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Appendix A

Public Law 94-282
94th Congress, H. R. 10230
May 11, 1976

An Act

To establish a science and technology policy for the United States, to provide for scientific and technological advice and assistance to the President, to provide a comprehensive survey of ways and means for improving the Federal effort in scientific research and information handling, and in the use thereof, to amend the National Science Foundation Act of 1950, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Science and Technology Policy, Organization, and Priorities Act of 1976".

National Science and Technology Policy, Organization, and Priorities Act of 1976. 42 USC 6601 note.

TITLE I—NATIONAL SCIENCE, ENGINEERING, AND TECHNOLOGY POLICY AND PRIORITIES

FINDINGS

SEC. 101. (a) The Congress, recognizing the profound impact of science and technology on society, and the interrelations of scientific, technological, economic, social, political, and institutional factors, hereby finds and declares that— 42 USC 6601.

(1) the general welfare, the security, the economic health and stability of the Nation, the conservation and efficient utilization of its natural and human resources, and the effective functioning of government and society require vigorous, perceptive support and employment of science and technology in achieving national objectives;

(2) the many large and complex scientific and technological factors which increasingly influence the course of national and international events require appropriate provision, involving long-range, inclusive planning as well as more immediate program development, to incorporate scientific and technological knowledge in the national decisionmaking process;

(3) the scientific and technological capabilities of the United States, when properly fostered, applied, and directed, can effectively assist in improving the quality of life, in anticipating and resolving critical and emerging international, national, and local problems, in strengthening the Nation's international economic position, and in furthering its foreign policy objectives;

(4) Federal funding for science and technology represents an investment in the future which is indispensable to sustained national progress and human betterment, and there should be a continuing national investment in science, engineering, and technology which is commensurate with national needs and opportunities and the prevalent economic situation;

(5) the manpower pool of scientists, engineers, and technicians, constitutes an invaluable national resource which should be utilized to the fullest extent possible; and

(6) the Nation's capabilities for technology assessment and for technological planning and policy formulation must be strengthened at both Federal and State levels.

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Priority goals.

(b) As a consequence, the Congress finds and declares that science and technology should contribute to the following priority goals without being limited thereto:

(1) fostering leadership in the quest for international peace and progress toward human freedom, dignity, and well-being by enlarging the contributions of American scientists and engineers to the knowledge of man and his universe, by making discoveries of basic science widely available at home and abroad, and by utilizing technology in support of United States national and foreign policy goals;

(2) increasing the efficient use of essential materials and products, and generally contributing to economic opportunity, stability, and appropriate growth;

(3) assuring an adequate supply of food, materials, and energy for the Nation's needs;

(4) contributing to the national security;

(5) improving the quality of health care available to all residents of the United States;

(6) preserving, fostering, and restoring a healthful and esthetic natural environment;

(7) providing for the protection of the oceans and coastal zones, and the polar regions, and the efficient utilization of their resources;

(8) strengthening the economy and promoting full employment through useful scientific and technological innovations;

(9) increasing the quality of educational opportunities available to all residents of the United States;

(10) promoting the conservation and efficient utilization of the Nation's natural and human resources;

(11) improving the Nation's housing, transportation, and communication systems, and assuring the provision of effective public services throughout urban, suburban, and rural areas;

(12) eliminating air and water pollution, and unnecessary, unhealthful, or ineffective drugs and food additives; and

(13) advancing the exploration and peaceful uses of outer space.

DECLARATION OF POLICY

42 USC 6602.

SEC. 102. (a) PRINCIPLES.—In view of the foregoing, the Congress declares that the United States shall adhere to a national policy for science and technology which includes the following principles:

(1) The continuing development and implementation of strategies for determining and achieving the appropriate scope, level, direction, and extent of scientific and technological efforts based upon a continuous appraisal of the role of science and technology in achieving goals and formulating policies of the United States, and reflecting the views of State and local governments and representative public groups.

(2) The enlistment of science and technology to foster a healthy economy in which the directions of growth and innovation are compatible with the prudent and frugal use of resources and with the preservation of a benign environment.

(3) The conduct of science and technology operations so as to serve domestic needs while promoting foreign policy objectives.

(4) The recruitment, education, training, retraining, and beneficial use of adequate numbers of scientists, engineers, and tech-

nologists, and the promotion by the Federal Government of the effective and efficient utilization in the national interest of the Nation's human resources in science, engineering, and technology.

(5) The development and maintenance of a solid base for science and technology in the United States, including: (A) strong participation of and cooperative relationships with State and local governments and the private sector; (B) the maintenance and strengthening of diversified scientific and technological capabilities in government, industry, and the universities, and the encouragement of independent initiatives based on such capabilities, together with elimination of needless barriers to scientific and technological innovation; (C) effective management and dissemination of scientific and technological information; (D) establishment of essential scientific, technical and industrial standards and measurement and test methods; and (E) promotion of increased public understanding of science and technology.

(6) The recognition that, as changing circumstances require periodic revision and adaptation of title I of this Act, the Federal Government is responsible for identifying and interpreting the changes in those circumstances as they occur, and for effecting subsequent changes in title I as appropriate.

(b) IMPLEMENTATION.—To implement the policy enunciated in subsection (a) of this section, the Congress declares that:

(1) The Federal Government should maintain central policy planning elements in the executive branch which assist Federal agencies in (A) identifying public problems and objectives, (B) mobilizing scientific and technological resources for essential national programs, (C) securing appropriate funding for programs so identified, (D) anticipating future concerns to which science and technology can contribute and devising strategies for the conduct of science and technology for such purposes, (E) reviewing systematically Federal science policy and programs and recommending legislative amendment thereof when needed. Such elements should include an advisory mechanism within the Executive Office of the President so that the Chief Executive may have available independent, expert judgment and assistance on policy matters which require accurate assessments of the complex scientific and technological features involved.

(2) It is a responsibility of the Federal Government to promote prompt, effective, reliable, and systematic transfer of scientific and technological information by such appropriate methods as programs conducted by nongovernmental organizations, including industrial groups and technical societies. In particular, it is recognized as a responsibility of the Federal Government not only to coordinate and unify its own science and technology information systems, but to facilitate the close coupling of institutional scientific research with commercial application of the useful findings of science.

(3) It is further an appropriate Federal function to support scientific and technological efforts which are expected to provide results beneficial to the public but which the private sector may be unwilling or unable to support.

(4) Scientific and technological activities which may be properly supported exclusively by the Federal Government should be distinguished from those in which interests are shared with State and local governments and the private sector. Among these enti-

ties, cooperative relationships should be established which encourage the appropriate sharing of science and technology decisionmaking, funding support, and program planning and execution.

(5) The Federal Government should support and utilize engineering and its various disciplines and make maximum use of the engineering community, whenever appropriate, as an essential element in the Federal policymaking process.

(6) Comprehensive legislative support for the national science and technology effort requires that the Congress be regularly informed of the condition, health and vitality, and funding requirements of science and technology, the relation of science and technology to changing national goals, and the need for legislative modification of the Federal endeavor and structure at all levels as it relates to science and technology.

(c) PROCEDURES.—The Congress declares that, in order to expedite and facilitate the implementation of the policy enunciated in subsection (a) of this section, the following coordinate procedures are of paramount importance:

(1) Federal procurement policy should encourage the use of science and technology to foster frugal use of materials, energy, and appropriated funds; to assure quality environment; and to enhance product performance.

(2) Explicit criteria, including cost-benefit principles where practicable, should be developed to identify the kinds of applied research and technology programs that are appropriate for Federal funding support and to determine the extent of such support. Particular attention should be given to scientific and technological problems and opportunities offering promise of social advantage that are so long range, geographically widespread, or economically diffused that the Federal Government constitutes the appropriate source for undertaking their support.

(3) Federal promotion of science and technology should emphasize quality of research, recognize the singular importance of stability in scientific and technological institutions, and for urgent tasks, seek to assure timeliness of results. With particular reference to Federal support for basic research, funds should be allocated to encourage education in needed disciplines, to provide a base of scientific knowledge from which future essential technological development can be launched, and to add to the cultural heritage of the Nation.

(4) Federal patent policies should be developed, based on uniform principles, which have as their objective the preservation of incentives for technological innovation and the application of procedures which will continue to assure the full use of beneficial technology to serve the public.

(5) Closer relationships should be encouraged among practitioners of different scientific and technological disciplines, including the physical, social, and biomedical fields.

(6) Federal departments, agencies, and instrumentalities should assure efficient management of laboratory facilities and equipment in their custody, including acquisition of effective equipment, disposal of inferior and obsolete properties, and cross-servicing to maximize the productivity of costly property of all kinds. Disposal policies should include attention to possibilities for further productive use.

(7) The full use of the contributions of science and technology to support State and local government goals should be encouraged.

(8) Formal recognition should be accorded those persons whose scientific and technological achievements have contributed significantly to the national welfare.

(9) The Federal Government should support applied scientific research, when appropriate, in proportion to the probability of its usefulness, insofar as this probability can be determined; but while maximizing the beneficial consequences of technology, the Government should act to minimize foreseeable injurious consequences.

(10) Federal departments, agencies, and instrumentalities should establish procedures to insure among them the systematic interchange of scientific data and technological findings developed under their programs.

TITLE II—OFFICE OF SCIENCE AND TECHNOLOGY POLICY

Presidential Science and Technology Advisory Organization Act of 1976.

SHORT TITLE

SEC. 201. This title may be cited as the "Presidential Science and Technology Advisory Organization Act of 1976". 42 USC 6611 note.

ESTABLISHMENT

SEC. 202. There is established in the Executive Office of the President an Office of Science and Technology Policy (hereinafter referred to in this title as the "Office"). 42 USC 6611.

DIRECTOR; ASSOCIATE DIRECTORS

SEC. 203. There shall be at the head of the Office a Director who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for level II of the Executive Schedule in section 5313 of title 5, United States Code. The President is authorized to appoint not more than four Associate Directors, by and with the advice and consent of the Senate, who shall be compensated at a rate not to exceed that provided for level III of the Executive Schedule in section 5314 of such title. Associate Directors shall perform such functions as the Director may prescribe. Appointment. Compensation. 42 USC 6612.

FUNCTIONS

SEC. 204. (a) The primary function of the Director is to provide, within the Executive Office of the President, advice on the scientific, engineering, and technological aspects of issues that require attention at the highest levels of Government. 42 USC 6613.

(b) In addition to such other functions and activities as the President may assign, the Director shall—

(1) advise the President of scientific and technological considerations involved in areas of national concern including, but not limited to, the economy, national security, health, foreign relations, the environment, and the technological recovery and use of resources;

(2) evaluate the scale, quality, and effectiveness of the Federal effort in science and technology and advise on appropriate actions;

(3) advise the President on scientific and technological considerations with regard to Federal budgets, assist the Office of Management and Budget with an annual review and analysis of funding proposed for research and development in budgets of all Federal agencies, and aid the Office of Management and Budget and the agencies throughout the budget development process; and

(4) assist the President in providing general leadership and coordination of the research and development programs of the Federal Government.

POLICY PLANNING, ANALYSIS, AND ADVICE

42 USC 6614.

SEC. 203. (a) The Office shall serve as a source of scientific and technological analysis and judgment for the President with respect to major policies, plans, and programs of the Federal Government. In carrying out the provisions of this section, the Director shall—

(1) seek to define coherent approaches for applying science and technology to critical and emerging national and international problems and for promoting coordination of the scientific and technological responsibilities and programs of the Federal departments and agencies in the resolution of such problems;

Science and Technology Report.

(2) assist and advise the President in the preparation of the Science and Technology Report, in accordance with section 209 of this Act;

(3) gather timely and authoritative information concerning significant developments and trends in science, technology, and in national priorities, both current and prospective, to analyze and interpret such information for the purpose of determining whether such developments and trends are likely to affect achievement of the priority goals of the Nation as set forth in section 101(b) of this Act;

Data base.

(4) encourage the development and maintenance of an adequate data base for human resources in science, engineering, and technology, including the development of appropriate models to forecast future manpower requirements, and assess the impact of major governmental and public programs on human resources and their utilization;

Studies and analyses.

(5) initiate studies and analyses, including systems analyses and technology assessments, of alternatives available for the resolution of critical and emerging national and international problems amenable to the contributions of science and technology and, insofar as possible, determine and compare probable costs, benefits, and impacts of such alternatives;

(6) advise the President on the extent to which the various scientific and technological programs, policies, and activities of the Federal Government are likely to affect the achievement of the priority goals of the Nation as set forth in section 101(b) of this Act;

(7) provide the President with periodic reviews of Federal statutes and administrative regulations of the various departments and agencies which affect research and development activities, both internally and in relation to the private sector, or which may interfere with desirable technological innovation, together with

recommendations for their elimination, reform, or updating as appropriate;

(8) develop, review, revise, and recommend criteria for determining scientific and technological activities warranting Federal support, and recommend Federal policies designed to advance (A) the development and maintenance of broadly based scientific and technological capabilities, including human resources, at all levels of government, academia, and industry, and (B) the effective application of such capabilities to national needs;

(9) assess and advise on policies for international cooperation in science and technology which will advance the national and international objectives of the United States;

(10) identify and assess emerging and future areas in which science and technology can be used effectively in addressing national and international problems;

Report to President.

(11) report at least once each year to the President on the overall activities and accomplishments of the Office, pursuant to section 209 of this Act;

(12) periodically survey the nature and needs of national science and technology policy and make recommendations to the President, for review and transmission to the Congress, for the timely and appropriate revision of such policy in accordance with section 102(a)(6) of this Act; and

(13) perform such other duties and functions and make and furnish such studies and reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

Intergovernmental Science, Engineering, and Technology Advisory Panel. Establishment.

(b)(1) The Director shall establish an Intergovernmental Science, Engineering, and Technology Advisory Panel (hereinafter referred to as the "Panel"), whose purpose shall be to (A) identify and define civilian problems at State, regional, and local levels which science, engineering, and technology may assist in resolving or ameliorating; (B) recommend priorities for addressing such problems; and (C) advise and assist the Director in identifying and fostering policies to facilitate the transfer and utilization of research and development results so as to maximize their application to civilian needs.

Membership.

(2) The Panel shall be composed of (A) the Director of the Office, or his representative; (B) at least ten members representing the interests of the States, appointed by the Director of the Office after consultation with State officials; and (C) the Director of the National Science Foundation, or his representative.

Chairman.

(3)(A) The Director of the Office, or his representative, shall serve as Chairman of the Panel.

(B) The Panel shall perform such functions as the Chairman may prescribe, and shall meet at the call of the Chairman.

Compensation.

(4) Each member of the Panel shall, while serving on business of the Panel, be entitled to receive compensation at a rate not to exceed the daily rate prescribed for GS-18 of the General Schedule under section 5332 of title 5, United States Code, including traveltime, and, while so serving away from his home or regular place of business, he may be allowed travel expenses, including per diem in lieu of subsistence in the same manner as the expenses authorized by section 5703 (b) of title 5, United States Code, for persons in government service employed intermittently.

5 USC 5332 note.

FIVE-YEAR OUTLOOK

42 USC 6615.

SEC. 206. (a) Within its first year of operation, the Office shall, to the extent practicable, within the limitations of available knowledge and resources, and with appropriate assistance from the departments and agencies and such consultants and contractors as the Director deems necessary, identify and describe situations and conditions which warrant special attention within the next five years, involving—

(1) current and emerging problems of national significance that are identified through scientific research, or in which scientific or technical considerations are of major significance; and

(2) opportunities for, and constraints on, the use of new and existing scientific and technological capabilities which can make a significant contribution to the resolution of problems identified under paragraph (1) of this subsection or to the achievement of Federal program objectives or national goals, including those set forth in section 101(b) of this Act.

Annual revision.

(b) The Office shall annually revise the five-year outlook developed under subsection (a) of this section so that it takes account of new problems, constraints and opportunities and changing national goals and circumstances, and shall extend the outlook so that it always extends five years into the future.

Consultation.

(c) The Director of the Office shall consult as necessary with officials of the departments and agencies having programs and responsibilities relating to the problems, constraints, and opportunities identified under subsections (a) and (b) of this section, in order to—

(1) identify and evaluate alternative actions that might be taken by the Federal Government, State and local governments, or the private sector to deal with such problems, constraints, or opportunities; and

(2) ensure that alternative actions identified under paragraph (1) of this subsection are fully considered by departments and agencies in formulating their budget, program, and legislative proposals.

Consultation.

(d) The Director of the Office shall consult as necessary with officials of the Office of Management and Budget and other appropriate elements of the Executive Office of the President to ensure that the problems, constraints, opportunities, and alternative actions identified under subsections (a), (b), and (c) of this section are fully considered in the development of the President's Budgets and legislative programs.

ADDITIONAL FUNCTIONS OF THE DIRECTOR; ADMINISTRATIVE PROVISIONS

42 USC 6616.

SEC. 207. (a) The Director shall, in addition to the other duties and functions set forth in this title—

(1) serve as Chairman of the Federal Coordinating Council for Science, Engineering, and Technology established under title IV; and

(2) serve as a member of the Domestic Council.

(b) For the purpose of assuring the optimum contribution of science and technology to the national security, the Director, at the request of the National Security Council, shall advise the National Security Council in such matters concerning science and technology as relate to national security.

(c) In carrying out his functions under this Act, the Director is authorized to—

(1) appoint such officers and employees as he may deem necessary to perform the functions now or hereafter vested in him and to prescribe their duties;

(2) obtain services as authorized by section 3109 of title 5 of the United States Code, at rates not to exceed the rate prescribed for grade GS-18 of the General Schedule by section 5332 of title 5 of the United States Code; and 5 USC 5332 note.

(3) enter into contracts and other arrangements for studies, analyses, and other services with public agencies and with private persons, organizations, or institutions, and make such payments as he deems necessary to carry out the provisions of this Act without legal consideration, without performance bonds, and without regard to section 3709 of the Revised Statutes (41 U.S.C. 5).

COORDINATION WITH OTHER ORGANIZATIONS

SEC. 208. (a) In exercising his functions under this Act, the Director shall— 42 USC 6617.

(1) work in close consultation and cooperation with the Domestic Council, the National Security Council, the Council on Environmental Quality, the Council of Economic Advisers, the Office of Management and Budget, the National Science Board, and the Federal departments and agencies;

(2) utilize the services of consultants, establish such advisory panels, and, to the extent practicable, consult with State and local governmental agencies, with appropriate professional groups, and with such representatives of industry, the universities, agriculture, labor, consumers, conservation organizations, and such other public interest groups, organizations, and individuals as he deems advisable;

(3) hold such hearings in various parts of the Nation as he deems necessary, to determine the views of the agencies, groups, and organizations referred to in paragraph (2) of this subsection and of the general public, concerning national needs and trends in science and technology; and Hearings.

(4) utilize with their consent to the fullest extent possible the services, personnel, equipment, facilities, and information (including statistical information) of public and private agencies and organizations, and individuals, in order to avoid duplication of effort and expense, and may transfer funds made available pursuant to this Act to other Federal agencies as reimbursement for the utilization of such personnel, services, facilities, equipment, and information.

(b) Each department, agency, and instrumentality of the Executive Branch of the Government, including any independent agency, is authorized to furnish the Director such information as the Director deems necessary to carry out his functions under this Act.

(c) Upon request, the Administrator of the National Aeronautics and Space Administration is authorized to assist the Director with respect to carrying out his activities conducted under paragraph (5) of section 205(a) of this Act.

SCIENCE AND TECHNOLOGY REPORT

Transmittal to Congress.
42 USC 6618.

SEC. 209. (a) The President shall transmit annually to the Congress, beginning February 15, 1978, a Science and Technology Report (hereinafter referred to as the "Report") which shall be prepared by the Office, with appropriate assistance from Federal departments and agencies and such consultants and contractors as the Director deems necessary. The report shall draw upon the information prepared by the Director pursuant to section 206 of this Act, and to the extent practicable, within the limitations of available knowledge and resources, discuss such issues as—

(1) a review of developments of national significance in science and technology;

(2) the significant effects of current and projected trends in science and technology on the social, economic, and other requirements of the Nation;

(3) a review and appraisal of selected science- and technology-related programs, policies, and activities of the Federal Government;

(4) an inventory and forecast of critical and emerging national problems the resolution of which might be substantially assisted by the application of science and technology;

(5) the identification and assessment of scientific and technological measures that can contribute to the resolution of such problems, in light of the related social, economic, political, and institutional considerations;

(6) the existing and projected scientific and technological resources, including specialized manpower, that could contribute to the resolution of such problems; and

(7) recommendations for legislation on science- and technology-related programs and policies that will contribute to the resolution of such problems.

(b) In preparing the Report under subsection (a) of this section, the Office shall make maximum use of relevant data available from the National Science Foundation and other Government departments and agencies.

Public document.

(c) The Director shall insure that the Report, in the form approved by the President, is printed and made available as a public document.

TITLE III—PRESIDENT'S COMMITTEE ON SCIENCE AND TECHNOLOGY

ESTABLISHMENT

42 USC 6631.

SEC. 301. The President shall establish within the Executive Office of the President a President's Committee on Science and Technology (hereinafter referred to as the "Committee").

MEMBERSHIP

42 USC 6632.

SEC. 302. (a) The Committee shall consist of—

(1) the Director of the Office of Science and Technology Policy established under title II of this Act; and

(2) not less than eight nor more than fourteen other members appointed by the President not more than sixty days after the Director has assumed office (as provided in section 203 of this Act).

(b) Members of the Committee appointed by the President pursuant to subsection (a)(2) of this section shall—

(1) be qualified and distinguished in one or more of the following areas: science, engineering, technology, information dissemination, education, management, labor, or public affairs;

(2) be capable of critically assessing the policies, priorities, programs, and activities of the Nation, with respect to the findings, policies, and purposes set forth in title I; and

(3) shall collectively constitute a balanced composition with respect to (A) fields of science and engineering, (B) academic, industrial, and government experience, and (C) business, labor, consumer, and public interest points of view.

Chairman.

(c) The President shall appoint one member of the Committee to serve as Chairman and another member to serve as Vice Chairman for such periods as the President may determine.

Compensation.

(d) Each member of the Committee who is not an officer of the Federal Government shall, while serving on business of the Committee, be entitled to receive compensation at a rate not to exceed the daily rate prescribed for GS-18 of the General Schedule under section 5332 of title 5, United States Code, including traveltime, and while so serving away from his home or regular place of business he may be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as the expenses authorized by section 5703(b) of title 5, United States Code, for persons in Government service employed intermittently.

5 USC 5332 note.

FEDERAL SCIENCE, ENGINEERING, AND TECHNOLOGY SURVEY

42 USC 6633.

SEC. 303. (a) The Committee shall survey, examine, and analyze the overall context of the Federal science, engineering, and technology effort including missions, goals, personnel, funding, organization, facilities, and activities in general, taking adequate account of the interests of individuals and groups that may be affected by Federal scientific, engineering, and technical programs, including, as appropriate, consultation with such individuals and groups. In carrying out its functions under this section, the Committee shall, among other things, consider needs for—

(1) organizational reform, including institutional realinement designed to place Federal agencies whose missions are primarily or solely devoted to scientific and technological research and development, and those agencies primarily or solely concerned with fuels, energy, and materials, within a single cabinet-level department;

(2) improvements in existing systems for handling scientific and technical information on a Government-wide basis including consideration of the appropriate role to be played by the private sector in the dissemination of such information;

(3) improved technology assessment in the executive branch of the Federal Government;

(4) improved methods for effecting technology innovation, transfer, and use;

(5) stimulating more effective Federal-State and Federal-industry liaison and cooperation in science and technology, including the formation of Federal-State mechanisms for the mutual pursuit of this goal;

(6) reduction and simplification of Federal regulations and administrative practices and procedures which may have the effect of retarding technological innovation or opportunities for its utilization;

(7) a broader base for support of basic research;

(8) ways of strengthening the Nation's academic institutions' capabilities for research and education in science and technology;

(9) ways and means of effectively integrating scientific and technological factors into our national and international policies;

(10) technology designed to meet community and individual needs;

(11) maintenance of adequate scientific and technological manpower with regard to both quality and quantity;

(12) improved systems for planning and analysis of the Federal science and technology programs; and

(13) long-range study, analysis, and planning in regard to the application of science and technology to major national problems or concerns.

Interim report.

(b)(1) Within twelve months from the time the Committee is activated in accordance with section 302(a) of this Act, the Committee shall issue an interim report of its activities and operations to date. Not more than twenty-four months from the time the Committee is activated, the Committee shall submit a final report of its activities, findings, conclusions, and recommendations, including such supporting data and material as may be necessary, to the President.

Report to President.

Transmittal to Congress.

(2) The President, within sixty days of receipt thereof, shall transmit each such report to each House of Congress together with such comments, observations, and recommendations thereon as he deems appropriate.

CONTINUATION OF COMMITTEE

42 USC 6634.

SEC. 304. (a) Ninety days after submission of the final report prepared under section 303 of this Act, the Committee shall cease to exist, unless the President, before the expiration of the ninety-day period, makes a determination that it is advantageous for the Committee to continue in being.

(b) If the President determines that it is advantageous for the Committee to continue in being, (1) the Committee shall exercise such functions as are prescribed by the President; and (2) the members of the Committee shall serve at the pleasure of the President.

STAFF AND CONSULTANT SUPPORT

42 USC 6635.

SEC. 305. (a) In the performance of its functions under sections 303 and 304 of this Act, the Committee is authorized—

(1) to select, appoint, employ, and fix the compensation of such specialists and other experts as may be necessary for the carrying out of its duties and functions, and to select, appoint, and employ, subject to the civil service laws, such other officers and employees as may be necessary for carrying out its duties and functions; and

(2) to provide for participation of such civilian and military personnel as may be detailed to the Committee pursuant to subsection (b) of this section for carrying out the functions of the Committee.

(b) Upon request of the Committee, the head of any Federal department, agency, or instrumentality is authorized (1) to furnish to

the Committee such information as may be necessary for carrying out its functions and as may be available to or procurable by such department, agency, or instrumentality, and (2) to detail to temporary duty with the Committee on a reimbursable basis such personnel within his administrative jurisdiction as it may need or believe to be useful for carrying out its functions. Each such detail shall be without loss of seniority, pay, or other employee status, to civilian employees so detailed, and without loss of status, rank, office, or grade, or of any emolument, perquisite, right, privilege, or benefit incident thereto to military personnel so detailed. Each such detail shall be made pursuant to an agreement between the Chairman and the head of the relevant department, agency, or instrumentality, and shall be in accordance with the provisions of subchapter III of chapter 33, title 5, United States Code. 5 USC 3341.

TITLE IV—FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING, AND TECHNOLOGY

ESTABLISHMENT AND FUNCTIONS

SEC. 401. (a) There is established the Federal Coordinating Council for Science, Engineering, and Technology (hereinafter referred to as the "Council"). 42 USC 6651.

(b) The Council shall be composed of the Director of the Office of Science and Technology Policy and one representative of each of the following Federal agencies: Department of Agriculture, Department of Commerce, Department of Defense, Department of Health, Education, and Welfare, Department of Housing and Urban Development, Department of the Interior, Department of State, Department of Transportation, Veterans' Administration, National Aeronautics and Space Administration, National Science Foundation, Environmental Protection Agency, and Energy Research and Development Administration. Each such representative shall be an official of policy rank designated by the head of the Federal agency concerned. Membership.

(c) The Director of the Office of Science and Technology Policy shall serve as Chairman of the Council. The Chairman may designate another member of the Council to act temporarily in the Chairman's absence as Chairman. Chairman.

(d) The Chairman may (1) request the head of any Federal agency not named in subsection (b) of this section to designate a representative to participate in meetings or parts of meetings of the Council concerned with matters of substantial interest to such agency, and (2) invite other persons to attend meetings of the Council.

(e) The Council shall consider problems and developments in the fields of science, engineering, and technology and related activities affecting more than one Federal agency, and shall recommend policies and other measures designed to—

(1) provide more effective planning and administration of Federal scientific, engineering, and technological programs,

(2) identify research needs including areas requiring additional emphasis,

(3) achieve more effective utilization of the scientific, engineering, and technological resources and facilities of Federal agencies, including the elimination of unwarranted duplication, and

(4) further international cooperation in science, engineering, and technology.

(f) The Council shall perform such other related advisory duties as shall be assigned by the President or by the Chairman.

(g) For the purpose of carrying out the provisions of this section, each Federal agency represented on the Council shall furnish necessary assistance to the Council. Such assistance may include—

(1) detailing employees to the Council to perform such functions, consistent with the purposes of this section, as the Chairman may assign to them, and

(2) undertaking, upon request of the Chairman, such special studies for the Council as come within the functions herein assigned.

Subcommittees and panels, establishment.

(h) For the purpose of conducting studies and making reports as directed by the Chairman, standing subcommittees and panels of the Council may be established.

ABOLITION OF FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY

42 USC 1862 note.

SEC. 402. The Federal Council for Science and Technology, established pursuant to Executive Order 10807, issued March 13, 1959, as amended by Executive Order 11381, issued November 8, 1967, is hereby abolished.

42 USC 1862 note.

TITLE V—GENERAL PROVISIONS

AUTHORIZATION

42 USC 6671.

SEC. 501. (a) For the purpose of carrying out title II of this Act, there are authorized to be appropriated—

(1) $750,000 for the fiscal year ending June 30, 1976;

(2) $500,000 for the period beginning July 1, 1976, and ending September 30, 1976;

(3) $3,000,000 for the fiscal year ending September 30, 1977; and

(4) such sums as may be necessary for each of the succeeding fiscal years.

(b) For the purpose of carrying out title III of this Act, there are authorized to be appropriated—

(1) $750,000 for the fiscal year ending June 30, 1976;

(2) $500,000 for the period beginning July 1, 1976, and ending September 30, 1976;

(3) $1,000,000 for the fiscal year ending September 30, 1977; and

(4) such sums as may be necessary for each of the succeeding fiscal years.

STATUTORY REPEAL

5 USC app.; 42 USC 1861 note.

SEC. 502. Sections 1, 2, 3, and 4 of Reorganization Plan Numbered 2 of 1962 (76 Stat. 1253) and section 2 of Reorganization Plan Numbered 1 of 1973 (87 Stat. 1089) are repealed.

5 USC app. II; 50 USC app. 2271 note.

AMENDMENT

SEC. 503. Section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863) is amended by striking out subsection (g) and by redesignating subsections (h), (i), and (j), and all references thereto, as subsections (g), (h), and (i), respectively.

Approved May 11, 1976.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 94-595 (Comm. on Science and Technology) and No. 94-1046 (Comm. of Conference).

SENATE REPORTS: No. 94-622 accompanying S. 32 (Committees on Labor and Public Welfare, Commerce, and Aeronautical and Space Sciences) and No. 94-765 (Comm. of Conference).

CONGRESSIONAL RECORD:
Vol. 121 (1975): Nov. 6, considered and passed House.
Vol. 122 (1976): Feb. 4, considered and passed Senate, amended, in lieu of S. 32.
Apr. 27, Senate agreed to conference report.
Apr. 29, House agreed to conference report.

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS:
Vol. 12, No. 20 (1976): May 11, Presidential statement.

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Appendix 13

A SUMMARY OF ACCOMPLISHMENTS IN FY 1988 BY THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY

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A SUMMARY OF ACCOMPLISHMENTS IN FY 1988 BY THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY

The Reagan Administration's science and technology policy and actions are designed to increase the contribution of science and technology to the national goals of improved economic competitiveness and a strong national defense. This has been and will continue to be reflected in the annual federal budgets.

Federal government agencies responsible for the support of research and development evaluations of projects on the basis of excellence, relevance, and appropriateness. In an effort to maximize the return on the nation's investment in R&D to U.S. society, various R&D performers are encouraged to collaborate. The broad aim is to ensure that the U.S. continue to lead the world in research and technology, maintain a competitive position in international markets, and, in cooperation with allies, retain a national security strategy based on credible deterrence.

The activities and accomplishments of the Office of Science and Technology Policy during fiscal year 1988 are summarized in the following pages.

A. NATIONAL SCIENCE AND TECHNOLOGY POLICY

A. 1 AERONAUTICS POLICY

The national aeronautics policy was developed during 1982 in an integrated process chaired by OSTP. This approved national policy establishes the importance of aeronautical systems for America's national security and commercial competitiveness. In addition, the policy reaffirmed the U.S. government's role in supporting aeronautical research and technology.

After assessment of current and proposed government programs in aeronautical research by the OSTP-sponsored Aeronautical Policy Review Committee, a series of national goals was established in 1985 to fulfill the policy objectives of attaining specific aeronautical capabilities by the turn of the century. Included are a subsonics goal to establish a firm U.S. aeronautical leadership into the next century; a supersonics goal to develop technology for efficient, long-distance supersonic cruise; and a trans-atmospherics goal to exploit

the growing convergence of aeronautics and space transportation. Pursuit of these goals will focus government, industry, and university efforts and opportunities essential to U.S. leadership in aeronautics.

The committee's sequel to the R&D Goals Report defines specific steps for government and industry toward achieving these goals. This report -- National Aeronautical R&D Goals: Agenda for Achievement -- was released in February 1987, and over 8,000 copies have been distributed within the government, industry, and academic communities. Since aeronautics provides the largest positive contribution to the U.S. balance of trade, OSTP has been reviewing the Committee's recommendations in light of the President's competitiveness initiative and is working closely with government agencies, the academic research communities, and the industrial sector to develop specific implementation plans that respond to the report's recommendations.

In 1988 the Committee reviewed its original recommendations and the current (1988) status in achieving those goals. The report is encouraging from the national perspective; however, it suggests continued emphasis on:

- Stimulation of U.S. R&D in aeronautics;
- Constructive teaming of U.S. with international consortia;
- Strong support for enhanced U.S. engineering education;
- Development of the X-30 Aero-Space Plane technology demonstrator;
- U.S. industry development of a high-speed Civil Transport;
- Upgrading of national aeronautical test facilities;
- Acceleration of efforts to recover the U.S. share of the global market in VTOL aircraft;
- Revitalization of the U.S. general aviation industry;
- Stimulation of favorable trade balance;
- Development of a structure for a global air traffic control.

OSTP will continue to place special emphasis on implementing the Committee's recommendations.

A.2 AGENCY LONG-RANGE PLANNING REVIEWS

During this period of rapid advances in virtually all fields of scientific and engineering research, it is essential that OSTP stay abreast of federal plans to meet national S&T objectives, including recommendations of presidentially commissioned and White House Science Council reports. Accordingly, the Science Adviser has invited all major agencies supporting R&D to review their long-range plans, major research goals, scientific thrusts, and key issues with OSTP staff. This is done as part of the budget process where OSTP works with OMB in reviewing and analyzing funding for R&D in budgets of all federal agencies.

A.3 TECHNOLOGY TRANSFER POLICY

OSTP helped to obtain interagency concurrence on a statement of Administration policy on the transfer of scientific and technical information that was signed by the President early last year. The national policy statement establishes security classification as the mechanism for control of scientific and technological information resulting from basic research at universities and laboratories under contract to the U.S. government. OSTP chaired an interagency working group on scientific communication, as a subcommittee to the Interagency Committee on Technical Data Controls, which is in the process of revising Section 379 of the Export Administration Act. As a result, this section is now consistent with the policy statement on the transfer of scientific and technical information. The constraints on the export of scientific and technical information either publicly available, or derived from basic research, are unambiguously spelled out for the first time. OSTP has been monitoring the implementation of the Presidential policy statement.

OSTP has assisted the National Security Council in redefining the President's policy on U.S. export controls. Our principal activities involved U.S. export control policy toward the People's Republic of China, West-West trade, COCOM, and the review of technology transfer requirements and policies formulated by government departments. As an example, OSTP played a central role in coordinating government-wide activities to finalize technical guidelines for U.S. industry to use in the potential sale of a direct broadcast satellite to the People's Republic of China.

OSTP continues to serve on several Interagency Groups involved in technology transfer policy and technical issues. The newly established CISET working group on international technological cooperation and technology transfer provides another mechanism for examining national technology transfer policy issues.

SECTION B. HIGHLIGHTS

B.1 THE SUPERCONDUCTING SUPER COLLIDER

The proposal aimed at retaining U.S. leadership in high energy particle physics through the construction of a Superconducting Super Collider (SSC) has drawn considerable interest from the scientific community. OSTP supported an objective assessment of the SSC through a process that allowed technical considerations to be assessed apart from other pressures. A 40 trillion electron Volt (TeV) proton-proton collider, 53 miles in circumference, has been proposed. This "world's largest scientific instrument" has an estimated cost of $4.4 billion. In January of 1987 the President announced his support for the construction of the SSC.

Solicitation for site proposals for the SSC began in April 1987. Of the 43 proposals received by the Department of Energy (DOE) for review in September 1987, 36 proposals for sites in 25 states were forwarded to the National Academies of Sciences and Engineering for evaluation. The Academies conducted an independent evaluation of the qualified proposals on basis of the DOE-established technical criteria and cost considerations. The Academies provided DOE with a report of their evaluation including an unranked list of the seven best qualified sites in December 1987. Subsequently, the seven states, which are home to those sites, have been allowed to present selected additional information on the sites. Preparation of Environmental Impact Statements has begun by DOE contractors, and the DOE Site Task Force has made visits to all sites. The Task Force will report to the DOE Energy Systems Acquisition Advisory Board of the sites' qualifications against six major criteria and 19 sub-criteria. These results will then be presented to the Secretary of Energy, and the announcement of the "preferred site" will be made in November 1988. Once the final site is announced, public debate over funding for the SSC will become more intense. It is vital that priorities for such large projects be established in the context of other major needs, including those for individual

investigator research. The Office of Science and Technology Policy expects to continue its coordinating role as an appropriate decision is reached for the SSC project.

B.2 SUPERCONDUCTIVITY

One of the most significant scientific breakthroughs of recent decades, the achievement of high temperature superconductivity (HTS), occurred in 1986 and 1987.

As a result of the outstanding discoveries made by scientists in the U.S. and elsewhere, OSTP initiated several activities aimed at broadening and strengthening the role of the federal government in HTS, and stimulating U.S. industry to take advantage of our national preeminence in basic research through the commercial applications of superconductivity.

Much of the excitement about HTS came after Dr. Paul Chu's announcement in February 1987 of a new class of ceramic materials that would become superconductors at 93K. The new materials, metal oxide ceramics known as perovskites, were first discovered to show superconductivity by Alex Muller and Johann Bednorz at the IBM Research Laboratory in Zurich, Switzerland. The temperature they had achieved was 35K and their findings were published in October 1986. The economic significance, however, became evident with Chu's breakthrough in that inexpensive liquid nitrogen, which exists at 77K at one atmosphere pressure, could be used as a cooling medium. Previous superconductors required the far more costly liquid helium.

Recognizing the important scientific and technological significance and enormous economic prospects for superconductivity, a "Federal Conference on Commercial Applications of Superconductivity" was hosted by OSTP and the Department of Energy and was co-sponsored by the Departments of Commerce and Defense, the National Science Foundation, and the National Research Council of the National Academies of Science and Engineering. The Conference attracted 1,400 individuals from government, industry, and universities, who have a direct interest in American competitiveness. Its purpose, as described by the President in his address to the conference, was "so that business and science can cross-fertilize, can begin at these early stages to dream and plan together -- because this new age of

superconductivity is a new arena for the spirit of enterprise." The conference alerted the nation's scientists, engineers, and entrepreneurs to the opportunity at hand, and to the commitment of the Administration to encourage exploitation of superconductivity. The private sector was reminded that they had the ultimate responsibility to translate the basic research discoveries of this exciting new field into commercially viable products.

The U.S. private sector is responding, not only in established laboratories of major companies, but with new ventures. Entrepreneurs are planting the seeds that are sprouting into an innovative superconductivity industry. Venture capitalists, believing that this industry will flourish, are investing in startup companies, with as much as $5 million in first-round financing.

A broad course of action in HTS was defined for the federal government in the President's 11-point Superconductivity Initiative, announced during his keynote address at the conference. Some of the key developments arising from the Initiative are:

- Designation of superconductivity centers within the federal agencies and their laboratories. These centers are in place and are in the process of developing the enabling technologies necessary to commercialize superconductivity.

- The Superconducting Materials Subcommittee (SMS) of the Federal Coordinating Council for Science, Engineering, and Technology Committee on Materials (COMAT) was established. (cf. Section C. p. 14) Its purpose is to coordinate superconducting materials research by the agencies of the federal government, to identify relevant issues and concerns, and to bring them to the attention of COMAT. The SMS completed a report, Federal Research Programs in Superconductivity, summarizing the programs and funding within the federal agencies. The SMS reported federal spending on HTS at $44.9 million in FY 1987, and an estimated FY 1988 support at $94.8 million. The requested funding for FY 1989 is $135 million.

- A Superconductivity Advisory Group was established to advise the Administration on research and commercialization policies related to superconductivity. Chairman of the Group is Dr. Ralph E. Gomory, IBM Senior Vice President for Science and Technology and a member of the White House Science Council. The Group is expected to issue its first report to the President's Science Adviser in the near future.

The legislative changes identified in the Superconductivity Initiative have been incorporated in the Superconductivity Competitiveness Act of 1988, proposed to Congress in February 1988. The Act amends the National Cooperative Research Act to cover joint production ventures, increases the protection of the U.S. patent laws for holders of U.S. process patents, and provides protection for certain commercially valuable scientific and technical information generated in government-owned and -operated laboratories. This last provision relieves government scientists of the compulsory obligations to disclose commercially valuable scientific data under Freedom of Information Act requests.
(cf. Section H. page 45)

B.3 NATIONAL AERO-SPACE PLANE

In his FY 1987 budget, President Reagan announced plans for the National Aero-Space Plane (NASP). Answering an unprecedented challenge, the program focuses on enabling technologies for single-stage-to-orbit and hypersonic flight. The Reagan Administration's program is intended to culminate in a manned flight research vehicle, the X-30, starting in the early 1990s. Through the end of this competition phase, more than $1 billion will be invested in this technology effort, with more than $500 million coming from industry. The NASP will be capable of launching into orbit from conventional runways. Derivatives of the NASP will include a second generation space transportation system (space shuttle) to service the Space Station.

The Director of OSTP is a member of the NASP Steering Committee. OSTP works closely with Congress, OMB, Department of the Air Force, NASA, and the NASP Joint Program Office at Wright-Patterson Air Force Base to ensure the success of this vital national technology program.

B.4 AIDS

An AIDS Modeling and Epidemiology Workshop was organized and convened under the auspices of the Office of Science and Technology Policy in July 1988. The purpose of the workshop was to examine the current status of AIDS and HIV modeling, to assess the potential benefits from mathematical and statistical analysis, and to make recommendations for a program of research. Sixty-five scientists in the fields of mathematics, statistics, biology, epidemiology, and the behavorial and social sciences participated in six working groups to conduct the following analyses: a review of existing modeling efforts, an identification of models that could be created, and the data requirements for models; an examination of the biological and epidemiological information available for modeling use and an estimate of the potential for obtaining data not now in hand; a similar examination for behavioral and sociological data; an examination of the data themselves in terms of existing and on-going data collection, and forthcoming surveys, together with descriptions of data quality where possible; an examination of the accessibility of data and current and planned management; and a working group to consider options for organization and oversight of a new modeling effort.

B.5 ATMOSPHERIC OZONE POLICY

The Domestic Policy Council has reviewed the U.S. policy positions on the international control of chlorofluorocarbons and other chemicals that may contribute to the projected depletion of stratospheric ozone. OSTP has supported the DPC in reviewing and assessing the scientific basis for ozone depletion projections and for the projected effects of any ozone depletion that may occur. OSTP has been an influential participant in the development of policy options for the President, and in providing guidance for U.S. negotiators of the protocol.

B.6 DOMESTIC POLICY COUNCIL WORKING GROUP ON AGENT ORANGE

The Agent Orange Working Group (AOWG) is chaired by the Department of Health and Human Services and includes scientific, legal, and policy representatives from that

Department. Also represented at the AOWG are other appropriate agencies and OSTP. The AOWG has been responsible for overseeing Agent Orange research.

As of 1988 the AOWG working with the Air Force in a study of personnel exposed to he Agent Orange herbicide along with the national Center for Disease Control (CDC) could not find direct evidence coupling many of the reported health difficulties with the use of the herbicide.

B.7 DOMESTIC POLICY COUNCIL WORKING GROUP ON HEALTH POLICY AND ECONOMICS

OSTP is participating in the DPC Working Group on Health Policy that is developing policy options in such areas as catastrophic health care and AIDS. The working group has focused on the steps that the federal government is taking to combat the spread of HIV, the virus that causes AIDS. This includes principles to guide the federal government's educational efforts, and the means of estimating prevalence and rates of spread of the virus. Also considered were policy proposals for testing federal prisoners; adding HIV to the dangerous contagious diseases list pertaining to immigrants and aliens; reviewing expanded routine testing potential in the federal government, including the Veterans Administration; and encouraging states to increase routine testing in hospitals, sexually transmitted disease and drug abuse clinics, for marriage licenses, and in state and local prisons. OSTP has been most involved in issues related to the spread of AIDS and technical content of educational materials. OSTP and HHS, at the direction of the President, are working together to take the lead in an integrated scientific modeling effort to evaluate data already obtained and to guide further data collection to reduce the uncertainties in estimates of prevalence and rates of spread.

B.8 FUSION ENERGY

Substantial improvements in the technology to produce a controlled thermonuclear fusion system have continued to emerge. Plasma temperatures consistent with an operating reactor have been reached and an injection

system for the deuterium/tritium interaction has been constructed. The design for a Compact Ignition Tokomak (CIT) anticipated to reach full ignition has been completed. The device will allow technologists to study the design and control characteristics that could eventually lead to a design for an experimental test reactor. OSTP participates in a program to define what could be expected as the result of an efficient fusion-based power production process. This program will take into account the issues of technical feasibility in light of the Geneva summit agreements aimed at achieving a realistic timetable.

B.9 NUCLEAR POWER PLANT SAFETY AND AGING

Nuclear power is expected to play an important and growing role in the nation's future energy supply. The reasons for this newly emerging perspective are (1) The improved safety measures pertinent to, and implemented by, currently planned and operating nuclear power reactors; (2) The effects on the global environment of the continuing increase in fossil fuel utilization; (3) The political risks associated with continuing reliance on oil imported from overseas; (4) The relative cost of all other alternative energy sources; and (5) The potential of new, "inherently safe" nuclear power plant concepts.

The emphasis on safety of the current generation nuclear power reactors requires concentrated attention to the problem of aging of reactor components in their operating environment. A significant fraction of currently operating plants are near the end of their design life expectancy. Replacement is difficult or even impossible, owing to the many economic and licensing-related impediments. On the other hand, any accident in our currently operating reactors may seriously set back the cause of nuclear power.

OSTP is taking an active interest in matters of safety and aging associated with nuclear power reactors. An OSTP representative was keynote speaker at a conference on Nuclear Power Plant Aging in August 1988. The essential theme advanced by OSTP is that field observations, laboratory experiments specifically designed for this purpose, and theoretical analysis should go hand-in-hand to develop and corroborate predictive theories of improved reliability and accuracy.

B.10 ARCTIC RESEARCH

In 1984, Congress passed legislation under which the President established the Arctic Research Commission, whose purpose is to establish and implement (by means of an Interagency Arctic Research Policy Committee) a national arctic research program plan. OSTP participated in the activities of the Commission and the Interagency Committee as the two groups developed the plan. The program plan document and the interagency review and concurrence process was completed in FY 1987. The President approved and submitted to Congress the United States Arctic Research Plan, August 1987. The plan stresses national security, rational development with minimum adverse environmental or social impact, and an emphasis on phenomena best studied in that region. In addition to the National Science Foundation, which chairs the group, the Interagency Committee consisted of the Departments of Commerce, Defense, Energy, Interior, State, Transportation, Health and Human Services as well as the National Aeronautics and Space Administration and the Environmental Protection Agency.

B.11 AGRICULTURAL RESEARCH -- PLANT SCIENCE INITIATIVE

OSTP identified the need for plant science centers after its 1985-1986 review of competitive funding for basic research in biological sciences in U.S. colleges and universities. The results of that survey indicated that less than 5 percent, or approximately $110 million of federal obligations for competitive awards in basic research at colleges and universities, was earmarked for plant science research. The future applications of plant biotechnology to agriculture will depend upon today's investment in basic research. Accordingly, under the leadership of OSTP, three agencies (NSF, USDA, and DOE) jointly proposed a new competitive awards program in plant science for multidisciplinary basic research and training centers at academic institutions. Funds were requested and approved in the FY 88 budgets of each of these agencies. The program calls for a federal funding commitment for an initial five-year period to establish multidisciplinary centers at universities in high-priority areas of plant science. Funds for new facility construction are not included. The program emphasizes research, training,

education, and the provision of funds for instrumentation and equipment. The centers would establish foci for industrial, other private sector, and local and state government participation. Significant industrial participation is strongly encouraged. Such partnerships would encourage cost sharing. It is expected that the centers would form, wherever possible, research and training relationships with existing facilities and expertise in laboratories such as those of the Agricultural Research Service and Forest Service Research, the national laboratories, and universities. Industry participation is key to transfer of technology to aid in U.S. industrial competitiveness in biotechnology.

C. FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING, AND TECHNOLOGY (FCCSET)

The FCCSET was established in 1976 by P.L. 94-282 to deal with science and technology policy issues affecting more than one federal agency. It is chaired by the Director, Office of Science and Technology Policy. During FY 1987, the active committees were:

Biotechnology Science
Earth Sciences
Life Sciences
Protection of Human Subjects
Materials
Radiation Research and Policy Coordination
Computer Research and Applications
International Science, Engineering, and Technology
Solar-Terrestrial Research

Two new FCCSET committees were established in 1987, the Committee on Earth Sciences (CES) and the Committee on Life Sciences (CLS).

C.1 BIOTECHNOLOGY SCIENCE COORDINATING COMMITTEE

The Biotechnology Science Coordinating Committee (BSCC), which is responsible for consistent scientific policy and scientific reviews, has asked the National Academy of Sciences to conduct a study to define categories of potential risk attendant to the planned introduction and use of genetically modified micro-organisms and plants in the environment. These risk categories will be based on the nature of the organism and the environment into which it is to be

introduced. The BSCC is also developing position papers on the scientific basis for regulatory authority for using genetically altered animals (e.g., transgenic fish and mice). Another task is the determination of scientific information necessary for a written description to preclude the requirement for a deposit of biological material for patent purposes. The latter practice is costly and can be abused by withdrawal of the deposits for illegal purposes. A subcommittee on risk assessment is surveying federal agencies to develop a resource document and status report on microbial biotechnology risk assessment. The BSCC has also conducted scientific review of the proposed EPA biotechnology rules under the Toxic Substances Control Act and has commented on several other documents and proposed committees.

C.2 COMMITTEE ON EARTH SCIENCES

The Committee on Earth Sciences (CES) was established in March 1987, by the Science Adviser to the President, to increase the overall effectiveness and productivity of federal research efforts directed toward an understanding of the Earth as a global system. To better understand human influence on the global environment, as well as to understand the naturally caused global changes, federal agencies have intensified their research activities in "Earth System" science. In the process, it became clear that the existing FCCSET Committee on Oceans and Atmospheres was not sufficiently broad in scope to deal with these more comprehenstive and intensified activities. Accordingly, the Committee on Oceans and Atmospheres was terminated and the applicable subcommittees subsumed into the CES, including the Federal Oceanographic Fleet Coordination Council and the Subcommittee on Atmospheric Research.

C.3 COMMITTEE ON LIFE SCIENCES

With the expansion of scientific and policy issues in the life sciences, it became clear that a broad coordinating committee was needed to facilitate communication between the federal agencies. In November 1987, the Committee on Life Sciences (CLS) of the Federal Coordinating Council on Science, Engineering, and Technology was established to meet this need. This Committee will provide a central forum for overall

interagency policy coordination and guidance and for the exchange of information regarding the federal programs, policies, and procedures relating to life sciences, including human genome research, plant sciences, international and regulatory aspects of biotechnology, and risk assessment.

The Human Genome Subcommittee of the CLS serves as a forum for the exchange of Human Geonome related program plans, coordination of research, and discussion of legislative and international issues. Four agencies (NIH, DOE, USDA, and NSF) and the Howard Hughes Medical Institute serve as permanent representatives on the subcommittee. The International Biotechnology Subcommittee (IBS) of the CLS has taken up the functions of the original Domestic Policy Working Group on Biotechnology. The IBS developed the U.S. positions for the April 1988 OECD meeting and is continuing to monitor international and regulatory issues in biotechnology. A working group has been formed to assess the needs for information on environmental issues.

C.4 MODEL POLICY FOR THE PROTECTION OF HUMAN SUBJECTS

In its first biennial report published in December 1983, the President's Commission for the Study of Ethical Problems in Medicine in Biomedical and Behavioral Research made several recommendations to improve the uniformity of federal rules and policies pertaining to the protection of human subjects. As a direct outgrowth of the Commission's report, OSTP chartered a FCCSET Committee for the Protection of Human Subjects. The committee drafted a policy to serve as a model for all federal departments and agencies that conduct, support, or regulate human subjects research, to be published in the latter part of 1988.

C.5 COMMITTEE ON MATERIALS

Advanced materials will, along with electronics, information science, and biotechnology, play a key role in our technological and economic progress, as well as in providing support for our national security. Government agencies spend over $1 billion per year on programs to meet the needs for improved materials, including processes to produce and work with them. The

spending on materials-related research in the private sector is less accurately known, but believed to be larger than that spent by the government.

The Committee on Materials (COMAT) is a long-standing, well-established FCCSET committee. Seven of its subcommittees are active in information exchange, coordination of research being conducted by the various agencies, and collection of information for policy development.

The COMAT Subcommittee on Superconductivity, formed in 1987, focuses the high level of activity which has emerged throughout the government after the discovery of high temperature superconductors by Bednorz and Muller in late 1986. The subcommittee has met six times, bringing together representatives who are involved in projects affected by this discovery to exchange information on programs, plans, studies, and meetings. In May 1988, this Subcommittee completed and published a report entitled "Federal Research Programs in Superconductivity." It describes the scope and content of the programs (totaling $147 million) on superconducting materials being carried out in FY 1988. Assisted by COMAT coordination, five federal agencies are cooperating in the support and publication of a newsletter, called HiTc Update, which has more than 2,000 subscribers.

VAMAS, the Versailles Project on Advanced Materials and Standards, was begun under the aegis of the periodic summit meetings of the Heads of Government as one of eighteen projects supporting technology, growth, and employment. VAMAS is recognized by all participating governments as a unique contributor to the world economy. The signing of the Memorandum of Understanding completed the foundation of VAMAS as an independent organization. The COMAT/VAMAS Subcommittee has taken a leadership role for the U.S. in this program. Participating are Canada, France, Germany (FRG), Italy, Japan, the United Kingdom, the United States, and the other nations of the European Community.

Following a meeting on standards for composite materials, called by the COMAT Subcommittee on Advanced Composites, a private sector steering committee was formed for exchange of information about the work of various organizations who contribute to the development of standards and materials specifications needed in the

area of advanced composites. This COMAT subcommittee will monitor this information exchange and use it in its interagency coordination efforts.

A task force formed in February 1988 to assess the need to establish a Subcommittee on Nondestructive Evaluation held its first meeting in May 1988. A review of agency philosophies, activities, and plans pointed to the need for a subcommittee; accordingly a charter is being drafted for approval. This new subcommittee will be established in the fall of 1988.

During 1988, OSTP took steps to work with the National Critical Materials Council through COMAT and provided support for NCMC's effort to produce the Advanced Materials Program Plan (AMPP), which is required by NCMC's enabling legislation. Part of COMAT's support was a Workshop on Advanced Materials, with Dr. Graham was the keynote speaker. Held on March 29, 1988, the workshop was cooperatively sponsored by NCMC, COMAT, and the Federation of Materials Society.

As part of the implementation of the U.S.-Japan Agreement on Cooperation in Research and Development, COMAT has recently established task forces on (1) Superconducting Materials; (2) Advanced Materials, Manufacturing Technology, Automation and Process Control; and (3) Materials Data Base Development to provide technical input to the Joint Working Level Committee (JWLC) established by the Agreement. This activity will shape some of the areas of cooperation with Japan, which have been made possible by the agreement, and will help establish equitable and balanced science and technology information access and flow, especially in materials-related fields. A preliminary report was forwarded to the JWLC on August 12, 1988.

C.6 RADIATION RESEARCH AND POLICY COORDINATION

The Committee on Interagency Radiation Research and Policy Coordination (CIRRPC) has completed its third full year of activities. CIRRPC is charged to coordinate radiation matters between agencies, evaluate research on radiation, and provide advice on the formulation of radiation policy.

During its third year, CIRRPC issued two major reports: the first discusses the use of the International System of Units (SI) for radiological quantities. The recom-

mendation of the report was that it be U.S. policy to use dual radiation units (SI unit of 0.01 sievert Sv = 1 rem) in federal activities.

The second CIRRPC-sponsored report of the National Council is the Radiation Protection (NCRP) Scientific Committee Publication #48 entitled "Exposure of the Population in the United States to Ionizing Radiation" summarizes assessments of the major natural and man-made sources of exposure by identifying natural radioactivity as the source of more than 80 percent of radiation exposure in the U.S.

Other reports published during this period include the CIRRPC Review of SCOPE 28 Report on Environmental Consequences of Nuclear War: Volume II, Ecological and Agricultural Effects and the Oak Ridge Assoicated Universities report on The Federal Ionizing Radiation Research Agenda Related to Low Level Biological Effects: FY 1985.

C.7 COMPUTER RESEARCH AND APPLICATIONS

Under the FCCSET Committee on Computer Research and Applications, three interagency subcommittees were set up by OSTP in May of 1987. The subcommittee on Science and Engineering Computing examined the potential for developing new supercomputer applications (particularly through massively parallel systems). This FCCSET subcommittee has continued to survey the U.S. supercomputer industry and has noted again this year the increased capability of the Japanese to produce state-of-the-art memory chips, the use of dumping techniques to capture world markets (thereby removing U.S. competition); and finally the withholding of the latest chips from U.S. supercomputer manufacturers.

The FCCSET subcommittee on Networking, Infrastructure, and Digital Communications initiated a study of a greatly expanded user network system which would allow interaction of several existing networks and greatly expand scientific collaboration in the U.S. This expanded network has been referred to as the National Research Network (NRN). It considered the use of higher speed network technology to create a system that would extend access of researchers to the federally supported high performance computing resources. This group was charged with the responsibility of carrying out the national network study required of OSTP by P.L. 99-383.

The third subcommittee on Computer Research and Development updated the analysis of federal investment and its consequences for the commercial high performance computing market. It has also reviewed the need for future high performance computing systems.

In August 1987, OSTP tasked the FCCSET to produce an integrated set of recommendations, derived from the work of the three subcommittees. After review of these recommendations, OSTP provided a report to Congress entitled A Research and Development Strategy for High Performance Computing. OSTP has directed FCCSET to produce an action plan to determine how the federal government can best implement the report's recommendations in cooperation with industry and academia.

C.8 INTERNATIONAL SCIENCE AND TECHNOLOGY

OSTP continues to coordinate and implement the President's policy and priority programs in international science and technology cooperation to advance broad national goals. In selected areas, OSTP has developed new or revised Administration policies and initiatives in the international arena of science and technology.

Recent years have seen growing recognition of the significance of the international dimensions of science and technology for economics and research, for competitiveness, for U.S. foreign policy goals, and for national security interests. One factor is the number and complexity of international S&T issues, research activities, and programs that cut across federal departments and agencies.

In December 1985, the President's Science Adviser, Dr. George A. Keyworth, established the Committee on International Science, Engineering, and Technology (CISET) under FCCSET. CISET's purpose is to bring high-level scientific and technical expertise and responsibility in the government to bear on critical international issues and to integrate international S&T activities into the framework of broad domestic policies, consistent with the Administration's priorities and budgetary resources. CISET, chaired by OSTP, began its work in early 1986 to ensure that senior policy makers oversee key international S&T issues and activities. CISET has established four working groups, on (1) International Science,

Engineering, and Technology Education, Infrastructure, and Facilities; (2) Strategic Science, Engineering, and Technology Cooperation, and Technology Transfer; (3) Science, Engineering, Technology, and International Competitiveness; and (4) Bilateral and Multinational Activities. Each of these working groups is developing specific policy recommendations to advance national goals, enhance the effectiveness of U.S. activities, and protect our long-term national interests. To give one example of the process, a CISET task force reviewed and made policy recommendations on the U.S.-Japan S&T relationship which were referred to, and ultimately approved by, the Economic Policy Council. The EPC's recommendations in turn guided the USG negotiating team that successfully concluded the new Head of State level Agreement on Cooperation in Research and Development in Science and Technology, which was signed in June 1988.

Several provisions of the President's Executive Order on Facilitating Access to Science and Technology address the international dimension: strengthening U.S. S&T representation abroad; improving U.S. access to S&T information generated in foreign countries; provision for protection of intellectual property rights in bilateral S&T cooperation agreements. OSTP is overseeing interagency implementation of the President's new directives pertaining to international science and technology agreements, specifically those key provisions of the Executive Order that require R&D agencies to take into consideration in negotiating agreements and Memoranda of Understanding (MOU) whether the foreign country provides for equitable access, adequately protects intellectual property, and controls the transfer of strategic technologies.

During FY 87 OSTP articulated an overall policy framework for bilateral S&T cooperation, overseeing the application of those principles in specific agreements with individual countries. The key themes of equity and reciprocity of access, balance of contributions and benefits, and protection of intellectual property rights have been underscored by the Science Adviser and OSTP staff in international fora, bilateral negotiations, and private meetings with S&T officials from foreign countries. OSTP will ensure that these issues are adequately addressed in each bilateral S&T agreement that is signed or renewed. To carry out the provision of the Executive Order regarding intellectual property rights, OSTP led an interagency effort to develop a comprehensive annex on intellectual property

protection to serve as a general model for use in bilateral S&T agreements. This model was used for the Japan agreement and, adapted for the specific circumstances of each country, is being used in discussions under way or anticipated with China, Korea, India, and Brazil, to name a few. (cf. Section E p. 25)

D. COMPETITIVENESS

D.1 INTERNATIONAL COMPETITIVENESS

OSTP has actively participated in the formulation of the Administration's science and technology initiatives affecting the nation's long-term global competitiveness. These initiatives were defined in the President's State of the Union Address, January 1987, with more specific aspects covered in the Presidential Executive Order 12591, April 10, 1987, Facilitating Access to Science and Technology. The Executive Order showed continuing solid support for the Administration-backed Public Law 99-502, the Technology Transfer Act of 1986.

D.2 "THE QUEST FOR EXCELLENCE" -- THE PRESIDENT'S STATE OF THE UNION ADDRESS, JANUARY 1987

Federal government responsibility for promoting the development of science and technology is fundamental to U.S. competitiveness. Our policies should serve three broad objectives:

(1) generating new knowledge in the sciences and advanced technologies;

(2) swiftly transferring technologies to the market place; and

(3) expanding the nation's talent base in science and technology fields.

OSTP plays a major role in each of these three objectives. This Administration's new government-private "science and technology centers" based at U.S. universities will focus on fundamental science that has the potential to contribute to our nation's economic competitiveness, including areas such as robotics for automated manufacturing and microelectronics, new materials processing, biotechnology, plant science, and superconductivity.

"People-to-People" exchange programs will be initiated in which scientists and engineers from federal laboratories and the private sector will be encouraged to make their expertise available to one another through temporary assignment exchanges.

D.3 TECHNOLOGY TRANSFER FROM FEDERAL LABORATORIES

The national concern over economic competitiveness has led to increased expectations of the federal laboratories to place emphasis on collaboration with American industry for purposes of transferring applicable technology to the marketplace. To aid and urge the federal laboratories in this mission, the Technology Transfer Act of 1986 was enacted and the President's Executive Order 12591, Facilitating Access to Science and Technology, dated April 10, 1987, was issued. The Office of Science and Technology Policy has pursued its oversight role in supporting this initiative.

In June 1988, OSTP submitted a report to the President describing progress being made by the federal laboratories, with particular emphasis on high temperature superconductivity. OSTP found a wide range of activities in agencies and the laboratories to transfer technology. Agencies are establishing and improving mechanisms for cooperation with industrial and academic partners. Laboratories of the Departments of Agriculture and Commerce have assumed their new responsibilities for negotiating licensing and cooperative research agreements at the laboratory level. Consortia have been formed between national laboratories and the private sector to seek commercialization opportunities. Person-to-person communication through thousands of industry scientists visiting or working at federal laboratories is increasing.

Superconducting Research Centers at Argonne National Laboratory, Lawrence Berkeley Laboratory, Ames Laboratory, and the National Institute of Standards and Technology (formerly the National Bureau of Standards) have begun operation. FY 1988 funds have been redirected to research in superconductivity in many agencies. A subcommittee of the Federal Coordinating Council for Science, Engineering, and Technology, Committee on Materials, and an Ames Laboratory newsletter, HiTc Update, are coordinating information about developments in superconductivity.

The Office of Science and Technology Policy is encouraged by federal agencies' vigorous compliance efforts with E.O. 12591. An OPTP-convened interagency task force required by E.O. 12591 will search for further innovative approaches to transferring technology from national laboratories to industry and universities.

D.4 TECHNOLOGY EXCHANGE THROUGH SCIENTISTS AND ENGINEERS

OSTP has observed that numerous scientist and engineer residence or exchange programs have been started, sustained, or expanded in response to E.O. 12591. For example, there are at present approximately 200 such persons in residence at the National Institute of Standards and Technology (NIST) under the Research Associate Program. In a related effort, approximately 700 experts visited NIST last year for lesser stays to conduct specific tests, utilize specialized equipment, or engage in other activities.

The Department of Energy (DOE), in a technology exchange program, has funded 19 visiting scientists and engineers from 18 companies at seven of their laboratories in 1987, while about 3,400 participants have been involved in experimental user facilities at the laboratories. A program with universities has brought several thousand faculty and graduate students into DOE laboratories.

These programs represent a substantial openness to industry and academic visitors in federal laboratories. Little activity, however, is reported for federal laboratory scientists and engineers spending time in industry. It is not evident whether the personnel visiting programs reach across widespread segments of business, industry, and academia, or whether there are segments that do not participate. This question is the subject of further evaluation.

D.5 SCIENCE AND TECHNOLOGY CENTERS

The National Science Foundation (NSF) established a new Science and Technology Research Centers (STC) program in 1987. This program is designed to exploit opportunities in fundamental science and technology that require the advantages of scale, duration, facilities, and/or collaborative opportunities that can

be provided only by university-based research centers while increasing the transfer of knowledge from discovery to application and among sectors of society. It will also provide unique educational opportunities for the future scientific and technical work force.

The initial budget plan called for the NSF to spend $30 million on this program in FY 1988, supporting the development of 10-20 STCs. The STC program solicitation, published in September 1987, announced a January 15, 1988, deadline for proposal submission, and the Foundation received 325 proposals for full STC awards and more than 300 proposals for STC planning grants. These proposals represent a total request to NSF for STC support of more than $4 billion. The reduction from the President's budget request for the FY 1988 appropriation level has precluded NSF from making any STC awards with FY 1988 funds. NSF will, however, proceed to review all the proposals it received, with the intention of funding them early in FY 1989.

D.6 ENGINEERING RESEARCH CENTERS

The concept of Engineering Research Centers (ERCs) to encompass multidisciplinary centers of science and technology excellence was first advanced by OSTP in November 1985. Eleven ERCs, six established in FY 1985 and five in 1986, were joined in 1987 by three new centers, bringing to 14 the total number of such centers. The ERCs continue to work with private industry to select projects with potential for major technological advance, particularly in manufacturing systems. The new 1987 centers focus on optical computing, hazardous substance control systems, and emerging cardiovascular technology. The planned 1988 budget of $33 million will continue support for the 14 existing centers and allow planning of two additional centers.

D.7 SMALL BUSINESS INNOVATION RESEARCH

OSTP is required by the Small Business Innovation Research Act to "monitor the implementation and operation of the SBIR program." The required evaluation is carried out on a continuing basis and reported to the Congress in an annual report.

FY 86 marked the first year that any SBIR Phase II contracts were consummated. OSTP now has an opportunity to have a statistically significant data base of completed SBIR awards that can be evaluated in total (Phase I and Phase II). OSTP took the first steps in FY 87 to conduct a review of the SBIR with two major components:

(1) an analysis of the mechanism by which the quality of research in Phase I and II is assured, and

(2) a study of the criteria that can be used to evaluate the relative success of the Phase III portion of the program.

D.8 U.S. COMPETITIVENESS IN THE SEMICONDUCTOR INDUSTRY

The U.S. semiconductor industry has lost its once commanding lead in overall market share and manufacturing technology. The Japanese are also challenging U.S. leadership in design. Major Japanese companies have pulled ahead in dynamic random access memories, static random access memories, bipolar gate arrays, optoelectronics, gallium arsenide technology, and packaging technology. The U.S. has remained strong primarily in microprocessors and semi-custom and custom logic chip design, but Japan is making inroads in these areas also.

OSTP has become involved in various investigations related to the semiconductor industry. These investigations include the Committee for Foreign Investment in the United States (CFIUS), chaired by the Treasury Department. CFIUS looked into the proposed acquisition of Fairchild, an important U.S. semiconductor manufacturer, by a Japanese firm, Fujitsu. The Committee is represented by most of the major U.S. government agencies dealing with international trade and science and technology issues.

A second study initiated by the National Security Council was designed to look into the national security implications of a diminishing U.S. semiconductor industry. OSTP directed the NSF to lead an interagency task force to examine the state of the U.S. semiconductor industry, determine the effects of loss of competitiveness in this industry on downstream and upstream industries, the national security impact of the loss, and any recommendations for improving the

situation. A report of the study's findings is planned for 1988.

Because of the importance of the semiconductor industry, the Science Adviser asked the White House Science Council (WHSC) to create a panel to review possible options for action available to the federal government and industry. The findings of the panel were provided to the Economic Policy Council Working Group on Semiconductors as that group made recommendations to the full EPC. The panel's report was published in September 1987.

SECTION E. INTERNATIONAL SCIENCE

OSTP participates in the International Political Committee established to monitor the UNESCO reform process and to develop U.S. alternatives to UNESCO activities in education, cultural, and scientific arenas. Such alternative activities will be designed to directly benefit U.S. interests and also to provide bilateral assistance to UNESCO-type programs that will benefit developing nations.

In compliance with Title V of the Foreign Relations Authorization Act of 1979, OSTP transmitted to Congress in early 1988 the President's 1987 Report on Science, Technology, and American Diplomacy, which reports on U.S. Government policies and activities in international science and technology as an adjunct to U.S. foreign policy objectives. The President's transmittal letter to the Congress serves as a key statement of the Administration's policies and thrusts in international science. OSTP guided State/OES, in consultation with the staffs of the interested congressional committees, to develop a streamlined format, which simplifies interagency production of this annual report, and should also make it easier to use as a reference tool.

OSTP has continuing responsibility to provide staff support to senior White House officials to plan and help coordinate state visits that involve science and technology cooperation. OSTP works closely with the NSC, State, and the appropriate USG technical agencies, as well as the nation's scientific establishment, to assure the success of such visits in terms of U.S. foreign policy goals and other national interests. OSTP's coordinating role includes participation in the initial planning stages, events associated with the

visit itself, and follow-up actions to implement Presidential policy decisions or initiatives resulting from the visit.

E.1 U.S.-SOVIET BLOC S&T RELATIONSHIP

During 1985, OSTP monitored U.S.-Soviet S&T cooperation under the seven existing bilateral agreements and conducted an internal evaluation of policy for S&T interactions with the Soviets as well as the effectiveness of current U.S. Government coordination mechanisms. OSTP participated in the S&T issues associated with the President's meeting in Geneva with Secretary Gorbachev, including the joint decision to increase multilateral cooperation in fusion research. In this regard, OSTP participated in the preparation and negotiations of a Civilian Space Cooperation Agreement with the Soviet Union, which was negotiated in October 1986 and signed in the spring of 1987. The changing environment of U.S.-Soviet relations and the President's agreement in Geneva to expand bilateral contacts in many areas, including science and technology, calls for an integrated policy to underpin our technical agency programs to achieve national goals and protect security interests. Toward this end, the President's Science Adviser has established a sub-Cabinet level working group on S&T policy and priorities for cooperation with the USSR and Eastern Europe, under the FCCSET Committee on International Science, Engineering, and Technology (CISET).

During 1987 OSTP continued to play a role in U.S.-Soviet-bloc S&T initiatives. Most notably, OSTP participated in negotiations resulting in a U.S.-Poland S&T agreement. OSTP also chaired interagency preparation for a possible U.S.-Soviet Basic Science Agreement and led exploratory discussions in Moscow toward that end in October 1987. During 1988 OSTP continued to chair the interagency group that reviewed the results of those discussions for possible next steps. This review led to preliminary negotiations during May 1988, in which OSTP played a major role. OSTP continues its involvement in the U.S.-Soviet space agreement as a member of an interagency group overseeing its implementation. OSTP also participated in the development of U.S. government positions for the Reagan-Gorbachev Washington and Moscow Summits.

E.2 OECD FRAMEWORK OF GENERAL PRINCIPLES FOR INTERNATIONAL COOPERATION IN SCIENCE AND TECHNOLOGY

The OECD Committee on Science and Technology Policy (CSTP) convened a meeting of the S&T Ministers from member states in October 1987. The Science Adviser led the U.S. delegation and chaired the ministerial level discussion on "Science, Technology, and International Economic Relations." These meetings, held at approximately five-year intervals, present a useful opportunity to coordinate policies and focus attention on priority issues for the leading industrialized countries of the free world. At this meeting, the OSTP, speaking for the U.S. government, presented a draft policy framework for international cooperation in science and technology. Follow-up meetings to further discuss and develop this proposed set of agreed principles were held in early 1988, culminating in April 1988 in the adoption by the OECD Council of this framework as a formal OECD Recommendation to member governments. As noted at the Toronto Economic Summit, the OECD Framework represents an important achievement in assuring the vitality of international cooperation and facilitating future cooperative agreements.

E.3 U.S.-JAPAN S&T RELATIONSHIP

In June 1988 President Reagan and Prime Minister Takeshita signed a new policy framework for bilateral cooperation. The fruit of a sustained OSTP-led effort, the new umbrella agreement refocuses the substance of collaboration and specifically addresses the equity and balance of science and technology interactions between the United States and Japan.

Bilateral negotiations were held in the fall of 1987, continuing into early 1988. U.S.-Japan S&T cooperation has major implications for both nations' global competitiveness and a new relationship, based on equity and reciprocal access, is of paramount importance as we face the technological challenges of the twenty-first century.

To implement the new agreement, joint meetings will be held in Washington and Tokyo in the fall of 1988, at the working level and high policy level respectively, to identify areas for scientific cooperation, develop

mechanisms for monitoring the balance of the relationship, and name a joint level advisory panel to recommend broad directions for this critical bilateral S&T relationship.

E.4 CHINA

As one of the highest priority international science programs of the government, U.S.-China science and technology agreements and cooperative activities continue to be monitored by OSTP. The fifth meeting of the U.S.-PRC Joint Commission on Science and Technology, with the Director of OSTP participating, took place in Beijing in June 1987; the two sides agreed to establish a working group to study the issue of intellectual property protection and to begin bilateral negotiations to conclude a comprehensive annex on intellectual property rights (IPR) for the U.S.-China umbrella S&T agreement. Discussions began and are continuing, with a view to successful conclusion of an annex on IPR by the time the current umbrella agreement expires, in early 1989.

E.5 INDIA

The Presidential Science and Technology Initiative (STI) by President Reagan and the late Prime Minister Indira Gandhi in July 1982, was designed to intensify and sharply focus bilateral science and technology cooperation to improve the overall relationship between the United States and India.

An objective of the STI has been to invest shared resources in those selected research programs that would utilize the complementary expertise and accomplishments of both scientific communities. This partnership-investment approach to scientific cooperation was initiated in 1983 with joint activities established in the priority areas of health, agriculture, and monsoon prediction, with a fourth research area, solid state science and engineering, added in spring 1985. OSTP continues to provide policy guidance for the STI, and NSF, as Executive Agent, coordinates program activities on a government-wide basis.

During Prime Minister Rajiv Gandhi's visit to Washington on October 20, 1987, President Reagan and he jointly announced the extension of the STI for an

additional three years. The President's Science Adviser is scheduled to go to India in fall 1988 to sign the renewal instrument. The next phase of the STI may include new project areas, reflecting advances in science since the initiative began in 1982, as well as continuing pursuit of current areas. The new areas of cooperation will take account of increased U.S. emphasis on the protection of intellectual property rights in international joint research programs.

In connection with the renewal of the STI, OSTP oversees the negotiation of adequate provisions for protection of intellectual property in our extensive bilateral S&T program with India.

E.6 KOREA

Korea is an increasingly important trading partner of the U.S. with high aspirations and significant potential in science and technology. The renewal of the bilateral S&T agreement with Korea is providing an opportunity for serious substantive negotiations on such issues as protection of intellectual property rights and respect for security obligations in technological exchanges. These accords will be documented as annexes to the umbrella agreement, which is scheduled for renewal in early FY 1989.

OSTP takes the lead in formulating U.S. objectives and positions on S&T issues within the context of the annual Economic Summit meetings.

E.7 U.S.-BRAZIL PRESIDENTIAL S&T INITIATIVE

In September 1986, Presidents Reagan and Sarney agreed to establish a joint panel of eminent scientists, engineers, and industrial experts to determine priorities for cooperation in areas of mutual strength and benefit. On the U.S. side, the appointments were made by the Science Adviser. The joint U.S.-Brazil panel met twice. The panel recommended six priority areas for cooperative research: biomedical and agricultural research; oceanography and meteorology; engineering and materials sciences; alternative energy sources; basic sciences; and ecology and environment. The panel's recommendations, sent to the Science Advisers of the two countries, will constitute an initial agenda to implement the 1984 U.S.-Brazil S&T

Agreement. The Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs will be responsible for implementing these activities under the auspices of the U.S.-Brazil S&T Commission, which is expected to hold its first meeting in early FY 89. The National Science Foundation will provide administrative coordination for U.S. agency participation in this initiative.

E.8 THAILAND SCIENCE AND TECHNOLOGY

In May 1988 the President's Science Adviser and the White House Science Council hosted a dinner in honor of H.R.H. (Dr.) Princess Chulabhorn of Thailand, youngest daughter of Their Majesties Bhumibol and Queen Sirikit. The Princess, who is known by the Thai as their "Ambassador of Science," was on a two-month tour of U.S. scientific foundations, government and university research centers, and private corporate laboratories, to build links between the U.S. and Thailand. Science and technology cooperation is a very important component of the bilateral relationship with Thailand. The dinner gave added visibility to Thailand's capabilities and aspirations in science and technology, and provided an opportunity for the Princess to share with members of the White House Science Council and high Administration officials her plans to establish a Royal Research Institute, and other enterprises, and her hopes for enhanced U.S.-Thai cooperation in research and development.

E.9 INDONESIA SCIENCE AND TECHNOLOGY

The U.S.-Indonesia umbrella agreement for science and technology cooperation, scheduled for renewal in October 1989, is likely to be a major focus of attention in the coming year. USG interagency discussions on national objectives and strategy for the renewal began in the spring of 1988. A key concern is conclusion of an annex on intellectual property rights. Until this issue is resolved, implementation of a number of subsidiary cooperative programs is being held in abeyance. On September 23, 1988, Indonesia's Minister of State for Research and Technology, Dr. B. J. Habibie, met with OSTP to discuss issues in bilateral cooperation in science and technology. In addition to exploring the opportunities for expanded cooperation, OSTP underscored the USG commitment,

pursuant to Executive Order 12591, to ensuring equitable protection for intellectual property rights in all bilateral cooperative S&T programs.

SECTION F. NATIONAL SECURITY

F.1 NATIONAL SECURITY STUDIES

The OSTP stimulates a broad range of queries associated with national security, participates in the efforts aimed at resolving critical scientific and technical issues, and provides for the drafting of position and issue papers for use by the National Security Council, the OMB, and participating agencies.

As Soviet technologies improve, U.S. strategic systems must be modernized to meet an expanded threat. OSTP has been concerned with the survivability and modernization of all three legs of the triad. Specifically, the two ICBM basing modes currently under development (the Garrison Rail Mobile Basing for the MX and Hardened and Mobile basing for the Small ICBM) have command and control related issues that need to be examined in more detail. OSTP has provided its observations both to the NSC staff and to the Air Force.

OSTP closely follows the modernization of strategic bombers, including the production of the B-1B, as well as the development of the B-2 and other (classified) aircraft programs.

F.2 DEFENSE BASIC RESEARCH

OSTP has been an active proponent of maintaining sustained growth in defense funding of basic research. Through a series of technology-based briefings by the services, the Defense Advanced Research Projects Agency, and Office of the Secretary of Defense, OSTP has maintained familiarity with the goals, the objectives, and the management of the various defense programs that sponsor laboratory and university research. The Director of OSTP has interceded with the Secretary of Defense and the Office of Management and Budget on behalf of the basic research defense community to protect these programs from funding cuts. In particular, OSTP continues to monitor the funding and management of the University Research Initiative.

F.3 S&T COMPETITIVENESS IN THE NATIONAL SECURITY ARENA

OSTP completed an analysis of scientific and technological competition between the Soviet Union and the U.S. in the national security arena. This effort was based on the premise that maintaining a strong United States science base and the effective focusing of this base toward key national security issues would have the potential to maintain and to enhance the U.S. defense posture vs. that of the Soviet Union. This study focused on defining the national defense problem and on assessing the United States position relative to the Soviet Union in terms of national doctrine, defense budgets, military and political intent, survivability, weapons systems development and capability, and fielded weapons systems. It also addressed the science base from which each country operates and the relation of this base to the national defense posture of the Soviet Union and the United States respectively.

F.4 COMMISSION ON LONG-RANGE INTEGRATED NATIONAL SECURITY STRATEGY

In early spring 1987 a Commission was established to assess U.S. military strategy in view of a changing security environment in the decades ahead. In January 1988, the Commission presented its report, entitled "Discriminate Deterrence," to the President's National Security Adviser and the Secretary of Defense. The members of the Commission include policy and military experts of high stature, who are in position to examine our national security strategies without biases based on the views of former or current Administrations. On the other hand, the charge to the Commission specifically included the consideration of political, economic, socio/ideological factors, as well as those more closely associated with purely military projections. The purpose of this effort was to offer a clear picture to Congress and the next Administration of the strengths and weaknesses of our national strategic posture and of the choices available for the near future.

In addition to participating in the top-level overview of the Commission's efforts through its Director, OSTP representatives also served on the Working Groups on Future Security Environment, on Offense and Defense

Interactions, Air Force Scientific Advisory Board, and on Technology Projections; OSTP contributed, as required and appropriate, comments and position papers to these groups.

F.5 ARMS CONTROL VERIFICATION

In light of the INF agreement signed this year, and the ongoing Defense and Space talks in Geneva, the question of U.S. arms control verification capabilities has been at the forefront of U.S. national security concerns. OSTP has worked with the Department of Defense and the Arms Control and Disarmament Agency, as well as the U.S. negotiating teams, on the technical aspects of verification capabilities and requirements. The Director of OSTP served as an adviser to the U.S. delegations to the summit meetings at Washington (December 1987) and Moscow (May 1988) between President Reagan and General Secretary Gorbachev, and as a member of the arms control group of experts.

OSTP has also provided technical expertise and review in the area of nuclear testing verification capabilities and requirements, in support of the ongoing U.S.-USSR negotiations on a threshold test ban treaty.

F.6 EMERGENCY PREPAREDNESS PLANNING

By Executive Order, the Director, OSTP, is assigned the responsibility for managing the nation's telecommunications resources during wartime and non-wartime national crises and emergencies. Preparation for executing this responsibility entails a constant level of involvement in planning, training, and supervision. By focusing attention on the critical tasks associated with this responsibility, OSTP has maintained a high state of readiness to execute the essential functions of emergency telecommunications management in wartime and non-wartime situations. Concurrently the office has addressed key planning and programming issues related to the government's preparedness to respond to a spectrum of national emergencies.

F.7 TELECOMMUNICATIONS POLICY

Because of the Director's presidentially assigned operational responsibilities in the area of emergency telecommunications management, OSTP is an active

participant in emergency telecommunications planning and in the telecommunications policy formulation process. Through membership on steering groups and advisory boards, interaction with the National Security Council and OMB, and a working relationship with the National Communications Systems and its members, OSTP has been a reviewer and coordinator of proposed telecommunications standards and policies. As chairman of the Joint Telecommunications Resources Board, the Director, OSTP, approves the telecommunications planning guidance issued to all departments and agencies controlling telecommunications resources.

F.8 STRATEGIC DEFENSE INITIATIVE

The Strategic Defense Initiative (SDI) has been President Reagan's highest defense priority, and an area of great technological excitement. There is a very real probability that science and technology can create a safer future in which nuclear missiles become less and less capable of threatening destructive surprise attack. The essence of the Strategic Defense Initiative is to explore those technologies that could support an effective defense against ballistic missiles. President Reagan is committed to building SDI as soon as it is ready. OSTP has taken a lead role in advancing the President's strategic defense goals, working with the SDI Office and the National Security Council.

The Director of OSTP convened a panel of the White House Science Council to review the technological progress that has been made on the SDI research program during its first five years, and to assess the six key technologies selected for a deployment decision in the mid-1990s -- the first phase of SDI deployments.

The Phase I technologies are to undergo validation and testing throughout FY 89. Highly promising research continues in the area of next generation technologies based on directed energy -- lasers and particle beams. OSTP will continue to take an active interest in the development of these technologies for strategic defense.

In addition, the SDI promises a broad range of spin-offs that can add up to significant benefits in terms of human welfare, industrial efficiency, and economic value. For example the medical free electron

laser program, included within the SDI budget, draws upon the resources nd expertise of 18 universities, two national laboratories, two commercial laboratories, and one hospital. OSTP has been instrumental in encouraging technology transfer to the private sector from the SDI program, as well as from other defense endeavors.

F.9 C3I AND COUNTER-C3I

Modern weaponry and military operations rely on availability of massive, timely and accurate information flow. Information plays an essential role within the envelope of any weapon system (e.g., avionics and shipboard electronics), but also increasingly serves to provide surveillance and reconnaissance data, guidance and navigation, electronic order of battle, weapon assignment and release, and target kill assessment over distances ranging from a few feet to hundreds or even thousands of miles. The systems that make all this possible involve communications, automated data processing, interfaces with human operators and commanders, and many types of support equipment. In all, the U.S. military forces spend approximately one third of their acquisition funds on what has come to be known as command, control, communications, and intelligence -- or C3I. As warfare increases in complexity, especially with the growing role of conventional warfare, non-conventional non-nuclear weapons, and space based components, the proportion of C3I-related spending is expected to increase.

In any military engagement, the adversaries attempt to destroy, degrade, deceive, and exploit each other's information channels. This activity, loosely described as counter-C3I, is now recognized as an essential element of warfare.

OSTP has participated during FY 1987 and 1988 in a number of efforts by the military services aimed at articulating the principles, the practical applications, and the evaluation techniques applicable to C3I and counter-C3I. Specifically, the development of expert databases and the possible use of embedded test equipment have been given focused attention.

F.10 ANTI-SUBMARINE WARFARE

OSTP has been active in examining the implications of submarine technology development for anti-submarine warfare. Its representative was the keynote speaker at the Navy's Submarine Technology Symposium in June 1988. The essential thrust of OSTP's involvement is that the many detection techniques explored in the past three decades are (or soon will be) individually inadequate, but integrating several of them over a theater or battle zone could lead to substantial and lasting advantage. Interaction with the Navy and its laboratories is continuing.

F.11 SMART MISSILES

The U.S. military forces plan on procuring a large number of "smart" missiles which will be called upon to navigate autonomously to hit designated aimpoints after having penetrated hostile defenses.

OSTP continues to play an active role in assessing the potential and the possible pitfalls associated with the smart missile concepts. Two basic conclusions have emerged to date and are being considered by the services: (1) Smart missiles must interface with a C3I system that is capable of updating the missile memory with quasi-real-time target intelligence; and (2) Advanced decoying techniques could, if not properly countered by the missile's discrimination capability, radically change the cost-exchange ratios <u>against</u> the smart missile concept.

Extensions to naval warfare are currently under investigation.

F.12 STEALTH

OSTP continues to monitor the progress in applied sciences that makes the drastic reduction of observables possible. These include techniques applicable to radar cross-section reduction, to optical and infrared signature control and the attenuation of acoustic signatures. The critical consideration is, as it has been from the start, to what extent must the flight performance of an aircraft, missile, or submarine suffer in order to achieve increasing levels of observable reduction.

Current efforts to embody the stealth concepts into continuing platform developments are being assessed in terms of potential promise vs. cost trends, with related counters by potential adversaries as an important factor.

F.13 ELECTROMAGNETIC PULSE

OSTP has special interest in guiding the military in the field of electromagnetic pulse (EMP) damage to electronic components and to communications. If not adequately countered by appropriate "hardening" and circumvention techniques, EMP caused by nuclear detonations can incapacitate the nation's emergency telecommunications as well as disable most critical weapon systems.

Current results of EMP testing of the B-1B strategic bomber have been reviewed.

F.14 RADIO-FREQUENCY WEAPONS

Advanced technology for radio-frequency (RF) power generation has reached the point where energy densities can be focused on distant targets with potentially incapacitating or destructive effects. RF energy can enter the targets through sensors or other electro-magnetic apertures; or again can be absorbed by the target structure.

Intelligence indicates that the Soviet Union is active in the RF generation field. The U.S. efforts need to be stimulated and channeled in a direction that should eventually serve the strategic as well as the tactical needs of all three services.

At this point, OSTP's role is one of technology assess-ment, with a view of developing R&D recommendations for the 1990 Five-Year Defense Plan (FYDP).

F.15 FOLLOW ON FORCES ATTACK (FOFA)

An OSTP initiative was the creation of the Interagency Technology Assessment Group (ITAG). The ITAG is an interagency body of intelligence, research and development, doctrine, and analysis experts organized

for the purpose of evaluating studies of the advantages offered by new technologies on the European battlefield from the perspectives of the threat, technology risk, and modeling accuracy. During FY 88 the ITAG undertook several technological areas with a focus on low observables. OSTP continues as a member.

F.16 MILITARY TACTICAL EXPLOITATION OF NATIONAL TECHNICAL COLLECTION MEANS

OSTP has maintained close interest and involvement in the planning, technology development, and analysis that addresses the military's ability to receive and exploit intelligence collected by national technical means. Issues involving requirements generation, hardware development, downlink and processing centers, and doctrinal approaches to utilizing the intelligence have received attention throughout FY 88.

F.17 NUCLEAR WINTER

The Director, OSTP, is the Chairman of the Coordinating Committee on the Interagency Research Program (CCIRP) overseeing federally funded research on the "nuclear winter" hypothesis. These research efforts are funded by the Departments of Defense and Energy, the National Science Foundation, and the National Oceanic and Atmospheric Administration, and are conducted by national laboratories, universities, and private corporations across the nation.

The research community's consensus is that the "nuclear winter" first postulated (and publicized) is far too extreme and should be seen only an initial estimate. Further research is addressing the remaining uncertainties in both the models and the physical processes.

F.18 STRATEGIC SURFACE TRANSPORT

The adequacy of merchant marine and naval cargo ship capacity to meet current and projected national security strategic mobility requirements is an area of national concern. The potential of advanced technology to address this problem has not received significant attention. One such application of advanced technology worthy of consideration is the Surface Effects Fast Sealift Ship. OSTP has maintained an active interest

in this project and has promoted exposure of various study groups addressing sealift shortfalls and future strategic mobility requirements.

F.19 TECHNOLOGY FOR COUNTERTERRORISM

The government's program for applying advanced technology to counter the threat of terrorism is coordinated by a senior interagency group on counterterrorism. This group selects projects for funding on the basis of relative potential benefits and technology risk assessment of competing candidates. OSTP has maintained active interest and involvement in this vital national security concern through a senior technology oversight panel to review candidate projects to insure that projects are selected with full understanding of the technological issues and risks involved.

F.20 CHEMICAL AND BIOLOGICAL WARFARE (CBW)

The proliferation of chemical weapons, apparent Soviet violations of the 1972 Biological Weapons Ban, in-progress negotiations on a chemical weapons ban, and the environmental issues of defensive biotechnology research have focused attention on the national security implications of biotechnology and other technical aspects of CBW. OSTP is also a participant in the interagency group addressing chemical warfare arms control policy. Continued attention to these important national issues will be required as the implications of advances in biotechnology become more widely understood.

SECTION G. SPACE

G.1 FORMULATION OF NATIONAL SPACE POLICY

By the start of FY 1987 it became apparent that the then current U.S. national space policy, as stated in NSDD-42, no longer satisfied the urgent need for top level guidance of the nation's space program, in spite of the several attempts toward piecemeal updating. The basic driving forces for a comprehensive review were: (1) the recognized need for a nationwide effort to bring about low-cost, high-capacity, reliable, and

flexible access to space; (2) the growth in potential military space applications; (3) the clearly apparent challenge in space by the Soviet Union; (4) the rise of technical and commercial competence of several allied nations. Several important programmatic issues also await top policy guidance: among these the objectives and the cost and schedules of the manned Space Station; the role of the space shuttle in the Space Station logistics; the national investment in advanced heavy-lift capability; the conduct of the national aerospace plane program and the support for space scientific exploration, are the most urgent ones.

The OSTP participated with the National Security Council staff in establishing a rationale for the national space policy revision as well as in the definition of the Terms of Reference. Its representative serves as the Deputy Chairman of the Interagency Group responsible for this policy review. Resulting from this study was the Presidential mandate to study the financing alternatives of the space infrastructure to be provided in support of the nation's space program.

A national space policy was announced on February 11, 1988.

G.2 SPACE SCIENCE

The President's National Space Strategy Directive directs the agencies to maintain a vigorous and balanced program in the space sciences. In 1984, OSTP issued a report on funding trends in NASA's Office of Space Science and Applications, which identified large fluctuations in the budgets of individual space science disciplines as having a significant impact on discipline balance, continuity, and stability. The Challenger accident, and the attendant need to maintain several complete or nearly complete major payloads (e.g., Space Telescope and Galileo) in working order on the shelf until they can be launched, has strained the stability and continuity of the science disciplines as well as the NASA space science budget.

OSTP continues to work with OMB, NASA, and the science communities on these issues, in order to maintain a vigorous space science program. OSTP has worked closely with the scientific community and the NASA

advisory committees to establish mechanisms that assure that input from the scientific communities to the process of cross-disciplinary ranking of scientific programs is utilized by the agency.

OSTP has strongly supported new science initiatives such as the Advanced X-Ray Astrophysics Facility (AXAF) and the Microwave Observing Program, formerly the Search for Extraterrestrial Intelligence (SETI), and the concept of a budget ground rule that no less than 20% of the NASA budget be used for space science.

G.3 NATIONAL COMMISSION ON SPACE (NCOS) REPORT

The National Commission on Space was created by Public Law 98-361 "to study existing and proposed U.S. space activities; to formulate an agenda for the U.S. civilian space program; to identify long-range goals, opportunities, and policy options for civilian space activity for the next twenty years." The Commission's report was completed in April 1986 and released to the public in May 1986. The OSTP reviewed the report, with other agencies, and has concluded that the recommendations to the President should be formulated as part of a comprehensive review of the U.S. national space policy. The substance of the OSTP recommendations on the NCOS report is as follows: (1) the long-range goals stated by the Commission are truly visionary and could be accepted as part of the longer-term U.S. goals in the 25- to 50-year perspective; (2) the report itself constitutes a sound description of the technical aspects of the several civilian space missions that could be undertaken; (3) the report assumes that the civil space program has essential priorities over other claims on the federal budget, and thus does not address the problem of operating in a budget-constrained environment; (4) the report does not fully reflect the dissenting voices within the scientific community that oppose large manned space missions in order to emphasize the unmanned scientific exploration of the accessible universe; and (5) OSTP recommends that, with the NCOS long-range goals in mind, the U.S. civil space program be focused, over the next five to ten years, on developing a solid technology base for the longer-term undertakings. The latter should include and emphasize the development of low-cost, high-capacity, and flexible access to space, serving the needs of both civilian and military space missions.

G.4 INTERAGENCY COORDINATING COMMITTEE ON SOLAR TERRESTRIAL RESEARCH

The policy-level Interagency Coordinating Committee on Solar Terrestrial Research (ICCSTR) as well as the Committee's Program Planning Group (PPG) met during 1987. The PPG has drafted a report on the health of solar physics in the United States. The ICCSTR has reviewed the document and has requested a number of necessary extensions and revisions. The Committee has served as a forum for interagency coordination of solar-terrestrial research, including the international components.

G.5 SPACE STATION

As a result of an internal program cost review undertaken by NASA, the agency developed revised cost estimates for the Space Station which substantially exceeded the original estimates. OSTP worked closely with OMB, NSC, and NASA to develop revised Space Station capabilities, schedules, and costs. An independent review of the Space Station Program was performed by the National Research Council's Committee on Space Station on a schedule permitting incorporation of any revised program scope in the forthcoming FY 1990 budget request.

G.6 COMMERCIAL SPACE ACTIVITIES

OSTP participates in the activities of the Interagency Commercial Space Working Group. This group was established by the National Space Strategy of 1984 under the Economic Policy Council (EPC) to develop and implement specific measures to foster the growth of private sector commercialization in space. The working group examined a range of policy concerns that affect commercial space activities (e.g., antitrust laws, tax laws, patent laws, and industry-government relationships) and forwarded to the Economic Policy Council in December 1985 a report that identified several areas appropriate for further consideration and action by the working group.

In June 1987, the working group began a task to extend the work presented in the December 1985 report. In particular, the group will interact with the emerging

commercial space industry and the aerospace industry in order to identify factors that may be hampering the further growth of the industry.

In parallel with the national space policy revision, OSTP also participated in the development of the new Commercial Space Policy, also signed by the President in February 1988. Among other important measures, the latter policy mandates the establishment of a Microgravity Research Board and directs NASA to start on privately developed space platform facilities.

This activity has lead to the Office of Commercial Programs in NASA and similar offices in the Departments of Commerce and Transportation.

SECTION H. MISCELLANEOUS

H.1 NATIONAL MEDAL OF SCIENCE

In June of 1987 the President, in a Rose Garden ceremony, awarded 20 National Medals of Science and 4 National Medals of Technology, the nation's highest honor for achievement in mathematics, science and engineering, and technology. There were 20 National Medals of Science and 10 National Medals of Technology awarded by the President in July of 1988. OSTP provided staff support and implemented recommendations by the President's Committee on the National Medal of Science.

H.2 PRESIDENTIAL AWARDS FOR EXCELLENCE IN SCIENCE AND MATHEMATICS TEACHING

In 1987 the President greeted the recipients of the Presidential Awards for Excellence in Science and Mathematics Teaching. A White House ceremony will be held in 1988 for the awardees. OSTP provided staff support and coordinated activities with the National Science Foundation for the event. The award was established by President Reagan in 1983 and represents the highest honor that any mathematics or science teacher can receive. The teachers were nominated by their peers with final screening by a distinguished panel of educators and scientists. The awards are presented annually to science and mathematics teachers selected from across the nation, two from each state, the District of Columbia, and Puerto Rico. Not only do

these awards focus national attention on the importance of precollege science and mathematics education, they also encourage increased local support and contributions from industry.

To reduce the shortage of college faculty in engineering and science, NSF is administering the Presidential Young Investigator Awards Program, designed to induce outstanding young science and engineering faculty to remain in academia rather than leave for industry. The awards, including matching funds from industry, provide up to $100,000 each year for five years. Industry has responded enthusiastically with matching funds for over 70 percent of the possible total. The first 200 awards (100 in engineering) selected from 1,400 nominations were announced in February 1984. In 1985, NSF gave 200 new awards; in 1986, 100. In 1987, there were 200 new awards.

H.3 MINORITY ISSUES IN S&T

OSTP and the White House Initiative on Historically Black Colleges and Universities (HBCU) jointly sponsored an effort to increase the number of minorities in science and engineering professions. An advisory committee composed of business, science, and black community leaders organized a September 1986 conference that examined the characteristics of HBCU alliances with frontier sciences. By recognizing the strengths of joint programs between minority schools and national laboratories, major universities, or corporate research programs, we are encouraging emulation by federal agency programs, foundations, and the private sector. The September conference was also supported by Members of Congress and was capped by a ceremony of recognition at the White House.

The groundwork was also laid for an ongoing task force that will permit a three-year agency/corporate/university approach to overcoming under-representation of women, minorities, and the handicapped in science and technology, as required under P.L. 99-383. The first meeting was held in June of 1987.

H.4 FREEDOM OF INFORMATION ACT

In conjunction with the President's Competitiveness Initiative announced in the February 1987 State of the Union Address and the President's Superconductivity

Initiative, OSTP has assisted in providing protection from the Freedom of Information Act (FOIA) mandates for scientific and technical data of commercial value.

Statutory changes have been proposed via Title IV of the Superconductivity Competitiveness Act of 1988 sent to the Congress in February 1988. Title IV would provide protection for certain commercially valuable scientific and technical information generated in federal government-owned and -operated laboratories. In particular, it recognizes that commercially valuable scientific and technical information generated in federal facilities loses potential commercial value when it is released indiscriminately under FOIA. Mandatory disclosure of such information under FOIA may encourage U.S. competitors to exploit the U.S. science and technology base rather than making investments in their own research and development infrastructure. The Title is not intended to end the U.S. tradition of sharing the benefits of our excellence in science and technology; it merely provides that the Freedom of Information Act may not always be the appropriate or the best avenue for doing so.

Title IV sets forth the conditions that must be met in order for an agency to withhold scientific or technical information from an FOIA request. First, the agency head or his or her designee must determine that the requested information was generated in a wholly or partly owned and operated government laboratory or similar facility. Second a determination must be made that the information has commercial value. Laboratory research that has potential for commercial application clearly has commercial value. Finally, a determination must be made that disclosure of this information could be reasonably expected to cause harm to the economic competitiveness of the United States. Because it would be unrealistic to expect such a determination to be made with absolute certainty, the proposed statute requires only that a determination be made that disclosure "could be reasonably expected" to cause harm. This determination will be made by the agency in possession of the information. The proposed statue's purpose--preventing the wholesale disclosure of information that could harm the "economic competitiveness" of the United States--is the result of a growing realization that although the United States is a leader in laboratory breakthroughs, it may not have sufficient mechanisms or incentives in place to encourage U.S. firms to commercialize those discoveries and

improvements. Title IV will aid in assuring that U.S. leadership in science translates into leadership in commerce.

H.5 SCIENCE APPOINTMENT CANDIDATES

OSTP continues to work with the Office of Presidential Personnel to identify highly qualified candidates for a range of top-level science appointments. These have included all the Presidential appointments to the National Science Foundation, the National Science Board, and key positions in the National Aeronautics and Space Administration, Department of Energy, Department of Commerce, and Department of Defense. OSTP has also helped select numerous committees, boards, and commissions set up by the President or Congress.

Appendix C

OFFICE OF SCIENCE AND TECHNOLOGY POLICY

PERSONNEL SUMMARY

TYPE OF APPOINTMENT	INDIVIDUAL/ POSITION TITLE	GRADE
PAS	Dr. William R. Graham, Jr. Science Advisor to the President and Director, OSTP	EL II
	Dr. Thomas P. Rona Associate Director	EL III
SES (Non-Career)	Ms. Michelle K. Van Cleave Assistant Director and Counselor	SES 2
Schedule C	Ms. Marian Nida Confidential Secretary to the Science Advisor to the President and Director, OSTP	GS 12
	Ms. Sally Sherman Assistant to the Executive Director	GS 12
Career	Mrs. Barbara J. Diering Special Assistant	GS 12
	Miss Nancy Clark Secretary	GS 9
	Ms. Ruth Fisher Secretary	GS 10
	Mrs. Elsie Patterson Secretary	GS 8

OFFICE OF SCIENCE AND TECHNOLOGY POLICY

PERSONNEL SUMMARY
OTHER THAN PERMANENT OSTP

TYPE OF APPOINTMENT/ DEPARTMENT	INDIVIDUAL/ POSITION TITLE	GRADE
Career/DOE Detailee	Dr. Beverly J. Berger Assistant Director for Life Sciences	GS 15
Career/DOC Detailee	Sara R. Bowden Policy Analyst	GS 13
Career/DOE Detailee	Dr. Janet V. Dorigan Senior Policy Analyst	GS 15
Career/Interior Detailee	Joann Hilty Secretary	GS 10
Career/CIA Detailee	Pat Neuhardt Secretary	IS 3
Career/OMB Detailee	Dr. Robert L. Post Special Assistant to the Director for Budgetary Review	GS 15
Career/NSF Detailee	Deborah L. Wince Assistant Director for International Affairs	GS 15
Military/USAF Detailee	Thomas J. Bishop Military Assistant to the Deputy Director and Senior Policy Analyst	LtCol
Military/USAF Detailee	Dr. R. Joseph DeSutter Military Assistant to the Director and Executive Director	LtCol
Military/USMC Detailee	John F. O'Neil Senior Policy Analyst	LtCol

TYPE OF APPOINTMENT/ DEPARTMENT	INDIVIDUAL/ POSITION TITLE	GRADE
Schedule C/AID Detailee	Mary Catherine English Director for Public Affairs	GS 15
Schedule C/ACTION Detailee	Jonina L. Lance Secretary	GS 8
Temporary/OSTP AEA Fellow	Kathleen Bernard Senior Policy Analyst	WOC 1/
Temporary/OSTP Consultant	William Owczarski Senior Policy Analyst	WOC 1/
Temporary/OSTP IRI Fellow	Robert Schaefer Senior Policy Analyst	WOC 1/
Temporary/OSTP SAE Fellow	Jack Simon Senior Policy Analyst	WOC 1/
Military/USA	Dr. Steven Harrison Liaison Officer (DNA Representative)	Major
Military/USA	Wayne Murphy Liaison Officer (SDIO Representative)	LtCol

1/ WOC: Without Compensation

Appendix D

THE WHITE HOUSE SCIENCE COUNCIL

Dr. Solomon J. Buchsbaum, Chairman	Executive Vice President Customer Systems AT&T Bell Laboratories Holmdel, New Jersey
Dr. Edward A. Frieman, Vice Chairman	Director Scripps Institution of Oceanography La Jolla, California
Dr. Harold M. Agnew	GA Technologies, Inc. San Diego, California
William G. Anlyan, M.D.	Chancellor Duke University Durham, North Carolina
Dr. D. Allan Bromley	Henry Ford II Professor Physics Department Yale University New Haven, Connecticut
Dr. Edward E. David, Jr.	EED, Inc. Bedminster, New Jersey
Dr. John M. Deutch	Provost Massachusetts Institute of Technology Cambridge, Massachusetts
Dr. William L. Fisher	Chairman, Department of Geological Sciences University of Texas Austin, Texas
Donald S. Fredrickson, M.D.	DSF Associates, Inc. Bethesda, Maryland
Dr. Ralph E. Gomory	Senior Vice President for Science and Technology IBM Corporation Armonk, New York

Bernadine P. Healy, M.D.	Chairman of the Research Institute The Cleveland Clinic Foundation Cleveland, Ohio
Dr. Thomas E. Lovejoy	Assistant Secretary for External Affairs Smithsonian Institution Washington, D.C.
Mr. Sanford N. McDonnell	Chairman Emeritus McDonnell Douglas Corporation St. Louis, Missouri
Mr. David Packard	Chairman of the Board Hewlett-Packard Company Palo Alto, California
Dr. Isadore M. Singer	Institute Professor Department of Mathematics Massachusetts Institute of Technology Cambridge, Massachusetts
Dr. Edward Teller	Lawrence Livermore Laboratory University of California Livermore, California and Hoover Institution on War, Revolution and Peace Stanford, California
Dr. Dean A. Watkins	Chairman and Director Watkins-Johnson Company Palo Alto, California

January 1989

OFFICE OF SCIENCE AND TECHNOLOGY POLICY

CHARTER

WHITE HOUSE SCIENCE COUNCIL

1. Committee's Official Designation:

White House Science Council (WHSC)

2. Objectives and scope of Activities and Duties:

- The purpose of the WHSC is to advise the Director, Office of Science and Technology Policy (OSTP), on science and technology issues of national concern.

- In furtherance of this mission the WHSC shall concern itself with specific issues assigned by the Director, OSTP, and will keep him informed of changing perspectives in the science and technology communities.

3. Duration:

The Council will terminate on December 31, 1989, unless sooner extended.

4. Official to Whom the Council Reports:

The WHSC will report to the Director, OSTP.

5. Agency Responsible for Providing Necessary Support for this Council:

Office of Science and Technology Policy.

6. Description of Duties:

The duties of the Council are solely advisory and are stated in paragraph 2 above.

7. Costs:

The estimated annual operating cost of the Council is $50,000.

8. Estimated Number and Frequency of Meetings:

The White House Science Council shall normally meet six times each year at regular intervals, and at such other times as may be called by the Director, OSTP. In addition, 10-15 meetings each year by subgroups are anticipated.

9. Subgroups:

Subgroups may be formed to conduct studies on specific issues assigned by the Director, OSTP.

10. Members:

WHSC members shall be appointed by the Director, OSTP. That appointment shall be subject to review every 365 days unless terminated earlier. The WHSC shall consist of no more than 20 members. The Director, OSTP shall appoint a Chairman and Vice Chairman from the members of the Council.

The Council shall utilize additional technical experts as needed to constitute its panels and study groups. These technical experts shall be appointed by the Director, OSTP, and shall be for the duration of the panel upon which the Associate Member serves or 365 days, whichever is sooner, unless terminated earlier by the Director.

This Charter for the Advisory Committee named above is hereby approved on:

Date: December 16, 1987

Jonathan F. Thompson
Committee Management Officer

Date filed: December 21, 1987

Appendix E

FEDERAL COORDINATING COUNCIL
ON SCIENCE, ENGINEERING AND TECHNOLOGY (FCCSET)

- FCCSET Committee on International Science, Engineering, and Technology (CISET)

  Purpose is to coordinate among agencies on policy matters relating to international science and technology. It will provide technical oversight on major programs, advise on broad policy issues for international S&T cooperation, identify issues with international implications, and identify areas of opportunity for new international science initiatives. Lead agency - OSTP.

- Committee on Earth Sciences

  Addresses the overall effectiveness and productivity of federal research efforts for understanding of the Earth as a global system. Lead agency - USGS.

- Committee on Life Sciences

  Provides a central forum for overall interagency policy coordination and guidance and for the exchange of information regarding the federal programs, policies, and procedures relating to the life sciences. Lead agency - OSTP.

- Biotechnology Science Coordinating Committee

  Coordinating forum for scientific issues related to biotechnology. Lead agency - NIH.

- FCCSET Committee on Computer Research and Applications

  Committee consists of three subcommittees focused on all aspects of computer research, ensuring U.S. retains leadership in high performance computing; addresses mechanisms by which increasing numbers of researchers have access to state-of-the-art supercomputing; provides coordination among agencies as contributors to the U.S. computing technology base; supports current U.S.-Japan S&T Agreement implementation as well as other interagency policy issues. Lead agency - OSTP.

- FCCSET Committee on Materials (COMAT)

  Purpose is to coordinate R&D in field of materials and materials processing, to identify issues which impact this field, and to raise any issues to the attention of the Director of OSTP. Lead agency - OSTP.

TITLE IV—FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING, AND TECHNOLOGY

ESTABLISHMENT AND FUNCTIONS

SEC. 401. (a) There is established the Federal Coordinating Council for Science, Engineering, and Technology (hereinafter referred to as the "Council"). 42 USC 6651.

(b) The Council shall be composed of the Director of the Office of Science and Technology Policy and one representative of each of the following Federal agencies: Department of Agriculture, Department of Commerce, Department of Defense, Department of Health, Education, and Welfare, Department of Housing and Urban Development, Department of the Interior, Department of State, Department of Transportation, Veterans' Administration, National Aeronautics and Space Administration, National Science Foundation, Environmental Protection Agency, and Energy Research and Development Administration. Each such representative shall be an official of policy rank designated by the head of the Federal agency concerned. Membership.

(c) The Director of the Office of Science and Technology Policy shall serve as Chairman of the Council. The Chairman may designate another member of the Council to act temporarily in the Chairman's absence as Chairman. Chairman.

(d) The Chairman may (1) request the head of any Federal agency not named in subsection (b) of this section to designate a representative to participate in meetings or parts of meetings of the Council concerned with matters of substantial interest to such agency, and (2) invite other persons to attend meetings of the Council.

(e) The Council shall consider problems and developments in the fields of science, engineering, and technology and related activities affecting more than one Federal agency, and shall recommend policies and other measures designed to—

(1) provide more effective planning and administration of Federal scientific, engineering, and technological programs,

(2) identify research needs including areas requiring additional emphasis,

(3) achieve more effective utilization of the scientific, engineering, and technological resources and facilities of Federal agencies, including the elimination of unwarranted duplication, and

(4) further international cooperation in science, engineering, and technology.

(f) The Council shall perform such other related advisory duties as shall be assigned by the President or by the Chairman.

(g) For the purpose of carrying out the provisions of this section, each Federal agency represented on the Council shall furnish necessary assistance to the Council. Such assistance may include—

(1) detailing employees to the Council to perform such functions, consistent with the purposes of this section, as the Chairman may assign to them, and

(2) undertaking, upon request of the Chairman, such special studies for the Council as come within the functions herein assigned.

Subcommittees and panels, establishment.

(h) For the purpose of conducting studies and making reports as directed by the Chairman, standing subcommittees and panels of the Council may be established.

ABOLITION OF FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY

42 USC 1862 note.

SEC. 402. The Federal Council for Science and Technology, established pursuant to Executive Order 10807, issued March 13, 1959, as amended by Executive Order 11381, issued November 8, 1967, is hereby abolished. 42 USC 1862 note.

OSTP Key Interagency Relationships

- Arms Control Experts Group

  Summit and Ministerial related; as appropriate. Lead agency - Interagency Group.

- Interagency Committee for Federal Laboratory Technology Transfer

  Purpose is to monitor progress relative to Technology Transfer Act of 1986 and E.O. 12591. Lead agency - Department of Commerce.

- Interagency Group on Supercomputers

  This group deals with such current supercomputer issues as export control policy, licensing of supercomputers for proscribed countries, market access (in Japan) of U.S. supercomputer vendors, and predatory pricing issues. Lead agency - OSTP.

- Trade Policy Review Group

  Purpose is to coordinate trade and international economic policies among agencies. OSTP participates when issues relating to international science and technology, including protection of intellectual property rights, are discussed. Lead agency - Office of the United States Trade Representative.

- President's Committee on the National Medal of Science

  The Science Adviser to the President is an ex-officio member. Lead agency - a Presidential nominating committee operating under the auspices of OSTP and supported by the National Science Foundation.

OSTP Key Interagency Relationships

- Joint Telecommunications Resources Board (JTRB)

  On July 30, 1984, the Director, OSTP, established the Joint Telecommunications Resources Board (JTRB) in accordance with E.O. 12472. The Board consists of the following members: Director, OSTP (Chairman), Department of Defense, Department of Commerce, General Services Administration, Federal Emergency Management Agency, Federal Communications Commission, National Communications System. An SOP is now ready for approval by the Board.

- The National Security Telecommunications Advisory Committee (NSTAC) meets semiannually to advise the President. The NSC coordinates and OSTP participates. NSTAC IX met on September 30, 1988. NSTAC X is expected to meet during May 1989, and the activities of its subcommittees will be monitored in preparation for the next meeting.

- An Interagency Communications Coordinating Group of Continuity of Government communications agencies is being formed with OSTP as chair and NCS as the secretariat. Terms of Reference have been drafted and are pending approval at a December 8, 1988, meeting.

- Lead agency - OSTP.

Appendix F

II. SUMMARY OVERVIEW

The total FY 1990 budget request of $2,908,000 for the Office of Science and Technology Policy includes a new base support level of $2,548,000, and $360,000 for proposed new initiatives, many of which are legislatively mandated. The portion of the request for base support covers an increase in permanent staff from the current ceiling of 15 to a requested new ceiling of 24. The higher level of permanent staff is the minimum required to handle the expected workload in FY 1990, and to ensure that policy decisions of the next Administration are made and implemented by full-time permanent staff, rather than by individuals temporarily detailed from other government agencies or institutions in the private sector. We anticipate that increased efforts will be needed on competitiveness issues, and on cross-cutting issues such as global climate change. This level of funding will strengthen the contribution of science and technology to our nation by strengthening the essential role of OSTP in coordinating the science and technology policy of the Administration.

The current ceiling of 15 permanent staff, in addition to the Director, is sufficient to provide, for example, for administrative support staff (4), senior executive staff (4) and core secretarial support (7). As can be seen, this ceiling is insufficient to provide for any permanent technical staff, or senior policy analysts.

At present, three of the four Assistant Directors are detailees, so that funds are thereby available for additional detailees to serve as technical and secretarial staff. If this approach were <u>not</u> taken, there would be insufficient funds for policy analysts within OSTP. In addition, the Executive Director and the Public Affairs Representative also have part of their salaries paid by outside agencies, to ensure that OSTP can live within the FY 1988 and FY 1989 budget limits.

The requested level of 24 permanent staff is adequate to cover a core group of administrative staff, policy analysts and support staff. In addition to the Director, this increased level of personnel could cover administrative support staff (5), policy and executive staff (9) and core secretarial support (10).

Within the base request of $2.5 million, there is sufficient funding (0.4 million) to provide 50% salary support for 18 detailees, including special assistants and technical staff (13) and support secretaries (5).

The structure of permanent staff and detailees includes a ratio of about 2:1 for professional staff to secretaries - an appropriate value for the nature of the work, and the workload conducted by OSTP.

As can be seen, the major issue for the base level of support of $2.5 million is essentially one of policy: should a major Executive Office of the President agency be staffed primarily by permanent OSTP staff, serving at the pleasure of the President, or by detailees? The level of requested staffing, while austere, will be adequate to fulfill the required policy-making role, since the emphasis, will be primarily on quality of personnel rather than quantity. It should also be noted that the requested level of FY 1990 funding in real dollars is about the same, in real terms, as the average level of support for the years FY 1983-86, which also is $2.5 million in 1990 dollars. This level of base support still represents a level of funding well below levels prior to FY 1981.

It should be noted that the $2,548,000 of our request is for the increase of personnel and their associated operational costs. The remaining $360,000 is for four new areas described below, not previously funded, which OSTP will oversee during FY 1990.

The first area is full operational and associated costs for the White House Science Council. The Council was established to advise the Science Adviser (in his capacity as Director of the OSTP) on science and technology issues of national concern and to keep him informed of changing perspectives in the science and technology communities. Although the activities of the Council have always been under the direction of the Director, it's associated optional costs have been funded by the National Science Foundation. It is felt that the Foundation should not be burdened with this responsibility and that its total direction and funding should be borne by the OSTP. An amount of $90,000 has been placed in the FY 1990 budget for costs associated with the Council. (cf. pages 15 and 16)

The second area concerns OSTP's increased responsibilities in international science and technology cooperation , for example:

CHINA

OSTP has the lead for US-China Science and Technology cooperation, and the President's Science Adviser is the US co-chairman for the annual meetings of the Joint Science and Technology Commission called for in the umbrella bilateral agreement. In FY 1990 the meeting

will be held in China, in Beijing, with site visits elsewhere. Based on the precedent of the 1987 Joint Commission Meeting in Beijing, where the US delegation numbered approximately 30, OSTP will fund six persons of the delegation and support staff.

JAPAN

OSTP led the successful negotiation of a new US-Japan Head of State Science and Technology Agreement in FY 88. This agreement calls for a three-tiered policy oversight and management structure to ensure satisfactory progress toward the new relationship called for in the agreement. The three bodies established by the agreement meet alternately in the US and Japan.

a. Joint Working Level Committee (JWLC). the JWLC meets twice a year, once in Japan and once in the US, to review the substantive work programs and recommend any changes. The FCCSET committee have the responsibility for the US side of assessing the technical merits of the US-Japan cooperative activities; the chairmen of those committees will participate in the JWLC. OSTP incurs no significant cost when the meetings are held in Washington. However, for meetings in Tokyo, OSTP will be required to provide the necessary funding for five staff members.

b. Joint High Level Committee (JHLC). The Director, OSTP, is the US Co-chairman of the JHLC, and the Assistant Director for International Affairs is a member of the committee. The FY 1990 meeting will be held in Tokyo. OSTP will fund the participation of the two principals named above, plus three FCCSET committee chairmen, plus two staff support persons.

c. The Joint High Level Advisory Panel consists of eminent leaders in science and engineering and science policy from outside of government who will advise the co-chairman on new directions for the overall bilateral science and technology relationship. This panel is scheduled to meet twice a year, once in each capital. The panel for each side will consist of five persons. Many, if not all, of the US panelists are likely to reside outside of the Washington, D. C. area, so the OSTP will incur travel expenses even for the US-hosted meetings. OSTP, as the convening agency for the US side, will cover the expenses of the US panelists, plus the participation of two OSTP staff members at each meeting.

An amount of $193,000 has been requested for activities regarding US-China and US-Japan. (cf. pages 15 and 16)

To enhance the competitiveness of American industry, and for other purposes, the Trade Bill (H.R. 4848) (now P.L. 100-418) established a National Advisory Committee on Semiconductors (NACS), Section 5142. OSTP has been designated as one of the 13 members, and was assigned the task of assisting the President in the selection of 8 members outside the Federal Government. These individuals are to be eminent in the semiconductor industry and in the fields of technology, defense, and economic development. The OSTP is requesting $77,000 to assist in meeting it's obligation for the NACS. (cf. pages 15 and 16)

In summary, because of the increasing critical need for science and technology policy expertise within the Executive Office of the President, the White House, and the entire government and the established expansion of responsibilities for OSTP in recent years, the requested level of funding of $2,908,000 for FY 1990 is prudent, and cost-effective.

Executive Office of the President
Office of Science and Technology Policy

BUDGET OVERVIEW

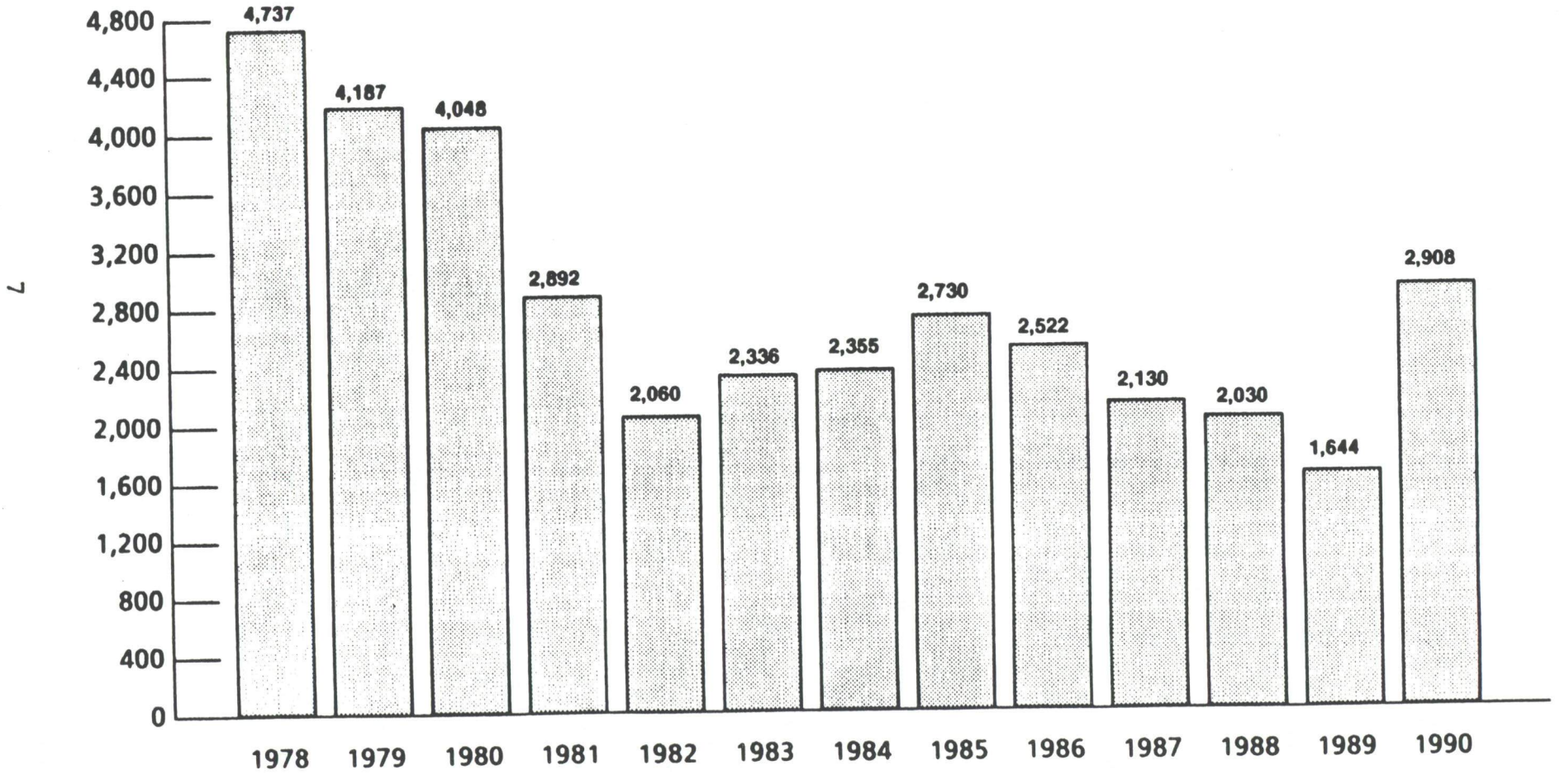
(IN THOUSANDS OF DOLLARS)

	Estimated FY 1988	Estimated FY 1989	Estimated FY 1990	Net Change FY 89 - 90
Budget Authority:				
Appropriation	1,888	1,587	2,908	1,321
FTE Employment:				
FTP	15	15	24	9
Total FTE	**23**	**20**	**29**	**9**

Executive Office of the President
Office of Science and Technology Policy

HISTORICAL SUMMARY OF APPROPRIATIONS

In Constant Dollars
Fiscal Years 1978 – 1990
(IN THOUSANDS OF DOLLARS)

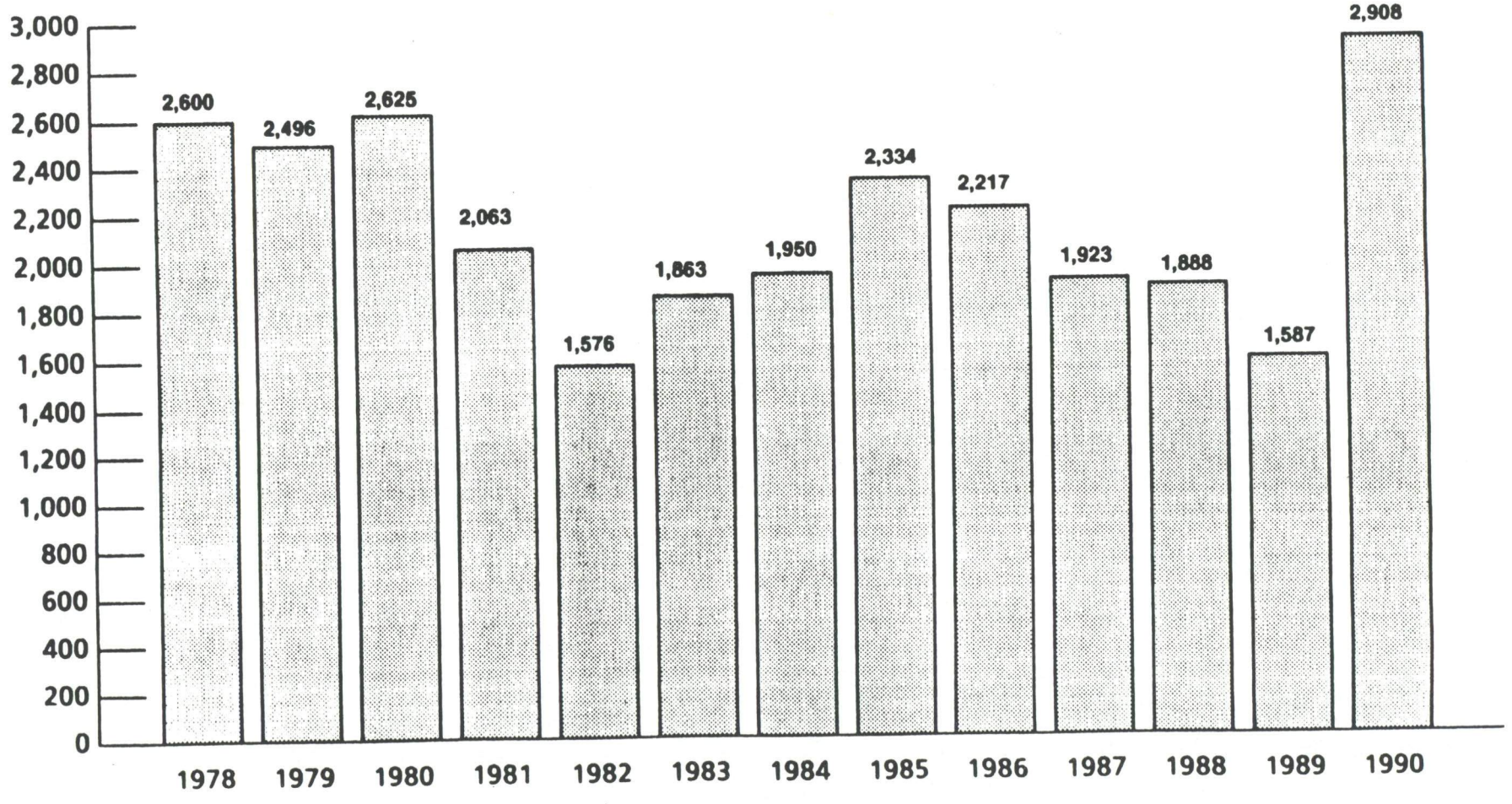


Executive Office of the President
Office of Science and Technology Policy

HISTORICAL SUMMARY OF APPROPRIATIONS

Fiscal Years 1978 – 1990

(IN THOUSANDS OF DOLLARS)



III. APPROPRIATION LANGUAGE

Executive Office of the President
Office of Science and Technology Policy

Salaries and Expenses

For necessary expenses of the Office of Science and Technology Policy, in carrying out the purposes of the National Science and Technology Policy, Organization, and Priorities Act of 1976 (42 U.S.C. 6601 and 6671), hire of passenger motor vehicles, services as authorized by 5 U.S.C. 3109, not to exceed $52,000 for official receptions, expenses, and rental of conference rooms in the District of Columbia, and $1,500 for the Director's representation, [$1,587,000] $2,908,000. Provided, That the Office of Science and Technology Policy shall reimburse other agencies for not less than one-half of the personnel compensation costs of individuals detailed to it. (Department of Housing and Urban Development-Independent Agencies Appropriations Act, 1989)

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STANDARD FORM 300
July 1984, Bureau of the Budget
Circular No. A-11, Revised.
300-101

Office of Science and Technology Policy
Salaries and Expenses

Program and Financing (in thousands of dollars)

Identification code 11-2600-0-1-802	19 88 actual	19 89 estimate	19 90 estimate
Program by activities:			
00.01 Direct program: Administrative support	1,888	1,587	2,908
01.01 Reimbursable program	---	---	---
10.00 Total obligations	1,888	1,587	2,908
Financing:			
11.00 Offsetting collections from: Federal funds	---	---	---
25.00 Unobligated balance lapsing	---	---	---
40.00 Budget authority (appropriation)	1,888	1,587	2,908
Relation of obligations to outlays:			
71.00 Obligations incurred, net	1,888	1,587	2,504
72.40 Obligated balance, start of year	1,222	1,215	1,175
74.40 Obligated balance, end of year	-1,215	-1,175	-1,586
77.00 Adjustments in expired accounts	---	---	---
90.00 Outlays	1,895	1,627	2,497

Office of Science and Technology Policy

Program and Performance

The Office of Science and Technology Policy (OSTP) provides advice to the President concerning policies in science and technology and on the utilization of science and technology in addressing important national problems. The OSTP operations include support to other Executive Office of the President organizations on issues with science and technology considerations; review and analysis, of research and development budgets for all Federal agencies; coordination of research and development programs of the Federal Government; advise the President and the National Security Council on scientific and technological issues relating to security matters; and other activities necessary to carry out the duties, functions, and activities described in Public Law 94-282, the National Science and Technology Policy, Organization, and Priorities Act of 1976.

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STANDARD FORM 300
July 1984, Bureau of the Budget
Circular No. A-11, Revised.
300-101

Office of Science and Technology Policy
Salaries and Expenses

Object Classification (in thousands of dollars)

Identification code 11-2600-0-1-802	1988 actual	1989 estimate	1990 estimate
Direct obligations:			
Personnel compensation:			
11.1 Full-time permanent	726	535	1,103
11.3 Other than full-time permanent	30	20	20
11.5 Other personnel compensation	10	10	20
11.8 Special personal services payments	251	199	437
11.9 Total personnel compensation	1,017	764	1,580
12.1 Personnel benefits: Civilian	65	90	166
21.0 Travel and transportation of persons	105	85	399
22.0 Transportation of things	3	3	3
23.1 Rental Payments to GSA	436	442	449
23.3 Communications, utilities, and miscellaneous charges	119	118	122
24.0 Printing and reproduction	15	10	15
25.0 Other services	48	40	114
26.0 Supplies and materials	35	30	35
31.0 Equipment	45	5	25
99.0 Subtotal, direct obligations	1,888	1,587	2,908
99.0 Reimbursable obligations	---	---	---
99.9 Total obligations	1,888	1,587	2,908

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STANDARD FORM 300
July 1984, Bureau of the Budget
Circular No. A-11, Revised.
300-101

Office of Science and Technology Policy
Salaries and Expenses

Personnel Summary

Identification code 11-2600-0-1-802	19 88 actual	19 89 estimate	19 90 estimate
Total number of full-time permanent positions	15	15	24
Total Compensable workyears:			
Full-time equivalent employment	23	20	29
Full-time equivalent of overtime and holiday hours	1	1	1

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STANDARD FORM 306
July 1968, Bureau of the Budget
Circular No. A-11, Revised.
300-100

Office of Science and Technology Policy
Salaries and Expenses

DETAIL OF PERMANENT POSITIONS

11-2600-0-1-802	19 88 actual	19 89 estimate	19 estimate
Executive Level II	1	1	1
Executive Level III	1	1	1
Subtotal	2	2	2
ES-6	1	1	0
ES-3	0	0	2
ES-2	1	3	4
ES-1	2	0	0
Subtotal	4	4	6
GS-14	0	0	4
GS-12	3	3	3
GS-10	1	1	1
GS-9	0	2	4
GS-8	2	1	1
GS-7	3	2	3
Subtotal	9	9	16
Total permanent positions	15	15	24
Unfilled positions, end of year	---	---	---
Total permanent employment, end of year	15	15	24
(Mono cost: 16.2)	(Mono cost: 4.9)	(Mono cost: 4.9)	(Mono c

IV. EXPLANATION AND JUSTIFICATION OF CHANGES BY OBJECT CLASS FOR FY 1990

Executive Office of the President
Office of Science and Technology Policy
(in thousands of dollars)

I. Increases to Maintain Current Services and Requests Levels $ 1,321

FY 89	FY 90		
$ 854	$1,746	Personnel compensation and benefits	$ 892

This funding amount will provide for a staffing level of 24 full-time permanent (FTP) and 29 full-time equivalent (FTE).

$ 85	$ 399	Travel and transportation of persons	$ 314

An increase of $314,000 is anticipated in this category due to increased costs associated with airline fares, especially foreign travel, and per diem rates. ($117,000)

The increase will not only provide travel for the OSTP staff but meetings of the following major programs in FY 1990: (1) the US-China Science and Technology Cooperation ($45,000); (2) the US-Japan Joint Working Level and High Level Advisory Panels ($92,000); (3) the National Advisory Committee on Semiconductors ($70,000); (4) the White House Science Council ($75,000).

$ 3	$ 3	Transportation of things	$ 0

There is no change to this category. The existing funding level is sufficient to cover the cost of commercial courier services and transportation companies.

$ 442	$ 449	Rental Payments to GSA (SLUC)	$ 7

No additional space is being requested for FY 1990. However, due to an increase in the cost of office space charges by GSA, an additional $7 is requested.

FY 89	FY 90		
$ 118	$ 122	Communications, utilities, and miscellaneous charges Our request will provide for OSTP's area commercial utilities primarily telephone (AT&T and FTS service), GSA after-hour utilities, postage, and the cost of data lines and other communication links between OSTP, all EOP agencies, and the science community at large.	$ 4
$ 10	$ 15	Printing and reproduction These funds provide for the government and commercial printing requirements including publication charges for the Federal Register. The increased funding level is sufficient to meet OSTP's printing requirements.	$ 5
$ 40	$ 114	Other services Our request for this line item will provide for normal maintenance costs of reproduction and ADP equipment and the cost of subscriptions to commercial data based systems. ($36,000) Also funded under this category are anticipated costs for operational support for the programs: -- US-China Cooperation: $20,000 Representation and $8,500 other services. -- US-Japan Trade Agreement: $20,000 Representation and $7,500 other services. -- National Advisory Committee on Semiconductors: $2,000 Representation and $5,000 other services. -- White House Science Council: $10,000 Representation and $5,000 other services.	$ 74
$ 30	$ 35	Supplies and materials OSTP's use of traditional office supplies has decreased while the need for specialized office supplies such as off-the-shelf software and ADP supplies has increased. The increased funding level is sufficient and will allow us to meet this change as office automation becomes more integral to our operation.	$ 5

FY 89	FY 90		
$ 5	$ 25	Equipment	$ 20

In an effort to increase OSTP's efficiency and enhance communication, a major drive was completed in FY 1987 and 1988 to purchase ADP equipment. This equipment allows OSTP to reduce dependence upon personnel resources and allows increased compatibility with the EOP information network. The funding level of $25,000 will assist in providing additional equipment for the increase in FTE's and continue to provide for purchases which enhance existing equipment and replace outdated office equipment.

$1,587	$2,908	Total all object classes	$ 1,321

Executive Office of the President
Office of Science and Technology Policy

SUMMARY OF CHANGES FROM FY 1989 TO FY 1990 BY OBJECT CLASS

(IN THOUSANDS OF DOLLARS)

FY 1989 BUDGET AUTHORITY			*$1,587*
	Increases	**Decreases**	
CURRENT PROPOSED FY 1990			*$2,908*
Personnel compensation	816	0	
Personnel benefits	76	0	
Total compensation and benefits	892	0	
Travel and transportation of persons	314	0	
Transportation of things	0	0	
Rental payments to GSA	7	0	
Comm., util., and misc. charges	4	0	
Printing and reproduction	5	0	
Other services	74	0	
Supplies and materials	5	0	
Equipment	20	0	
Total	**1,321**	**0**	
Net Increase/Decrease	**1,321**		

Executive Office of the President
Office of Science and Technology Policy

SUMMARY OF BUDGET AUTHORITY BY OBJECT CLASS

FY 1988–1990

BUDGET OVERVIEW
(in thousands of dollars)

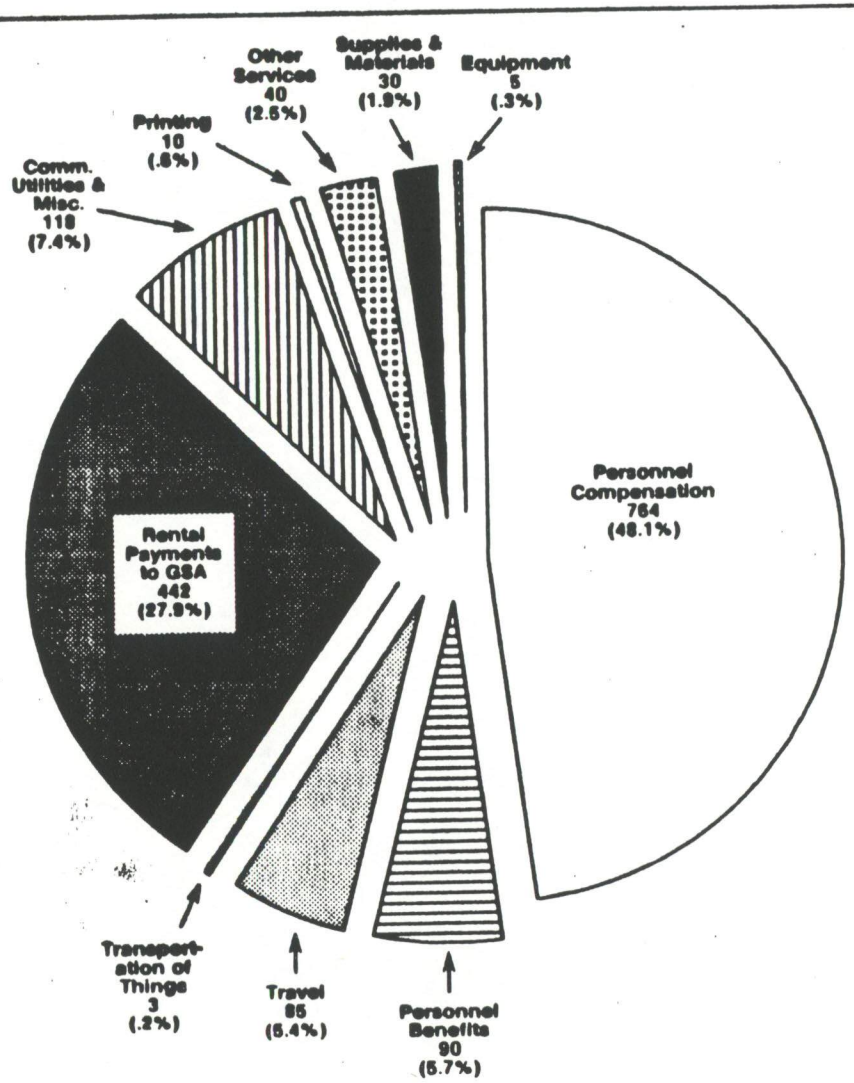
	Estimated FY 1988	Estimated FY 1989	Estimated FY 1990	Net Change FY 89 - 90
Personnel compensation:				
Full-time permanet	726	535	1,103	568
Other than full-time permanent	30	20	20	0
Other personnel compensation	10	10	20	10
Special persopnal services payments	251	199	437	238
Total personnel compensation	1,017	764	1,580	816
Personnel benefits: Civilian	65	90	166	76
Total compensation and benefits	1,082	854	1,746	892
Travel and transportation of persons	105	85	399	314
Transportation of things	3	3	3	0
Rental payment to GSA	436	442	449	7
Comm., util., and misc., chgs.	119	118	122	4
Printing and reproduction	15	10	15	5
Other services	48	40	114	74
Supplies and materials	35	30	35	5
Equipment	45	5	25	20
Subtotal, direct obligations	1,888	1,587	2,908	1,321
Reimbursable obligations	0	0	0	0
Lapse	0	0	0	0
Budget Authority	**1,888**	**1,587**	**2,908**	**1,321**

Executive Office of the President
Office of Science and Technology Policy

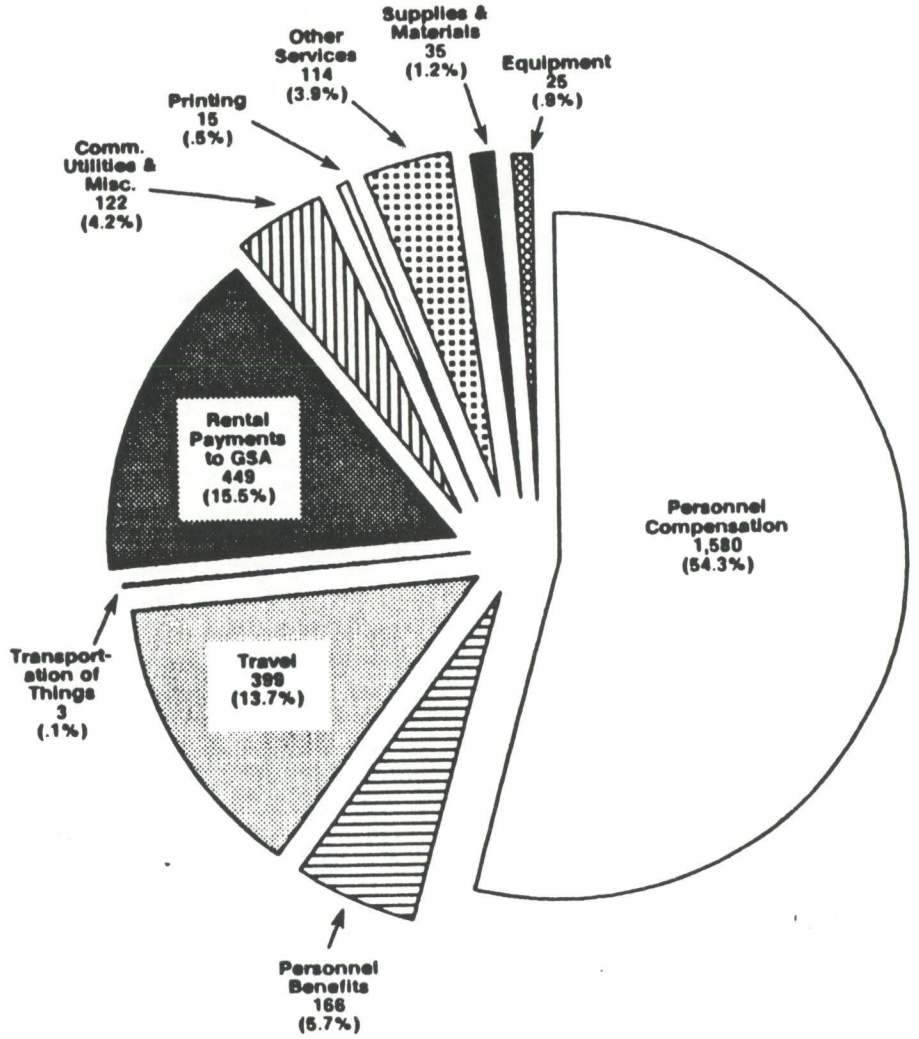
FUNDING BY OBJECT CLASS

Fiscal Years 1989 – 1990

(IN THOUSANDS OF DOLLARS)



FY 1989



FY 1990