/rh 3/14/85
bc: Dr. Merrifield
Egils Milbergs
Dr. Williams
Norm Latker
Chron
Read

THE WHITE HOUSE

WASHINGTON

March 19, 1984

Dear Bruce:

The allocation of rights to various technical data, developed in the performance of government contracts, is an issue with significant implications for future government-industry relationships. It is driven, for example, by the government's need to minimize the costs of the products and services it buys, as well as by industry's desire to maximize profits and maintain any competitive advantage. It is fundamental to the government's continued ability to obtain the services of the best of the private sector.

I believe that this is an issue of sufficient importance that any codification of the government's position on this issue, as in the technical data section of part 27 of the proposed Federal Acquisition Regulations, requires a thorough analysis and discussion by the various agencies, and by the private sector. I believe that the FCCSET Intellectual Property Committee would be an appropriate vehicle for examining the various kinds of technical data, for agreeing on the various government objectives in seeking access to, or protecting the proprietary nature of that data, and for developing the basis for an acceptable set of draft regulations for the government's rights to such data. Please keep me informed of your progress.

Yours truly,

G. A. Keyworth
Science Advisor to the President

Dr. D. Bruce Merrifield
Assistant Secretary for Productivity,
Technology and Innovation
Department of Commerce
Washington, D.C. 20230

RECEIVE
MAR 2 0 198
D. BRUCE MERRIF

EJB
NJL

DULIN, THIENPONT, POTTHAST & SNYDER, LTD.
ATTORNEYS AT LAW
SUITE 606,
135 SOUTH LASALLE STREET
CHICAGO, ILLINOIS 60603

JACQUES M. DULIN
JAMES W. POTTHAST
RAY E. SNYDER
FRANK R. THIENPONT

(312) 263-3288
CABLE
LAWBYRINTH

PATENT BRANCH, OGC
DHEW

AUG 25 1978

August 22, 1978

Senator Robert Dole
Russell Senate Office Building
Washington, D. C. 20510

Dear Senator Dole:

Thank you for your letter of August 14, 1978 and the page from the Congressional Record dated Wednesday, August 9, 1978. I had already sent you a communication dated August 14, 1978 commending and supporting your position based on your news release. I am still amazed at the clarity with which you have analyzed the problem, and the logic of your proposed solution.

Patents generally are not of universal interest, and some of your colleagues, namely Nelson and Long, no doubt have made hay back home in haranguing on the governments' treatment of them. In fact, dealing with inventions is fairly intricate, and patents are a vital link for effecting the transfer of technology you refer to.

I believe that much of the furor and confusion expressed by some of your colleagues and members of the administration stem from a lack of understanding of just what a patent is and how it functions. There seems to be a real hang-up over the concept of granting anyone a monopoly, albeit a very restricted one. In truth it is not very much of a monopoly. The worst that can happen is that a competitor affected by another's patent may have to get off his duff and develop something as good or better in order to compete. In this sense, patents can be a strong force for stimulating competition. There may be a temporary howl, but any company still in the business of making buggy whips should upgrade its product line.

As a final comment, I was particularly pleased with your reference to the position of the patent counsel for the DHEW. I have known Mr. Norm Latker for many years and am intimately aware of his stand on the handling of these matters--even to the point of jeopardizing his job. In my opinion, Mr. Latker has done more toward placing DHEW sponsored inventions into the hands of the public than any other individual and perhaps more than all of the rest of DHEW combined.

If I can be of further assistance in this matter, I am at your service.

Very truly yours,

Ray E. Snyder

Ray E. Snyder

RES:cs

bcc:Donald W. Banner, Esq.
Howard Bremmer, Esq.
Mr. Paul R. Keenan
Dr. Martin Rachmeler
Norman J. Latker, Esq.

CONFERENCE AUDIENCE INVITATION LIST

Mr. Robert A. Schoellhorn
Chief Executive Officer
Abbott Laboratories- Abbott Park
North Chicago, IL 60064

Mr. Robert S. Janicki
Vice President, Pharmeceutical
Products Research & Development
Abbott Laboratories, Abbott Park
North Chicago, IL 60064

Mr. W. J. Sanders, III
Chairman, President and
Chief Executive Officer
Advanced Micro Devices, Incorporated
901 Thompson Place
Sunnyvale, CA 94086

Mr. Edward L. Hennessy, Jr.
Chairman and Chief Executive Officer
Allied-Signal Companies
Columbia Road and Park Avenue
Morristown, NJ 07960

Mr. Albert E. Germain
Tax Counsel
Aluminum Company of America
1501 Alcoa Building
Pittsburgh, PA 15219

Mr. Charles W. Parry
Chairman and Chief Executive Officer
Aluminum Company of America
1501 Alcoa Building
Pittsburgh, PA 15219

Mr. Eugene R. White
Chairman
Amdahl Corporation
1250 E. Arques Avenue
Sunnyvale, CA 94086

Mr. George Sella, Jr.
Chairman, President and
Chief Executive Officer
American Cyanamid Company
One Cyanamid Plaza
Wayne, NJ 07470

Mr. Claude Barfield
Resident, Fellow Science and Technology Policy
American Enterprise Institute
1150 17th Street, N. W.
Washington, D. C. 20036

Mr. Edward A. Mason
Vice President, Research
Amoco
200 East Randolph Drive
Chicago, IL 60601

Mr. Walter F. Raab
Chairman and Chief Executive Officer
AMP, Incorporated
Post Office Box 3608
Harrisburg, PA 17105

Mr. John Sculley
President and Chief Executive Officer
Apple Computer, Incorporated
20525 Mariana Avenue
Cupertino, CA 95014

Mr. James C. Morgan
President and Chief Executive Officer
Applied Materials, Incorporated
3050 Bowers Avenue
Santa Clara, CA 95051

Mr. Emmett W. Hines
Director, Government Relations
Armstrong World Industries
1025 Connecticut Avenue, N. W.
Suite 1007
Washington, D. C. 20036

Mr. Joseph L. Jones
Chairman and Chief Executive Officer
Armstrong World Industries, Incorporated
Liberty and Charlotte Streets
Lancaster, PA 17604

Mr. Irving Levin
Senior Consultant
Arthur D. Little, Incorporated
4 Embarcadero Center
San Francisco, CA 94111

Mr. Peter E. Glaser
Vice President for Advances
in Technology
Arthur D. Little, Incorporated
25 Acorn Park
Cambridge, MA 02140

Mr. James E. Olson
Vice Chairman
AT & T
550 Madison Avenue
New York, NY 10022

Mr. Charles L. Brown
Chairman and Chief Executive Officer
AT & T
550 Madison Avenue
New York, NY 10022

Mr. Vernon R. Loucks, Jr.
President and Chief Executive Officer
Baxter Travenol Laboratories
1 Baxter Parkway
Deerfield, IL 60015

Dr. Robert A. Patterson, M. D.
Senior Vice President of Scientific Affairs
Baxter Travenol Laboratories
1 Baxter Parkway
Deerfield, IL 60015

Mr. G. S. C. Wang Mr.
Manager, Research and Engineering
Bechtel Group Incorporated
50 Beale Street
San Francisco, CA 94150

Mr. James H. Leonard
Vice President, Technology
Bethlehem Steel Corporation
Bethlehem, PA 18016
Mr. Donald H. Trautlein
Chairman and Chief Executive Officer
Bethlehem Steel Corporation
2118 Martin Tower
Bethlehem, PA 18016

Ms. Jane Cicala
Senior Administrator
Governmental & International Affairs
Boeing Company
Post Office Box 3707
Seattle, WA 98124

Mr. Thornton A. Wilson
Chairman and Chief Executive Officer
Boeing Company
Post Office Box 3707
Seattle, WA 98124

Mr. James F. Bere
Chairman and Chief Executive Officer
Borg-Warner Corporation
200 South Michigan Avenue
Chicago, IL 60604

Mr. Richard L. Gelb
Chairman of the Board and
Chief Executive Officer
Bristol-Myers Company
345 Park Avenue
New York, NY 10154

Mr. Charles A. Heimbold, Jr.
Sr. Vice President for
Planning and Development
Bristol-Myers Co.,Inc.
345 Park Avenue
New York, NY 10154

Mr. George T. Maloney
President
C. R. Bard
371 Central Avenue
Murray Hill, NJ 07974

Mr. Robert H. McCaffrey
Chairman of the Board and
Chief Executive Officer
C. R. Bard
731 Central Avenue
Murray Hill, NJ 07974

Mr. Robert A. Charpie
President
Cabot Corporation
125 High Street
Boston, MA 02110

Mr. George A. Schaefer
Chairman of the Board
Caterpillar Tractor Company
100 North East Adams Street
Peoria, IL 61629

Mr. John D. Macomber
Chairman and Chief Executive Officer
Celanese Corporation
1211 Avenue of the Americas
New York, NY 10036

Mr. Peter Crawford
Vice President, Information Services
Citibank, N. A.
399 Park Avenue
New York, NY 10043

Mr. William C. Norris
Chairman and Chief Executive Officer
Control Data Corporation
8100 34th Avenue South
Minneapolis, MN 55420

Mr. John W. Lacey
Executive Vice President for
Technology and Planning
Control Data Corporation
8100 34th Avenue South
Minneapolis, MN 55420

Mr. Amory Houghton
Chairman, Executive Committee
Corning Glass Works
Houghton Park
Corning, NY 14831

Mr. John A. Rollwagon
Chairman, President and
Chief Executive Officer
Cray Research, Incorporated
608 Second Avenue South
Minneapolis, MN 55402

Mr. John Mumford
Crosspoint Venture Associates
Post Office Box 10101
Palo Alto, CA 94303

Mr. Michael Dale
DALECO Research and Development, Inc.
3388 Via Lido
Fourth Floor
Newport Beach, CA 92663

Mr. Gerald B. Mitchell
Chairman and Chief Executive Officer
Dana Corporation
Post Office Box 1100
Toledo, OH 43697

Mr. Robert A. Hanson
Chairman and Chief Executive Officer
Deere and Company
John Deere Road
Moline, IL 61265

Mr. Paul F. Oreffice
President and Chief Executive Officer
Dow Chemical Company
2030 Willard N. Dow Center
Midland, MI 48640

Mr. Howard E. Simmons
Director, Central Research and Development
E. I. Dupont De Nemours & Company
1007 North Market Street
Wilmington, DE 19898

Mr. Edward G. Jefferson
Chief Executive Officer
E.I. duPont de Nemours and Co., Inc.
1007 Market Street
Wilmington, DE 19898

Mr. Leo J. Thomas, Jr.
Senior Vice President (Research)
Eastman Kodak Company
343 State Street
Rochester, NY 14650

Mr. Colby H. Chandler
Chairman and Chief Executive Officer
Eastman Kodak Company
343 State Street
Rochester, NY 14650

Mr. DeSoto Jordan
Vice President, Government Affairs
EDS Corporation
229 Pennsylvania Avenue, S. E.
Washington, D. C. 20003

Mr. H. Ross Perot
Chairman
EDS Corporation
721721 Forrest Lane
Dallas, TX 75230

Mr. R. William Gorin
E. F. Hutton & Company, Inc.
One Battery Park Plaza
New York, NY 10004

Mr. Gene Mannella
Deputy Director
Electric Power Research Institute
1800 Massachusetts Avenue, N.W.
Suite 700
Washington, D. C. 20036

Mr. Edward E. David, Jr.
President
Exxon Research and Engineering Company
Post Office Box 101
Florham Park, NJ 07932

Mr. C. C. Garvin
Chairman and Chief Executive Officer
Exxon Corporation
1251 Avenue of the Americas
New York, NY 10020

Mr. David S. Tappan, Jr.
Chairman and Chief Executive Officer
Fluor Corporation
3333 Michelson Drive
Irvine, CA 92730

Mr. Robert H. Malott
Chairman and Chief Executive Officer
FMC Corporation
200 East Randolph Drive
Chicago, IL 60601

Mr. Donald E. Petersen
Chairman and Chief Executive Officer
Ford Motor Company
The American Road
Dearborn, MI 48121

Mr. Howard G. Schaeffer
Freshman, Marantz, Orlanski,
Comsky and Deutsch
9100 Wilshire Boulevard
8th Floor, East Tower
Beverly Hills, CA 90212

Mr. Robert Swanson
President
Genentech
460 Point San Bruno Boulevard
San Francisco, CA 94080

Mr. Roland W. Schmitt
Senior Vice President for
Corporate Research and Development
General Electric Company
3135 Easton Turnpike
Fairfield, CT 06430

Mr. John F. Welch
Chairman and Chief Executive Officer
General Electric Co.
3135 Easton Turnpike
Fairfield, CT 06431

Mr. Phillips S. Peter
Vice President
Corporate Government Relations
General Electric Company
1331 Pennsylvania Avenue, N. W.
Suite 800
Washington, D. C. 20004

Dr. Paul F. Chenea
Vice President for Research
General Motors Corporation
3044 West Grand Boulevard
Detroit, MI 48202

Mr. Robert A. Frosch
Vice President, Research Laboratories
General Motors Corporation, U. S. A.
767 Fifth Avenue
New York, NY 10153

Mr. Roger B. Smith
Chairman and Chief Executive Officer
General Motors Corporation
3044 West Grand Boulevard
Detroit, MI 48202

Mr. William R. Thurston
President and Chief Executive Officer
Genrad, Incorporated
300 Baker Avenue
Concord, MA 01742

Mr. David A. Kelso
Special Investments
Goldman, Sachs & Company
85 Broad Street
New York, NY 10004

Mr. William R. Ylvisaker
Chairman and Chief Executive Officer
Gould Incorporated
10 Gould Center
Rolling Meadows, IL 60008

Mr. John F. Carr
Vice Chairman of the Board
Grumman Corporation
1000 Wilson Boulevard
Suite 2100
Arlington, VA 22209

Mr. Theodore F. Brophy
Chairman
GTE Corporation
One Stamford Forum
Stamford, CT 06904

Mr. Thomas H. Cruikshank
President and Chief Executive Officer
Halliburton Company
400 North Olive LB 263
Dallas, TX 75201

Mr. William Perry
Hambrecht and Quist
235 Montgomery Street
Suite 530
San Francisco, CA 94101

Mr. Joseph A. Boyd
Chairman and Chief Executive Officer
Harris Corporation
Melbourne, FL 32919

Mr. Robert H. Kessel
Herrick and Smith
100 Federal Street
Boston, MA 02110

Mr. David Packard
Chairman of the Board
Hewlett-Packard
3000 Hanover Street
Palo Alto, CA 94304

Mr. John A. Young
President and Chief Executive Officer
Hewlett-Packard
3000 Hanover Street
Palo Alto, CA 94304

Mr. John L. Doyle
Vice President for Research and Development
Hewlett-Packard
3000 Hanover Street
Palo Alto, CA 94304

Mr. Gerald Lore
Director of Federal Government Affairs
Hoffmann-LaRoche, Incorporated
30040 Kingsland Street
Nutley, NJ 07110-1199

Mr. Irwin Lerner
Chief Executive Officer
Hoffmann-LaRoche, Incorporated
30040 Kingsland Street
Nutley, NJ 07110-1199

Mr. Edson W. Spencer
Chairman and Chief Executive Officer
Honeywell Incorporated
Honeywell Plaza
Minneapolis, MN 55408

Mr. William B. Johnson
Chairman and Chief Executive Officer
I. C. Industries, Incorporated
One Illinois Center
Chicago, IL 60601

Mr. Ralph E. Gomory
Vice President for Research
IBM Corporate Headquarters
Old Orchard Road
Armonk, NY 10504

Mr. John F. Akers
President and Chief Executive Officer
IBM Corporation
Old Orchard Road
Armonk, NY 10504

Mr. John R. Opel
Chairman of the Board
IBM Corporate Headquarters
Old Orchard Road
Armonk, NY 10504

Mr. Gordon E. Moore
Chairman and Chief Executive Officer
INTEL Corporation
3065 Bowers Avenue
Santa Clara, CA 95051

Mr. Rand V. Araskog
Chairman and Chief Executive Officer
ITT Corporation
320 Park Avenue
New York, NY

Mr. Roy A. Anderson
Chairman and Chief Executive Officer
Lockheed Corporation
2555 Hollywood Way
Building 61
Burbank, CA 91503

Mr. Mitchell D. Kapor
Chairman and Chief Executive Officer
Lotus Development Corporation
161 First Street
Cambridge, MA 02142

Mr. Raymond A. Hay
Chairman and Chief Executive Officer
LTV Corporation
Post Office Box 5003
Dallas, TX 75222

Mr. Thomas J. Pownall
Chairman and Chief Executive Officer
Martin Marietta Corporation
6801 Rockledge Drive
Bethesda, MD 20817

Mr. James E. Cunningham
Chairman and Chief Executive Officer
McDermott International, Incorporated
1010 Common Street
New Orleans, LA 70160

Mr. Thomas M. Gunn
Staff Vice President-Washington
McDonnell Douglas Corporation
1225 Jefferson Davis Highway
Suite 800
Arlington, VA 22202

Mr. John Huck
Chairman of the Board
Merck, Sharp and Dohme Research Laboratories
Post Office Box 2000
Rahway, NJ 07065

Mr. P. Roy Vagelos
President and Chief Executive Officer
Merck, Sharp and Dohme Research Laboratories
Post Office Box 2000
Rahway, NJ 07065

Mr. Hirman W. Emery, Jr.
Managing Director
Merrill Lynch Capital Markets
165 Broadway
1 Liberty Plaza - 44th Floor
New York, NY 10023

Mr. Glen Haney
President and Chief Executive Officer
Micropro International Corporation
33 San Pablo Avenue
San Rafael, CA 94903

Mr. Lewis W. Lehr
Chief Executive Officer
Minnesota Mining and Manufacturing Co.
General Offices/3M
3M Center
Saint Paul, MN 55144

Mr. Lester C. Krogh
Vice President, Research and Development
Minnesota Mining and Manufacturing Company
3M Center
Saint Paul, MN 55144

Mr. A. E. Klauser
Senior Vice President
Mitsui and Company (U.S.A.), Inc.
1701 Pennsylvania Avenue, N. W.
Suite 400
Washington, D. C. 20006

Mr. Rawleigh Warner, Jr.
Chairman and Chief Executive Officer
Mobil Corporation
150 East 42nd Street
New York, NY 10017

Dr. Howard A. Schneiderman
Senior Vice President for
Research and Development
Monsanto Company
800 North Lindbergh Boulevard
Saint Louis, MO 63167

Mr. Richard Mahoney
President and Chief Executive Officer
Monsanto Company
800 North Lindbergh Boulevard
Saint Louis, MO 63167