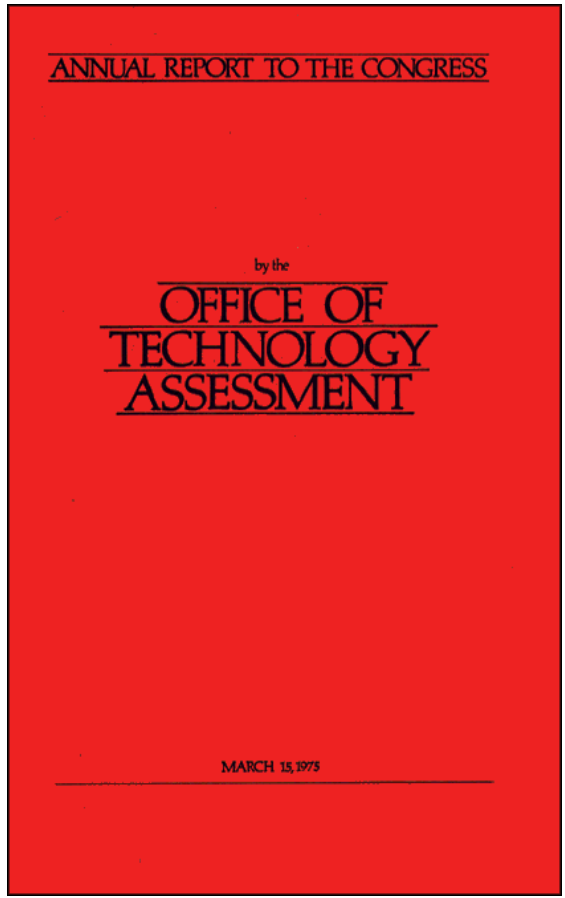
Annual Report to the Congress by the Office of Technology Assessment: March 15, 1975

March 1975





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LETTER OF TRANSMITTAL

Technology Assessment Board
Washington, D. C., March 15, 1975

To the Congress of the United States:

DEAR MR. PRESIDENT AND MR. SPEAKER: We are pleased to submit, pursuant to section 11 of the Technology Assessment Act of 1972 (Public Law 92-484), the annual report of the Office of Technology Assessment (OTA). This report is intended to provide the Congress with information about the activities of the Office during the year ended March 15, 1975. Although the legislation establishing OTA was approved October 13, 1972, funds for the Office ***were*** not made available until November 1, 1973. Accordingly, this is the first annual report to cover a full year of OTA operations. During the greater part of this year, the positions of chairman and vice chairman were held by Senator Edward M. Kennedy and Congressman Charles A. Mosher.

As stated in the Technology Assessment Act, the purpose of OTA is to equip the Congress with "new and effective means for securing competent, unbiased information concerning the physical, biological, economic, social, and political effects" of technological applications; and to serve as an aid "in the legislative assessment of matters pending before the Congress, particularly in those instances where the Federal Government may be called upon to consider support for, or management or regulation of, technological applications."

In virtually every public policy issue confronted by the Congress today, the expanding and pervasive potential of technology presents both opportunities and complications. History has shown that even slightly differing technological approaches can result in dramatically different economic, social and environmental consequences-not all of them expected or desired. OTA was established in response to the long-felt Congressional need for its own source of expert advice, independent of the executive branch, to help define the options and the probable consequences—both direct and indirect—inherent in proposed technological solutions to policy problems.

As an agency of, by, and for the legislative branch, the primary criterion of success for OTA is its ability to be of timely and useful service to the standing committees of the Congress. The Technology Assessment Board has been encouraged by the Office's accomplishments during its first full year of operations. OTA brought together scientific and social leaders for the planning and performance of multidisciplinary assessments in the pri-

ority fields of energy, food, materials, the oceans, health, and transportation. Although major assessments can require up to a year or more to complete, interim information from such studies has been made available in several instances to meet more immediate Congressional needs.

During the year under report, studies dealing with the generic drug issue, data collection for automobile safety standards, Interior Department plans to accelerate offshore oil and gas development, methods for analyzing strategic defense doctrine, and a full-scale review of the budget and plans of the new Energy Research and Development Administration were completed by OTA within deadlines dictated by the hearing schedules of requesting Congressional committees.

OLIN E. TEAGUE,
Chairman of the Board,
Office of Technology Assessment

CLIFFORD P. CASE,
Vice Chairman of the Board,
Office of Technology Assessment

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Section I

Director's Statement

Some years ago, the economist and author, Kenneth Boulding, observed that "the rise of modern technology and the growth in the complexity of the knowledge structure of society is perhaps the dominant factor in the political process of modern time." Nowhere is this more apparent than in the U.S. Congress, which is a most representative forum for deliberating and deciding upon those conflicting goals, values, and priorities raised by the increasing number of policy issues in which applications of technology affect the distribution of benefits, risks, and costs.

In meeting these challenging problems, the Congress consistently has sought accurate, timely, and independent information to enhance its understanding of both the opportunities and the problems which have accompanied the advance of scientific knowledge. The growing importance of such information led, in 1967, to the first legislative proposal for an agency to evaluate technological impacts. In 1972, this concept was enacted into law with the creation of the Congressional Office of Technology Assessment (OTA).

During the past 12 months, OTA completed its first full year as an operational advisory arm of the Congress. The accomplishments and activities of this period are described in the following report. In order to fulfill its mandate, OTA has placed special emphasis on the establishment of working relationships with the committees of the Congress and the staff personnel who support them. These relationships provide opportunities for a free and continuous two-way flow of information between OTA's assessment teams and the Congressional interests whose information needs are being served. This aspect of the Office's development, I believe, has paid dividends as committees have benefited-through hearing testimony and background briefings—from a feed-in of data from ongoing assessments. At the same time, OTA assessors have been able to refine and modify the scope of their studies by virtue of feedback they have received from Congressional committees.

The establishment of OTA was one step in the continuing trend toward the strengthening of the analytical and advisory resources of the Congress. OTA's unique role is to assist the Congress through the developing art of technology assessment, an interdisciplinary form of policy research designed to identify alternative approaches to technology-related issues and to provide thorough analyses of the probable consequences of such options. OTA assessments must be in a form suitable for use by the committees of Congress and,

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thus, are more likely to be in the form of intelligence reports or issue papers than of traditional reports.

The objective of each assessment is to provide an early appraisal of the probable impacts and uncertainties of technological programs, so that both beneficial and adverse factors can be identified and considered in the legislative planning process. Both near-term and longer-term effects, whether intended or unintended, are examined, as are the diverse interests and viewpoints of the many different parties foreseeable to be affected by the technology.

Technology assessment is not primarily an exercise in forecasting or prophecy. It is a process designed to ask the right questions, and to seek answers based-as much as is possible-on hard, factual information which can be obtained through disciplined analysis. Where important data are unavailable, the need for additional research can be spotlighted. Technology assessment is an aid to, not a substitute for, the judgments which must be reached by elected officials in policymaking positions.

During its formative stages, OTA has sought to develop the capability to respond to Congressional committees seeking timely and unbiased technological information and analyses. As the Office moves forward, it will develop an additional, longer-range capability for calling attention to emerging technological issues deserving early assessment, but which have not yet surfaced as matters of political concern. A continuing objective and goal of OTA will be to improve public understanding of the implications of science and technology through techniques which will make possible more balanced and more informed discussion and debate of technology-related public issues.

The past year has brought both challenges and opportunities for OTA in its efforts to establish a distinctive institutional capability and to provide a fresh viewpoint for dealing with complexly interrelated issues which cross traditional disciplinary boundaries. Much has been accomplished and much remains to be done. The flavor of the events of this developmental period is well captured in the outgoing statements of OTA's initial Chairman, Senator Edward M. Kennedy, and Vice Chairman, Congressman Charles A. Mosher, which are included as appendices to this report.

* * *

This report covers the activities of the Office of Technology Assessment during the year since March 15, 1974, the date of the preceding annual report, through March 15, 1975, The sections which follow describe the structure and organization of OTA and its operating procedures, the activities of the OTA Advisory Council, and the assessment activities under way in OTA's six priority areas.

EMILIO Q. DADDARIO,
Director,
Office of Technology Assessment.

Section II

Organization and Operations

The Office of Technology Assessment (OTA) was created by the Technology Assessment Act of 1972 (86 Stat. 797) to help the Congress anticipate, and plan for, the consequences of uses of technology. OTA received funding in November 1973, and commenced operations with the convening of the 93d Congress, 2d Session, in January 1974.

The statute specifies that OTA shall consist of a bipartisan Congressional policy Board, an OTA Director and Deputy Director, a citizens Advisory Council, and such other employees and consultants as may be necessary in the conduct of OTA's work. The Congressional Board sets the policies of the Office and is the sole and exclusive oversight body governing OTA. The OTA Director is the chief executive officer and is responsible solely to the Board, of which he is a member. The function of the Advisory Council is to advise on such technology assessment matters as may be requested by the Congressional Board.

OTA's Congressional Board comprises six Senators and six Representatives, evenly divided by party, who are appointed respectively by the President Pro Tempore of the Senate and the Speaker of the House. The current Board Chairman is Congressman Olin E. Teague of Texas and the Vice Chairman is Senator Clifford P. Case of New Jersey. The two posts rotate between the Senate and House in alternate Congresses, with the Chairman chosen from the majority party and the Vice Chairman chosen from the minority party. The Advisory Council consists of 12 members. Ten are public members, appointed by the Board, who are persons eminent in one or more fields of the physical, biological, or social sciences or engineering or experienced in the administration of technological activities, or who may be judged qualified on the basis of contributions made to educational or public activities. The Comptroller General and the Director of the Congressional Research Service of the Library of Congress are ex officio Council members.

In providing assistance to the Congress, OTA is to: Identify existing or probable impacts of technology or technological programs; where possible, ascertain cause-and-effect relationships; identify alternative technological methods of implementing specific programs; identify alternative programs for achieving requisite goals; make estimates and comparisons of the impacts of alternative methods and programs; present findings of completed analyses to the appropriate legislative authorities; identify areas where additional

research or data collection is required to provide support for assessments, and undertake such additional associated activities as may be directed.

Initiation, processing, and flow of assessments.-The Office of Technology Assessment, by statute, is located within and is responsible to the legislative branch of Government. Accordingly, its basic mission is to provide Congressional committees with assessments or studies which identify the range of probable consequences, social as well as physicial, of policy alternatives affecting the uses of technology. Requests for OTA assessments may be initiated by:

(1) The chairman of any standing, special, select, or joint committee of the Congress, acting for himself or at the request of the ranking minority member or a majority of the committee members;

(2) the OTA Board; or

(3) the OTA Director, in consultation with the Board.

The authorization of specific assessment projects and the allocation of funds for their performance is a policy responsibility of the OTA Board. The Board has established priority areas of study, and has approved individual assessment projects within those areas. In arriving at these decisions, the Board considers recommendations and plans developed by OTA staff, and applies the following general selection criteria, developed in consultation with the Advisory Council:

- Is this now or likely to become a major national issue?
- Can OTA make a unique contribution, or could the requested technology assessment be done effectively by the requesting committee?
- How significant are the costs and benefits to society of the various policy options involved, and how will they be distributed among various impacted groups?
- Is the technological impact irreversible?
- How imminent is the impact?
- Is there sufficient available knowledge to assess the technology and its consequences?
- Is the assessment of manageable scope-can it be bounded within reasonable limits?
- What will be the cost of the assessment?
- How much time will be required to do the assessment?
- What is the likelihood of Congressional action in response to the assessment ?

The development and performance of each OTA assessment is supervised by a program manager, assisted by other staff professionals with expertise in the subject under study, and by a citizens advisory committee or panel, comprised of persons directly involved with major aspects of the study. Assessments are carried out by panels of experts, consultants, con-

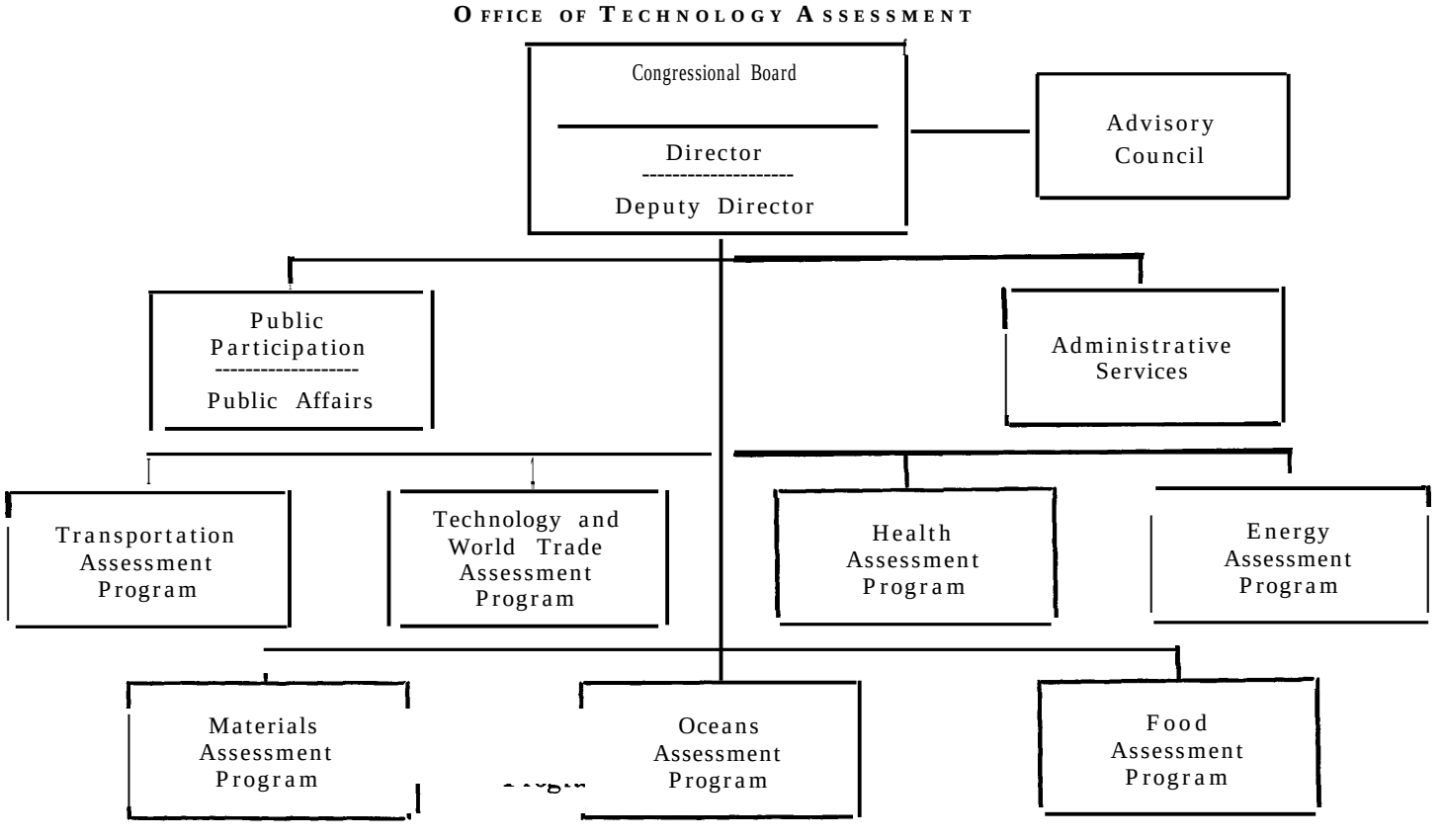
tractors, OTA staff members, or a combination of these resources, as deemed appropriate by the OTA project management team. The approach to a given assessment project can be determined in a variety of ways and may involve exploratory meetings or workshops of advisory panels, staff analyses, and consultant studies.

For assessments which include the resources of an outside contractor, the OTA staff, working closely with its citizens advisory group and representatives of the Congressional committees requesting the study, develops a detailed request for proposals which includes "a statement of work" outlining the scope of the study. Qualified parties demonstrating the capability to assemble the multidisciplinary team of experts needed to carry out a comprehensive technology assessment are invited to submit competitive bids. All proposals received by OTA are considered in the Office's contractor-selection process. In some instances, assessments carried out on an in-house basis, utilizing a task force approach or a series of workshop panel meetings, are augmented by contract studies of specific aspects of the overall project.

As the assessment or study proceeds, responsibility for its management remains solely a function of OTA. The resources of the associated advisory committee or panel are utilized throughout the entire project. Members and staffs of the interested Congressional committees also are kept informed on a regular basis of the progress and, as appropriate, the preliminary findings of the study. In many instances, such preliminary information assists committee staffs in their legislative analyses and preparations for public hearings.

Completed assessments and studies are transmitted by the OTA Congressional Board to the committee which requested the project, as well as to other interested committees. The committees of the Congress have first access to OTA assessment results and findings. At the direction of the Board, printing and public dissemination of final OTA reports takes place at the earliest possible date in accordance with arrangements worked out with the requesting committee (s).

Appropriations and budgeting summeries.--Administrative and financial aspects of OTA operations are overseen by an Administrative Officer who reports to the Director. The Congress appropriated $2 million for OTA operations during the final 8 months of fiscal year 1974. The OTA budget request for fiscal year 1975 was $5 million and $4 million was appropriated with the provision that the unobligated balance of fiscal year 1974 funds ($696,000) would be available for use during fiscal year 1975. The OTA Board approved submission of an OTA budget request for fiscal year 1976 totaling $6.5 million. The following table provides budget details by program and by major class of expense:


OFFICE OF TECHNOLOGY ASSESSMENT
Congressional Board
Director
Deputy Director
Advisory Council
Public Participation
Public Affairs
Administrative Services
Transportation Assessment Program
Technology and World Trade Assessment Program
Health Assessment Program
Energy Assessment Program
Materials Assessment Program
Oceans Assessment Program
Food Assessment Program

BUDGET SUMMARY	Fiscal 1974 actual	Fiscal 1975 estimate	Fiscal 1976 request	1975 to 1976 change
	[In thousands]			
By program:				
Energy	$322	$447	$858	+$411
Food	16	377	1,008	+631
Health	162	413	566	+153
Materials	1, 117	779		–338
Oceans	12	823	998	+ 175
Transportation	472	358	794	+436
Technology and World Trade	43	205		+162
Exploratory Assessments	32	256	293	+37
TAAC	37	97	105	+ 8
Public Affairs and Public Participation	8	126	159	+33
Office of the Director	136	224	225	+1
Administration:				
Information Services	150	415	510	+94
Totals	1,345	4,696	6,500	+1, 804
By major objects:				
Salaries and benefits	292	1,669	1,974	+305
Contracts and other services	965	2,599	3,884	+1, 285
Travel	30	273	435	+ 162
Other	58	155	207	+52
Totals	1,345	4,696	6,500	+1, 804

Note.—Details may not add to totals because of rounding.

Staffing and organisational structure.—The OTA professional staff has been recruited from the academic community, from industry, and from government scientific and technical agencies. With the exception of those officers with overall administrative responsibilities, professional staff members are assigned to specific program areas according to their experience and training. Staff professionals have been drawn from a wide variety of disciplines and backgrounds, including the physical sciences and engineering, social sciences, the law, and general administration. (A chart detailing OTA's organizational structure appears on the facing page.)

Public participation.—Public participation in the technology assessment process is an important OTA objective. In addition to the wide use of citizen advisory groups and consultants, the Office seeks to disseminate information to the various parties at interest in the subject being assessed **so** they may become more effectively involved in public decision-making processes. In keeping with this objective, meetings of OTA's Congressional Board and Advisory Council are open to the public. Also, the OTA Director is advised by an officer of public participation as well as a public affairs ***officer.***

The Advisory Council plays a key role in providing a forum for public participation in technology assessment. This function of the Council was stressed in the report issued in January 1975, by Representative Charles A. Mosher, who served as the first Vice Chairman of OTA's Congressional Board. "I hope it will be possible for the Council to incorporate the participation of public interest and other groups into its activities. This will take a great deal of work on the Council's part, but it is a vitally important task," Mosher said. (Representative Mosher's text is included as an appendix to this report.)

A separate public participation project is being carried out by OTA staff in conjunction with the Office's coastal zone impacts assessment of technologies proposed off the shores of New Jersey and Delaware. A concentrated effort has been planned to identify and contact a broad cross section of public groups representative of the region's overall population. Assessment information will be shared with these community groups, and the interests and concerns expressed by participating citizens, in turn, will be considered in the larger study.

Screening and evalation procedures.—OTA screening procedures for evaluating assessment requests include smaller scale, exploratory assessments undertaken to provide a better basis for decisions by the OTA Board as to whether certain major study projects are warranted. These evaluations as to feasibility and usefulness are made by senior OTA personnel with the assistance of general consultants and an ad hoc advisory group. (Members of this panel are listed at the end of this section.) During the year under report, this effort resulted in an analysis of the feasibility of conducting a large-scale study of the potential impacts on rural America of both existing and newly developing telecommunications technologies.

The rural telecommunications assessment was requested by the Senate Committee on Agriculture and Forestry, which is seeking information about improved means for delivering "basic human services to people who live in low density circumstances in the American countryside." OTA's preliminary analysis, to be completed over a period of about six months, will provide for the OTA Board a review of the results and progress of similar studies being conducted elsewhere, as well as an outline of the technological options and policy alternatives which might be explored by a full-scale OTA assessment.

Ad Hoc Analytical Process Panel

Dr. LAWRENCE J. FOGEL, ***Chairman.***	**President, Decision Science, Inc.**
Dr. MARTIN GREENBERGER	**Professor, Department of Mathematical Sciences, *Johns* Hopkins University.**
Dr. **MICHAEL MESAROVIC**	**Director, Systems Research Center, Case-Western Reserve University.**
Dr. DENNIS MEADOWS	**Professor, Thayer School of Engineering, Dartmouth College.**
Dr. RUTH DAVIS	**Director, Institute for Computer Science and Technology, National Bureau of Standards.**
Dr. **ROBERT E. MACHOL**	**Professor, Graduate School of Management, Northwestern University.**
Dr. **ITHIEL DESOLA POOL**	**Professor, Department of Political Science, Massachusetts Institute of Technology.**

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Section III

Activities of the OTA Advisory Council

The OTA Advisory Council, under the direction of Chairman Harold Brown and Vice Chairman Edward Wenk, Jr., rendered valuable assistance to the OTA Congressional Board during the report year, particularly in the areas of developing assessment priorities and methodologies, and in providing opportunities for public participation. The diverse composition of the Council, with its wide range of professional leadership and experience, enabled it to establish balanced perspectives, encompassing insights and concerns from academic, industrial, and public interest viewpoints.

Activities of the Council included regularly scheduled meetings of the full membership, joint meetings with the Congressional Board, meetings and work session of Council subcommittees, organization and conduct of regional hearings and meetings with citizen groups, structuring of expert panels to address specific questions, and participation of individual Council members on advisory panels and committees formed by OTA for individual assessment projects. Full Council meetings, of either one- or two-day duration, were held in April, May, July, October, and December 1974, and in February 1975.

During the year under report, the Board asked the Advisory Council to develop recommendations for the formulation of procedures for establishing assessment priorities and for developing assessment methodologies. Considerable time and attention have been given to these tasks to help assure that OTA's resources are used in the most important and effective ways. As of the date of this report, OTA had received 47 Congressional request letters in which 105 separate issues were nominated as topics for assessment.

In March 1974, the Council appointed an ad hoc Subcommittee on Assessment Priorities, under the chairmanship of Dr. Jerome B. Wiesner. The group sought the advice of a wide range of spokesmen from various professions and various sections of the country during a series of five regional hearings, held in Boston, Chicago, Dallas, La Jolla, and Seattle, and a meeting in Washington involving representatives of various citizen-interest groups.

In a preliminary report, submitted to the full Council in February 1975, the subcommittee classified priority topics for assessment into four general categories: energy, materials, food, and biology and health. These categories coincide with four of the six priority areas designated by the OTA Board in February 1974.

The Council subcommittee considered possible procedures for establishing OTA priorities for allocating resources among competing Congressional assessment requests. It also noted the need to identify technological issues, warranting assessment, that have not yet surfaced in the current deliberations of the Congress. The subcommittee decided it could best serve OTA by examining means to call attention to emerging issues of long-range importance to society that merit immediate policy considerations.

One of the recommendations of the Council group was that a certain portion of the OTA budget be set aside for studies designed to provide early warning of developing issues. These might be identified by periodically conducting forums to seek the advice of specialists and generalists not directly involved in Congressional processes.

The Council subcommittee also assisted in the development of a list of selection criteria to be utilized by the OTA staff in preparing recommendations to the Congressional Board on assessment priorities.

A second major Advisory Council subcommittee was appointed in April 1974, in response to the Board's request for an overview and recommendations regarding methods and procedures for carrying out technology assesments. The ad hoc Subcommittee on Methodology was chaired by Mr. J. Fred Bucy. It concurred with the priorities subcommittee in recommending that OTA experiment with a variety of methods for making assessments.

Other important assignments undertaken during the year by the OTA Advisory Council include a study on the feasibility of a technology assessment dealing with the subject of national growth policy. The Council also assisted OTA in assembling an expert panel to render advice on both the need and the means for further evaluation of estimates, presented by the Department of Defense to the Senate Foreign Relations Committee, dealing with the potential civil damage effects of a limited nuclear attack.

The task involving national growth policy resulted in a council recommendation, subsequently accepted by the OTA Board. This was to undertake a limited, first stage assessment effort which would concentrate on the effects ***on*** national growth patterns of decisions determining the locations of major new energy-generating facilities. The initial assessment, to be undertaken at a relatively low cost, will concentrate on the Nation's already heavily populated coastal regions and will utilize information being developed in OTA's ongoing assessment of Outer Continental Shelf energy technologies.

In the case of the Senate Foreign Relations Committee's request for an assessment dealing with the potential effects of limited nuclear warfare upon U.S. society, OTA was able to call upon two individual members of the Advisory Council with expertise in the field, former Presidential Science Advisor Jerome Wiesner and former Air Force Secretary Harold Brown. The two Council members agreed to serve on an ad hoc panel on nuclear effects, appointed by the OTA Board and chaired by Dr. Wiesner.

This panel, comprised of ten persons with wide experience in the area of national strategic doctrine concepts, convened a one-day meeting on Saturday, February 1, 1975. The meeting produced a detailed critique of the Defense Department damage estimates presented earlier to the Senate committee, and a series of conclusions and recommendations as to the best approaches for pursuing the question further. (Members of the panel are listed at the end of this section.)

The panel concluded that the interests of the committee could best and most **quickly be served not by an independent OTA assessment, but rather by a detailed request for further information to be submitted directly to the Department of Defense by the Foreign Relations Committee.**

The Council also has provided assistance in the presentation of OTA's annual justification of budget estimates. During hearings held May 28, 1974, before the Senate Subcommittee on Legislative Branch Appropriations, eight Council members appeared as witnesses in support of the fiscal year 1975 OTA budget request, and testimony was presented on behalf of a ninth member. Documentation in support of the fiscal year 1976 OTA budget request was strengthened through the efforts of a Council-appointed ad hoc budget review subcommittee headed by Dr. Edward Wenk, Jr.

In addition to these activities, the Council has been regularly briefed on the progress and status of all phases of OTA assessment projects, from ***in***ception to completion, and has provided helpful guidance and advice in the course of this review process. The cumulative efforts and contributions made by Council members during the report year reflect a major commitment of time, energy, and dedication to the furtherance of OTA's objectives.

Nuclear Effects Panel

Dr. **JEROME B. WIESNER, *Chairman.***	**President, Massachusetts Institute of Technology.**
Dr. **HAROLD BROWN**	**President, California Institute of Technology.**
Dr. SIDNEY D. DRELL	**Deputy Director, Stanford Linear Accelerator Center.**
Dr. RICHARD L. **GARWIN**.	**Thomas J. Watson Research Center, IBM Corporation.**
Mr. SPURGEON M. KEENY. . .	**The MITRE Corporation.**
Dr. GORDON MACDONALD.	**Professor, Dartmouth College.**
Admiral **GERALD E. MILLER**. ., .	**U.S. Navy (retired).**
Dr. JAMES V. NEEL	**Department of Human Genetics, University of Michigan.**
Dr. C HARLES T OWNES . .	**Department of Physics, University of California at Berkeley.**
Mr. **ARCHIE** WOOD , ...	**Brookings Institution.**

Dr. Henry Kelly, ***Executive Secretary***

Section IV

Assessment Activities

Since the preceding annual report, assessment activity has progressed in the six priority areas identified by OTA's Congressional Board: oceans, transportation, energy, materials, food, and health. Individual studies were designed to address the needs of Congressional committees as expressed in letters of request to OTA. Often the needs of several committees have been met within the scope of a single assessment addressing a number of related policy issues. In all activities, OTA staff worked closely with the staffs of the various Congressional committees to shape and time the performance of assessments to best converge with Congressional schedules. Frequently, information acquired from assessments in progress was adapted and made available to serve interim Congressional needs.

OCEANS ASSESSMENTS

The OTA Oceans Assessment Program during the report year organized and began one extensive project, which formed an information base for four shorter-term activities. Data from two of the derivative studies were utilized in Congressional committee deliberations during the year. Planning was initiated for three additional assessments scheduled for fiscal year 1976. These projects address a variety of policy issues, most of them energy related, raised in assessment requests submitted by six Congressional committees concerned with ocean technologies and coastal zone management.

In February 1974, just prior to the close of the previous report year, the OTA Congressional Board designated oceans as a high priority area for assessment activities Development of OTA's oceans project staff was begun and a nine member ad hoc advisory group was appointed, which included experts on legal, economic, environmental, geological, industrial and governmental aspects of offshore oil development. The panel included participants in recent studies of the subject sponsored by the National Science Foundation and the Council on Environmental Quality. (Members of the ad hoc panel are listed at the end of this subsection.)

During a three-day meeting, held in May 1974, the ad hoc panel reviewed procedures for the allocation of Federal resources which may be discovered in submerged lands beyond the three-mile limit. The panel also recommended that OTA assessments dealing with the Outer Continental Shelf should address the manner in which offshore-based energy facilities of various types may perform in a specific geographic region and the impacts they may have on the adjacent coastal area.

Incorporating the panel's guidance with the results of staff research and analysi—including reviews of information developed in previous Congressional hearings, monitoring of ongoing hearings, and first hand observation of North Sea oil staging and drilling sites by OTA's program manager—a proposal was developed for an assessment of new use demands on the coastal zone and offshore areas of New Jersey and Delaware. The project design was based on staff analyses that showed that the Baltimore Canyon Trough, lying off the New Jersey and Delaware coasts, would be an early target for a proposed program of accelerated offshore oil leasing. In addition, it addressed proposals for offshore siting of nuclear power plants and the possible development of deepwater ports for supertankers in the same coastal region.

An n-member project advisory panel, including representatives of the two affected State governments in addition to industrial, environmental,

scientific, labor, and public-interest spokesmen, was appointed to assist OTA in the conduct of all phases of the assessment. (Panel members are listed at the end of this subsection.) The project team was additionally augmented by consultants, contractual arrangements, and by participants in post-doctoral fellowship programs sponsored by Stanford University and by the American Association for the Advancement of Science.

As the primary oceans assessment program progressed during the report year, the resources assembled by OTA—both personnel and collected information—were used as a basis for meeting related Congressional requests, several of which required responses within a short time span. Analyses by OTA's Oceans Assessment Program were published as a staff report by a Senate committee, and in another instance were utilized extensively in preparations and backgrounding for a Congressional oversight hearing.

New usedemands on the coastal zone.—In response to a request from the Senate Commerce Committee and the Senate National Ocean Policy Study, this regional assessment is examining the potential offshore and coastal zone impacts of the introduction of deepwater ports, floating nuclear power plants and oil exploration and production off the coasts of New Jersey and Delaware. Alternatives to those technologies also are being identified and evaluated. The 1 l-month study is scheduled for completion in the late fall of 1975. The two-State, coastal area selected for the study is densely populated, concentrated with industry and shoreline activity, and faces the imminent prospect of accelerated oil leasing activity in the Baltimore Canyon Trough region of the Atlantic Ocean, from 60 to 100 miles off its shores.

Public participation program.— A key element of the New Jersey-Delaware coastal zone assessment is the examination of public attitudes and, to the extent possible, the broadening of public understanding of the technologies under study and of the ways governmental decisions can alter their impacts. In a separate but related project, OTA public participation specialists are establishing contact with citizens and various interest groups within the two states to provide information about the assessment, its subject matter, the probabilities of potential impacts, and the public policy issues which stem from them.

Analysis of accelerated OCS leasing plans.— OTAoceans project personnel, at the request of the Senate Committee on Commerce, provided the basic information and analysis for a Senate National Ocean Policy Study preliminary report on Administration-announced plans for expanded leasing of OCS lands in 1975. The study, "An Analysis of the Department of the Interior's Proposed Acceleration of Development of Oil and Gas on the Outer Continental Shelf," was published in March 1975 by the Senate Commerce Committee for use in its hearings on that subject.

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Separation of exploration from production of OCS oil and gas.— In response to a joint request from the Senate Committee on Interior and Insular Affairs and the Senate Committee on Commerce, OTA assembled a task force to analyze the consequences both of existing leasing mechanisms and of alternative procedures that would separate offshore exploration for oil and gas from development and production. The objective was to examine the feasibility of obtaining more complete information about the extent and location of Outer Continental Shelf petroleum reserves, prior to the fixing of production commitments. Such information would be of use for State coastal zone planning, for Federal energy policy planning, and for calculating an equitable return from the leasing of public lands, The project, begun in February 1975, was completed in time to provide OTA briefings and an information base for a joint hearing held by the two requesting committees.

Oil tankers.—This in-house study was begun in December 1974 in response to a request from the Senate Committee on Commerce and as an outgrowth of the coastal zone assessment. Preliminary information from this project was utilized by the Commerce Committee in its preparations for oversight hearings on the supertanker issue, held in late January 1975.

The final project report is intended as a basic background document, or primer, compiling available information about all aspects of tanker operations and identifying alternative approches to policy issues raised by this technology. Entitled "Oil Transportation by Tankers-An Analysis of Marine Pollution and Safety Measures," the report was formally transmitted to the Senate Commerce Committee.

Energy facilities siting.—This study planned for initiation in fiscal year 1976 is being designed as the first increment of a developing OTA assessment program dealing with the subject of national growth policy. The proposed first-stage assessment would focus on the growth policy implications of the demand for energy facilities (e.g., powerplants, refineries, petrochemical plants, fuel extraction facilities, etc.) and the factors associated with their siting, particularly within coastal zone areas. **The study responds to requests from the House Committee on Interior and Insular Affairs and the Senate Committee on Commerce. The staged approach to this area of assessment was recommended by the OTA Advisory Council.**

Fishries.-Planning for this proposed fiscal year 1976 assessment was begun in response to requests from the House Committee on Merchant Marine and Fisheries and the Senate Committee on Commerce. The study would examine present and future impacts of technology on the U.S. fishing industry. In particular, it would examine the risks, benefits, and resource management problems that would occur if U.S. fishing rights are extended from the current 12-mile limit to a proposed 200-mile limit.

Liquefied natural gas costal facilities and transportation.-In response to interest expressed by the Senate Commerce Committee on behalf of the National Ocean Policy Study, OTA has made plans to examine the national need for, and the projected impacts of, the construction and operation of port and terminal systems for the marine transportation of liquefied

natural gas (LNG). The project, proposed for the 1976 fiscal year, would assess the risks and benefits of LNG tanker operations in coastal waterways and harbors.

Ad Hoc Oceans Advisory Panel

Dr. DON E. KASH, *Chairman*. . . .	Director, Science and Public Policy Programs, University of Oklahoma.
Dr. RAY BRANNON	Research Scientist, Exxon Production Research.
Mr. HENRY COULTER.	Assistant Director for Environmental Conservation, U.S. Geological Survey.
Mr. CHARLES EDDY	Counsel, Ford Foundation Energy Policy Project.
Mrs. BARBARA HELLER.	Environmental Policy Center.
Mr. ROBERT KNECHT.	Director, Office of Coastal Zone Management, National Oceanic and Atmospheric Administration.
Dr. WALTER J. MEAD	Professor, University of California at Santa Barbara.
Dr. LYLE ST. AMANT	Assistant Director, Louisiana Wildlife and Fisheries Commission.
Mr. MARVIN SINGER	Council for Environmental Quality.

Coastal Zone Assessment Advisory Panel

Dr. RICHARD SULLIVAN, *Chairman.*	Center for Environmental Studies, Princeton University.
Mr. DAVID J. BARDIN	Commissioner of Environmental Protection, State of New Jersey.
Mr. E. C. BROUN , Jr.	Vice President, Petroleum and Minerals Group, Dresser Industries, Inc.
Dr. FRANCIS T. CHRISTY, Jr. ., .	Director, Program of International Studies of Fishery Arrangements for the Future.
Mr. JOHN DANIELLO	Secretary of Community Affairs and Economic Development, State of Delaware.
Dr. JOHN MARK DEAN.	Associate Professor of Marine Science and Biology, University of South Carolina.
Mr. RICHARD M. ECKERT.	Vice President, Engineering and Construction, Public Service Electric & Gas Co. (New Jersey).
Dr. DON E. KASH , ...	Director, Science and Public Policy Programs, University of Oklahoma.
Dr. H. W. MENARD	Scripps Institute of Oceanography, University of California.
Mr. CHARLES C. MOLLARD.	National Coordinator, Inland Boatmen's Union of the Seafarers International Union, AFL-CIO.
Dr. JAMES SULLIVAN	Director, Center for Science in the Public Interest.

TRANSPORTATION ASSESSMENTS

Assessment activity in the field of transportation issues advanced during the report year in response to a half-dozen Congressional requests dealing with the subjects of urban mass transit, automobile safety, and the nation's railroads. The OTA Transportation Program staff began work on five projects, completed one of them, and initiated planning for an additional study. The work undertaken in this area addresses various policy issues grouped around the common theme of a perceived need for safer, less costly, and more energy-efficient means of meeting national transportation needs.

In developing responses to these requests, the OTA staff has worked closely with public groups and industry sources, as well as with executive branch transportation officials. Members of the project management staff have personally visited various of the activities subject to analysis and review during the performance of assessments. Continuous guidance and assistance has been provided by an urban mass transit advisory panel comprised of 11 members chosen to reflect the concerns of labor, management, engineers, public interest groups, planners, and architects. (A list of the panel members appears at the end of this subsection.) In addition, valuable contributions have been made through consultants, contractual arrangements, special project panels and participants in workshop discussions.

The work of the OTA Transportation Assessment Program, and the progress of each assessment, was closely coordinated with interested Congressional committee members and staffs, as well as with other legislative branch information agencies. The Congressional Research Service of the Library of Congress provided assistance for an OTA study of automated guideway transit systems, and information developed in that project was, in turn, shared with staff members of the General Accounting Office conducting a review of an aspect of that subject. Additionally, OTA has provided summaries of its findings in the area of automated train control equipment to two General Accounting Office divisions involved in studies of metropolitan mass transportation systems. At the end of the report year, information inputs from OTA transportation assessments had been scheduled for inclusion in five upcoming Congressional hearings.

Automatic train control.—This assessment, requested by the Senate Appropriations Committee, addresses questions about the cost, safety, and efficiency of the uses of automation in rail rapid transit systems. The study will examine and evaluate the experiences of major domestic transit systems now existing or being planned, during the phases of design, development,

procurement, testing, and operation. The objective is to ascertain how social, economic, and technological variables affect system safety, security, reliability, performance, and costs.

The assessment is being performed by a multidisciplinary team with experience in train control, human factors, and systems and reliability engineering. Eighteen site visits have been made to transit properties, specialty transit installations, and manufacturers of signaling and automatic train control equipment. Work commenced in July 1974 and is scheduled to be completed in the autumn of 1975.

Community planning for mass transit.—Upon the advice of OTA consultants and staff, and with the concurrence of the Senate Appropriations Committee staff, this project was separated from the automatic train control study because of its need for a differing mix of expertise. This study is concerned with the processes by which communities have planned, selected (or rejected), and developed new or modernized urban rail transit systems in conjunction with other modes such as bus and personal rapid transit. Nine metropolitan study sites form the base for this study. These are: Atlanta, Baltimore, Boston, Denver, District of Columbia, Los Angeles, Minneapolis-St. Paul, San Francisco, and Seattle.

Work on this study began in July 1974. Concern over the impacts of the energy crisis and the unstable economic situation caused the Senate Appropriations Committee to request that the assessment of community planning be expanded in December 1974 to include these critical aspects. The purpose of the modification is to place public transit within the framework of national concern over energy and the economy and to analyze the potential impacts of these issues upon transit as well as the potential of transit for conserving energy or stimulating economic activity. The overall project is scheduled for completion in the autumn of 1975.

Automated guideway transit.-Because communities have shown increasing interest in smaller, more flexible forms of automated mass transportation (such as the installation at Morgantown, W. Va., and airport “people mover” systems), the Senate Appropriations Committee requested an additional assessment focused on these high technology systems. Systems involved in this study are characterized by a capacity to transport small numbers of passengers (from two to four in small units; up to 50 in large ones) with very brief “headways”, or spacing between vehicles.

This OTA project was carried out with assistance from a team of consultants and by five panels, formed to address the following subject areas: U.S. experience, foreign experience, technology, economics, and **public** acceptance. Work on the assessment commenced in December 1974, and was completed in time to provide the basis for OTA testimony at a Committee hearing scheduled shortly after the end of the report year.

Automobile collision data.—The National Highway Traffic Safety Administration is charged with setting standards for automobiles to en-

hance occupant safety. To set standards properly, a data base relating fatalities and injuries to the forces generated in crashes is needed. The Administration has proposed collecting improved data through the use of devices (crash recorders) placed in automobiles which would record collision forces and other data if a crash occurred.

During a House-Senate Conference Committee discussion of transportation appropriations it was suggested that OTA evaluate the proposed crash recorder program. The House Appropriations Committee transmitted the request, which was approved by OTA's Congressional Board. With assistance from a contractor, OTA commenced work on this assessment in December 1974, and issued a final report used during Congressional hearings held in March 1975.

Railroad services and technologies.-Planning was initiated by the OTA Transportation Program staff in response to two requests received during the report year. In January 1974, the Senate Commerce Committee requested an assessment of railroad technologies, including the need for upgrading roadbeds and rights-of-way. In February 1975, a request was initiated through a member of the Technology Assessment Board, calling for an OTA review of the U.S. Railway Association's proposal for reorganization of the Northeastern railroads. The OTA staff commenced work on this project during the spring of 1975.

Urban Mass Transit Advisory Committee

Mr. GEORGE KRAMBLES, ***Chairman.***	**General Operations Manager, Chicago Transit Authority.**
Mr. WALTER J. BIERWAGEN. ...	**Member, General Executive Board, Amalgamated Transit Union.**
Mr. ROBERT A. BURCO.	**President, Public Policy Research Associates.**
Mrs. JEANNE J. Fox.	**Senior Research Associate, Joint Center for Political Studies.**
Dr. LAWRENCE A. GOLDMUNTZ, .	**President, Economics and Science Planning.**
Dr. DORN C. MCGRATH	**Professor of Urban Planning, George Washington University.**
Dr. BERNARD M. OLIVER	**Vice President for Research and Development, Hewlett-Packard Corporation.**
Mr. **SIMON REICH**	**Train Control Consultant, Gibbs & Hill.**
Mr. FREDERICK P. SALVUCCI. ., . .	**Secretary, Executive Office of Transportation and Construction, Commonwealth of Massachusetts.**
Dr. THOMAS C. SUTHERLAND, Jr.	**Assistant Dean, School of Architecture and Urban Planning, Princeton University.**
Dr. STEWART F. TAYLOR.	**Director, Transportation Systems, Sanders & Thomas, Inc.**

ENERGY ASSESSMENTS

During the report year, the OTA Energy Assessment Program undertook two Congressionally requested projects, while mapping plans for forthcoming programs to help Congress address national energy problems within the context of a comprehensive analysis of the country's overall energy status. OTA work contributed directly to Congressional review of the fiscal year 1976 budget of the new Energy Research and Development Administration (ERDA). Activities in the energy area were initiated in accordance with priorities set by the Technology Assessment Board and in response to needs expressed by four Congressional committees.

The development of OTA's assessment capabilities in the energy field has been greatly augmented by support from the scientific community, including skilled staff recruited through Congressional fellowship programs supported by professional societies. Outside expertise, supplied through consultants and through task forces and advisory panels, also has contributed to the depth and the breadth of OTA energy studies. An OTA assessment in the area of solar energy is being performed with the assistance of an interdisciplinary team assembled under contractual agreement. Mutually supportive relationships have been established between energy projects at OTA and those at the General Accounting Office and Congressional Research Service.

In order to furnish a timely and independent response to the Congressional request for assistance in reviewing the policy implications of the proposed ERDA budget, OTA utilized a variety of informational resources available in the energy field, including valuable background data generated in the Office's ongoing solar energy assessment. Because of differences in executive and legislative branch scheduling priorities, there was a period of only two weeks from the time the ERDA budget figures were released to the time the House of Representatives began its authorization hearings. Utilizing an ad hoc advisory panel and a working task force of consultants, OTA prepared an item-by-item analysis of important issues raised in the budget. Each issue analysis included pro and con arguments, lists of questions to be asked of Administration witnesses, and a brief background discussion of the issue. Participants in the review also personally briefed committee members and staff prior to, and during the course of, the hearings.

Solar energy.— OTA solarenergy assessment deals with several possible means of producing electricity using **the sun's energy. It specifically is addressed to the question of the on-site production of electricity, suitable for** dispersed sites with populations of 100,000 or less and where use can be made of waste heat.

The study, requested by the Senate Committee on Aeronautical and Space Sciences, was begun in June 1974 and is to be completed by fall, 1975. The design of this assessment also responds to energy issues raised in a request from the House Committee on Science and Technology. In addition, its results should be pertinent to Congressional oversight of recently passed legislation to finance projects demonstrating solar heating and cooling technologies.

The OTA assessment focuses on two technological processes; the direct conversion of solar energy to electrical energy using the photo-voltaic cell, and the use of sun-heated fluids to drive electric generators. Either process can provide additional-or leftover-energy to heat or cool buildings.

The assessment also addresses many general energy policy issues in its coverage of the cost and availability of alternative energy sources and the discussion of policy implications of solar energy, such as impacts on balance of trade, pollution, or capital requirements. Results from this assessment project will therefore be applicable to other OTA energy assessments. The OTA solar energy project staff has been actively assisted in all aspects of its work by a diversified panel of experts. (The 13 advisory panel members are listed at the end of this subsection.)

ERDA budget review.— OTA assistance in analyzing the ERDA budget request was initially sought by the House Science and Technology Committee, and the results later were made available to the Senate Committee on Interior and Insular Affairs and the Joint Committee on Atomic Energy. This work product was jointly published by the three committees.

OTA's ERDA budget analysis served as a prelude to the forthcoming examination of ERDA's comprehensive plans and programs which, by law, must be submitted to the Congress by June 30, 1975. During the brief time available for the budget analysis, the OTA staff was assisted by a task group of 14 consultants and specialists under the guidance of a seven-member ad hoc advisory panel. (Members of the Ad Hoc Energy Panel and the Energy Task Group are listed at the end of this section.) .

Energy priorities.—The OTA staff has begun plans for a study to develop a comprehensive overview of the Nation's current and near-future energy status. An analysis of major recent energy studies will be undertaken to clarify the assumptions that were made and to establish the points of agreement, disagreement, and uncertainty. The objective of this planned activity is to provide the Congress a common base of information which will be useful in formulating legislative solutions to energy problems. This project was planned for fiscal year 1976 in response to requests received from the House Science and Technology Committee and the Senate Committee on Interior and Insular Affairs.

Ad Hoc Energy Panel

Dr. MILTON KATZ, *Chairman.* . . .	Professor, Harvard Law School.
Dr. EUGENE G. FUBINI	Private energy consultant, Washington, D.C.
Dr. JACK B. HOWARD . . .	Department of Chemical Engineering, Massachusetts Institute of Technology.
Dr. WILLIAM H. MIERNYK ., .	Director, Regional Research Institute, West Virginia University.
Mr. LELAND F. SILLIN, Jr.	Chairman and President, Northeast Utilities.
Dr. ROBERT SOCOLOW . . .	Center for Environmental Studies, Princeton University.
Dr. WILLIAM E. ZEITER	Lawyer, Morgan, Lewis & Bockius.

Energy Task Group

Dr. MICHAEL DEVINE.	Professor, Science and Public Policies Program, University of Oklahoma.
Dr. DAVID HUETTNER.	Professor, Science and Public Policies Program, University of Oklahoma.
Dr. JACK GIBBONS	Director, Environmental Center, University of Tennessee.
Dr. DON KASH	Director, Science and Public Policies Program, University of Oklahoma.
Dr. FRED KRUGER	Professor, Economic Geology, Stanford University.
Mr. JOHN MOODY	Private Energy Consultant, New York City.
Dr. FREDERICK H. MORSE.	Mechanical Engineering Department, University of Maryland.
Mr. M. HARRY PERRY.	Private Energy Consultant, Washington, D.C.
Dr. DAVID ROSE.	Nuclear Engineering Department, Massachusetts Institute of Technology.
Dr. ROBERT D. TOLLISON.	Chairman, Department of Economics, Texas A & M University.
Dr. FRANK VON HIPPLE.	Professor, Princeton University.
Dr. RICHARD WERTHAMER.	Bell Telephone Laboratories, Murray Hill, N.J.
Dr. JAMES L. WHITTENBERGER. . .	Professor, School of Health, Harvard University.
Dr. HERBERT WOODSON.	Chairman, Department of Electrical Engineering, University of Texas.

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Solar Advisory Panel

Dr. JERRY GREY, ***Chairman***	**Research and Engineering Consultant.**
Mr. WILLIAM W. CAUDILL	**Architect, Partner, Caudill, Rowlett & Scott.**
Mr. JOHN J. GUNTHER	**Executive Director, U.S. Conference of Mayors.**
Dr. KLAUS P. HEISS	**President, ECON, Inc.**
Mr. MORTON HOPPENFELD	**Director of Planning, Greater Hartford Process.**
Mr. CHARLES LUTMAN	**Principal Project Manager, Ralph M. Parson, Inc.**
Dr. JAMES J. MACKENZIE	**Massachusetts Audubon Society.**
Mr. PAUL MAYCOCK	**Manager, Product Planning, Consumer Products Division, Texas Instruments.**
Dr. MARJORIE MEINEL	**Professor, University of Arizona.**
Dr. L. T. PAPAY	**Director of Research and Development, Southern California Edison Company.**
Dr. PAUL RAPPAPORT	**Director, Process and Applied Material, RCA-David Sarnoff Research Center.**
Mr. FLOYD E. SMITH	**President, International Association of Machinists.**
Dr. E. M. SPARROW	**Professor, University of Minnesota.**

MATERIALS ASSESSMENTS

The OTA Materials Assessment Program, during the report year, began two major projects and completed preparations for a third. Planning was initiated for two additional assessments scheduled for fiscal year 1976. These activities address a range of policy questions raised in five Congressional requests for assessments of possible steps to assure adequate national supplies of basic materials resources and commodities, including fuels.

In preparing its response to these requests, OTA developed the materials assessment program in stages. First, a review of the history of national materials policy and legislative actions was prepared for OTA by the Congressional Research Service of the Library of Congress. Included was a broad program prospectus with suggested topics for both long-range and short-range assessments.

Next, concurrent with recruitment of in-house project management staff, a 19-member Materials Advisory Committee was appointed to provide a broad range of outside expertise. (Members of this committee are listed at the end of this subsection.) Staff development in the materials area was augmented by the special assignment to OTA of a senior physicist and division chief from the National Bureau of Standards, and through the availability of a Congressional Science and Engineering Fellow sponsored by the American Association for the Advancement of Science.

Additional planning information was supplied by a survey, conducted at OTA'S request by the Federation of Materials Societies, an association ofs professional and technical societies representing over 500,000 scientists and engineers. This survey addressed the adequacy, completeness and accessibility of information about supply and demand of key materials and resources.

These inputs were reviewed by the Materials Advisory Committee and by the OTA Advisory Council, and ten candidate topics for assessment were listed in priority order by the committee. The materials project staff, working in co-ordination with the requesting Congressional interests, developed plans for the performance of five assessments, including the four topics assigned highest priority by the advisory committee. This work program subsequently was authorized by the OTA Congressional Board.

Materials information system.— In response to the request of the House Science and Technology Committee, this assessment is evaluating existing and potential systems for compiling data about the location, use and disposal of basic industrial commodities. The goal is to identify ways to provide Congressional decisionmakers earlier and more complete information about supplies and potential shortages of materials both raw and processed, which are critical to the economy of the United States.

During the report year, the OTA assessment team, assisted by a contractor, completed a preliminary report which analyzed alternative institu-

tional structures for a national materials information system. Pertinent information from this report was made avail-able to the four Congressional members of the National Commission on Supplies and Shortages. The final assessment report is expected to be completed by the end of 1975.

National stockpiling policies.—Initiated in response to the informational needs expressed by the House Committee on Science and Technology, this assessment is examining the contribution that a national stockpile of basic commodities (excluding food) might provide to avoid future economic dislocations and interruptions in supplies.

Among the policy alternatives being evaluated are differing objectives and effects of possible new systems for a national program to buy, hold, upgrade, and sell various materials. The primary focus of the OTA stockpiling policy assessment will define a broader set of purposes, beyond current defense-related programs, which might be served by a well-defined national program. The development of such a program of stockpiling would be an important factor in the formulation of over-all national and international policies for materials and commodity management and conservation, and international trade.

This assessment is scheduled for completion in the fall of 1975.

Constraints and incentives afflecting domestic mineral accessibility.—This assessment, initiated by a member of the OTA Board, addresses questions raised in requests submitted by the House Committee on Interior and Insular Affairs and the House Committee on **Science and Technology. The project will examine the consequences of modifying and restructuring constraints and incentives that significantly affect the accessibility of fuel and mineral resources located on Federal lands.**

In order to define the problem, a range of estimates will be made of national mineral requirements and availability in the period from 1975 to 2000 and beyond, including import dependence and other alternatives to increasing the domestic production of essential minerals.

The most important constraints and incentives affecting domestic mineral accessibility on public lands will be identified and one or more appropriate sets of legislative options and implementing administrative measures will be defined and assessed. included in the assessment will be an analysis of the major social, environmental and economic impacts, which would result from not expanding domestic production of essential minerals, as well as legislative options for developing a balanced national land-use and mining policy which will meet national security and economic needs with due regard for environmental and social values.

Plans for this project were formulated during the project year, and it is scheduled to be completed early in 1976.

Materials recycling.—Requested by the House Committee on Science and Technology and the Senate Committee on Commerce, this planned assessment will examine the barriers to achieving substantial recovery of reusable materials from urban refuse using the best current technology.

Present plans for this assessment consist of two parts: (1) the identification of the institutional, economic and technical barriers to achieving substantial resouces recovery from urban refuse, and (2) an assessment of the legislative options for the removal of the barriers identified in part 1 and the consequences of the adoption of these options.

Conservation of materials through reduced wastage.— This assessment was planned in response to a request from the Senate Committee on Commerce. It calls for an examination by OTA of alternative approaches to the reduction of materials wastage. Areas of potential waste reduction include (1) employing technology to reduce degradation processes (e.g., corrosion, wear, fracture), (2) designing for longer life in service, and (3) more effective industrial processing.

Materials Advisory Committee

Dr. JAMES BOYD, ***Chairman.***	**President, Materials Associates.**
Dr. EARL H. BEISTLINE	**Dean, College of Earth Sciences and Mineral Industry, University of Alaska.**
Dr. SEYMOUR L. BLUM	Director, Advanced Program Development, The MITRE Corporation.
Dr. LLOYD M. COOKE,	Corporate Director, University Relations, Union Carbide Corporation.
Mr. FRANK FERNBACH	**Economist, United Steelworkers of America.**
Dr. EDWIN A. GEE	**Vice President, and Director, and member of Executive Committee, E. I. Dupont de Nemours & Co., Inc.**
Dr. BRUCE HANNAY,	**Vice President, Research, Bell Laboratories.**
Dr. BRUCE HANNON.	**Center for Advanced Computation, University of Illinois (Urbana).**
Dr. WILLIAM J. HARRIS, Jr,	**Vice President, Association of American Railroads.**
Dr. JULIUS HARWOOD	**Assistant Director, Materials Science, Ford Motor Company.**
Mr. HARRY H. HERMAN, Jr.	**Consulting Engineer.**
Dr. JAMES A. KENT	**Dean, College of Engineering, Michigan Technological University.**
Dr. HANS H, LANDSBERG	**Director, Energy and Minerals Program, Resources for the Future.**
Dr. ELBURT OSBORN,	**Distinguished Professor, Carnegie Institution of Washington Geophysical Laboratory.**
Dr. R. TALBOT PACE	**Research Associate, Resources for the Future.**
Mr. N, E. PROMISEL	Director Emeritus, National Materials Advisory Board.
Dr. LOIS SHARPE	**Environmental Coordinator, League of Women Voter Education Fund.**
Mr. GEORGE A. WATSON	**Executive Director, Ferroalloys Association.**
Dr. J. H. WESTBROOK	**Manager, Materials Information System, General Electric Company.**

FOOD ASSESSMENTS

The OTA Food Assessment Program, during the report year, addressed itself to the problem of improving the quality of agricultural and nutritional information, both domestic and international, which forms the basis for Congressional policy decisions in a broad spectrum of food-related areas. This project was initiated by OTA's Congressional Board with the endorsement of the Senate Committee on Agriculture and Forestry. The OTA food assessment staff also completed preliminary plans for follow-on studies, scheduled for fiscal year 1976.

An important role in the development and execution of the OTA Food Assessment Program was played by an advisory committee comprised of 13 leading experts representing a broad range of agricultural and nutritional concerns, ranging from food production and processing to distribution and consumer protection. (A listing of the members of the OTA Food Advisory Committee appears at the end of this subsection.) Additional assistance to the OTA project management staff was provided through the temporary assignment of skilled professionals from the Agency for International Development, the U.S. Department of Agriculture, and from the Congressional fellowship program of the American Association for the Advancement of Science. Through contractual arrangements, the OTA food team also utilized agricultural experts at Michigan State University and two private research firms. The overall direction and performance of the initial assessment, however, remained primarily an in-house function.

Agricultural information systems.— The initial OTA food assessment project is being performed primarily for the Senate Committee on Agriculture and Forestry. However, it relates to concerns raised by four other Congressional committees; House Agriculture, House Foreign Affairs, Senate Foreign Relations, and Senate Select Nutrition and Human Needs. The final assessment report is scheduled for completion in the fall of 1975.

Assessment efforts have been focused on information requirements dealing with key factors such as grain production and demand, import resource requirements, and domestic food consumption patterns and nutrition. The study was designed to identify and explain the relevant data-collecting and data-processing institutions-how they function, how they use technology, how they coordinate with one another, and where gaps, bottle-

necks, redundancies, and deficiencies exist-and to suggest policy options which might lead to improved availability of pertinent information.

The assessment includes a survey of organizations in the executive and legislative branches of the Government, as well as in the private sector, which are generators and/or users of agricultural information. The study was designed to determine whether policy directives or other legal or administrative structures exist, through which the exchange or coordination of information between such organizations can be enhanced.

During the conduct of the study, the OTA food assessment staff contributed preliminary findings and information for use in Congressional hearings and processes. Extensive meetings were held with staff of the Senate Agriculture and Forestry Committee to define issues, select witnesses and prepare questions for hearings on the Food for Peace program held over several days during February 1975. Similarly, OTA provided information and assistance in preparation for hearings set for April 1975 by the Senate Subcommittee on Foreign Agriculture Policy. Earlier during the assessment, the OTA staff assisted the Congress in its preparations for the World Food Conference, held in Rome in November 1974.

OTA also provided general background information for the U.S. Congressional delegation, which was incorporated in a comprehensive briefing book and other analytical documents, including a preliminary report on a worldwide food, agricultural, and nutrition information system. Many of the OTA analyses were reflected in final resolutions of the World Food Conference that were submitted to the United Nations General Assembly and approved.

Follow-on studies.— The Food Advisory Committee and OTA staff also began planning efforts to identify future study needs relating to subsystems in the agricultural-food-nutrition system. Such studies would build upon results of the initial assessment when it becomes final. Plans also were drawn to define the appropriate role in an information system of data on world grain production, and distribution; utilization of key resources (land, water, fertilizer, herbicides, pesticides) ; and national nutrition components, preferences, and attitudes. These projects were proposed by the Senate Committee on Agriculture and Forestry.

Agricultural waste conversion.— Planning was begun by OTA staff, during the report year, for a possible OTA assessment on agricultural waste conversion, requested by the Senate Select Committee on Nutrition and Human Needs. This proposed study would address such questions as the potential for using agricultural wastes for animal feed, and the extent to which protein substance now used to feed livestock might be more efficiently used if made directly available for human consumption.

Food Advisory Committee

Dr. CLIFTON R. WHARTON, Jr., ***Chairman.***	**President, Michigan State University.**
Dr. MARTIN E. ABEL	**Professor of Agricultural and Applied Economics, Director, Economic Development Center, University of Minnesota.**
Dr. W. D. BUDDEMEIER	**Director of International Agricultural Programs, College of Agriculture, University of Illinois.**
Dr. DAVID CALL	**Director of Cooperative Extension, Cornell University.**
Dr. D. GALE JOHNSON	**Vice President and Dean of Faculty, University of Chicago.**
Dr. CHESTER O. MCCORKLE, Jr.	**Executive Vice President, University of California.**
Dr. MAX MILNER	**Coordinator, NSF/MIT Protein Resources Study, Department of Nutrition and Food Science, Massachusetts Institute of Technology.**
Dr. ROBERT O. NESHEIM	**Vice President, Research and Development, Quaker Oats Company.**
Mrs. ESTHER PETERSON	**Vice President, Consumer Programs, Giant Food Inc.**
Dr. ROGER REVELLE	**Director, Center for Population Studies, Richard Saltonstall Professor of Population Policy, Harvard University.**
Mr. LEON SCHACHTER	**International Vice President, Amalgamated Meat Cutters and Butcher Workmen of North America.**
Mr. LAUREN SOTH	**Editor of the Editorial Page, Des Moines Register and Tribune.**
Dr. E. T. YORK, Jr.	**Chancellor Designate, State University System, University of Florida.**

HEALTH ASSESSMENTS

OTA's Health Assessment Program produced the first report transmitted by the Office to the Congress. The study dealt with a long-standing health policy issue—the equivalence of the therapeutic effects achieved by different brands of the same prescription drug product. During the report year, the program management staff in this area also conducted extensive negotiations with Congressional committee staffs interested in future OTA health assessments. Preliminary discussions covered a range of proposed fiscal year 1976 projects dealing with fifteen health and medical care issues enumerated in request letters from four Congressional committees.

In the planning and development of OTA's health program, the project staff has been able to utilize the talents of leading professionals in the fields of medicine, pharmacy and public health policy. Dr. Frederick C. Robbins, a Nobel Laureate in medicine and a member of the OTA Advisory Council, served as a member of the panel which performed the first OTA assessment and has been closely involved in planning for future studies.

Drug bioequivalence.—This study was performed at the request of the Senate Committee on Labor and Public Welfare and was completed in July 1974. The project grew out of subcommittee hearings on drug safety, drug costs, prescription practices and Federal regulatory functions. In late 1973, the Secretary of Health, Education, and Welfare testified about proposed changes in Federal drug purchasing policy, under which reimbursements for drugs used in the Medicare and Medicaid programs would be made at the price of the least expensive chemically equivalent product available. In a subsequent hearing in February 1974, representatives of the pharmaceutical industry testified that, in terms of quality and therapeutic equivalence, there can be significant differences among chemically equivalent drugs.

In view of the substantial difference of opinion presented before the Senate committee, an agreement was reached to delay the proposed new drug reimbursement regulations pending completion of an OTA study of the underlying technological issues. OTA staff worked closely with the requesting committee to define the issues to be addressed and the charge for the study. Project leaders and committee staff also cooperatively selected a panel with broad experience in medicine, pharmacology, and biostatistics to carry out this task. (The panelists are listed at the end of this subsection.)

The OTA charge to the study panel was: Evaluate the extent to which technology-short of trials in man-can determine whether drug products

that meet the same official standards of chemical composition, but which are produced at different times or by differing processes (although otherwise are the same), can be expected to produce comparable therapeutic effects. The OTA panel limited its examination to the degree to which such differences can be predicted on the basis of bioavailability—that is, the extent and rate of absorption of active ingredients over time. They also sought to determine whether differences in bioavailability noted in man correlate well with results achieved in laboratory tests.

The panel's report was forwarded to the Senate Committee on Labor and Public Welfare and to the House Committee on Interstate and Foreign Commerce in July 1974. Upon receipt of the report, a new subcommittee hearing was promptly scheduled in the Senate to hear additional testimony from drug manufacture, from the Department of Health, Education, and Welfare, and from members of the OTA Drug Bioequivalence Study Panel. Subcommittee staff subsequently began consideration of amendments to incorporate panel recommendations into pending legislation.

Medical malpractice.—At the request of the House Ways and Means Committee, planning was begun for a proposed assessment of the extent to which applications or misapplications of medical technology cause injuries which result in medical malpractice lawsuits. The study would seek to identify and analyze alternative ways of reducing the incidence of such technology-related injuries. Also to be examined would be the cost and appropriateness of so-called "defensive" applications of medical technology instituted for the sole purpose of seeking to avoid malpractice litigation.

Medical technologies.—The many uses of technologies in the health care field, ranging from research and disease prevention to diagnosis and treatment, raise a great many questions as to effectiveness, appropriateness, cost, and risk to patients involved. In response to a request from the Senate Labor and Public Welfare Committee, the OTA staff has begun preliminary planning within this broad area to identify specific issues for technology assessment which involve significant public policy questions and alternatives.

Hospital outpatient services.—The Senate Finance Committee has requested that OTA conduct an assessment of the technologies related to hospital outpatient departments. Preliminary plans for such a study call for the development of information concerning various types of medical technologies employed in outpatient departments, the utilization and costs of such technologies, and possible methods for decentralizing or dispersing certain services in order to reduce costs and improve efficiency.

Medical records and health information.—The Senate Committee on Labor and Public Welfare has **asked** OTA to consider an assessment dealing with the collection, storage, and transfer of medical and health information, Such a study would consider the recordkeeping requirements of various state and Federal medical programs, the potential costs and benefits of com-

puterized information systems, and the need to safeguard the privacy of patients involved.

***Adverse drug reactions*— The House Ways and Means Committee has requested that OTA develop data on the extent of adverse drug reactions, to survey and evaluate existing methods for reporting and disseminating information of such occurrences, to examine the problems of collation and exchange of this information, and to make recommendations on the role of utilization review as it pertains to adverse drug reactions. Preliminary OTA plans call for a review of previous studies in this area in order to determine the need for additional research.**

Drug Bioequivalence Study Panel

Dr. ROBERT W. BERLINER, ***Chairman.***	**Dean, School of Medicine, Yale University.**
Dr. LEIGHTON E. CLUFF.	**Chairman, Department of Medicine, University of Florida.**
Dr. JAMES T. DOLUISIO.	**Dean, College of Pharmacy, University of Texas at Austin.**
Dr. KENNETH L. MELMON.	**Chief, Division of Clinical Pharmacology, University of California at San Francisco.**
Dr. ALEXANDER S. NADAS.	**Chief, Cardiology Department, Children's Hospital Medical Center, Boston.**
Dr. JOHN A. OATES.	**Professor of Medicine and Pharmacology, Vanderbilt University**
Dr. SIDNEY RIEGELMAN	**Chairman, Department of Pharmacy, University of California at San Francisco.**
Dr. FREDERICK E. SHIDEMAN	**Head, Department of Pharmacology, University of Minnesota.**
Dr. MARVIN ZELEN	**Director, Statistical Laboratory, State University of New York at Buffalo.**
Dr. FREDERICK C. ROBBINS	**Dean, Case Western Reserve Medical School, Case Western Reserve University.**

54-955 0 - 75 - 6

APPENDICES

A. Technology Assessment Act of 1972.
B. Listing of OTA personnel.
C. Listing of assessment letters received during the report year.
D. Report of the outgoing Chairman of the Board, Senator Edward M. Kennedy, December 31, 1974.
E. Report of the outgoing Vice-Chairman of the Board, Congressman Charles A. Mosher, January 27, 1975.

APPENDIX A

Technology Assessment Act of 1972

Public Law 92-484
92nd Congress, H. R. 10243
October 13, 1972

An Act

To establish an Office of Technology Assessment for the Congress as an aid in the identification and consideration of existing and probable impacts of technological application; to amend the National Science Foundation Act of 1950, and for other purposes.

Be it enacted by the Senate and House of Representative of the United States of America in Congress assembled, That this Act may he cited as the Technology Aseessment Act of 1972".

Technology Assessment Act of 1972.

FINDINGS AND DECLARATION OF PURPOSE

SEC. 2. The Congress hereby finds and declares that:

(a) As technology continues to change and expand rapidly, its applications are-

(1) large and growing in scale; and

(2) increasingly extensive, pervasive, and critical in their impact, beneficial and adverse, on the natural and social environment.

(b) Therefore, it is essential that, to the fullest extent possible, the consequences of technological applications be anticipated, understood, and considered in determination of public policy om existing and emerging national problems.

(c) The Congress further finds that:

(1) the Federal agencies presently responsible directly to the Congress are not designed to provide the legislative branch with adequate and timely information. independently developed, relating to the potential impact of technological applications and

(2) the present mechamisms of the Congress do not and are not designed to provide the legislative branch with such information.

(d) Accordingly, it is necessary for the Congress to—

(1) equip itself with new- and effective means for securing competent, unbiased information concerning the physical, biological, economic, social, and politicnl etfects of such applications; and

(2) utilize this information, whenever appropriate, as one factor in the legislative assessment of matters pending before the Congress, particlarly in those instances where the Federal Government may be called upon to consider support for. or management or regulation of. technological applications.

ESTABLISHMENT OF THE OFFICE OF TECHNOLOY ASSESSMENT

Sec. 3. (a) In accordance with the findings and declaration of purpose in section 2, there is hereby created the Office of Techology. Assessment (hereinafter referred to as the "Office"') which shall be within and responsible to the legislative branch of the Government.

(b) The Office shall consist of a Technology Assessment Board (hereinafter referred to as the "Board") which shall formulate and promulgate the policies of the Office, and a Director who shall carry out such policles and administer the operations of the Office.

Teohnology Assessment Board.

(c) The basic function of the Office shall be to provide early indications of the probable beneficial and adverse impacts of the applicat ions of technology and to develop other coordinate information which may assist the Congress. In carrying out such function, the Office Shall :

Duties.

(1) identify existing or probale impacts of technoology or technological programs;

(2) where possible, ascertain cause and-effect relationships;
(3) identify alternative technological methods of Implementing specific programs;
(4) identify alternative programs for achieving requisite goals;
(5) make estimates and comparisons of the impacts of alternative methods and programs;
(6 present findings of completed analyses to the appropriate legislative authorities;
(7) identify areas where additional research or data collection is required to provide adequate support for the assessments and estimates described in paragraph (1) through (5) of this subsection; and
(8) undertake such additional associated activities as the appropriate authorities specified under subsection (d) may direct.

(d) Assessment activities undertaken by the Office may be initiated upon the request of:
(1) the chairman of any standing, special, or select committee of either House of the Congress, or of any joint committee of the Congress, acting for himself or at the request of the ranking minority member or a majority of the committee members;
(2) the Board; or
(3) the Director, in consultation with the Board.

Information availability.

(e) Assessments made by the office, including information, surveys studies, reports, and findings related thereto, shall be made available to the initiating committee or other appropriate committees of the Congress. In addition, an such information, surveys, studies, reports, and findings produced by the Office may be made available to the public except where-
(1) to do so would violate security statutes; or
(2) the Board consideration neceasary or advisable to withhold such information in accordance with one or more of the numbered paragraphs in section 552(b) of title 5, United States Code.

81 Stat. 54.

TECHNOLOGY ASSESSMENT BOARD

Mambership.

SEC. 4. (a) The Board shall consist of thirteen members as follows:
(1) six Members of the Senate, appointed by the President pro tempore of the Senate, three from the majority party and three from the minority party;
(2 six, Members of the House of Representatives appointed by the speaker of the House of Representatives, three from the majority party and three from the minority party; and
(3) the Director, who shall not be a voting member.

Vacancies.

(b) Vacancies in the membership of the Board shall not affect the power of the remaining members to execute the functions of the Board and shall be filled in the same manner as in the case of the original appointment.

Chairman and vice Chairman.

(c) The Board shall select a chairman and a vice chairman from among its members at the beginning of each Congress. The vice chairman shall act in the place and stead of the chairman in the absence of the chairman. The chairmanship and the vice chairmanship shall alternate between the Senate and the House of Representatives with each Congress The chairman during each even-numbered Congress shall be selected by the Members of the House of Represntatives on the Board from among their number. The vice chairman during each

Congress shall be chosen in the same manner from that House of other than the House of Congress of which the chairman is & Member.

(d) The Board is authorized to sit and act at such places and times during the sessions, recesses, and adjourned periods of Congress, and upon a vote of a majority of its members, to require by subpena or otherwise the attendance of such witnesses and the production of such books, papers, and documents, to administer such oaths and affirmations, to take such testimony, to procure such printing and binding, and to make such expenditures, as it deems advisable. The Board may make such rules respecting its organization and procedures as it deems necessary, except that no recommendation shall be reported from the Board unless a majority of the Board assent. Subpenas ma-y be issued over the signature of the chairman of the Board or of any voting mem-her designated by him or by the Board, and ma be served by such person or persons as may be designated by such chairman or member. The chairman of the 'Board or, any voting member thereof may administer oaths or affirmations to witnesses.

Meetings.

Subpena,

I) DIRECTOR AND DEPUTY DIRECTOR

SEC. (3). (a) The Director of the office of Technology Assessment shall be appointed by the Board and shall serve for a term of six years unless sooner removed by the Board. He shall receive basic pay at the rate provided for level III of the Executive Schedule under section 5314 of title 5, United States Code.

Appointment.

Compensation.

83 Stat. 863.

(b) In addition to the powers and duties vested in him by this Act. the Director shall exercise such powers and duties as may be delegated to him b the Board.

(c) The Director may appoint with the approval of the Board, a Deputy Director who shall perform such functions as the Director may prescribe and who shall be Acting Director during the absence or incapacity of the Director or in the event of a vacancy in the office of Director. The Deputy director shall receive basic pay at the rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code.

(d) Neither the Director nor the Deputy Director shall engage in any other business, vocation, or employment than that of serving as such Director or Deputy Director, as the case may be; nor shall the Director or Deputy Director, except with the approval of the Board, hold any office m, or act in an capacity for, any organization, agency, or institution with which the Office makes any contract or other arrangement under this Act.

Employment restriction.

AUTHORITY OF THE OFFICE

SEC. 6. (a) The Office shall have the authority,within the limits of available appropriations, to do all things necessary to carry out the provisions of this Act, including, but without being limited to, the authority to—

(1) make full use of competent personnel and organizations outside the Office, public or private, and form special ad hoc task forces or make other arrangements when appropriate;

(2) enter into contracts or other arrangements as may be necessary for the conduct of the work of the office with any agency or instrumentality of the United States, with any State, territory,

Contracts.

or possession or any political subdivision thereof, or with any person, firm, association, corporation or educational institution, with or without reimbursement, without performance or other bonds and without regard to section 3709 of the Revised Statutes (41 U.S.C. 5);

(3) make advance, progress, and other payments which relate to technology assessment without regard to the previsions of section 3648 of the Revised Statutes (31 U.S.C. 529);

accept and utilize the services of voluntary and uncompensated personnel necessary for the conduct of the work of the Office and provide transportation and subsistence as authorized by section 5703 of title 5, United States Code, for persons serving without compensation;

80 stat. 499; 83 Stat. 190.

(5) acquire by purchase, lease, loan, or gift, and hold and dispose of by sale, lease, or loan, real and personal property of all kinds necessary for or resulting from the exercise of authority granted by this Act; and

(6) prescribe such rules and regulations as it deems necessary governing the operation and organization of the Office.

Recordkeeping

(b) Contractors and other parties entering into contracts and other arrangements under this section which involve costs to the Government shall maintain such books and related records as will facilitate an effective audit in such detail and in such manner as shall be prescribed b the Office and such books and records (and related documents and papers shall be available to the Office and the Comptroller General of the United States, or any of their duly authorized representatives for the purpose of audit and examination.

(c The Office, in carrying out the provisions of this Act, shall not, itself, operate any laboratories, pilot p ants or test facilities.

Agency cooperation.

(d) The Office is authorized to secure directly from any executive department or agency information, suggestions estimates, statistics, and technical assistance for the purpose of carrying out its functions under this Act. Each such executive Department or agency shall furnish the information, suggestions, estimates statistics, and technical assistance directly to the Office upon its request.

Personnel detail.

(e) On request of the Office, the head of any executive deartment or agency may detail, with or without reimbursement, any of its personnel to assist the Office in carrying out its functions under this Act.

(f) The Director shall. in accordance with such policies as the Board shall prescribe, appoint and fix th compensation of such personnel as may be necessary to carry out the provisions of this Act.

ESTABLISHMENT OF THE TECHNOLOGY ASSESSMENT ADVISORY COUNCIL

Membership.

Sec.. 7. (a) The Office shall establish a Technology Assessment Advisory Council (hereinafter referred to as the 6."Council"). The Council shall be composed of the following twelve members:

(1) ten members from the public, to be appointed by the Board, who shall be persons eminent in one or more fields of the physical. biological, or social sciences or engineering or experienced in the administration of technological activities, or who may be judged qualified on the basis of contributions made to educational or public activities;

(2) the Comptroller General; and

(3) the Director of the Congressional Research Service of the Library of Congress.

(b) The council, upon request by the Board, shall— *Duties.*

(1) review and make recommendations to the Board on activities undertaken by the Office or on the initiation thereof in accordance with section 3(d);

(2) review and make recommendations to the Board on the findings of any assessment made by or for the Office; and

(3) undertake such additional related tasks as the Board may direct.

(c) The Council, by majority vote, shall elect from its members appointed under subsection (a) (1) of this section a Chairman and a Vice Chairman, who shall serve for such time and under such conditions as the Council may prescribe. In the absence of the Chairman in the event of his incapacity, the Vice Chairman shall act as Chairman. Chairman and Vice Chairman.

(d) The term of office of each member of the Council appointed under subjection (a) (1 shall be four years except that any such member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was a pointed shall be appointed for the remainder of such term. No person shall be appointed a member of the Council under subjection (a(1) more than twice. Terms of the members appointed under subsection (a) (1) shall be stag red so as to establish a rotating membership according to such method as the Board may devise. Term of office.

(e) (1) The members of the Council other than those appointed under subsection (a) (1) shall receive no pay for their services as members of the Council. but shall be allowed necessary travel expenses (or, in the alternative, mileage for use of privately owned vehicles and a per diem in lieu of subsistence at not to exceed the prescribed in sections 5702 and 5704 of title 5, United States Code), and other neceseary expenses incurred by them in the performance of duties vested in the Council, without regard to the provisions of subchapter 1 of chapter 57 and section 5731 of title 5. United States Code, and regulations promulgated thereunder. Travel expenses.

80 Stat. 498; 83 Stat. 190. 5 USC 5701.

(2) The members of the Council apppointed under subsection (a)(1) shall receive compensation for each day engaged in the actual performance of duties vested in the Council at rates of pay not in excess of the daily equivalent of the highest rate of basic pay set forth in the General Schedule of section 5332(a) of title 5, United States Code, and in addition shall be reimbursed for travel, subsistence. and other necessary expenses in the manner provided for other members of the Council under paragraph (1) of this subjection. *Ccmpensation.*

UTILIZATION OF THE LIBRARY OF CONGRESS

Sec. 8. (a) To carry out the objectives of this Act, the Librarian of (Congress authorized to make available to the Office such services and assistance of the Congressional Resarch Service as may be appropriate and feasible.

(b) Such services and assistance made available to the Office shall include, but not be limited to, all of the services and assistance which the Congressioal Research Service is otherwise authorized to provide to tfe Congress.

(c) Nothing in this section shall alter or modify any services or responsibilities, other than those performed for the Office, which the (Congressional Resarch Service under law performs for or on behalf

of the Cogress. The Librarian is, however, authorized to establish within the Congressional Research Service such additional divisions, groups, or other organizational entities as may be necessary to carry out the purpose of this act.

(d) Services and assistance made available to the Office by the Congressional Research Service in accordance with this section may be provided with or without reimbursement **from funds of the Office, as agreed upon by the Board and the Librarian of Congress.**

UTILIZATION OF THE GENERAL ACCOUNTING OFFICE

SEC. **9. (a) Financial** and **administrative services (including those related to budgeting, accounting, financial reporting, personnel, and procurement) and such other services as maybe appropriate shall be provided the Office by the General Accounting Office.**

(b) Such services and assistance to the Office shall include, but not be limited to, all of the services and assistance which the General Accounting Office is otherwise authorized to provide to the Congress

(c) Nothing in this section shall alter or modify any services or responsibilities other than those performed for the Office, which the General Accounting Office under law performs for or on behalf of the Congress.

(d) Services and assistance made available to the Office the General Accounting Office in accordance with this section ma he provided with or without reimbursement from funds of the Office as agreed upon **by the Board and the Comptroller General.**

COORDINATION WITH THE NATIONAL SCIENCE FOUNDATION

Sec. 10. (a) The Office shall maintain a continuing liaison with the National Science Foundation with respect to—

(1) grants and contracts formulated or activated by the Foundation which are for purposes of Techology assessment: and

(2) the **promotion of coordination** in areas **of technology assessment** and the avoidance of unnessassary duplication or overlapping of research activities in the development of technology assessment techniques and pro rams.

Scientific programs, financing.

(b) Section 3(b) of the National Science Foundation **Act of 1950 as amended 42 U.S,C. 1862(b), is amended to read as follows:**

"(b) The Foundation is authorized to initiate and support specific

9s Stat. 360. **scientific activities in connection with matters relating to international cooperation, national security, and the effects of scientific applications upon society by making contracts or other arrangements (including grants, loans, and other forms of assistance) for the** conduct of **such** activities. When initiated ***or*** supported pursuant to requests made by any other Federal department or agency, including the Office of Technology Assessment, such activities shall he financed whenever feasible **from funds transferred to the Foundation by the requesting official as**

64 Stat. 156; **provided in section 14( ), and any such activities shall be unclassified**

42 USC 1873. 365. and shall be identified by the Foundation as being unndertaken at the request of the appropiaite official."

ANNUAL REPORT

SEC. 11. The Office shall submit to the Congress an annual report **which shall include. but not be limited to an evaluation of technology assesement techniques and identification, insofar as** may be **feasible, of technologial areas and programs requiring future analysis. Such report shall be submitted not later than March 15 of each year.**

APPROPRIATIONS

SEC. 12. (a) To enable the Office to carry out itS powers and duties, there is hereby authorized to be appropriated to the Office, out of any money in the Treasury not otherwise appropriated, not to exceed $5,000,000 in the aggregate for the two fiscal years ending June 80, 1973, and June 30,1974, and thereafter such sums as may be necessary

(b) Approriations made pursuant to the authority provided m subsection (a) shall remain available for obligation for expenditure, or for obligation and expenditure for such period or periods as may be specified in the Act making such appropriations.

Approved October 13, 1972.

LEGISLATIVE HISTORYi

HOUSE REPORTS: No. 92469 (Comm. on Soi enoe and Astronautic.q) and No. 92-1436 (Comm. of Conferenoe).
SENATE REPORT No. 92-1123 (Comm. on Rules and Adm inistration).
50 NGRESSIONAL RECORD. Vol. 118 (1972)X
Feb. 8, considered and passed House.
Sept. 14, considered and passed Senate, amended.
Sept.22,Senate agreed to conferenoe report.
Oct. 4, House agreed to conferenoe report.

APPENDIX B

Listing of OTA Personnel

OFFICE OF TECHNOLOGY ASSESSMENT

Emilio Q. Daddaro— Director
Daniel V. De Simone—Deputy Director

PERSONNEL (as of March 15, 1975)

Ames, Mary E,
Bacon, Barbara
Beresford, Spencer
Boisclair, Suzanne
Caton, Douglas
Chinni, Andy
Coates, Joseph
Cordaro, J. B.
Cotton, Tom
Crane, Alan
Datcher, Debra
Davis, Evelyn
Digilio, Rodger
Fitzhugh, Marion
George, Jaime
Guthrie, Yvonne
Hard, Patricia
Harden, Gerald
Harper, Jerome
Jennings, Thomas
Johns, Lionel S.
Johnson, Beverly
Karstadt, Myra
Kelly, Henry
Kirschten, Dick
Kolsrud, Gretchen
Larson, Ronal
Macklin, Buford
Manning, Mary Jo
Marshalla, Robert
Mascioli, Cynthia
Mason, Kathy
McGurn, Thomas
Mercing, Cynthia
Miles, Teri
Miller, Dennis
Mills, William
Mottur, Ellis
Niblock, Robert
Parker, Linda
Poulton, Patricia
Russell, Judith
Serif, Eleanor
Sibley, Vicki
Soper, Janet
Taylor, Carl
Terpstra, Ellen
Thomas, Gary
Tuchman, Jessica
Veigel, Jon
Wachtman, John B.

Number of Professional Personnel ---------- 36
Number of Supporting Personnel ---------- 17

Total OTA staff ---------- 53

APPENDIX C

Listing of Assessment Letters Received During the Report Year

3/29/74 Senator Jackson—Safety of nuclear reactors.

4/3/74 Representative Sullivan—Study oceans, fisheries, and aquaculture.

4/22/74 Representative Ullman—Evaluate methanol as a fuel use.

6/25/74 Senator Talmadge—Feasibility and value of broadband communications in rural areas.

8/13/74 Senators Magnuson, Hollings—National growth policy in coastal zone areas.

9/10/74 Representative Patman, Joint Economic Committee—Future industrial innovations in enhancing productivity.

9/18/74 Representatives Sullivan and Grover—National growth policy in coastal zone areas.

9/19/74 Senator Fulbright—Effects of limited nuclear warfare.

9/19/74 Congressman Udall—National growth policy study.

9/27/74 Senator McClellan—Revision to mass transit assessment.

10/10/74 Senator Magnuson—Computer managed technology.

10/1 1/74 Senator Moss—Determining R. & D. priorities.

10/ 17/74 Senator Hart—Emission and safety technology in automobiles.

11/6/74 Senator Stevens—Land use, environmental and transportation policies, related to accessibility of domestic mineral resources.

11 /7/74 Senator Humphrey-Determining R. & D. priorities.

1 1/19/74 Representative Mahon-Crash recorders.

11/21/74 Representative Aspin—Effects of freon on ozone layer.

12/3/74 Representative Pickle—Effects of freon on ozone layer.

12/1 1 /74 Senator Williams—National health insurance.

12/ 1 7/74 Representatives Teague and Mosher—Energy R. &D.

12/30/74 Senator Jackson—ERDA budget.

1/15/75 Senator Magnuson—Materials wastage: techniques for reducing.

1/23/75 Senators Magnuson and Jackson—Oil exploration on the outer continental shelf.

1/29/75 Representative Unman-Medical malpractice, long-term care, adverse drug reactions.

1 /29/75 Senator Randolph—Energy and coal research facilities and capabilities in West Virginia and Appalachia.

2/6/75	Senators Williams, Kennedy, and Javits-Cost and quality of clinical labs; medical record information requirements; cost control studies.
2/7/75	Senator McGovern—Protein wastage through the use of grain to feed livestock.
2/10/75	Congressman Wolff-SST flights.
2/11/75	Senator Humphrey-Food assessments.
2/12/75	Representative Foley—Rice blended food.
2/19/75	Senator Magnuson-U.S. technology and world trade.
2/26/75	Senator Schweiker-ConRail.
2/27/75	Senators Talmadge and Long—Hospital outpatient services.
2/28/75	Senator Humphrey—Assessment of policy options in technology and world trade.
3/7/75	Representative Sullivan—Ocean dumping of waste materials.

APPENDIX D

Report of the Outgoing Chairman of the Board,
Senator Edward M. Kennedy, December 31, 1974

TECHNOLOGY ASSESSMENT BOARD

EDWARD M. KENNEDY, MASS. CHAIRMAN
CHARLES R. MOSHER. OHIO, VICE CHAIRMAN

ERNEST F. HOLLINGS. S.C.
HUBERT H. HUMPHREY, MINN.
CLIFFORD P. CASE N J.
RICHARD S. SCHWEIKER. PA.
TED STEVENS, ALASKA

JOHN W DAVIS GA.
OLIN E TEAGUE, TEXAS
MORRIS K. UDALL, ARIZ.
CHARLES S. GUBSER. CALIF.
MARVIN L· ESCH. MICH.

EMILIO O. DADDARIO

Congress of the United States
OFFICE OF TECHNOLOGY ASSESSMENT
WASHINGTON, D.C. 20510

EMILIO Q. DADDARIO
DIRECTOR

DANIEL V. DE SIMONE
DEPUTY DIRECTOR

December 31, 1974

Fellow Members of the Technology Assessment Boards

As the 93rd Congress draws to a close and I prepare to turn over my chairmanship to a House Member of our Board, I should like to share my thoughts with you about what we have accomplished thus far, and what still needs to be done.

The Office of Technology Assessment is an experiment in Congressional thought and action. The questions it addresses are critical.

-Can we **shape modern technology to meet human needs?**

-Can we create energy sources which are cheap and non-polluting?

-Can we **expand productivity while generating more jobs, and jobs which are more meaningful?**

-Can we transform the wonders of modern medical science into the delivery of excellent health care to all our citizens?

-Can we find a way to feed the hungry throughout the world, while meeting the needs of our farmers and consumers here at home?

-Can we design practical mass transit systems for our cities and suburbs?

In every technical area there are questions like. these crying for solution; and there is important legislation which hinges on the answers that are uncovered.

But OTA is not only an experiment in technical analysis, it is also an experiment in institutional reform.

Can the Congress redress the imbalance of information with the Executive Branch? In an age in which technical knowledge is power, the capability of the Congress to cope with complex technical issues has been woefully inadequate. Decisions on weapons systems, on major programs like the Supersonic Transport (SST), and on the shape and direction of the *nation's* research and development programs have all been made on the basis of information furnished by the Executive Branch--by the very agencies having the most to gain or lose by the decisions made by Congress.

Congress needs its own source of unbiased technical expertise, and OTA is an institutional innovation to meet that need. But even more than a technical or institutional experiment, OTA is an experiment in how to make democracy work.

It is not just a matter of whether Congress can utilize technical information and advice. The crucial point is whether Congress can do so in the full glare of public scrutiny--and with the full participation Of the varied public groups that have a stake in the outcome of the decisions.

Thus the Advisory Committees we have established contain not only the technical experts, and the economists, lawyers, and sociologists--but also the representatives of labor and industry, consumers environmentalists, and other interested segments of the public.

All these varied elements participate in shaping the studies and in appraising their results. The efforts of these panels are neither pandemonium, nor panaceas, but a major experiment *in* the social control of technology.

We will not know the outcome of this experiment for sometime to come. But in the one study which has been completed to date--the Drug Bioequivalence Project--we obtained results which were highly significant: (1) that the drug industry needs a substantial improvement in quality control procedures; and (2) that any wide-scale reliance *on* generic drugs

needs to be carefully planned and implemented in phases over a sufficient period of time.

I can attest that my own thinking was strongly affected by the findings of this study, and that legislation in my Health Subcommittee was substantially reshaped as a result.

I believe this excellent beginning is a reliable forecast of the future impact of OTA studies on Congressional action.

The fields we have chosen to focus on reflect the problems of our times: energy, food, health, transportation, oceans, materials, and technology and world trade.

As the results of our studies start to come in over the coming year, we will begin to get answers to critical questions in all these priority areas.

- How should we allocate our resources to energy R&D?

- How economical is solar energy for the generation of electric power?

- What are the economic, social, and environmental impacts of drilling for offshore oil and gas? Of the use of deep water ports?

- How can we strengthen the technology of our fisheries industry?

- How can we strengthen overall food technology systems? What is the impact of the energy shortage on fertilizers and food production?

- How can we assure the nation adequate supplies of materials resources?

- What is the impact of automated mass transit technology--not only on movement of people and goods, but on jobs and the economy in general?

- How can we use our high technology products to strengthen America's international competitive position?

These are but a few examples of the critical issues addressed by OTA studies. I fully expect that the results of these studies will significantly clarify future Congressional debate on such issues.

Over the past year, with the outstanding leadership furnished by Director Daddario, we have built a powerful team for tackling these problems. Mim Daddario is one of those fortunate figures in history who have not only the imagination to conceive a novel idea of significance to society, but who also have the concrete opportunity to put the idea into practice.

Under his leadership, OTA has assembled a high quality, highly motivated staff, and has pulled together an outstanding array of talent on our Advisory Committees in special areas and on our statutory Advisory Council. We are fortunate to have on these panels some of the most outstanding people in the country, including a Nobel Laureate in medicine, the Dean of the Yale Medical School; the presidents of MIT, Cal Tech and Michigan State; the Manager of the Chicago Transit Authority and other state and local officials; the executive vice presidents of DOW Chemical, Texas Instruments, Bell Laboratories and other leaders in engineering, the behavioral and life sciences; the president of the International Association of Machinists and other labor officials; the first woman to serve as Assistant to the President of the United States for Consumer Affairs; and a noted authoress and lecturer on environmental, economic, and consumer, issues.

Welding this diversity of professional talent into an effective team has been our most tangible accomplishment over the first year.

But an intangible accomplishment of perhaps even greater significance -- and especially gratifying to me personally -- is the demonstration that the Congress can mount and manage a fully non-partisan effort to direct the nation's technology toward our citizens' needs.

Even before the Technology Assessment Board had organized itself, various news commentators were speculating that OTA would strangle itself in a web of political ambition and partisan interest.

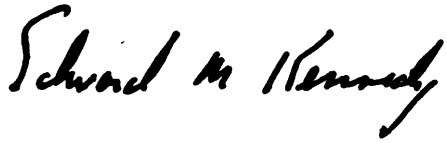
We have demonstrated that we can effectively operate a non-partisan Board, evenly split between the parties, with conservatives, moderates, and liberals from all regions of the country, and that we can amicably and constructively resolve our different points of view and work together to provide Congress with the objective information it needs so desperately. This has been most satisfying to me as Chairman.

This is the challenging experiment on which we have embarked. Can man rationally control his scientific knowledge and put it to work to solve human problems? Can we bring together the best brains in the nation? Can we blend their deliberations with the interests of industry, the consumer, the environment, the economy, and the quality of life in our society?

Can we forge from these facts and these divergent points of view a rational set of alternatives for congress to consider? Can we set out clearly and objectively the consequences of each alternative -- the benefits as well as the costs and the risks? This is what OTA is all about. I believe OTA is off to a promising start and shows every indication of becoming a key Congressional tool in shaping technology for the nation's economic needs.

I have enjoyed the opportunity to serve as your chairman during OTA's first critical year and I look forward to continuing to work with you in the years ahead.

Sincerely,



EDWARD M. KENNEDY
Chairman

APPENDIX E

Report of the Outgoing Vice-Chairman of the Board,
Congressman Charles A. Mosher, January 27, 1975

TECHNOLOGY ASSESSMENT BOARD
EDWARD M. KENNEDY. MASS . CHAIRMAN
CHARLES R. MOSHER. OHIO, VICE CHAIRMAN
ERNEST F. HOLLINGS, S.C.
HUBERT H. HUMPHREY, MINN
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CHARLES S GUBSER. CALIF
MARVIN L. ESCH. MICH.
EMILIO Q. DADDARIO

Congress of the Unites States
OFFICE OF TECHNOLOGY ASSESSMENT
WASHINGTON , D.C. 20510

EMILIO 0. DADDARIO
DIRECTOR
DANIEL V. DE SIMONE
DEPUTY DIRECTOR

January 27, 1975

The Honorable Carl Albert
The Speaker of the House
of Representatives
Washington, D. C. 20515

Dear Mr. Speaker:

Having served as Vice Chairman of the new Technology Assessment Board for the 93rd Congress, I think it appropriate to offer several personal observations which I believe should be reported to you and to the House, concerning our experience with OTA thus far. It is my intent, with your permission, to send copies of this letter to the Committee Chairmen and Ranking *Minority* Members of both Houses, Members of the Technology Assessment Board, its Advisory Council and others whom I believe will find this useful **or of** particular interest.

It **has** been a unique privilege for a Minority member to serve as Vice Chairman of the new Board, the policy-making body which oversees the activities of the Office of Technology Assessment, created by the Congress in 1972.

Under the law, the Chairmanship of the Board alternates between the House and Senate. During the last Congress the Chairman of the Board was Senator Edward Kennedy of Massachusetts, and at this point I think it is timely to point out that the Board operated in a thoroughly bipartisan manner, and very effectively. I congratulated Senator Kennedy for the skill with which he got the Board off to a good start, and for his complete cooperation with the Minority members on the Board.

It is my expectation and hope that in this 94th Congress, with the Chairmanship of the Board shifting to the House for the first time, the Board Chairman will be our

good friend and respected colleague from Texas, "Tiger" Teague. This past year we established a precedent that the OTA Board Chairman shall be of the majority party, and the Vice Chairman shall be of the Minority. It is expected the Senate members will name Senator Case of New Jersey Vice Chairman for this Congress.

The Office of Technology Assessment is still in its infancy and it must, necessarily, crawl before it walks or runs. For all practical purposes, it has been in business really for only about eight months.

What is OTA's record? What are its strengths and constructive progress, what weaknesses or mistakes. . . what opportunities or obstacles can we anticipate immediately ahead, or in the longer term?

Viewed in the perspective of the confusions and difficult growing pains characteristic of every new government unit, I believe OTA's record to date deserves high marks. I believe it has earned confident, continuing support by the Congress, with full reason to expect from it increasingly useful, constructive results of great practical value. Those of us who are close to it are confident that the OTA is a productive investment that will pay excellent dividends.

But we also invite objective evaluation, and especially constructive criticism, from all interested observers.

What really is the Office of Technology Assessment? Exactly what kinds of dividends are expected from it?

It is a new arm of the Congress, created by the Congress, responsible only to it; it is unique, unprecedented, though somewhat analagous to the General Accounting Office and the Library of Congress in that they also are of, by and for the Congress, even though not a part of Congress per se...they all perform an intimate service for the Legislative Branch.

The principal purpose of OTA is to respond to the increasingly urgent needs of the Senate and House Committees for adequate, accurate, evaluated information; it is expected to provide expert and objective data and useful information concerning problems, questions and opportunities in areas of science and technology. Today,

in almost every policy decision required of the Congress there are baffling technological questions. Many Members of both Houses have long felt an urgent need for a much more adequate source of expert and independent information, independent of the Executive Branch and responsive only to the Congress. We definitely need a more accurate, confident understanding of the consequences of technological proposals and opportunities before we decide, not only the probable immediate consequences, but perhaps more importantly, the broader secondary and tertiary consequences. Thus we may better define and understand our options and the alternatives.

It was to meet such basic needs that OTA finally was created by statute in October, 1972, after going through a gestation period of more than six years. But it was November, 1973, before this new Office was funded and former Congressman Emilio Q. Daddario became its Director. It had little really usable office space until March, 1974, and no significant staffing until April of that year. Hence, only eight busy months have passed since the Office became operational.

Record to Date

By the time the Board held its final meeting of the 93rd Congress, in December, the Office had received 43 requests for assessments of varying kinds; six had been funded or had received beginning funding; funds had been earmarked for an additional six; and still another half dozen were in the organizational stage; one had been completed.

Merely to suggest their great diversity, note that our first assessments being attempted address a wide range of subjects, from drug bioequivalence to problems of coastal oil drilling, to solar energy, auto emissions, food production systems, automated mass transportation problems. . . and what next?

From the time of its first meeting in April of 1973, to the present the OTA Board itself has "shaken down" considerably. It is, nevertheless, still in the process of determining its internal procedures and its methodology for setting priorities.

In my opinion, the Board has done remarkably well in maintaining its politically bipartisan approach without serious conflicts. I suppose no better example of this exists than the fact mentioned above, that it now appears the Board will follow in the 94th Congress the precedent we established this year of having its Chairman from the Majority party and its Vice Chairman from the Minority party.

Similarly, the Technology Assessment Advisory Council, after some understandable early uncertainty as to its mission, now has begun to carve out a useful and much needed supportive role in cooperation with the Board.

In addition, each of OTA's assessment programs includes a special Consulting Advisory Committee of expert private citizens in the field to be covered. We are grateful to those who have provided such assistance to OTA so far. They have worked hand-in-hand with the OTA staff and have made invaluable contributions.

Limitations

(1) Budgets -- OTA's beginning budgets are relatively small: $2 million for fiscal year '74; $4.6 million for fiscal '75; $6.5 million is being requested for '76. This limitation, of course, works both ways and as yet it should not be considered a handicap. It does keep OTA from moving too fast, from being easily" "pressured;" it forces us to be carefully selective. On the other hand, and in order to provide some perspective to our budget, let me point out that before OTA came into being, the government spent $20 million or so on a largely incomplete and meaningless assessment of the SST before abandoning it. Also the Project Independence energy assessment cost over $10 million for a six month period, more than 20 times the amount OTA has available for energy assessments on a half year basis. Similarly, the assessment for an Alaska Pipeline ran somewhere between $10 to $16 million, depending on whose figures are used. These figures are useful in suggesting to Members the real modesty of the OTA program.

(2) Space -- While many people felt it desirable for OTA to have, or at least predicted it would have a staff of 90 or more by this time, the actual staff today is

about half that size. Undoubtedly, it still should grow, but I insist slowly and very selectively, only on the basis of fully justified need.

OTA is for the moment effectively locked in because of space limitations. When additional staff help is needed in the months ahead, we must recognize the importance, especially for this sort of organization, to avoid having the working staff physically scattered. Yet there simply seems nowhere to go at the present time! This is a handicap and could become a serious one.

OTA is presently located in a few rooms on the top floor of the old Immigration Building on D Street, a somewhat discouraging, inefficient, inconvenient working environment. In my view it is very important that we succeed now in reserving for OTA appropriate space in the new Madison Building now going up near the Library.

(3) Staff Role -- The role and technique of the OTA's staff, I suggest, need further definition and study. As planned from the beginning, our assessments are done mainly out-of-house; and while the present system of bringing in specialists to serve as principal investigators for the duration of any particular assessment seems to be working well, there is nonetheless continuing need for high quality assistance from the OTA staff. This means that internal staff functions are demanding; flexibility, versatility, managerial skills, and a variety of professional experience are required; and also an understanding of legislative politics, procedures and policies is very desirable.

Problems That Need Attention

(1) Appropriate relationships must be achieved for effective liaison and assistance with both the Congressional Research Service and the General Accounting Office. A good start appears to have been made here in the time thus far available, but it is clear that maximum utility of these agencies as they interrelate with OTA has yet to be realized.

(2) Another very important working relationship is that between OTA and the National Science Foundation,

especially as to the utilization of the latter in the techniques and methodologies of technology assessment. The organic act creating OTA provided specifically for this sort of reciprocity with NSF. It may be that before long OTA will wish to create a permanent division devoted exclusively to promotion of assessment techniques which are as yet uncertain, unproved.

(3) We must also be aware that OTA has a statutory responsibility under P.L. 93-344 to assist the new Congressional Budget Office in review and analysis of the Federal R&D budget.

And OTA must work closely with Executive agencies to assemble relative and available facts. It is my impression at this point that this liaison has been very constructive thus far.

(4) I think it imperative that the relationships between the Technology Assessment Board and the Advisory Council be mutually helpful and effective, including a better understanding between them regarding procedures, assignments and authority. Again, a good deal has been accomplished but much remains to be done. This is particularly important in view of the rotation of terms of Advisory Council members, and inevitable changes in the Board, which require awareness and effort to maintain continuity in healthy relations between the two groups.

(5) I suggest that we House Members on the OTA Board have not, as yet, participated as fully and effectively in the Board's decisions as we should. In the OTA's first year the Senate definitely was the dominate partner.

I am not suggesting that OTA Board members should ever think of themselves primarily as spokesmen for the House or Senate respectively. Quite the opposite! I believe every member of the Board should attempt to avoid all parochialism, should be concerned primarily for the best interests of the Congressional process and the national interest as a whole. But I do emphasize the need for a healthy balance between Senate and House Members, working together, in the OTA Board's operations, initiatives and decisions, a balance that so far is lacking.

I hope and expect that we House Members will correct our deficiencies under the leadership of Chairman Teague.

(6) I also suggest that the Board, in its sense of priorities in approval of assessments, tends too easily to ignore the smaller assessment requests and concentrates largely on those which are directed toward the bigger, more compelling issues of the moment. This is understandable, but I believe some of the less conspicuous, less 'fascinating" requests are of considerable importance and usefulness to the Congress, and perhaps a certain percentage of OTA funds in the future should be earmarked for such smaller purposes.

Necessarily, we must be very selective in our Board approvals; and I believe it essential that we constantly emphasize above all else our basic, all important mission, to serve the needs of the Committees of Congress.

Dangers

It is not difficult to conjure up a variety of pitfalls lying in OTA's path. I am especially concerned about three.

(1) A possibility that the OTA may choke itself by succumbing to pressures to accept tasks that are at present too vast, complex and difficult, or inappropriate. Examples of the former might include efforts to assess the nation's general socio-technological growth patterns and alternate policies which might be used to control them, or assessments of the impacts of nuclear weapons or other major military Systems. Examples of the latter might include such problems as land-leasing policies arising from environmental difficulties, or assessment of the general or special impacts of taxation.

(2) The matter of adequate liaison between OTA and Congressional committees and their staffs. If we look at the assessment requests made thus far of OTA, it is clear that a large proportion have come through Board members themselves or their own Committee Chairmen colleagues. Hopefully this will continue. Yet it is important that there be an increased percentage of

requests that originate through sources not so directly connected with the Board, especially requests which genuinely originate in the Congressional committees.

There is no ducking the fact that, while recognition of the OTA has been increasing, a very large part of the Congress still knows very little about it, or cares. This seems to be true especially at the Committee staff level. Ordinary tact and prudence dictate that this situation, to whatever extent it exists, be corrected. Staff awareness and understanding is vital. I believe they have been improving significantly as assessments have picked up, a trend which must continue.

(3) Most important, the Board-Director-Council functions and relationships. As I have indicated, it takes time to develop relationships in an organization such as OTA, particularly to develop and understand the appropriate roles among the statutory elements of OTA: the Board, the Director, and the Advisory Council.

An effective enterprise can have only one Board of Directors; in OTA, this function is vested exclusively in its Congressional Board. The Director of OTA is the chief executive officer of this enterprise. He can be effective in marshaling resources and executing the broad policies and decisions of the Board, only if he has sufficient authority and discretion. OTA's Director must not be subjected to multiple lines of direction; he must be responsible solely to the Congressional Board. Members of the Board, particularly its Chairman and Vice Chairman, should insure that, having laid down broad policies, authority remains in the Director to execute these policies.

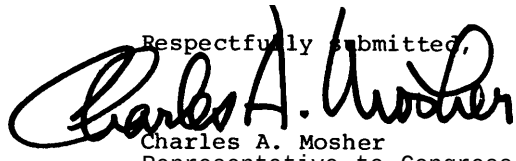
The Advisory Council performs a very necessary, valuable function for OTA, providing expert advice, guidance and constructive criticism. As I have said, this kind of relationship is developing and will improve as OTA matures. I also believe the Advisory Council is the key to providing a forum for public participation in technology assessment. I hope it will be possible for the Council to incorporate the participation of public interest and other groups into its activities. This will take a great deal of work on the Council's part, but it is a vitally important task.

The Outlook

Yes, Mr. Speaker, in our new OTA there are these several important and difficult problems. But I am optimistic, and with good reason. I interpret the total situation as consisting of many more pluses than minuses. And if there is one thing which I believe merits special emphasis it is this: in the Office of Technology Assessment, the Legislative branch has a new tool of great potential. But those of us who are in Congress must keep in mind that we are all just learning to use it. This is going to require trial and error practice on the part of OTA, and patient support from Congress and the public. It is also going to require some faith on the part of each of us.

Given a reasonable effort in these matters, there is no doubt in my mind that OTA will become what its progenitors envisioned for it. .

Respectfully submitted,



Charles A. Mosher
Representative to Congress

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