April 10, 1980

Cover Sheet: Phase I Survey Results

Draft Papers Prepared for the Task Force on TA Methodology and Management

Please do not reproduce or circulate until further notice.

The following papers are attached:

Programs

Energy
Int. Security
Materials
Food
Genetics
Health
Telecom.
Oceans
Transpo

Support Offices

Summary of Support Office Input
Personnel
Senior Editor/Public Communications
Information Center
Secretaries/AA's

Other Relevant Materials

Internal OTA Communications
Public Participation
Advisory Panels
OTA Information Services Annual Report
OTA Publishing Office Background Information

OTA TASK FORCE
ON TA METHODOLOGY AND MANAGEMENT

General Framework for the Phase I Survey

The purpose of this survey is to give OTA program/office staff an opportunity to help the Task Force develop a description of the OTA assessment process. The survey is intended to capture important learning from past experiences and to help us better understand current practices.

As a general framework, we are defining assessment management to include the major steps of the assessment process such as: selection, planning, resource allocation, execution, review, publication, distribution, and use. A more detailed description of these steps is attached. We are defining assessment methodology to include the use of analytical techniques/frameworks such as: social impacts analysis, scenario building, computer-based modeling, forecasting, evaluation research, survey research, cost-effectiveness analysis, and general systems analysis.

However, this framework is intended to be flexible in providing some structure for conducting the survey. We want the programs/offices to identify and describe what they think is important in a way that is convenient for them. So please use the framework in whatever ways will facilitate the reporting of the most important and interesting learning, and will do so in the easiest and least time consuming fashion.

Kinds of Projects

1. What generic kinds of projects has your program done? Briefly characterize the projects by simple distinguishing parameters such as time, money, ratio of in-house to contractor staff time, role of advisory panels and task forces, relative emphasis on technology vs. impacts vs. policy issues/options, breadth of committee interest, urgency of congressional need, and whatever else seems pertinent.

Project Management

2. For each type of generic project, using specific illustrations where possible, briefly describe the key steps in the assessment process, what is done in each step, and how much time, money, staff, and other resources are involved in each step.

   If you wish, use the general framework described earlier as a starting point. Add or delete steps as you see fit.

3. Describe your experiences with the various steps. Where possible, give illustrations of successes and failures. Which steps have gone well? Which steps have given you the most problems? Why?

Project Methodology

4. For each type of generic project, using specific illustrations where possible, briefly describe key analytical techniques used in assessments, what is involved in each technique, and how much time, money, staff, and other resources are required to implement each technique.

   If you wish, use the eight analytical techniques listed earlier as a starting point. Add or delete techniques as you see fit.

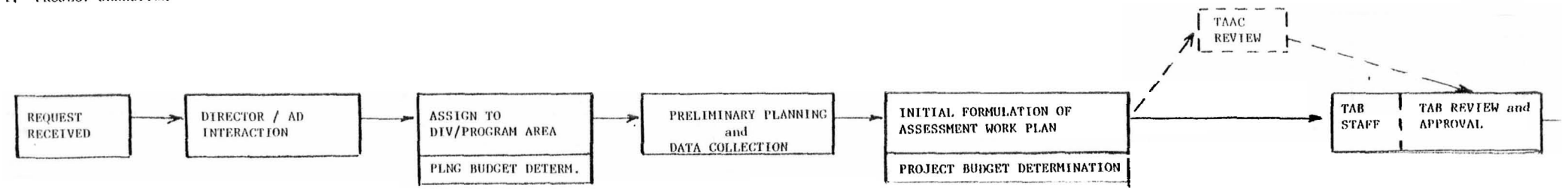
5. Describe your experiences with the various techniques. Where possible, give illustrations of successes and failures. Which techniques have worked well? Which have given you the most problems? Why?

Overall Assessment Process

6. Based on your overall experience, what are the things you have found that should frequently or always be included in an assessment? What are the things you have found that should rarely or never be done? What are the things that are sometimes worth doing but are chancy and need careful monitoring and fall back positions?

7. Please cite what your program has done best and worst, as measured by quality, timeliness, usefulness, cost-effectiveness, and whatever other criteria seem relevant.

I. PROJECT SELECTION



from:
- -Congress (Committees)
- -TAB
- -Dir. with TAB approval

* Discuss:
  - -scope
  - -resources
  - -possible priority
  - -obstacles to success
* May include:
  - -Admin Officer
  - -Publishing Officer
  - -Senior Editor
  - -Program Manager

* Identify Project Dir. who:
  - -manages project
  - -coordinates staff and advisor inputs
  - -is involved with development of & writing of final report
* Assign Planning Cost Code
* Set Planning Budget

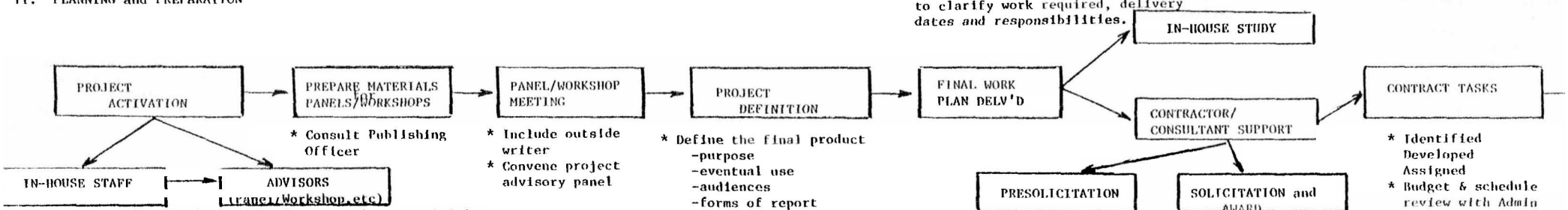
* Analyze existing literature including legislative history; Committee hearings & reports; GAO, CRS, CBO projects & reports.
* Interact with Congr. Committees & staff
* Interact with ad hoc panels & advisors

* Define Work Statement and tasks within Work Statement
* Determine period of performance
* Determine internal/external resource needs
* Determine contractor/consultant panel support required
* Identify prospective contractors capable of performance
* Determine obstacles to success
* Approval of PM and AD
* Consult Publishing Officer re his budget estimates
* Prepare budget
* Admin Office review budget within OTA-wide financial context. Specific budget integration details are resp of Admin.
* Determine if competitive or non-competitive contract(s). If no formal competition required, contact prospective contractors to clarify work required, delivery dates and responsibilities.

* Prioritize proposed projects

* All proposed assessments go TAB for approval. Give to TAB staff 2 weeks before TAB mtg. Address issues of:
  - -rationale for undertaking assessment
  - -proposed budget
  - -proposed period of performance, including periodic milestones and completion date.
* Prioritize proposed projects
* Dir. can OK up to $30K for quick-response studies and planning for full-scale assessments
* This is project go-ahead

II. PLANNING and PREPARATION



* Consult Publishing Officer

* Include outside writer
* Convene project advisory panel

* Define the final product
  - -purpose
  - -eventual use
  - -audiences
  - -forms of report
* Assessment plan formalized
* Sr.Editor & Publishing Officer involved
* Director review

* Identified
  Developed
  Assigned
* Budget & schedule review with Admin (adjustments if needed)

Coordinate & synthesize background info, contracted reports & panel documents into a policy analysis & policy report
Develop & analyze options tailored to Congressional needs
Involve Sr.Editor - in how and by whom report is to be written
Inform Panel advisors of role & schedule of performance
Write Panel/Advisor contracts
Identify appropriate public involvement participants

* Advise, evaluate, criticize & help conceptualize study's progress & issues
* Analyze issues to be explored and preliminary options to be considered

* Determine that rqmt is suitable for contract
* Procurement planning (with negotiator)
* Describe requirement (work statement)
* Develop source list & evaluation criteria
* Develop request for contract

* Preparation of RFP
  - -solicitation
* Receipt of proposals
* Evaluation of proposals
* Selecting sources for negotiation
* Award

* formulate & negotiate contractor support (Admin)
* establish appropriate consultant support (Project)

Franklin Tugwell
Energy

ENERGY GROUP SURVEY

Task Force on Methodology and Management

This memo summarizes the results of a series of discussions within the Energy program about the process of assessment as it has been carried out in the last half decade. Several staff members submitted written comments/observations, and I have tried to incorporate these, along with lessons drawn from my own brief experience at OTA. Rather than blend these materials together in essay form, I have simply listed pertinent points under appropriate headings.

I. Background: The Energy Program

The Energy program at OTA has completed a wide range of studies since 1975. These are listed, in chronological order, below. In the first two years, the Program concentrated heavily on the evaluation of Executive Branch programs and initiatives in the energy field. An ongoing review of the Conservation and Solar Energy Program of the Department of Energy is the most recent example of this kind of work. Recently, the program has devoted an increasing portion of its time to studies of discrete energy sources, fuel systems, or technologies - Devonian shale, enhanced oil recovery, coal slurry pipelines, onsite solar technologies, direct use of coal, residential conservation, LNG, biomass fuel cycles. As energy policy research has become more sophisticated, and as Congress has become increasingly familiar with energy technologies and the broad role of energy in the American economy, there has been growing interest within the Program in moving to more integrative studies capable of analyzing the relationship between different technologies and fuel systems and the broader energy system in the world. The Alternative Energy Futures Project, which has just gotten under way and which will be absorbing a large portion of the Program's time in the next year, reflects this new emphasis. Finally, the program has published one "Technical Memorandum", on gasohol, and will soon publish another on world energy supply projections. This format has allowed the Program to make available, on short notice, key results of ongoing research projects in order to inform current decisionmaking.

STUDIES: ENERGY PROGRAM

1. Natural Gas Curtailments
2. 1975 ERDA Budget
3. 1975 ERDA Plan and Program
4. Comparative Analysis: Revised ERDA Plan and Program
5. National Energy Plan
6. Devonian Shale Gas
7. Enhanced Oil Recovery
8. Coal Slurry Pipelines
9. Onsite Solar Energy
10. The Direct Use of Coal
11. Residential Energy Conservation
12. Alternative Energy Futures I: The Future of Liquified Natural Gas Imports
13. Gasohol (Technical Memorandum)
14. Energy from Biological Processes
15. Department of Energy Solar and Conservation Applications (in Progress)

← Nuclear Proliferation and Safeguards

(Forthcoming)

1. An Assessment of Global Oil Supply (Technical Memorandum)
2. The Solar Power Satellite
3. AEF: Energy for Cities
4. Dispersed Electricity Generation
5. AEF: Energy Policy Forum
6. Synthetic Fuels in Transportation
7. AEF: Industrial Conservation

METHODOLOGY

o In general, the search for a single, unified methodological "tool kit" for technology assessment is not likely to be fruitful. The appropriate methods and techniques can be expected to vary widely by topic.

o Assessments should begin with, and be driven by, policy concerns. They should not begin with interesting technical topics in the expectation that important policy considerations and recommendations will result from an examination of technologies themselves.

o It is important that we bear in mind that technology assessments are a special kind of policy analysis -- a means of structuring knowledge for choice. Because of this it is crucial that the goals of projects be defined in policy terms as early as possible. An early effort to identify the key policy considerations or "issues" -- "issues" are matters which about which choice or action has been proposed or may be necessary -- can have several benefits. First, it can help focus the inquiry by suggesting derivative technical questions which must be answered. For example, if an important policy issue is the maximum speed at which an energy technology can be introduced, the technologies for preventing pollution may take on new importance. Second, an early focus on policy can allow project planners to incorporate the analysis of policy alternatives as fully as possible in contract work. This is especially important if there is to be any detailed assessment of the costs, benefits and consequences of different policy options. One of the weaknesses of OTA assessments is that, while the review of technical questions has been excellent, the policy sections have been able to offer little more than broad indications of what steps might be taken to promote or regulate technologies.

o To identify the key policy considerations, and thereby clarify the "context" of choice, the assessment team might begin with a list of tentative answers to the following:

1. What are the central matters "at issue" in the current debate concerning the technology (after all, something led to the choice of the assessment in the first place)?

2. What basic values are, or may be, at stake?

3. What are the main actors, interests, or sectors of society that are concerned with the problem area?

4. What are their perceptions of the nature of the problem?

5. What groups or interests might later be affected or become concerned?

6. In view of the above, what are the most important choices that must, or may be, made in the future concerning the technology?

7. How can the assessment be structured to assist in clarifying the

nature and implications of these choices?

A formal list of answers to these questions might be helpful in structuring later steps in the assessment. Such a list will be tentative in character, of course, and should be expected to evolve with the assessment as new issues and considerations surface.

o The steps of a technology assessment with an enhanced "policy" orientation, might be summarized as follows:

1. Clarification of the "context" of choice: key issues, actors, values affected, choices to be made.

2. Analysis of the technology and its possible uses.

3. Analysis of the possible effects or impacts of different patterns of deployment of the technology.

4. Identification of possible constraints or obstacles to the further development or adoption of the technology.

5. Description of possible policies that might be adopted to manage the impacts and overcome the obstacles.

6. Analysis of the costs, benefits, and uncertainties associated with the different options -- presented if possible, in terms of key "value groups" identified in #1.

o The presentation of policy conclusions in OTA assessments presents special problems. Most policy analyses are designed to narrow the options to a select few that are then carefully analyzed in terms of costs and benefits. Because of its client, OTA must make a special effort to include, within the range of alternative options, ones that appeal, or might appeal, to widely different perceptions and value systems. This does not mean that some options will not be favored -- anyone reading a recent OTA study with care is likely to be able to discover the implicit preference of the study team for one or another course of action. Wherever possible, however, the net should be cast widely enough to satisfy major contenders and interests.

o Contract work on policy themes is a topic that needs attention. There are many components of assessments that can be profitably contracted, and this applies to the delineation of costs, benefits and impacts of different options where they can be analyzed within the context of the contract itself. For example, where a model of economic relationships is utilized to indicate economic penetration under different economic conditions, this may be the best place to depict possible interventions in the market by the public sector. Where project managers are unsure of the policy options it might be helpful to hold some contract funds for precisely this purpose.

o If contractors are asked to clarify the consequences of different options, it is important for OTA to retain final control of the policy analysis. Assessment teams must be careful not to allow contractors to

structure the conclusions completely.

o The first panel meeting is a good place to begin to clarify these policy issues.

o Where future values and interests -- ones that have not yet emerged or been identified -- appear to be important to an assessment, a workshop or series of workshops may be helpful. The Solar Power Satellite study has found workshops very valuable as a means of identifying different perspectives and value orientations.

o Another procedure that has been suggested as a means of clarifying issues and placing boundaries around an assessment is the "dummy draft". In this exercise the study team quickly completes a draft of what they feel the study ought to look like, creating hypothetical conclusions where necessary. The goal is to identify options and areas where further analysis is needed.

o One of the most difficult tasks in an assessment is that of selecting clusters of values that can be used conveniently to arrange policy options along a spectrum. The practice most frequently encountered in OTA studies is the choice of two or three clusters that are distinguished by their degree of support for the actual deployment of a technology and willingness to have the government step in with incentives and subsidies. This is easiest when the assessment concerns a well-defined class of technologies -- such as onsite solar energy generation -- but becomes increasingly complex as the assessment becomes more comprehensive and integrative -- as was the case, for example, with the Bioenergy study. In that study, key options involved sectors such as forestry and agriculture and four major discrete fuel cycles with different market relationships and anticipated environmental impacts.

o Choosing the appropriate time-frame is another problem for the policy analysis. The most directly useful approach to OTA's clients may be very detailed actions that can be taken immediately, but the most valuable contribution OTA can make (and is supposed to make) is often a review of the longer-term implications of broad directions of activity.

o In planning an assessment, it is important if possible to begin with a clear sense of where the technology fits in the broader scheme of things. This often means setting out "scenarios" that provide a context for discussing possible impacts.

o Don't collect quantitative data and construct analytical models for their own sake. It is fashionable to have an elaborate data base and methodology, but it is also expensive and not always necessary or useful to answer important questions.

MANAGEMENT

A. Project Selection

o A recent study concludes that the users of technology assessment generally place the greatest value on new information provided by studies. The next most valued functon is to provide a "big picture" by pulling together relevant but previously scattered data. Many assessments do neither of these things; the few most highly regarded ones accomplish both of these objectives.

o Four key questions should be asked in selecting projects:

1. Can OTA contribute significnatly to the decisions to be made by Congress?

2. Can this be done within a reasonable time and cost?

3. Is the issue or problem worth our time (in our judgment)?

4. Does the project enhance our ability to do future work?

5. Is the timing right -- i.e., will our results appear at a good time insofar as the "maturing" of the issue is concerned?

o Project size is also an important choice. The energy group has completed projects of varying length, but most have been of two kinds: short studies done very quickly, and full-scale assessments that tend to last as long as two years and involve outside contractors. Short studies are most helpful in identifying new issues and questions, but are less helpful in analyzing mature problems. Timing is important with the large studies, since they are not likely to appear for two years or more.

o "Full scale" projects for which less than 200 thousand dollars are budgeted probably don't justify the trouble and expense of advisory panels, project directors and many other fixed costs.

B. Panel Selection and Use

o Selection of a good panel with a skilled chairman is critical to the success of a study.

o In addition to experts, representatives of key interests, and prestigious figures, it is important for the panels to include some good "generalists." The latter are often the most useful but may be the first to be cut from the list.

o Extensive checking of panel members' credentials is very important.

o The study team should use the expertise of the panel members. It is easy to lose a panel's support and interest by spending too much time defending a position or arguing with panelists. The project manager should accept advice from panel members but retain the role of final arbiter. it is important, in this respect, that study team

members not provoke confrontations in meetings.

o In instructing a panel, it is important to make clear that the role of the panel is not to come to a consensus, but to make sure that all sides of an issue are reprsented fairly in reports.

o The chairman of the advisory panel should be instructed to move to the next topic when all views on a subject have been expressed and understood, and not to wait for some resolution of the issue being discussed.

C. Contractors and Contracting

o Large contracts allow greater conceptual coherence and are more convenient administratively, but represent a greater risk if the work proves to be of low quality or misdirected. Using a large number of contracts complicates the task of integrating results at the end of the project, but the failure of a single contractor can be more easily handled.

o Tasks for contractors should be specified clearly and in as much detail as possible. If the work statement is unrealistic, the contractors will tend to do what they please.

o It is possible to save work in editing the final report by organizing contract tasks and the overall report in roughly the same way.

o Don't be afraid to cut losses. If a contractor turns in a bad product, it may be more trouble than it is worth to spend alot of time supervising revision and reorientation. It may make more sense to ask someone else to do a piece of work for you.

o It is important to identify people who may be available to complete a piece of contract work on short notice. A quick piece of analysis may be essential but the need for it unanticipated until the end of the study.

o There is a strong need at OTA and within the programs to pool resources and experience with both panelists and contractors. It was suggested that we have a data bank of names and subjects of specialization and interest which could be drawn upon by new project leaders. There was some discussion as to whether it would be appropriate to include in such a file an assessment of the quality of the work of individuals or organizations. One suggestion is that the file include the name of an OTA "contact" person who could provide a personal evaluation.

o Check the references of the individual or group under consideration for a contract. If a group is involved, be sure that you specify clearly the person in charge and the people who will perform the work.

o Set specific deadlines for work products and meet with the contractor regularly enough to ensure that those deadlines will be met.

o Take careful notes when talking with contractors or panelists, since they may say things in conversation that are not in the reports submitted by them.

o Rescue mission. Always save enough money so that you can seek out a third party for a rescue mission toward the end of the assessment.

D. The Conduct of Studies

o Before you begin a study, carefully review staff support and budget to be sure that you have the people and resources to complete the study as it is defined. Do not be afraid to narrow it if this seems necessary.

o Do not be afraid to seek help at the Program or Division level when you really need it.

o Try to maintain as wide as possible a network of collegial contacts concerning your study -- within OTA, with other government agencies and with the private sector. Other OTA shops can often be very helpful.

o It is very important to pause and take stock in the middle of a study to see how things are going. This is a good time to review the list of key issues to see if it needs to be revised, and to decide of some additional contract assistance will be needed.

o Clear deadlines are especially important for smoothing the workflow for secretaries.

o A guideline that is often used by research institutions is 50% of the time devoted to research, 50% of the time to the writing of a project. Experience in the energy group suggests that there is a strong tendency to allocate too little time to the final writing and revision of a study.

o It is impossible to overestimate the importance of a clear and simple outline of a study, prepared as early in the assessment as possible.

E. Followup

o Dissemination of results is a basic part of the assessment process, and should not be neglected. The planning of the dissemination effort should begin well before the study is finished.

o The actual dissemintion process can also begin before the study is completed. Indeed, it should begin sooner if Congress is considering legislation on the subject. Meetings with legislative staff can be very useful to them and prepare the ground for the eventual release of the study.

o It is worth spending the time to deliver the study personally to key

users. This greatly heightens the chances that the study will be read and taken seriously.

o The time for testimony and consultation on the subject of a study should be allocated in the budget. This may involve as much as two months of work for principal analysts.

o Testimony and professional journals are important outlets, but summaries should also be made available in more popular forums such as newspapers and news magazines.

o When the report is completed, it might be helpful to pick a handful of key users, especially those who can be identified as communicators themselves in one way or another, and hold a special workshop or conference for them to review the contents of the study and emphasize the implications.

o Overall, there is a consenus that the dissemination process has been neglected for many OTA studies in the past, especially when this effort is compared to that of other ogranizations of a similar kind.

F. Miscellaneous

o Staff orientation is important and often neglected. In order to help new staff members, the handbook that results from the workshop exercise should be as detailed as possible. In addition, it might also be helpful if the various programs would hold periodic "bag lunches" to orient the rest of the OTA staff concerning what they are doing. Mutual exchange of this kind is important.

o New staff and consultants also often need orientation on the functions of Congress and Committees.

o Several staff members have commented on the problem of poor institutional memory at OTA. There is a fairly steady turnover of staff, and little institutionalized transfer, across generations, of the lessons learned from assessments. One suggestion is that project managers be asked to write reviews of the lessons learned at the end of the assessment, and that these be made available in a file.

o As formal models become increasingly important in policy research, many staff members are concerned that OTA acquire the ability to work with computer models with greater ease. One way to accomplish this might be by developing a core group of staff with computer skills who are familiar with modelling techniques and can advise on possible applications as well as evaluate the results of contractor work based on modelling.

o It is important that OTA assessments not give in to the pressures to emphasize short-term issues of immediate concern and neglect longer-term, second-order problems and possibilities, even though this means making some speculative analytical conclusions.

OTA **STAFF MEMO**

April 11, 1980

TO: Fred Wood

FROM: International Security and Commerce Program

RE: Task Force Input

TECHNOLOGY AND EAST-WEST TRADE

Kind of Project

Budget — $170,000

Duration — 10/78 - 11/79 (public release)

In-house staff — Project Director, full-time for duration
Congressional Fellow, "full-time" 1/79-6/79
In-house contractor, full-time 4/79-9/79
Senior analyst, part-time (wrote one chapter)

Contractors — 9 contractor reports; 2 contractors providing intermittent advice, consultation, review, etc.

Advisory Panel — 19 members, including the Chairman, 3 panel meetings

Committee Interest -- Active interest largely confined to International Finance Subcommittee, Senate Committee on Banking, Housing and Urban Affairs. This was not a requesting committee, but the Subcommittee Chairman was a member of both the OTA Board and the Commerce Committee. Direct legislative interest was relevant to the Export Administration Act, but timing of the project (the request was about two years old when OTA began substantive work on it) precluded OTA's playing a direct role in either hearings, mark-up, or debate. Informal contact with staff was maintained, and an Interim Report was provided in May. Although this was delivered to the Subcommittee before the mark-up, it was too late to be more than a symbolic gesture. The gesture, however, was important, it demonstrated that after long and embarrassing delay on this project, OTA could produce promised documents on time, and it led the staff to believe - for the first time - that a final report on the subject would be forthcoming. Unfortunately, by this

time the staff of the requesting committee in the House had changed, momentum had been established, and OTA was unable to rouse more than casual interest in the study.

Post-publication activities included a formal briefing of about 50 Senate and House staff on the technology embargo to the USSR.

Project Management

Advisory Panel -- 19 is probably too large, but after the first meeting attendance stabilized at about 12, and of these about 9 showed active and constructive interest. A deliberate decision was made to select an eminent and well-known Chairman, and this provide a success. His contribution was limited to presiding at meetings, but he performed his duty exceedingly well, and his name was useful in legitimizing the study and securing help from individuals who might otherwise have been reluctant to participate in yet another government study.

One panel member has complained that his views were not fairly represented in the report. In fact, his remarks led to substantial revision between the final and published drafts of which he was apparently unaware. In future, a detailed list of such

revisions sent to panel members with their published copies might advert this misunderstanding.

Contractors -- In general, academics on personal contracts produced much better work (for much less money) than did larger organizations. With the latter, it is also difficult to always know who is actually doing the work.

Liaison with Other Agencies -- Individuals in the Departments of State, Commerce, and Defense were all very helpful, especially after the project was described to them as an opportunity for the problems and points of view of the Executive Branch to be clearly and objectively explained to Congress (this approach was useful in dealing with private industry as well).

A particularly useful system was worked with the CIA: the project director, who has a security clearance, was able to spend two weeks at the CIA reading classified documents and taking notes from them (this cooperation was at least partly due to the good offices of the above-mentioned contractor). The notes were written-up and sent back to the CIA, which cleared them. It was then

permissable to use the material in an unclassified report. This procedure is much easier and faster than attempting to get documents de-classified.

* One serious problem arose, however, when a contractor based his report on personal experience and private and privileged sources. The conclusions were dramatic, but so controversial that we had to throw out the entire piece because there was no way of verifying them.

NOTE: Comments on the "Taggants in Explosives" and "Effects of Nuclear War" projects will be circulated at a later date.

April 9, 1980

Results of the MATERIALS PROGRAM Soul Search on Technology Assessment

Introduction

This informal report from the Materials Program is not meant to be a consensus document. Individual members of the Program may disagree with some of the opinions reported in this paper, or, while agreeing in part with an opinion think that the emphasis is wrong. However, every opinion discussed here was expressed by some present or past member of the Program. The opinions of the past members were solicited by Bill Davis and Audrey Buyrn by telephone. The opinions of the present members were aired in a brown-bag luncheon meeting of the Program. This report has been prepared by Bill Davis and Audrey Buyrn. Several appendices containing dissenting or amplifying opinions of individual members of the Program have been promised and will be forwarded when received.

Background

The Materials Program has published six assessments since its inception, three of them within the past twelve months. In addition, the Program has published two Working Papers as appendices to two of the assessments, a Technical Memorandum, and two or three publications resulting from conferences sponsored by the Materials Program. Two more assessments will be published shortly. Another assessment is scheduled for completion in early 1981. These publications can roughly be divided into two classes: those from the early days of OTA (generally assessments requested by TAB in the 1974-75 period); and those of more recent vintage (generally requested by Committees or, in one case, mandated by the Congress). The assessments have taken a long time to complete; this has caused not only budget overruns but also has resulted in work being delivered after the initial Congressional interest passed. In some of these cases, however, Congressional interest may be reawakening. For example, our report on Energy and Materials from Municipal Waste will probably be of more interest to the Congress one year after its publication date (July 1979) than it would have been had it come out on time (1976). (Please note that we are not claiming that the report was the cause of the reawakened interest.)

Only one current Materials staff member has been in the Program since the beginning. Where possible, former staff were interviewed to gain their perspective on the assessment process. As a consequence, this report is in part retrospective and is based on the recall of a limited number of individuals involved with the work.

At the time of this exercise, the Materials Program was getting ready to send two assessments to TAB. People were preoccupied with the details of their particular assessment tasks and were not at the stage where they could step back and look critically at the lessons to be learned from these two assessments. Thus, much of the conversation at the brown-bag luncheon centered around lessons from older assessments; the milieu in which assessments are done; and the hassles and uncertainties which eat up productive time.

Lessons from Older Assessments

AN INVIOLABLE RULE:

1) Don't give out large contracts or contracts to "do" or "finish" the assessment.

This ought to be a well learned lesson by now, but the results of violating this rule have been so uniformly disastrous that we must be sure that the Rule is indelibly etched into our institutional memory. The problem is that it is so seductive .... "And Satan took the Project Director onto a high mountain and showed him a Contractor who would solve all his problems."

There is a difference of opinion about what can best be contracted for. Some contend that contractors are best at doing small, highly focused jobs, particularly data gathering and analysis; these people argue that no good policy analysis can come from contractors. Others have found that certain contractors - carefully monitored and knowledgeable in the needs of Congress - can provide good policy analysis for certain tasks.

Also, there was no agreement about what constitutes a "large" contract. (The brown bag group did not address this question - it evolved in the course of the interviews.) Thus some said that no contracts should be issued for more than $50 to $75,000 while others said none should be issued for more than $150 to $200,000. The rule, "Don't give out large contracts," may need closer examination so that we are sure what it is we are recommending against.

2) ANOTHER RULE: Directing a project is at least a full time job.

Don't ever ask anyone to direct more than one project. One alumnus said that at one point he was directing four projects. If you don't have a project director for a project either (a) the project should be killed or put in suspended animation or (b) the project should be run at a very low and cheap level by the Program Manager.

Several staff, past and present, reflected on the role of the project director. Among the responsibilities this person has are overseeing contracts, keeping tabs on the budget to a gross level, and keeping in close touch with the Advisory Panel. These are viewed as integral parts of orchestrating the entire effort. Problems include setting priorities on additional contracting when it is unclear what is left in the budget, knowing for sure how much the present contracts cost, and guessing how good and how close to schedule the present contractor work is.

Given these differing responsibilities, some staff questioned the assumption that the project director had to be a technical person. One alumnus suggested that a technical (or technology) expert should be a project director only if that person had a demonstrably good track record (preferably at OTA) as a manager. This observer stated that he thought it would be a better use of technical experts' time if they spent it assessing the technologies at hand, rather than managing all parts of an assessment.

Furthermore, this advocate said he thought this would provide better balance to assessments since the project director could be concerned with policy and impact implications as well as the technology itself; this balance he felt had been missing in the past because the project leader was a technical expert. These comments suggest that the assumptions about which people make good project directors should be reevaluated.

3) ANOTHER RULE: Don't expect a Project Director to do the project as the only OTA staffer on the project.

The general consensus is that there must be at least 3 full-time equivalent staff to do a decent assessment; of which at least two should be doing the assessment and nothing else. (Possibly the project leader and the technology expert; see supra 2.) In other words, at least 2 people must be immersed in the project. It is not possible to efficiently and objectively design, carry out, and write an assessment in a vacuum penetrated occasionally by the Program Manager, the Advisory Panel, and a few contractors. Part of the problem in the "good old days" of the Materials Program was having only one person working on the assessments. In one instance, this one person changed every so often, and the net result was that each time a new individual took over the project, he had to begin essentially from scratch (maybe he didn't have to, but each one did). The net result was that three years were spent scoping the assessment, each scope reflecting the particular approach of he who was the project director at that particular point in time.

This raises a more generic problem for OTA: namely, is there an irreduceable number to perform an assessment; what mix of talents should this number possess; and what makes for a good assessment team? It is generally agreed by Materials Staff, old and present, that a good team can whack out the work but there is not much agreement on what constitutes a good team. Those who spoke of the team concept urge the Task Force to try to define what makes one. This leads to the next point:

4) A concern: There has not been enough recognition given to the staff.

People spend a year or more (almost always more) of their lives becoming expert on a topic and writing the report. Yet they do not become known as experts outside a small OTA-Congressional staff circle. They are discouraged or not allowed to present papers at conferences or write for publication in the professional or general journals. (This was a concern expressed by one or two of the alumni; it is apparently less a concern among the present staff.) Fred Robbins said something of the sort at the April 2, 1980 TAB/TAAC meeting, adding the point that publication in quality journals enhances the prestige of OTA and disseminates our work to much wider audiences.

Furthermore, there often is not recognition within OTA itself. One former staff member ventured that a lot of para-legal interpretations appear in OTA assessments but guessed that few in the Office were aware that Materials has an attorney on the staff, with whom these legal questions could be reviewed. This alumnus suggested that there might be a certain set of

talents (legal, economic, environmental) that different programs need for their work but that there is no way of finding who in a different program area might possess those talents and could be pirated for specific tasks or possibly for a whole assessment. This alumnus suggested that possibly cross-program personnel would enhance the interdisciplinary strength of assessment teams even if it meant those individuals might be working on two assessments at the same time.

5) Advisory Panels, Executive Branch Agencies, and Other Externalities.

The role of Advisory Panels, contacts with Executive Branch agencies, and relations with other parts of the "real world" have had their ups and downs for the Materials Program. In the early days, there was a general sentiment that the Materials Advisory Committee was calling too many of the shots. Since the MAC no longer exists, this doesn't seem to be a current problem. How to appropriately exploit the Assessment Advisory Panels that have taken its place is not clear to all, however. Who should be on a panel, what they should be asked to do, how best to get them to perform, how to structure meetings so as little time is wasted as possible, and what alternatives to the panels might work are all questions posed by present and former staff members.

For some assessments, the substitution of Working Groups has been successful. In this instance, a group of people with specific expertise or interests are drawn together (preferably on their own turf) and given a set of specific assessment-related tasks to perform. An alternative has been to have the OTA project person meet with such individuals and milk them for data, opinions, or ask them to respond to the assessment-related tasks. The general consensus seems to be that sharing of information between programs about how Advisory Panels are/have been used would be a worthy goal for the Task Force.

The major "use" of Executive Branch agencies by Materials has been to obtain detailees. The exploitation of the agencies for information has been much less prominent - in the eyes of some past members, this had led to "thinner" assessments than might have been possible had better contacts been made with the agencies. All seem to feel that the matter of Executive Branch relations is one of great delicacy, approaching that of relations with the offices on the Hill. All seem to agree as well that there should be clearer guidance as to how these delicate matters might be handled.

Past and present staff members are divided about what to do with Advisory Panel members and/or Executive Branch contacts who fail to produce. Some argue that if the panel member or agency contact doesn't do what he/she promised, that should be the end of it. If a prominent person is chucked off a panel for charging per diem yet saying nothing at a panel meeting, then OTA should take its lumps and save the money, is one point of view. The other position is that the person should be paid and tolerated because it will look good to have the name inside the cover of the assessment. Similarly, if the Executive agency doesn't come up with the information, then OTA should plunge ahead without it and let the chips fall where they may. One former staff member told of repeated promises by one agency to produce, but never any data.

The assessment languished for several months while the project director made repeated phone calls. It's not all bad, though. One assessment was materially advanced by the cooperation of the National Bureau of Standards.

Industry is the other externality mentioned by staff. Again, it seems there have been some good and some not-so-good interactions with industry. Lawyers, lobbyists, and PR representatives were generally cited as people to be avoided.

The Milieu in Which Assessments Are Done: The members of the Materials Group expressed concern that they don't know what is happening in OTA, in the Division, and even in the Program outside their own assessment. The demise of the newsletter was lamented. The Materials Program would like to be kept informed on what assessments are being done in other Programs, who is working on them, and the status of the assessments. The members of the Materials Program felt that it would not only be nice to know what is going on in other Programs, but useful. Substantive information could be traded, people working in related fields talked to, reviewing help exchanged, and potential contractors identified. Within the Program it became apparent that regularly scheduled meetings, (but monthly rather than weekly) even at the busiest of times, would be welcome.

Also of concern to both present and former staff members is contact with Hill staff (the Congressional milieu as opposed to the OTA one). It is generally felt that it is unclear who is supposed to talk to Committee staff, what can be said, to whom such conversations are to be reported, and why. The generic problem is how OTA project staff can have meaningful interaction with advocates on the Hill without becoming (or being accused of being) the handmaidens of those advocates. One former staff member opined that the reason some Materials Program assessments were weak in their policy dimensions (being more technical reports than policy assessments) was because contact with the interested Committees was minimal and thus the reports did not respond to Congressional needs. (This person also noted that the program was so far behind by then that it was probably best that the contact was minimal.)

Related to this was the observation that OTA should make sure the new arrivals learn what OTA is all about. It was noted that sometimes a new person is left to sink or swim on his own and suggested that there should be a way to let new employees learn what OTA is trying to accomplish. Small wonder, observed one commentator, that technical experts attend to their technical interests and policy aspects, impacts, etc. get left behind. This leads to the question of continuity and commitment.

Good morale requires some belief that one's position at OTA has continuity. Some staff indicated that OTA can be a stepping stone to bigger and better things for certain project personnel, while the Office is viewed as a more permanent job for others. Those who see it as a more permanent position occasionally have qualms about whether their job has continuity. The situation is complicated for personnel who are hired "just for a single assessment." One commentator said that bringing people on board for only one assignment creates poor morale and no commitment to the task. He suggested that this way of doing things might need to be re-evaluated. Another former staff member suggested, when reflecting on continuity, that there might be inter-program scoping teams. That is, when a request comes

from a Committee, instead of assigning it to a program area, it should be diagnosed to see what kinds of people are needed to accomplish the assessment, and then those people could be brought together to scope the assessment regardless of which program they come from and where the assessment might finally come to rest, managerially. This individual noted such anomalies as one program scoping an assessment and a different one doing it; another former staff member told of an assessment being scoped and then presented to a program with the instructions to do it - the project leader was never involved with the decisions about what was to be done yet was sitting in OTA the whole time. Involvement with future plans for the Office as a whole - even if one did not end up in fact working on thatproject - would certainly add to feelings of continuity, at least one would be able to chart a better path than now seems possible.

Hassles and Uncertainties

1) The Programs Have Become Satellite Production Centers

In the good old days, all John Holmes required of the Programs was legible copy. Cutting and pasting was OK; any typeface was OK - and even a bit of handwritten stuff; there was no requirement for perfection. John handled all of the production steps. Now, the Programs have been handed the beginning of the production sequence and there are nine satellite production centers in OTA.

There are those who contend that this has improved efficiency and cut costs when the boundaries of the system are drawn around OTA. Without debating this point here (we will debate it a little later), it is clear that when the boundaries are drawn around an individual Program, efficiency has gone down and costs have gone up. Being a Production Center has placed burdens on the Program not compensated for by increased staff or budget.

Has efficiency gone up and costs down overall at OTA with the new system? How can we know? No-one has looked into what is happening in the Programs: how much of the money being spent on temporaries and Linolexes is reasonably attributable to the production requirements? How efficiently are these Linolex machines being used? How many gray hairs and aggregated upward blood pressure points can be attributed to the production requirement?

Assessment after assessment goes out of OTA making the point that you don't solve a problem by merely plunking down a new technology before a group of people. Yet that is exactly what has happened with the Linolex machines. "Hello. Here is a machine which will solve all your problems. Goodbye." Part of this appears to be that - while the Linolex may be o.k. as an instrument to prepare final copy for Publications - it is a poor substitute for an ordinary typewriter. A lot of early assessment work is just straight typing and could as easily be cranked out on a manual machine as having to be placed on a floppy disc that is alternately in "Recovery" or can't be retreived right now because something else is in the drive. Perhaps what is needed is a course for the professional staff on how to use the Linolex, but for now the Satellite Production Center/Linolex combination has presented the Program with money, staffing, educational, and tempermental problems.

Solving the first three will solve the fourth for some of us. Others of us will continue to feel that the only part of production they want to be involved in is reading galleys. The nature of the final decision is less important than that we recognize that the system we have now can be improved and that we figure out how to improve it.

OTA **STAFF MEMO**

11 April 1980

TO: Fred Wood

FROM: Bill Davis

SUBJECT: Attached

Attached are several appendices to the earlier Materials Program Soul Search. These have been submitted by the staff members in response to the invitation to submit commentary, both assentary and dissentary, to the Main Memo.

I have promised the authors that these ideas will be considered by the Task Force.

W. E. D.

STAFF MEMO

April 10, 1980

TO: Bill Davis

FROM: Joel Hirschhorn

RE: Commentary on MATERIALS PROGRAM SOUL SEARCH ON TA

The following are several points I hope will be transmitted to the OTA task force. They have been discussed with individuals or were presented at the Materials Program brown bag discussion.

1. Defining Responsibilities and Authority: I have found, and continue to find, inadequate communication of what the responsibilities and limits of authority are for various positions, particularly the Project Director and the relationship between that person and the Program Manager. While it is easy to delegate responsibility to staff members to get things done, it is far more difficult to obtain clear-cut understandings of what individuals can do within the OTA bureaucracy (growing by leaps and quantum jumps) to fulfill their responsibilities. There are particular problems in the areas of budgets and personnel. All generally accepted wisdom about people protecting their turfs and lower parts of their anatomy are evident in OTA. Projects suffer because of this, to a degree which is inconsistent with the size of OTA and the degree of professional backgrounds found here.

2. Staff Recognition: I agree that this is a major problem. One obvious example is the lack of clear recognition in the OTA reports of authorship. Present listings give no information on actual contributions versus management responsibilities.

3. Internal OTA Relationships: One creative way to enhance communication among OTA personnel from different programs would be to require every new project to conduct their first panel meeting with a panel of selected OTA staffers. This would give a useful exercise for the project team, a means to attain quality control and a way to find out how to use OTA personnel from other groups.

4. Using Outside People: I have written a paper on the problem of issue statements, particularly the problem faced by technical or business people who are not used to communiticating with well articulated issues which policy analysts must cope with. I believe there ought to be an OTA Seminar on the problem of communicating with issues.

The following is an amalgam of three sets of comments: one written and two verbal that were submitted in response to the invitation to add amplifying comments.

1. There is some element of condemnation that seems to underlie the tone of parts of the report. Former staff and managers had a tough row to hoe and shouldn't be faulted for problems beyond their control (i.e, budget cuts). The conditions in the past were different than they are now.
2. The suggestion that there are "rules" by which assessments can be run is disquieting. There are no inviolable rules and it is a mistake to communicate this. It is more important how the project leader manages the contracts than whether they are large or small. Many small contracts can be more difficult to manage than one or two large ones, and can take just as much time. Time is also an important factor. Sometimes a large contract is clearly justified if there is a serious time tradeoff to be made. It is easier to pronounce rules than it is to exercise good judgment; no management handbook sets rules because they usually don't work.
3. As far as the size on contracts goes, who is to say that one amount is better or worse than another?
4. With respect to the role of the project director, it is common for experienced technical managers to direct 2 or 3 projects at the same time, assuming support personnel exist. There also must be adequate management support. OTA seems to be top heavy with managers who impede progress rather than accelerating it. Maybe the problems are not with the project directors but with the program managers and A.D.'s. The project director's role should be enhanced not diminished. The director has much responsibility but little authority.
5. It is agreed that at least two people should be involved in an assessment but the combination of addition personnel should be flexible. Make those two the Project Leader and the Assistant Project Leader. One might add detailees, contractors, other in-house staff, consultants, and contractors in various combinations. There is no way to define a good team. Much depends on the morale and esprit de corps - dedicated people, who are supported and encouraged by a professional environment, can do wonders. If the environment isn't professional, 20 people might be added to a job and never get it done.
6. One reason staff do not become known as experts is because the mechanisms to make them known do not exist. Communications from outside OTA come from the top down. Only if the program manager makes a conscious decision to involve project staff - to give them visibility and to encourage them to communicate with "outsiders" - will they become known. Even if staf were encourage to write for professional journals, when would they find the time? With the sparse staff and the need for overtime to get work done, there's no way one could make oneself known as an expert.

(3)

7. The possibility of cross-program staff looks like a major landmine. To whom would they report? Who would evaluate them? People without homes have a lower morale than those with homes.
8. We need to consider the problem faced by detailees as well as the needs of OTA. What Executive Agency representative - least of all a junior or mid-level one - needs the grief of clearing contacts with the Hill? A problem here is that OTA needs them for the duration of the job not for a fixed time period. Secondly, OTA must be sure the detailee is not coming just because she/he wants OTA on the 171 or needs it for the Grade 16 promotion.
9. It is very hard for us to separate what we feel as problems we are facing now from lessons that might be learned from past assessments. Is the Task Force going to grapple with some of the difficulties that are problems <u>right now</u> or only look backwards at what may no longer be lessons worth learning? Once the Task Force has collected the "lesson learned", maybe they should be recycled through the programs so that people can comment on whether or not they are still relevant.
10. The Task Force is a good idea. Will all of this make any difference?

COMMENTS ON MATERIALS PROGRAM INPUTS TO TA TASK FORCE

1. The fact that two assessments were in final stages of completion and being sent to TAB does not mean that the project staff were too preoccupied with the details of their projects and not able to step back and look critically at how the assessments were conducted. In two instances, the project staff had worked on previous assessments and were well equipped to draw comparisons as to how different projects had been conducted and the difficulties that were encountered. The experienced staff also were in a position to observe which problems were managerial and unique to the ongoing project and which were structural or endemic to OTA or Materials Program projects. Some of the difficulties encountered in the nearly completed studies were comparable to ones encountered in early Materials assessments and in the coal assessment (which is far from being in the final stages).

2. The brown bag discussion did not concentrate around lessons learned from earlier assessments although they were discussed, much of the discussion centered on existing assessments and difficulties encountered by staff in conducting the assessments under current organization in OTA - comparisons to earlier experiences were made to illustrate the staff perspective that some of the project management problems are of recent vintage and are the direct result of the new management structure. To wit:

    1. Project staff have responsibility for producing a technically sound report but do not have any authority over contracts, budgets, staffing, schedule and in some instances the technical content of the study and the manner in which tasks are to be performed - there is no control over the management or the substance of projects - only blame for any problems that are encountered. There is not sufficient delegation of authority to those who are responsible for performing the assessments.

    2. Management of contracts - the split between project management and OTA contract administration - insulated by two layers of upper management (program manager and division director) leads to difficulties a) in negotiating contracts - obtaining the services required at a reasonable or equitable price and b) in assuring performance of contract tasks. Neither project staff nor contract administration are in a good position to bargain effectively with potential contractors for the services needed -- since project staff cannot discuss contract costs - and contract staff are unfamiliar with the technical requirements OTA is often in the position of buying a pig in a poke - project staff - unless they are extremely skillful and experienced in commercial contract operations - are not always aware of the cost trade offs of the tasks they are contracting for. An additional performance problem is that contractors often become confused over who they must report to at OTA concerning task performance, invoices, reporting - admin,

division director, program manager or project staff - contractually this allows contractors the potential to get away with murder in contract performance because there is no clear indication of which OTA power center they are accountable to. There is insufficient coordination between project management and contract negotiation and management.

3. Congressional contacts - OTA as a congressional agency is supposed to serve the needs of Congress - it is virtually impossible for OTA to do that unless there is good communication between congressional clients and OTA. In the past year and a half, relations with existing and potential client committees have withered. The Materials Program (and I assume) OTA have operated under several different regimes - 1. No conditions on congressional contacts except that staff could not commit OTA or program - most significant meetings were routinely described in weekly and monthly progress reports - staff were expected to establish and maintain professional contacts with congressional staff, CRS, and executive agencies.

2. No contacts with congressional staff without prior approval of program manager.

3. OTA staff encouraged by director to establish cordial relations with hill staff.

4. Now OTA staff to report in writing on congressional contacts of significance (significance is undefined).

The impact of these changing directions on the Materials Program have been a decline in and in some cases a disappearance of working relationships with key congressional committees - with the result that program staff often are unaware of possible congressional interest in their studies and congressional staff are unaware of ongoing OTA studies or of OTA's capability to conduct assessments or to provide information relating to legislative activities. As one staff member put it - you can't turn good informal working relationships on and off at will to suit the current managerial climate and then expect those contacts to continue.

The OTA Materials Program enjoyed a good reputation among the Congressional committee staff on the house and senate interior committees and the Senate Commerce Committee as the result of ongoing projects and program staff liaison with the committees -- this may have led to the mandated coal assessment as a former house staffer put it - if anyone can do the job, OTA can - GAO does not have the technical capability, and the executive agencies won't. In fact, the expectations of OTA capability were so high that the house staff originally proposed that OTA perform two of the major studies called for in the surface mining act - the study of

surface mining reclamation for minerals other than coal and the study of mined land reclamation in Alaska. (Those studies are now being conducted by NAS.)

Good working relationships with client committees have been beneficial - on the Alaska report - information was made available to concerned committees through informal briefings with committee staff (with TAB approval) and release of some working working papers and maps. As a result, althogh the report was not issued until after the Alaska Lands Bill passed the House in the 95th Congress, the results of the OTA analysis were available to and used by both minority and majority staff in drafting the final version of the bill and were used by senate staff in hearings. In addition, by maintaining contacts with staff, it was ascertained that there was not sufficient interest in completing a report on access problems in other public land states (since few problems were identified) and as a consequence, the assessment was reduced in scope thus freeing the staff for work on other projects.

4. It is possible for someone to direct more than one project at a time - provided that the projects can be adequately scoped and tasks carefully defined and scheduled to allow the project director sufficient opportunity to manage performance by contractors and consultants. If, however, the assessment is one requiring substantial involvement of project director and OTA staff in conducting research and analyses and in writing most of the final report, then obviously one person can't run more than one job at a time. However OTA staff and project directors frequently find themselves in the latter position, because they were not able to scope the assessment and to monitor contract performance, I think that a primary reason for this is insufficient allocation of resources at the beginning of a project for planning and overly optimistic estimates of the time required to perform tasks (overcommitment of in-house staff time).

5. Report Production and Support Services

It was not the past experience in the Materials Program that final report materials should be sent to publications in less than final form - there are of course many options for producing final copy - some cost more than others - we have in the past hired temporaries, sent material to typing services, and required that contractors prepare the final copy of materials based on their studies according to OTA specifications. The publications office cannot and should not be expected to produce quality reports efficiently if the material they receive is not in substantially final form - no major changes in text, complete chapters, fairly accurate copy without lots of typos. Programs have the responsibility for the content of the report.

The value of the Linolex machines is not only in producing copy that can be used to set type for the final report - the machines were obtained to help move the flow of paper - since OTA is a paper shop - written material is typed and retyped with revisions and on and on - it is more efficient to be able to reduce the amount of time the typist spends retyping the same material -- It has been my experience that these machines have resulted in significant savings in turn around time for material that has to be typed in fairly accurate format. Part of the problem we have in this program in typing - is that we have more material being turned out than we have typists to type it. With priority given to in-house preparation of final report copy - project staff are subsidizing this effort by doing most of the early stages of typing on their own. To be sure, this allows the technical staff an opportunity to see how things look in print and to make their revisions -- But most of these people were not hired based on how fast they could type - and it reaches a point where their efficiency is substantially reduced since they are currently the ones who are manually typing, retyping, retyping, and retyping earlier drafts - perhaps they should be given the Linolex machines. It is a simple fact that technical people cannot write draft material, correct it, retype it in one step - the burden of retyping draft material with corrections slows down the writing process. It should be possible to anticipate typing crunches and to set ground rules for putting out final report copy - when it reaches the stage where few changes need to be made - perhaps it should be sent out to commercial typing services - that is a management decision and not a requirement of using Linolex machines - no one said that final report typing had to be done in house - it just has to be provided in the correct format.

OTA **STAFF MEMO**

April 7, 1980

TO: Fred Wood

FROM: Bob Smith BS pb

SUBJECT: Response to Task Force Survey

Attached is the Food and Renewable Resources response to the Task Force Survey.

If you would like to discuss any part of it before the meeting, contact Wally Parham (5-8879) or me (463-7508).

BS/pb
Attachment

FOOD AND RENEWABLE RESOURCES PROGRAM

RESPONSE TO TASK FORCE SURVEY

This report on the assessment activities of the Food and Renewable Resources Program (F&RR) is in no way an exhaustive analysis of all the experiences in conducting an assessment within the program but rather a selective overview of those experiences. The experiences selected were determined by the program's representative to the TA Task Force and include all the concerns expressed by the program staff in conducting a TA.

Types of Assessments

A majority of the assessments conducted by this program have been focused more on a problem and the corresponding technologies to ameliorate that problem than assessing a technology and the problems or impacts associated with that technology. Recent examples of the problem-oriented assessments are: Environmental Contaminants in Food, Drugs in Livestock Feed, and Open Shelf-Life Dating of Food. Emerging Food Marketing Technologies and the ongoing Impact of Technology on

Productivity of the Land are two assessments that focus on the latter type.

The topic areas for these problem-oriented assessments are specific and narrow and have involved evaluating ongoing and proposed Federal programs and laws. These assessment conditions have allowed for congressional options to be considered and presented in the final report. Congressional options are defined here as policy options from which Congress can select and act upon, given its powers of authorization, appropriations, and oversight. It has been this program's experience that congressional options, as defined above, are difficult to develop if the assessment topic is broad and does not review relevant Federal laws or regulatory programs.

In keeping with this agency's philosophy of maintaining a small in-house staff, all of this program's assessments have had no more than two to three full-time staff on the project. This includes full-time contractors and detailees. In some instances, a project director has been reponsible for more than one assessment at a time. This has obviously placed considerable reliance on outside contractors for technical information, a condition which was intended by Congress. Thus program staff have become managers of the research rather than actual researchers.

The cost of assessments has ranged from a low of $40,000 to a high of $350,000. Most projects have fallen into the $160,000 to $250,000 price range with an average time period of 14 to 24 months. The program staff feels, however, that $400,000 to $500,000 per assessment is a more reasonable figure at this time. While all assessments except one (Emerging Food Marketing Technologies) were requested by committee chairmen, none were fulfilling an immediate congressional need (six-month response). Upon completion, however, several assessments were used in drafting legislation--e.g., Organizing and Financing Basic Research to Increase Food Production.

Management

Selection

As has been indicated, all assessments except one were requested by committee chairmen. Thus selection for all of the approved assessments but one has been determined by congressional interest, and Emerging Food Marketing Technologies was taken by the director to the Board, which approved it. It must be recognized, however,

that several congressional requests were not undertaken by OTA because of budget constraints and because OTA management did not feel these request were for OTA-type studies.

This interest and these requests did not come as a surprise to program staff. In some instances, committee staff initiated contact with program staff to do an assessment. In other instances, program staff would initiate a dialogue with relevant committee staff on their needs. The purpose of initiating this dialogue is to familiarize committee staff with the program and its capabilities. This was essential several years ago in making the program's presence known to key committee staff. Continuing such dialogue is essential for maintaining rapport with established committee staff contacts and developing a rapport with new staff. Because of the increasing number of retiring Members of Congress and the election of many new Members during the last six years, a continuing dialogue with committee staff, often initiated by this program's staff, is required.

This dialogue with committee staff has become increasingly difficult by the lack of direction given to the program by the agency management on the type and number of assessments that can be undertaken. Obviously, the present tight budget places restrictions on the number of

assessments that can be undertaken, but at this time it is unclear what those restrictions are and consequently it is unclear how to respond to inquiries made by committee staff on undertaking new assessments.

The other area of concern on assessment selection is the status of the priority process and the blue book. It is felt that OTA should reevaluate the topics in the priority blue book in order to determine which ones continue to be important topics and worthy of OTA's consideration. This opinion is closely associated with the staff conclusion that OTA needs to establish a policy that a certain percent of assessments will be committee-requested and a smaller number will be self-initiated by OTA with the approval of the Board. The self-initiated would be those topics that OTA staff feel are important after surveying the scientific, social, and political communities, are worthy of assessment, and need to be brought to the attention of Congress. It is proposed that somewhere between 20 percent to 40 percent of all OTA assessments should be self-initiated.

If it is decided that OTA will initiate assessments on emerging and priority topics, the question becomes How will these topics be determined? Two choices are available. First, a general overall agency-initiated process is established on a regular basis to identify and rank the

priority and emerging topics for which a certain percentage of funds is allocated. This process is similar to the one initiated under the previous director. If such a process is to be reestablished, the credibility of the process and its results will be determined by the involvement of all OTA staff, the openness of the process, and the organizational, political, and scientific comprehensiveness of the outside survey. These conditions were lacking in the previous effort.

The second approach would be to allow each program to determine the priority and emerging topics in its own program area. Such an effort would be useful in selecting future assessments to be conducted. Such an effort has been conducted by the program in the food marketing area. The result of this effort is the report Emerging Food Marketing Technologies. The purpose of this study was to identify emerging technologies that required full assessment based on the critical issues and potential problems associated with these technologies. Although this report was completed in the fall of 1978, the agency-wide priority process superceded this program effort, and thus the program was not given the opportunity to further assess some of the identified technologies in the report. Although such a

process is useful in setting an agenda for a program, the problem is that certain important topics might be overlooked, given the subject areas covered by the programs within the agency.

Nevertheless, it is felt that the concept of the priority process needs to be reestablished and developed within the agency.

Planning

Planning includes developing the substantive scope of the assessment, Board proposal, personnel needs, and time and budget estimates. The time and effort have varied in this stage. Because of the process followed and the complexity of the topics, it is not uncommon for six months to elapse in the planning stage before a proposal has been brought to the Board.

Two methods have been successfully used to develop the substantive scope of the assessment. First, a draft document outlining the problems and areas to be assessed for the proposed project has been developed by program staff through literature review and personal interviews. This document then has been reviewed by an expert panel convened solely for critiquing the document. The document then is modified and becomes the heart of the assessement proposal

to the Board.

The second method is somewhat similar to the first. Instead of the staff preparing a background document on the critical problems of the project needing assessment, a small contract is awarded to provide this background information. The resulting paper provides the necessary information for producing the Board proposal.

Once the scope of the assessment has been determined, it becomes the staff's job to estimate personnel, time, and cost requirements. The previous section of this report already has discussed the program's experience with these resources and does not need to be repeated.

It is felt, however, that all of the assessments have been understaffed and that, depending on the assessment, three to five full-time researchers should be placed on one assessment. The lack of staff has placed a burden on staff and explains some of the time overruns. Personnel assignment to an assessment has been based more on staff availability and less on need.

Budget and time estimates have frequently been underestimated. It is the staff's opinion that a thorough assessment of a complex problem will most likely require 15 to 18 months from the time of Board approval. Anything less, in most instances, would be wishful thinking. Budget estimates are based more on agency budget constraints than

assessment needs. Some of the budget and time overruns can be explained by unreasonable requirements unrelated to program management, but poor planning and lack of experience by program staff also can be attributed to these overruns. This program has been relatively successful with its budget and time estimates, but some cost overruns have occurred. Fortunately, all assessments have cost $350,000 and under and were completed within two years of Board approval. Most assessments have cost in excess of $200,000. The critical point is, however, that the program needs to have encouragement for estimating realistic cost and time requirements and budget cuts cannot arbitrarily be made by management without consulting program staff if the planning stage is to be meaningful. This lack of encouragement has contributed to the time and resulting cost overruns for those assessments in which overruns have occurred.

The culmination of the planning stage is the submission of the assessment proposal to the Board. While this program's proposals have been at least 15 pages long, which includes a brief description and analysis of the problem to be assessed, the tasks to be performed, and the associated time and cost estimates, the staff feels that little guidance is given by the agency on the contents and structure of the proposal, the information requirements of the Board and its staff, and the length. This lack of

guidance has posed particular problems to the newer members of the staff who have been frustrated in writing proposals and even more frustrated by the fact that a five-page proposal has an equal chance of being approved as a comprehensive 40-page proposal. Agreement between the agency and the Board on the Board's requirements for a proposal would make preparing and writing a proposal a more straightforward process than it presently is.

Execution

The execution of an assessment has included refining the assessment plan, identifying and convening advisory panels and work groups, identifying contractors and awarding contracts, reviewing draft contract reports, and writing and reviewing the final report. These will be reviewed briefly.

After Board approval, the assessment plan is refined with the assistance of the assessment's advisory panel and/or by internal program review in conjunction with requesting committee staff. The methods employed depend upon the program staff's satisfaction with the initial plan. It has been found that reviewing the plan with the assessment's advisory panel is a sound practice no matter how confident the staff is with the plan. Receiving and incorporating the advisory panel's opinions on the plan at the assessment's beginning reduces any future problems the

panel might have with the plan and its execution. This also provides the staff with the opportunity to inform the advisory panel of its thinking on the assessment.

The advisory panel can require up to two months in developing. Time and much thought is needed in order to ensure that the panel is technically, geographically, and politically well-represented and balanced. Such representation and balance helps ensure that the final report is as objective and balanced as possible. In one assessment, Environmental Contaminants in Food, two advisory panels were formed to advise on two entirely different but important substantive areas making up the assessment. In other assessments, advisory panels were broken up into different groups during a panel meeting. Each group would concentrate on discussing or critiquing a particular paper or area in which the members of the group had expertise. Advisory panels have been used in a variety of ways. How they were used depended on the nature of the assessment and the staff needs of the panel. All panels have been most useful in reviewing draft contractor reports and draft final assessment reports.

Contracting is the most expensive exercise in the execution of the plan, the one with the most risk, and the basis of the final report, and yet it is the most cost-effective way of obtaining the caliber of expertise that is needed. Consequently, considerable time needs to be used in developing the various contracts, identifying the various contractors, awarding the contracts, monitoring the contract work, and reviewing the resulting draft papers. The whole contracting exercise--from developing the contracts to the final contract reports--easily can take six to eight months. This time period includes advisory panel review of draft reports.

Contracts that have been awarded to individuals at universities or who are self-employed have been, on the whole, very successful. Such individuals seem to be more responsive to staff and its needs than the big consulting firms. Going to an individual usually requires writing a contract that is very specific, narrow, and within the individual's area of expertise. This cannot always be accomplished.

Big consulting firms have been necessary when a component of the assessment required a multidisciplinary expertise and when the staff did not have the time to break this component into several smaller components to award

several contracts. These contracts require constant monitoring and are usually in excess of $15,000. Because such contracts take up so much of a project's contract budget and because they usually cover a significant substantive portion of the assessment, an assessment cannot afford to have these contracts produce inadequate products. While such contracts are at times necessary, great care must be placed in awarding and monitoring these contracts.

Work groups of five to ten people have been used as a means to generate information that requires multidisciplines. The Pest Management Strategies in Crop Protection assessment used regional work groups to prepare papers on the capability of pest management practices for crops indigenous to regions in this country. While such an effort required more staff work for the program, risk in obtaining a product that meets the assessment needs is much less than that associated with big consulting firms. Work groups also are more likely to have better qualified individuals associated with them than occurs with big consulting firms.

The importance of the contracting process cannot be underestimated. Its success will determine the project's success.

Writing the final report has shown to take <u>at least</u>

four to six months and several drafts before it is sent to the Board for approval. Writing the final report includes a review of at least one draft by the advisory panel and any other outside reviewers in addition to the reviews of several drafts by OTA program and nonprogram staff. The nature of the assessments are so complex and the review process so time-consuming that it is inconceivable that this time can be reduced.

Writing the final report has proven to be most successful where full-time staff or full-time contractors did the writing. The use of part-time consultants or contractors associated with the assessment has proven to be too time-consuming and produced reports that were usually too technical and not geared towards congressional use. Staff, particularly the project leader, who are knowledgeable of all facets of the assessment and familiar with congressional needs has proven to be the most successful in writing the final report. The review of the draft final report by experts in the assessment area but who have not been involved in the assessment can provide fresh ideas to the study and final report. It can also provide a broader base of support for the final report.

Publication and Distribution

Once the draft final report has been approved for

submission to the Publications Office, at least a month will expire before the report is sent to GPO. Considerable time is spent reviewing the page proofs and galleys of the final report. Failure to review carefully the proofs and galleys could mean that important words, sentences, or even paragraphs will be inadvertently deleted.

While this program has published and released six reports in the last 18 months, each publication of a report was a new experience. The reason is that the procedures for publication and release are communicated by word of mouth instead of on paper. Procedures seemed to have changed from report to report within a span of a few months. Printed guidelines for these publication and release procedures would ensure that the responsibilities of the project director, Publication Office, and Public Affairs Office would be clearly understood and that this activity would be straightforward with a minimum of problems. As it stands, this latter stage can be as painful a process as any in an assessment.

It also is felt that OTA reports could have wider use if different versions were published. For example, while publishing the executive summary of the environmental contaminants report separately is in the right direction, this summary could be rewritten for an even more popular and

lay audience. This would provide further public recognition to the office and useful information to the general public.

Finally, all too often the release of a report has meant the end of the report. Little time or resources are devoted to follow-up unless specifically required by committee staff. The completion of the report should mark the beginning of communicating its findings to both the requesting committee and other committees that might have an interest or jurisdiction in the assessment topic. Articles for scientific and popular journals and magazines should be prepared as well. In addition, staff should be encouraged to attend scientific forums and conferences to present findings. Such follow-up work should be as much a part of the assessment process as writing the project proposal. This will help ensure that the report is not only used by Congress but by scientists, regulators, and citizens as well.

General Issues

Two general managerial issues were raised by the program staff. The first concerns itself with communication among programs on assessments that have substantive overlap. The second is the relationship between the Administration Office and the programs.

While one of the purposes for instituting the three divisions was to stimulate communication among programs on assessments with multiprogram interests, such communication has improved only marginally. The limited size of the agency staff and its expertise demands for better communication among the program staff. More open communication among programs will strengthen the assessment process, foster improved understanding and professional respect for staff among programs, and eliminate present institutional barriers among programs. This communication can occur in various stages of an assessment: planning, developing advisory panels, awarding contracts, and reviewing draft contract reports and the draft final assessment report. Such involvement of other programs in an assessment should be institutionalized, rather than the present haphazard approach. It is unfortunate that OTA staff are better able to communicate with those professionals outside the agency than with those within the agency.

Program staff also feel that the relationship between the Administration Office and the programs is counterproductive. This is because the administrative requirements fostered on the program in conducting an assessment are either not properly communicated to program staff or are developed and finalized without program input.

This makes the daily management of an assessment frustrating and confusing. For example, catagories on the monthly programs report sheets do not include information on the actual progress of the assessment. As a result, the largest category for the most recent highlights was "Miscellaneous." The frustration would be reduced if the changes in administrative requirements were clearly communicated to the programs and if programs had an input in the devlopment of these requirements. The purpose of the Administration Office is to assist programs in the managing of a project, not to provide a hindrance.

Methodology

The methodologies employed in the various assessments were dictated by the nature of the assessment, its information need, and financial and personnel resources. A few of the more successful methodologies will be briefly discussed with both their strengths and weaknesses.

Forecasting

Several assessments have involved predicting future events. Emerging Food Marketing Technologies, a preliminary analysis, was all forecasting. The forecasting methods employed are discussed in detail in the report's appendix. Briefly, this study relied on two sources of information in

its forecasting activity. First, a comprehensive literature review on the future social and economic outlook was conducted. Second, over a hundred people were involved in identifying and evaluating emerging food marketing technologies. A variety of scientists in industry, government, and academia were surveyed for their opinions on these technologies, and a representative panel of technical and societal interests was convened to critique and rank these technologies. The principal cost in conducting this study comes from staff salaries, extensive mailings, and the panel.

The accuracy of this study's forecasts and the forecasting used in other assessments is highly reliant on the available information for the technologies or area one is attempting to predict and the quality of the outside people involved in the forecasting exercise.

Surveys

This program has used widely the survey method to collect information. The survey method was an integral process, as discussed above, in identifying emerging technologies in the emerging food marketing assessment. Surveys have been used to seek information from several Federal agencies and the relevant State agencies in all the States.

Surveying government agencies is necessary when the assessment involves evaluating State and Federal programs. In order to minimize staff time in this exercise, a written questionnaire is mailed to the appropriate Federal and State officials to be answered by them. This process elicits an official written agency response which can be cited in the final report. At times, the responses are not what is wanted and a second questionnaire which is modified from the first has to be sent out. Even this second questionnaire does not guarantee the required detailed and clear information, but it is a method in which a considerable amount of information can be gathered with a minimal amount of staff time and effort. If time and geographical logistics permit, the initial question can be followed up by personal interviews instead of the second questionnaire. With a program average of two full-time professionals to a project, GAO-type audits of goverment programs are definitely out of the question.

This type of survey has been successfully used in assessments on nutrition research and environmental contaminants. This survey method requires a four-to-six-month time period to conduct, however. Much of the time occurs in the mailing process and by the surveying agency's preparation of its response, if any. All Federal agencies have been responsive to our questionnaires, and in

the 50-State survey, 32 responded.

This program also has contracted for a statistically designed national survey for its assessment on open shelf-life dating of food. In this survey, consumers were asked their opinions and knowledge on the various open dates for food products. The cost of this survey was in the $10,000 to $15,000 range and provided useful information on the consumer opinion and understanding of this subject. Interestingly enough, the opinions of the consumers surveyed on open dating conflicted with the opinions of the consumer advocates on the advisory panel. In fact, these advocates dismissed the survey's findings as not truly representing consumer wants and needs. Such a survey is useful and appropriate for an assessment topic with which consumers are familiar. In addition, going to a professional organization in polling ensures that your survey findings are statistically significant and also minimizes staff time and effort in this exercise.

Legislative analysis

Since many of the assessments in this program have been problem-oriented and concerned with ongoing Federal programs and laws or proposed legislation, legislative analysis of the assessment topic has often been performed at the beginning and in the middle of an assessment. This

analysis provides two types of useful information. First, it lists all congressional hearings that have been conducted on the assessment topic during the last several Congresses. Second, it lists all bills that have been introduced on the assessment topic for present Congress.

The hearing information is useful for identifying the scientific and political actors in the assessment area and those committees that have or have had an interest in the assessment topic. The hearing documents also are useful in identifying the key issues and concerns for the assessment. The bills analysis identifies the Members of Congress interested in the assessment topic and reveals present congressional thinking on the topic. The legislative analysis is helpful in designing the assessment and identifying the interested congressional clients and should be performed for all assessments. It requires nominal staff time and costs and reaps huge benefits to the success of an assessment.

Conclusion

Most of the program staff responses concentrated on the management side of the assessment process. Part of this is reflected by the staff's major concern with management being the critical problem in successfully conducting an assessment. Another reason is that half the program staff

has not conducted an entire assessment as of yet and thus had nothing to say on methodologies. It is interesting to note, however, that this half had expressed several management deficiencies in the planning stage with which they were familiar.

OTA **STAFF MEMO**

TO: Fred Wood

FROM: Gretchen Kolsrud

DATE: 4 April 1980

RE: OTA Task Force on TA Methodology and Management - Report on Phase I Survey from Genetics and Population Program

This summary of past experience in TA management and methodology was developed from my own experience and from written and verbal inputs from my staff. My own experience includes management of eight assessments in transportation, one in rural telecommunication and two assessments in genetics and population which are currently underway. My staff's experience comes from these last two assessments. Because none of my staff has been through a complete assessment with OTA, material in this memo dealing with later phases of the assessment process is based solely on one person's perception.

Kind of Projects

The earlier assessments in transportation and communications with which I was concerned will be only briefly described. These varied widely in characteristics. They ranged in cost from less than $50,000 to more than $500,000 (including staff costs) and required from about three months to more than two years to complete. Some depended heavily on inputs from outside contractors, others were done almost entirely by in-house staff while another was done by in-house contractors combined with working panels. Subjects ranged from hard technology (e.g., automobile crash recorders) to soft (e.g., community planning for urban mass transit). Most addressed quite specific topics (e.g., the feasibility and value of automatic train control for rail rapid transit). All were in direct response to Committee requests. They were used in a variety of ways. Congressional staffers used reports and OTA staff knowledge to plan and prepare for hearings. OTA staff and consultants testified before Committees. Testimony and the reports were used as bases for modifying and adding programs and/or budgetary line items to executive agencies.

The Genetics and Population Program is one of OTA's newer program areas, having been established in the fall of 1978. Two assessments are underway. One of these is the Impacts of Applied Genetics in Nonhuman Applications (hereafter referred to as the "Genetics Assessment") which was approved by the Board in October 1978 with a budget of $585,600. The final report of the Genetics Assessment is scheduled for the end of August 1980. The project covers present and emerging genetic technologies applied to plants, animals and microorganisms. For microorganisms, interest is in the potential use of these life forms to produce chemicals, pharmaceuticals and food products. The project is staffed with two OTA employees (the Project Director and a Research Analyst) who work on it full time and one Senior Analyst employee who works on it about 5% of his time. There are also two contractor staff serving at the Research Analyst and Research Assistant levels. A senior level nonreimbursable detailee from NIH also worked on

the assessment for 6 months.

The second assessment is Technology and World Population (hereafter referred to as the "Population Assessment"), and it was approved by the Board in June 1979 with a budget of $498,000. The final report is scheduled for December 1980. The Population Assessment is concerned with present and anticipated planned birth technologies and their potential effects on population growth, especially in the developing countries, in the next twenty years. Besides planned birth technology per se, the assessment will examine social, psychological and cultural factors likely to affect availability, distribution, use, safety and effectiveness of these technologies in other nations. The project is staffed with two OTA employees who work on it full time (the Project Director and a Senior Analyst) and one who works on it about 5% of his time, and one in-house consultant who works on it full time (at the Research Assistant level) and one Senior Analyst on reimbursable detail from AID who works on it full time.

The two projects share the program's Administrative Assistant and a secretary. Both projects are expected to add a full-time contractor to the staff for several months to provide editorial assistance on the final report.

The program has no overall advisory panel. Each assessment has its own panel. The Genetics Assessment has a fourteen member Advisory Panel which meets to review and critique project plans and staff and contractor materials in accord with the project schedule. This works out to roughly four meetings per year. The panel is not being used to prepare any part of the report per se.

The Population Assessment has a sixteen member Advisory Panel, unique in OTA for its high representation of women (seven members). As in the Genetics Assessment, the advisory panelists were chosen for their expertise in a variety of relevant areas and represent themselves, not the organizations with which they are affiliated. A second group of about 25 persons has been established to provide liaison and tap the resources of the large number of other governmental, private and public insitutions also doing work in population. Persons in this group do represent their organizations. Interaction with this group is by phone, mail and meetings with individuals. A third group called the World Roster has also been established for the Population Assessment. This group of about 100 persons was established because the assessment deals with the less developed countries (LDCs), and it is of vital importance to ensure that the needs and concerns of these countries are understood. About half the Roster members are citizens of LDCs, while the other half are not citizens of LDCs but have detailed knowledge of one or more of those countries. The World Roster members comment on material which goes to the Advisory Panel and serve other purposes as well, such as responding to a survey on research needs. Interaction with Roster members is by mail.

Both the Genetics and Population Assessments originated in the priorities project conducted under the auspices of OTA's second director, Russell Peterson. However, mindful that assessments which are not oriented to the needs of our client will not be used, inputs from Congressional

staffers were sought during planning for these assessments and we continue to apprise them of our progress. No committees are concerned with these subjects per se but many have some interest in one or both topics. The Genetics Assessment is of particular interest to the following Committees:

Senate

Commerce Science and Transportation: Subcommitte on Science, Technology and Space
Agriculture and Forestry
Labor and Human Resources
Judiciary

House

Science and Technology: Subcommittee on Science, Research and Technology
Interstate and Foreign Commerce: Subcommittee on Health and the Environment

The Population Assessment is of particular interest to the following Congressional Committees:

Senate

Foreign Relations
Labor and Human Resources: Subcommittee on Child and Human Development: Subcommittee on Health and Scientific Research
Appropriations; Subcommittee on Foreign Operations; Subcommittee on Labor, Health, Education, and Welfare

Commerce, Science and Transportation

House

Foreign Affairs
Interstate and Foreign Commerce: Subcommittee on Health and the Environment
Science and Technology: Subcommittee on Science Research and Technology
Appropriations: Subcommittee on Foreign Operations; Subcommittee on Labor, Health, Education, and Welfare

Budget

Comments on the Assessment Process

I do not find the eight-step assessment process headings congruent with the comments I and my staff would like to make with regard to conducting an assessment at OTA. Hence, the following deviates from those headings. I have tried, however, to address most of the questions on page 2 of your "General Framework for the Phase I Survey".

Preproposal and Planning Workshops and Panels These are useful to: 1/ critique an assessment plan; 2/ identify panelists for the assessment per se; 3/ identify key literature items and major work in progress in other organizations; and 4/ identify potential contractors and consultants for the assessment. Of particular importance in these days of no redundancy or (occasionally) planned redundancy, preproposal workshops legitimize the assessment as a study which is needed and its plan as feasible. Such legitimization can be valuable when the project is presented to the Board. As with all panels, these work best when participants are asked to respond to specific questions, statements or materials. It is difficult to use them effectively to develop an analytical framework from scratch, conduct a useful general discussion or synthesize material.

Proposal Preparation Proposals must be done in detail if schedule, budget and staffing needs are to be realistic. The assessment should be carefully scoped as to what it does and does not include, major issues to be addressed and impact areas to be included. The issues should be those of interest to Congressional Committees.

Scope Assessments should focus on one or, if more than one, a limited number of related major issues which in turn is (are) of interest to a Committees(s). The major problem in conducting both the Genetics and Population Assessments has been to identify a limited number of key issues around which to build the rest of the assessment. This problem originated in the way these assessments were generated (the priorities process) and was not adequately remedied through interactions with Congressional staff and planning workshops during the proposal preparation stage. The breadth of these studies contrasts sharply with such efforts as the saccharin study, the automobile crash recorder study and the coal slurry pipeline study to name just a few.

Iteration and Flexibility It is best if an assessment is done by constantly doing it over in increasingly greater detail. This can begin in the broadest possible way during proposal preparation--which means, for example, that the proposal can usefully contain a first cut at the outline of the final report. At the same time it is necessary to remain flexible, broadening and narrowing parts of the study as more familiarity with the topic is obtained. This means that the project budget must have some flexibility.

Advisory Panels Some programs (e.g., Health and Materials) have program advisory panels as well as panels established for particular assessments. My experience is limited to the last so I can make no comments on the value of a program panel.

With regard to assessment panels, panelists must be clearly instructed that they are advisory and that their role is to ensure that all views are represented and that the report is well balanced and without major gaps and deficiencies. Responsibility for the study rests with the staff. Failure to make clear the panel's advisory status may result in a panel which tries to run or do the assessment, and, if staff and panel disagree on scope or other characteristics of the study, an antagonistic rather than cooperative relationship between panel and staff results.

Panels should also be instructed in the mandate of OTA - what it can and cannot do, the purpose of an Assessment, etc. Confusion over OTA's mandate has created problems for some members of the Population Advisory Panel - particularly with regard to assisting in scoping the Assessment.

Another problem can arise if an assessment is very broad as in the Genetics Assessment. Many of the panelists for that study are either plant or animal or microbial geneticists. It is sometimes difficult to arrange meetings where each of these areas of genetics is of equal concern. When meetings are almost entirely concerned with plant genetics for example, the animal and microbial geneticists may lose interest after a few hours. Where a very diverse panel is necessary because of study breadth, it seems best to have fewer meetings of the overall panel and more meetings (or phone conversations) of subgroups of panelists on those aspects of the assessment which fits their expertise.

Interaction with Users This should be continuous--starting with proposal preparation, continuing during the study and finally, assisting in its use. With a broad study, such as the Genetics Assessment, such interaction helps to shape the study while continuing to ensure that it will be useful.

A close relationship with the user interacts with the need for Iteration and Flexibility discussed above. Unanticipated Committee interests or changes in emphasis should be accommodated if possible.

Contractors Contractors must be fully aware that the study is to assist the Congress in policy decisions and that policy options and the pros, cons and consequences of such options are of interest rather than a recommended course of action. Most contractors are used to doing work for the Executive Branch where a recommended course of action rather than policy options is more likely to be desired.

Where there are subcontractors, one cannot assume that the contractor will make clear the special needs of studies for the Congress. The Project Director should interact with all subcontractors as well as contractors to ensure that such points are covered.

It is often difficult to communicate to contractors not only the special needs of the Congress with regard to policy options, but also the special mission of OTA, the special and sometimes odd requirements of TA methodology, and the resulting need for frequent interaction with contractors. That OTA's work involves both analysis and synthesis is sometimes difficult to understand for persons used to working exclusively in an analytical mode; that technology assessment is only partly a rational, orderly process, and also includes impressionistic, intuitive thinking may also bother some contractors.

All the above interaction with contractors and subcontractors cannot be too frequent. Insofar as possible, contractor and subs should be viewed as extensions of the staff.

State-of-the-Art of the Technology Most TAs include an assessment of the state-of-the-art and projected future state-of-the-art of the technology. Where the technology is really new, as in genetics, this part of the

assessment must be done as early and quickly as possible because many of the impact areas will be shaped by better understanding of the technology. A consequence of this is that follow-on contracts in impact areas may not be clearly defined or finally scheduled and budgetted until part of the study has been underway for a significant time--once again pointing up the importance of Iteration and Flexibility discussed above.

Methodolgy Just as there is no single way to do an assessment, there is no single methodology that should be used for all assessments. The eight methodologies listed in the Phase I General Survey Framework have all been used at OTA at one time or another. In my experience, the most frequently used are scenario building, forecasting, social impacts analysis (broadly defined), and general systems analysis.

With regard to forecasting and scenario building, I have been, and continue to be, concerned that OTA does not have a set of scenarios that could be used as a point of departure by all programs. Such scenarios should be continually updated, perhaps by an inter-program committee, to reflect current thinking and should not be in any way binding on the programs. Rather, they would permit us to start with some common assumptions regarding the future for each assessment and then choose our reasons for deviating from them. As it is now, I fear that we sometimes start out with different assumptions and would be hard put to respond to a query from a committee as to why assumptions made in an energy assessment differed from those made in a population assessment or even to respond in any detailed fashion on the assumptions we have used compared to those used in another OTA project.

Modeling is another area which I think the Office could fruitfully develop as a whole. An in-house person (or accessible contractor) whose primary function would be to be very familiar with the characteristics, limitations and advantages of various computer models and their previous use at OTA and could provide assistance in application for the various programs should be considered. This might be done on a three-month trial basis. The resource person could give several seminars to introduce the staff to the various models and assist some of the staff in their use. The utility and value of continuing such a resource could then be evaluated.

Modeling, scenario building, and forecasting are all tools. There is another aspect of methodology which is extremely important and for which there is no formal tool. That is establishing the issues to be addressed in the assessment and the analytical framework within which they will be addressed. Various formal tools can be helpful here but the primary emphasis must be on clear and careful thought which continues throughout the assessment and is flexible enough to accommodate new information by adopting midcourse corrections as required. Early in the assessment it must be recognized that there will be a certain amount of time spent "muddling" the problem. This expectancy helps to counter the tendency to frustration which accompanies the muddling period and the concern that one

is "going around in circles, not getting anywhere" etc. The "muddling period" is important and should not be short-circuited.

Phases of an Assessment The minimal number of phases into which an assessment can be divided are probably five: proposal planning and development, post-approval planning, conduct of the assessment, preparation of products and use. The costs, staff requirements, and time spent on each of these phases vary widely with the scope of the topic being assessed, the resources available, and Office philosophy, so these aspects will not be dealt with further here and comments are restricted to other aspects.

Proposal Planning and Development The importance of this phase cannot be overstressed. As mentioned earlier, this phase should include a first very preliminary run through the entire assessment with identification of major issues, impact areas and development of the basic approach and analytical framework for the study. Planning panels and workshops can be very helpful (see that topic discussed above). A tentative final report outline should be prepared. A detailed project schedule and budget should be prepared, including a first cut at which pieces of the assessment will probably be conducted by contractors and which by staff. Considerable interaction with the Congresional committee staffs should occur during this phase to be sure that the evolving assessment will be useful to them. It is important to realize that everything developed in this phase is preliminary and subject to change. Otherwise, people will argue against such detail (they may anyway!) on the basis of concern that they will be locked into a particular approach too early in the study. However, it is best to assuage such fears since the value of having something firm to start with which can be refined later is very great.

If additional staff and contractors will be needed, potential candidates must be identified during planning so that new hires can be on board as soon after project approval as possible. If the Project Director cannot be hired until after approval of the study, funds are well spent to involve her/him as much as possible as a consultant during the planning phase.

Acknowledgment of the importance of this phase has increased during the years I have been at OTA. Increased time and money are being spent on proposal planning, a very salutary development in my opinion.

Post Approval Planning During this phase the advisory panel will be formed and used to review and refine the project plan. Changes can be expected as fresh ideas are brought to the study by a new group.

Conduct of the Assessment If the topic is a new one for the staff, immediately after approval a notice of R&D Sources Sought should be placed in the CBD which will yield a list of potential contractors. Recommendations of the panel will probably be more useful here, however.

Literature collection and review begun in the proposal planning and development phase will be stepped up in this phase.

Of importance is establishment of means for ensuring that the staff is well-informed on each other's activities. Regularly scheduled project

meetings can be used. Contacts with people in other organizations and with committees can be summarized using an agreed upon form which is filed in a notebook and stored in an easily accessible place. Tasks which need to be done should be specifically assigned to individuals with dates for their completion. This, of course, is best done, not autocratically by the Project Director, but in a collegial, give-and-take between all staff. However there must also be clearly defined lines of decision-making authority in order to keep the project moving forward. Since things "dropping through the cracks" is a curse of all assessments, the importance of specific assignment of responsibilities cannot be overstressed.

Interaction with contractors cannot be too frequent. A key staff member should be assigned the lead role for interaction with each contractor. (See Contractors above for more on this topic.)

Preparation Of Products Using the report outline, lead responsibility for specific parts of the report should be assigned to each staff member. That person will be responsible for ensuring that any inputs of contractors to that section are of high quality and for integrating contractor and staff inputs during preparation of the first draft.

Gaps will undoubtedly be found as the first draft takes shape so provision for small fill-in contracts near the end of the study should be budgetted from the beginning.

Contractor assistance in integration and editing may be necessary. Such persons should be brought on board at least part-time as early as possible so that they are very familiar with the study. A recurring problem is the tendency of material to change when it goes through editing. Project staff must be on their toes to prevent this from happening.

There is a need to explore other ways than the written word and oral briefings and testimony for disseminating the findings of our assessments. On and off over the years we have had presentations on various alternatives such as slide-tape presentations, videocassettes, and computer graphic displays. So far, none of these has come to fruition. We need to explore these alternatives in a more systematic way, beginning with identifying actual users of such alternatives and querying them with regard to the value of the alternatives. So far, our approach has been the other way around--i.e., get someone in to talk about or demonstrate an alternative and thereafter think about whether we might want to try it. Identifying and discussing actual alternatives with actual users should be much more fruitful.

Use Besides the usual testimony, briefings, provision of one-pagers and reports, we can give speeches, write articles, etc. We can also build up interest by being on good terms with the press. User anticipation of the report should be high. However, the increasing tendency to bring our material to the attention of a wider audience is very desireable.

March 21, 1980

To: Fred Wood

From: David Banta

I am attaching the draft of our paper for the OTA Task Force.

I say "our" because I think that it is a consensus document. I sending it to the Health Program staff again to make sure, but I have tried to reflect very adequately the results of more than 5 hours of staff meetings, plus a number of private conversations.

I would like to have your reaction at this stage. I will be going out of town for two weeks on March 28, so there is no great pressure.

I should mention that one of the two former project directors in the Health Program has had input. Another (Polly Ehrenhaft) has not yet.

I should also tell you that I have a difficulty in writing this because the program has changed so much, and no report has yet been published that I initiated as Program Manager. So I have not seen any project through the entire process since I returned to OTA.

Nonetheless, I am curious to know how well I have met your expectations. And just as I ask Health Program staff to be critical and open, I hope that you will give me your honest reactions.

Phase I Survey - Health

OTA Task Force
on TA Methodology and Management

Health program reports have dealt primarily with three generic issues: evaluation of clinical medical technology, data systems and computers in the health care system, and the physical environment and health. The nine published reports and the three projects underway are difficult to characterize otherwise. They range widely in time, money, and methods involved to carry out the project.

Reports have not merely evaluated technology, but have examined impacts of technology and policy options for dealing with those impacts. However, the analysis done is generally not a comprehensive analysis. Health seems somewhat different from some other areas covered by OTA in that every member of the public is concerned with it and has some involvement with its technology, often including direct physical contact. At the same time, health care technologies are relatively small and inexpensive in general, and are rarely subject to a Congressional decision for an individual technology. Thus, the attempt has been to deal with problems and prospects generically. The focus has been on the value of medical technology in general terms, the methods used for assessing technologies, and the implications of such assessment. Detailed information is usually presented, and the policy options are rather obvious. Consequences of the policy options often merit detailed examination. Such detailed examination has often not been seen as in our mandate, since it moves us away

from "technology" and twoard policy. We feel that the Board's perspective on this point limits our work and its utility.

Health program projects have generally been done largely by OTA staff. The use of outside contractors has been limited. When such contractors have been used, they have done rather limited pieces that are then used in writing a report. A contractor is rarely if ever asked to do a piece that is absolutely essential for the success of an assessment. This again is probably related to the nature of health technology. Once one has developed the skill to analyze the medical literature dealing with the benefits and risks associated with one technology, that skill can readily be applied to other technologies. Health program staff is largely made up of generalists, who are capable of dealing with most areas within medicine and health. In-house contractors also function as generalists, although they are usually brought in because of a specific skill.

The health program relies very much on outside reviews. We use advisory panels and consultants extensively, and also gain many unpaid reviews of drafts and position papers. We have the impression that we use the mechanism of outside reviewers much more extensively than other programs, but we find that this is of great value.

Finally, there is rarely urgent Congressional need for our reports. Congress almost never makes decisions on individual technologies, and seems to have little inclination to anticipate problems or to deal with potential social impacts. Health program reports <u>have</u> had legislative impact. However, they are not often related to immediate legislative decisions on specific technologies as is the

case in other programs.

Project Management

Selection. Project selection is a continual process that involves all staff. It is an informal process that includes reading professional literature, meeting with Congressional staff, attending professional meetings, talking on the telephone, interacting with advisory panels, and using any other input that can be devised. It is hard to do selection adequately in the face of project pressures and Board ideas concerning appropriate projects.

The process of selection has varied a great deal depending on the philosophy of the Director of OTA, and that makes generalization difficult. A key question is the extent to which OTA should determine its own research agenda. In health program experience, our own knowledge and interests have been more important than Congressional preferences. The biggest problem in being legislatively relevant is finding Congressional staff willing to talk about next year's problems. This is related to the relative lack of interest in individual health technologies.

One problem with selection is the narrow formulation of technology sometimes used. Problems do not lend themselves to neat boxes. But we often find ourselves looking for the technology to hang a project on.

The most critical question, it seems to us, concerns the role of OTA. If OTA is to be important, it must work on longer term projects with a broader scope. However, Congressional staff

has little interest in such projects. To be useful, we end up meeting immediate needs of Committee staff. These narrow questions are generally of much less importance. To survive, it seems to be necessary to be relevant to legislative concerns. So the critical question is what people look to OTA to do.

Health program staff were deeply involved in the selection of all projects undertaken except those on saccharin and bioequivalence of drugs.

Planning. We find that we do not generally recognize a formal period of planning that is separated from actually doing the project. Planning begins when the project begins and continues until the project is over.

There seem to be two important phases in planning a project. The first is scanning the field and the problems related to the assessment. Ideally, the proposal is written and approved during this phase. After this overview period is completed, the first panel meeting is fruitful. The scanning period is obviously longer in an unfamiliar area. In the cost-effectiveness project, for example, little formal planning was done because we were quite familiar with the problem. The second phase of planning is deciding what to do, and as stated above, continues until the project is over. Inevitably, there are last minute scrambles because earlier planning wasn't as effective as it might have been. However, having the flexibility to allow such last minute changes is essential for quality products.

Planning is also more important where the project is larger,

primarily because outside contractors are then more involved, and their tasks must be carefully outlined in advance.

Planning also involves setting a budget level. We have the general feeling that we can tailor a project to the budget more easily than rationally developing a budget for a specific project. However, the budget must be large enough to provide flexibility. Setting the scope is perhaps the most critical phases, because that also determines the size of the project and its budget to a large extent. For example, in the report on efficacy and safety, the focus of the report was on the lack of information and how it could be developed. Little attention could be paid to potential uses for the information. The project had a budget of about $150,000. The cost-effectiveness project, on the other hand, is devoting a great deal of attention to the potential uses of the information, as well as covering the lack of information. The budget for the cost-effectiveness project is about $600,000.

We are experimenting with planning the structure of a report early in a project. Even though the outlines developed will have to be changed, our impression is that this is a useful exercise.

The worst failure in planning was the report on computed tomography (CT) scanners. The initial draft was a technical report, with little attention to policy. The report was then transformed into a policy analysis in a process that took more than a year. The most successful efforts were in the reports on efficacy and safety and cost-effectiveness, where we knew basically what the report would deal with before the project was started, and a formal planning process wasn't as critical. The most successful formal

planning was probably done in the project on cancer risk and the environment. This was accomplished because the project director was knowledgable about the area, because extensive consultations with Congressional and other government staff were carried out, and because the advisory panel is an excellent one. The final project will look very much like the proposal.

Overall, the health program is characterized by preferring an informal planning process that includes much interaction with staff of the project and outsiders, including advisory panels.

Resource Allocation. As noted above, we feel that we can tailor a project to fit a budget. A study can have almost any scope -- we are confident of administering it. Developing the technical information is a relatively easy part of the assessment. Analyzing the policy options and implications is the part that can be small or very large.

A problem that has not yet been adequately faced is how staff work across programs. We are contributing more and more time to other program's projects without compensation. This means that staff work full-time on health program projects and then add on time to help others. Given the small staff that we have, this may be inevitable. However, it would be helpful to have clear mechanisms for reimbursement of staff time.

Another problem is that of support services. We have limited secretarial services, and only survive by having very competent and hard-working people who work many extra hours without compensation. Temporary help is not satisfactory. The philosophy

of doing the work internally carries with it a heavier typing load. Many health program analysts do a great deal of their own typing, and appreicate the OTA willingness to provide good typewriters to most staff.

All materials produced are re-written and edited. With only one editor, this sometimes leads to rather severe back-ups. Again, a problem of limited resources.

Execution. Since projects are largely done with in-house staff, both the rewards and the problems are largely focused in that area. The most difficult area is perhaps meeting deadlines. It is hard for staff to learn to tailor a product to the time allotted. In addition, the scope of a study has a tendency to expand because of interesting areas turned up in the course of the study, and this also produces problems in meeting deadlines.

The use of in-house staff has several significant advantages, and no one in the health program has much faith in contracting firms to do a decent job. If contractors are used, we have had much better experience with academic contractors. In general, contractors don't appreciate the audience-tailoring style of writing and the analytic approach that we feel is necessary. This reduces the effectiveness of even the best contractors. Obviously, in-house staff is easier to control and channel. It is very difficult to hold contracting firms to deadlines, for example. Quality control is much easier with internal work. Revision is much easier. And contractors carry with them a great deal of inertia -- setting a scope of work and detailing it, locating the contractors, signing contracts, and so forth.

We have found that when we do use contractors it is best to make the contracts small and multiple and to do them sole source. If we can find the best person on a particular subject, that person is usually willing to write something for us. We have not had good experience with consulting firms, but have generally done well with academics. We make contracts for background material that will be used in writing the report or for case studies. (We rely on case studies to illustrate problems or as a communication device in complex situations.) When contracting, it is obviously necessary to allow plenty of time for revision. One of our persistent mistakes is underestimating the time it takes to obtain the contract, review it ourselves, revise it, obtain outside reviews, require further work of the contractor, and finally arrive at a product that is acceptable. If we had a choice, we would do very little contracting, but would hire staff to do the job.

Panels are an important part of an assessment, but panels do not seem to initiate. They are used best as reactors. Specific agendas get the best results. We use panels only as advisors, and make it clear to them that we have the option to reject their advice. It is hard to make panels understand this, since most panelists are accustomed to other circumstances where they have more control over the report. We do not necessarily seek consensus in a panel. We do, however, try to convince them that we really want tough, critical reviews. We find that it is difficult, in general, to get work out of panel members outside of formal meetings.

It seems to be a good idea to start writing early. Not only does this give staff a better sense of the project, but it involves

advisory panels in the project more successfully. It allows better adjustment during the course of an assessment.

Finally, we have had little experience with workshops, but have had several productive meetings of contractors who had done parellel products. For example, authors of case studies in the cost-effectiveness study were invited to a workshop that helped staff develop and refine generalizations from the case studies. It also involved them in the overall project and enhanced their ability and desire to review products for us.

Review. We emphasize review very heavily. This emphasis and our dependence on in-house staff are probably our most characteristic modes of operation.

It is frustrating to seek good, tough reviews. Few experts will spend the time ro energy to do a thorough review. Those who will are very valuable.

We seek reviews from the assessment's advisory panel, the Health Program Advisory Panel, government programs affected or involved, professional associations, vested interest groups, and any other individual or group that we can identify that may have a different, useful perspective. We have also had some good experience with hiring particular experts just to review on contract. We have a particular problem obtaining good reviews from government experts, perhaps because we cannot pay them. Political problems in supporting policy options not in accord with Executive Branch policies may also be a problem here.

Publication. We find little to say on this step. It is

obviously a crucial step that requires thought and planning. The OTA publications office is generally competent, helpful, and unflappable. Guidelines that indicate needed steps in this part of the process will be helpful.

Distribution. We have paid little attention to the distribution of our reports outside of Congress, and we should do more in this area. However, OTA has not had a clear and consistent policy. Should we send the report to interested groups who will use it and make reference to it? Or should we concentrate on our immediate clients? In the health program, we have tended to send reports out rather freely to those who may cite or visibly use our reports. We feel that this is the right philosophy, but we have been under intermittent pressure to limit our own distribution.

We do not feel that GPO by itself is an adequate distributor for OTA products.

The policy of OTA toward outside publication in books and journals has never been clear, although it seems desirable. But those who publish in non-government sources must largely use their own time in preparing such publications.

Use. We have not learned how to stimulate use of our products. Some factors are clearly important. One is individual and group briefings for Congressional staff. We made ourselves more available than usual with the vaccine report, and it has paid off in legislative action. But we do not know how to do this as effectively as we should.

In the health area, the Department of HEW usually already has the authority to implement the policies that we suggest. Impact in the Department is then very important. Our impression is that we have been rather successful in this area.

Press coverage is key. But we have not managed to get good coverage in the most important organ, The Washington Post.

Reports are more likely used if OTA staff is able to spend individual time with Congressional staff. This goes beyond briefing and may involve such tasks as reviewing proposed legislation. How far to go with such activity is the question.

Project Methodology

The health program has limited experience with formal analytical techniques. The method of doing a project could be simply outlined as consisting of the following steps: determining the goal for the project; breaking the goal into specific pieces, including information needed to carry out the assessment; collecting the information; analyzing the information; and writing the report. In any project we have one goal that is paramount: to express the material clearly and simply and to make it interesting even to lay people.

The only method common to all projects might be summarized as follows: literature review (including government reports on the subject); description of the area and problem; synthesis; and analysis. Such simple and obvious techniques as counting, comparing lists or authoritative statements, seeking outside reviews of draft documents, are integral to most assessments.

In addition, we feel that intuition and brain-storming are important parts of our assessments. This makes it difficult to describe our methods within a rationalistic framework.

We put a great deal of emphasis on writing as a method. All health program staff have been chosen in part because of their writing ability. But we also critique each other's writing. And we have a full-time editor and writer.

It is possible to do a project on almost any subject using published literature and government sources. Such a project will be inexpensive. More formal techniques and original data collection add to the cost of a project. We have had some experience with original data collection as follows:

Saccharin report - Some short-term tests for mutagenicity of saccharin were funded. Detailed evaluation of existing research design and result was carried out. Technological forecasting in the area of alternative sweeteners was done.

CT scanner report - Original data was collected on the number and distribution of installed and planned scanners.

Cost-effectiveness report - An extensive interview survey was done of Federal agency officials concerning use of cost-effectiveness in their agency. A formal survey of investigators was carried out to determine cost, number of people, and so forth required to do a cost-effectiveness study. Several workshops were held, including one involving lay people on the social implications of cost-effectiveness analysis.

Vaccine report - A computer-based model for cost-effectiveness was developed. Some health forecasting was done. A computer

analysis of data concerning vaccine production and number of companies in the market was carried out.

Cancer risk - Original data on cancer incidence is being analyzed. An open-ended survey concerning the meaning of the term "reasonable risk" is being done. The New York Academy of Sciences was given support to put on a meeting on the same topic as a way of stimulating thinking.

Manpower models report - An evaluation of forecasting models was done.

One report -- Development of Medical Technology -- Opportunities for Assessment -- did some methodology development. A list of question was developed that could be applied to the assessment of social impacts of medical technologies. Those questions were applied in the OTA study of CT scanners.

As mentioned above, contractors have generaaly been used for two main purposes: to develop case materials and to collect information that we lack the capability to collect ourselves. For example, a moderately sized contract was given to a firm to develop information on the use of cost-effectiveness analysis by such organizations as health planning agencies.

The use of existing information seems to fit well with our charge and our resources. It is seldom necessary to collect original data for the purposes of answering the question put by a Congressional staff member. In collecting additional information, we are attempting to contribute to the field more broadly.

We feel that our use of these methods has been successful. Our

reports are well-written and give sound overviews of certain areas of medical technology. They contain reasonable numbers and estimates. Many specific examples are given. Reports have been very well-accepted by Congressional staff, press, and the public. We have an uneasy feeling that we should be looking at problems more broadly, as mentioned previously. Any failure probably lies in this area.

Overall Assessment Process

We feel that we have learned that these steps are essential or at least very important in doing any assessment:

1) Remember to try to answer the question that was asked;

2) Talk to a lot of people early in the project;

3) Try to anticipate Congressional agendas (because staff will rarely be of much help);

4) Generalists are more useful than specialists on the staff;

5) Do as much of the project in-house as possible;

6) Devote a great deal of effort to the selection of the panel chairman, looking particularly at any candidate's attributes that would suggest effective chairmanship -- finding someone who can describe the individual's previous functioning is probably most useful;

7) Separate research and bureaucratic functions as much as possible; research staff must have budget flexibility throughout the project;

8) Remember that the success of the project depends on the staff doing it -- the personal interactions are critical;

9) Try to provide private space for those who must think and

write;

10) OTA staff should write the report;

11) Review should be both extensive and focused;

12) An in-house editor and writer is useful, and perhaps essential;

13) The report should usually contain options, because they force the report to have a focus.

A study should not be done using a lot of contracted work, especially using the contractors for analysis, development of options, or for writing the report. A study should not be done without an advisory panel. A study should not be done on such a tight time-frame that outside review is impossible.

Original data collection, although usually not essential for the success of a project, is a valuable activity. It gives the staff a chance to use imagination and to gain job satisfaction. It prevents OTA from having the image of an organization that just re-hashes old information. And it is surprising how much data is available that is unutilized, and that really contributes to the state of knowledge without a large expenditure. It is also amazing how much work some academics will do for little money. It is worth it to invest some money in good ideas, even if it is not certain that the results will contribute directly to the success of the study.

Our program has succeeded in producing well-written, well-timed reports that have addressed issues that people (including staff and even members of Congress) are worried about. Our reports have helped to raise the policy consciousness on medical technology

evaluation, and have even contributed to a broader public debate. We have also done a good job of developing basic definitions that others have picked up and used. Our descriptions of particular situations, especially government programs, have been well-received and used by others.

We are not satisfied with our ability to maintain an on-going dialogue with Congressional staffers. This is related to a relative small effect on legislation. As described in the opening section, health technologies are not usually subject to specific Congressional action. The key factor with medical technologies is their benefits and risks. We have sought such generic issues, including evaluation and evaluation methods. These are not as interesting and dramatic as the technologies that are the responsibility of other programs. We have also tried hard to be responsible, and not rhetorical or overly-dramatic.

In addition to the nature of the health field itself, we feel that OTA has a dilemma to face. If we deal with the important issues, in many cases Congress will not be interested because they do not relate to this year's legislative agenda. On the other hand, if our studies relate to legislation, we will ignore significant social issues. While this is an issue for all of OTA, it is particularly acute in the health area. We do not feel that we know how to deal with the issue, nor that it has been adequately discussed as a policy issue for OTA.

OTA **STAFF MEMO**

April 10, 1980

TO: Fred Wood
OTA Methodology Task Force

FROM: Stephen E. Doyle
Telecommunication, Information and Space Studies Program

SUBJECT: General Comment for Task Force Consideration

As requested, this Program has conducted a review of its work and experience to date and has developed the attached comments, grouped by subject area, to be submitted as a contribution to Phase I of the Task Force effort.

Attachments:
On Scoping a Study
On Manpower
On Advisory Panels
On Contracting
On the EFT Study Methodology
On the NIS Study Experience
Flow Chart

On Scoping a Study

Scoping an OTA study is an important and dynamic process. Preliminary scoping and issue identification is an essential part of the study proposal submitted to the TAB. It is not always sufficiently recognized that the preliminary scoping and issue definition may be too broad, too narrow or on an inappropriate tangent. It is generally only after a study has been initiated and several months' work has been completed that the study staff will begin to feel confidence in the scope of their work and the issues identified. There is no easy remedy for this problem, other than the tolerant recognition of the fact that study scoping and issue identification must be regarded as dynamic functions.

Requests from committees for assessments usually are couched in the general terms of alternative policies. From these requests it is necessary to derive specific statements of work and issue study areas that can be executed either by contractors or in-house staff. Experience has shown that the job of bridging the gap between a statement of policy options and a viable means of examining the related issues is probably the most difficult part of an assessment. This is invariably a multi-month process. Because there are a number of factors that tend to broaden the scope of a study, it is necessary to take explicit steps to focus on issues with some precision. If this is not done early, the resulting product will either be too broad to be of significant value to the Congress, or it will not be able to be concluded in the time likely to be available.

Focusing the assessment on a specific set of issues requires an iterative process involving participation by OTA staff, congressional staff, the advisory panel and various interest groups that may not be included as

panel members. Underlying the process are the letters of request. Lists of issues are sometimes prepared and circulated for comment, the comments are reviewed, and the list is again circulated until a usable one has been developed. During the process, the staff must keep in mind existing budget constraints that will limit the length of the list of issues that will be the subject of the assessment.

Factors that tend to broaden the scope of an assessment are: (1) the generality and/or multiplicity of the letters from requesting committees usually identifying large numbers of very broad issues; (2) the analysis of impacts of a relatively modest subset of issues requires the expenditure of considerable time and, invariably, study begets issues; (3) each of a number of interest groups will approach an assessment from a different perspective, seeking to emphasize different aspects, and each will therefore add to the list of issues to be included; and (4) the OTA staff and contractors themselves often bring varying perspectives to the problem set and will tend to expand the list of issues.

On Manpower

Management of a significant study effort at the project or program level is a full-time job. It is essential that there be a manager to handle:

- day-to-day management of staff and contractors
- administrative, personnel and budgetary matters
- inquiries from committee staffs, government agencies and the public
- correspondence and exchanges with panelists and contractors
- public presentation of study concepts and progress
- future work planning
- attending meetings -- management and other

It is not possible for a single person to manage a program or a project and to be a substantial contributor of research analysis. Many current OTA Managers do both, but it requires 60 to 80-hour weeks on a regular basis. There must be dedicated research staff, a minimum of one per study, to handle:

- literature review, analysis and synthesis
- material collection
- drafting of correspondence, RFPs, work statements, and report materials
- oversight of and operational interaction with contractors
- external inquiries
- attending meetings

No project of more than a year's duration with two full-time staff plus contractors should be required to work without a dedicated scretarial

support position. Secretaries are an essential part of an assessment group, needed to handle:

- document creation, duplication and processsing
- telephone answering
- filing
- research assistance
- administrative coordination and document preparation
- meeting arrangements
- travel, publication and other arrangements of a non-routine nature
- routine correspondence

Other staff may be required to deal with specialized aspects of a particular study. Staff specialists could include:

- economists
- lawyers
- scientists
- technicians
- administrative support
- technical writing skills

On Advisory Panels

There is no magic number that is right for the size of an advisory panel. It is possible that for some assessment subject areas an advisory panel may be more trouble than help. External evaluation and critique of staff and contractor work can be obtained in a variety of ways other than by use of advisory panels.

In general, advisory panels have proven to be useful, but they also involve problems. In some cases panels have assumed that their role was to manage a study and that may, in fact, have been the case in the past.

In a meeting held at OTA in January 1979, Audrey Buyrn offered several views on panels and panelists which, in some measure, are included in the following useful:

- an outside chairman
- a manageable size
- a clear view of OTA's role and function
- a clear view of the panel's role and function
- a written advance agenda for its meeting
- adequate time to study documents to be discussed
- some specific plans, proposals or products to react to
- no major surprises for the convener

On Contracting

One area of past experience in which many project leaders and program managers should be able to help give sound advice is in the area of contracting. At a January 1979 meeting for project leaders at OTA, one program manager reviewed past experience in this area and rendered the following useful hints on how to deal with contractors.

- Know what you want them to do and write it clearly.
- Use panelists or others to review work statements.
- Consider use of selected panelists as ad hoc review groups.
- Don't every give more than $100K to a contractor!
- Don't contract if you have doubt about a contractor's capability. Invariably your fears will be confirmed.
- Don't ever contract because of promises of speed or economy -- good contract work is not cheap or quick.
- Universities generally add 50-60% for overhead; firms generally add 100% or more for overhead.
- Never opt for time over quality of product.
- Give contractors time to think -- 1-2 months doesn't allow much, if any, thinking time. 3-5 months has been shown to be an adequate time for limited study.
- Allow time and money to revise contractor products.

- Include contractor presentation to panel in contracts.

- Allow for a delivery date slip -- it will!

- Allow time for panel and staff study of a contract. It usually takes about 2 weeks to get several people to read a product.

- Visit the contractor and ask to see:

    - his people working for you
    - his resources (library, files, etc.)
    - his draft materials in process
    - his work outline (if a contractor is close to or on his work outline, be suspicious)
    - his notes on guidance given. You should record conversations too
    - a draft at least 4 weeks before the end of the contract period

- Visit a contractor once a month if possible.

- Allow some funding for rescue missions.

- Communicate your views -- praise or dissatisfaction.

- Have contract explicitly identify key contractor personnel.

* Never contract the design of your study effort.

* Never contract the writing of your report.

* Never sole source unless absolutely necessary.

A final note: Assigning a prime contractor the responsibility for a

number of subcontractors is not likely to be successful. It means that OTA relinquishes much of its control to the prime contractor, making him/her responsible for the supervision of the timeliness and quality of interim work products and, perhaps more importantly, for the appropriate and judicious use of limited funds. Past experience has shown the whole exercise both time-consuming and costly, because OTA must interact with the prime contractor and pay attention to pace and quality of work of all the subcontractors if it wants to avoid unhappy surprises.

On the Electronic Funds Transfer Study Methodology

In the EFT assessment, four analytical techniques are being used: (1) social impacts analysis; (2) scenario building; (3) forecasting; and (4) general systems analysis. A forecast of possible futures for EFT is being prepared. This forecast will identify the EFT services that may be provided in the future and the institutions that may make them available. The objective is to identify all services and providers and, only in a secondary sense, to attempt to specify the likelihood that each service and supplier will actually exist in the market place. Thus, this is a forecast in the sense that it attempts to predict the future; but, in the context of the conventional definition of a forecast, it is not one, because it is not going to produce a specific picture of the future that is most likely to be realized.

Alternative scenarios describing three pictures of future EFT are being developed. One picture is of an environment conducive to the development of EFT; a second is of an environmental neutral to EFT; and, third is a picture of what EFT could look like if a constraining environment were established. These pictures will be generalized and are intended to provide only a preliminary insight into the alternative futures that could confront the Congress. The analysis of potential social impacts will look at each of the services and providers individually rather than looking broadly at the social impacts that could derive under each of the three scenarios being described.

Social impacts will be analyzed in terms of the impacts each of the various services could have on various populations in terms of their privacy, security and equity. It is expected that each of the services that

will have been identified will affect different subsets of the general population to a varying degree. The tasks of the contractors will be to first identify the populations likely to be affected and then to analyze the nature and significance of the effects.

EFT is not a monolith nor can it be viewed out of context of the general business and economic framework. Therefore, it is necessary to take a "systems perspective" in performing the analysis. Among the relationships that have to be considered are those that pertain to the general business of banking and the broad area of general commerce. Payments between individuals and government, between individuals and business, between government and business and between the various agencies in the public sector must be considered.

Since the project is only in the early months of contractor work, there is little that can be said about the techniques that are being used.

On the NIS Study Experience

More than two years of effort have been devoted to the study of National Information Systems under shifting management. These are comments on the National Information System Study overall.

- The original project proposal was not fully thought out.

- The effort to create an umbrella project which would be responsive to many letters of request (spanning a tremendously broad subject matter) has proven to be misguided.

- The original level of funding and time schedule were severely deficient.

- The original project plan did not contain or reflect effective assessment methodology, primarily because, as an institution, OTA did not provide any significant guidance to project staff on TA methodology and management.

- Staffing of the project was conducted in the absence of a good understanding of what was involved in the assessment process and what kinds of skills and personalities might be best suited to the various tasks.

- OTA provided no significant or sustained training or training opportunities for either project management or research staff. As a result, everyone has had to learn on the job from their own mistakes, rather than having an opportunity to learn from past mistakes of others.

- The entire outside contracting process was excessively complex, time-consuming, and counterproductive. Contracting delays of 3 months or more were not unusual, although this has improved in recent months.

- OTA provided minimal guidance to project staff on contracting procedures and no significant training in contract management and monitoring. As a result, contract results frequently fell short of what might have otherwise been possible. This continues to be a problem. (See separate comments on Contracting.)

- Financial accounting over the course of the project improved from poor to fair. Much time and energy were wasted on repeated budget exercises attempting to reconstruct the past or project the future when little was known about the present. The MIS now under development should be a major improvement.

March, 1980

(1)

Flow Charts: From Perspective of Program Staff-Susan Stocker

- Committee's awareness of OTA's role/mission/capabilities
- Past OTA experience
- Professional contacts with individual members or staff
- OTA testimony before Congress

Problem: for whatever reason, OTA Board members and their close colleagues seem to be involved in requesting studies out of proportion to the rest of Congress.

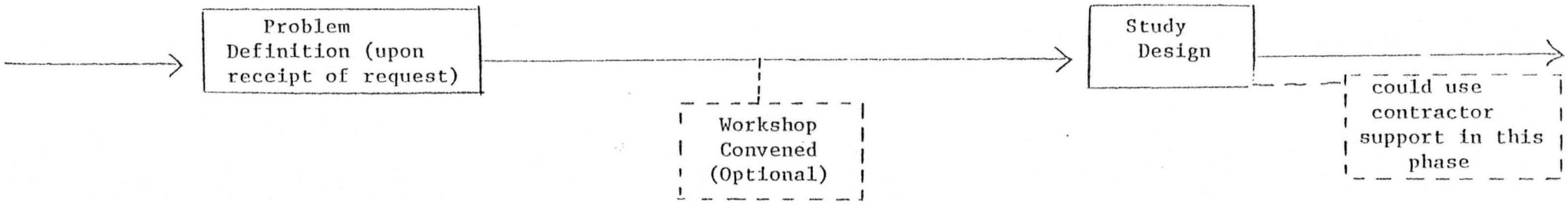
Opportunity: execution of good study can both serve Congress and build positive regard for OTA.

- as follow-on from previous OTA work
- out of ongoing interaction with and education of Committees to problem areas and issues
- OTA priorities process and booklet (or some viable replacement)

Problem: phase in which there is much uncertainty about ultimate staffing (should a key employee be let go or should their tenure be extended on hope that the/a request will be forthcoming?).

Opportunity: to help Committees determine what it needs to know and how OTA can help.

(15) Flow Chart pt. 2



- conceptualize problem in its breadth and depth
- determine its relation to other problems
- figure out what questions are relevant to ask and why
- define scope of inquiry
- assemble list of people or people types knowledgable in the area

Problem: tendency to rush into project design or even data collection before the proposed inquiry is thought through and rationalized.

Opportunity: can insure that the important concerns are addressed while the study is appropriately scoped.

- of potential panel members
- assist in problem conceptualization

Problem: if OTA has not done its homework, session could turn out to be a fishing expedition.

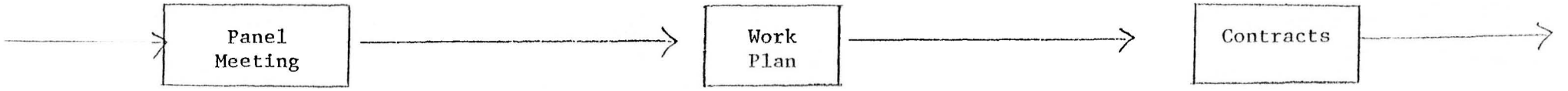
Opportunity: outsiders could flag unforeseen issues or questions.

- analytical tools selected according to intended purpose of study
- design and diversion of tasks
- project timeframe projection
- budget preparation
- determination of contractor/staff support

Problem: tendency to lay out an overly ambitious study which is impossible to do; can lead to continual re-scoping which is repeated too often will burn up valuable time and resources.

Opportunity: a well designed study will make optimum use of analytical techniques and resources as well as succinctly address the concerns of Congress.

16



- prepare for and structure meeting to facilitate constructive responses
- select strong but receptive chairperson

Problem: casting the panel in an inappropriate role (e.g., trying to get direction on how to budget or plan the study rather than just substantive input; looking a consensus on relative importance or meaning of issues withinthe given area).

Opportunity: can reveal blind spots in staff conception or knowledge and be an excellent resource for ideas and source material

- further deliniation of tasks, work statement(s) and schedule
- allocation of work between in-house staff or contractors and outside contractors

Problem: set ri gid unrealistic deadlines which must later by revised.

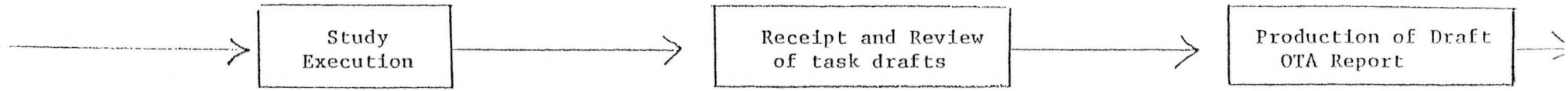
Opportunity: to allocate responsibilities in such a way as to take best advantage of in-house and outside resources.

- solicitation & selection
- contract award
- further specification of study methods
- establishment of working relationships with contractor(s)
- "final" revision of study plan expectations, and schedule

Problem: loss of control and delays in finalizing contract(s) and initiation of payments because of necessity to go through Administratio

Opportunity: to assemble a qualified team whose members complement one another and to start the work in a timely fashion.

(17)



- literature review
- data collection and analysis
- modeling and forecasting
- problem or program evaluation
- ongoing assessment of study substance and progress

Problem: can have too little coordination among tasks resulting in incompatible or disjointed elements which must later be revamped or significantly re-done by staff.

Opportunity: to streamline operation and insure that output is as useable as possible.

in-house critique

- panel and outside (pro bono) review

Problem: slow outside response which then slows turn around period or premature (unbalanced) press coverage of "study" results when only draft contractor or drafts in-house work is finished.

Opportunity: can be a means to balance and counter-balance points which are one-sided and generate supplementary material.

- revision of draft material on basis of comments
- arrangement of task document or contents
- consolidation of a single draft document
- editorial support(?)

Problem: distinquishing between fact or useful comments and partisan over-statement (in a fair manner)

Opportunity: to package and concisely explain difficult subject matter.

Flow Chart Pt. 5

(18)

- panel meeting
- other inside or outside review and comment

Problem: lack of sustained interest or timely response of panelists.

Opportunity: for a thorough test of report's balance and adequacy.

- fold in final comments
- editorial support

Problem: study is overtaken by events.

Opportunity: to finally clean up bugs and clarify message.

OTA **STAFF MEMO**

April 8, 1980

TO: Fred Wood

FROM: Bob Niblock BL

The survey of the Oceans Program breaks down in three parts. First, we have attempted to draw a single, major lesson or question from each of the studies completed to date. The next section deals with some general lessons from a variety of experiences and, finally, we have attempted to list a few tips that might be useful at one time or another in the assessment process.

I. Major Lessons or Questions from Completed Assessments

A. The Assessment of Ocean Thermal Energy Conversion (OTEC)

Traditional technology assessment literature urges examination of technologies that are not yet developed, or at an immature state of development. OTEC is such a technology. No large-scale plant to capture the energy potential of ocean thermal differences has been built. We planned to consider potential OTEC impacts but as the study progressed it became apparent that the controversy centered on whether OTEC would work at all, and, if so, whether it could be operated on a commercial basis. OTA is usually not in a good position to resolve technical feasibility questions, so what we did do was develop a set of critical questions to be asked by those overseeing the program. This kind of "bottom line", which answers a question with more questions, is not terribly satisfying to anyone involved, but it may be all that we can do in studies like these. It does seem, however, that we could profit from an exchange of views on how various people would or have approached the problem of assessing an undeveloped or immaturely developed technology. Also, we need to explore OTA mechanisms and techniques for comparing technologies (e.g., photovoltaic vs. ocean thermal) which are competing for the same research dollars.

B. Assessment of the Marine Transportation of LNG

An overriding issue when this study was conducted was the public concern about safety in transporting liquified natural gas in a pressurized state aboard large, specially constructed ships. Numerous risk analysis studies had been done by the responsible Federal agencies, and we dedicated one contractor to the task of reviewing and critiquing this work. Our finding was that fault-tree analysis and risk analysis had limited application in determining whether an LNG facility is safe. There does not appear to be analytic substitute for good common sense in managing complex, potentially hazardous substances like LNG. In fact, too great a reliance on these research techniques may lead to a false sense of knowledge about the risks. In our study, we were, for awhile, terribly bogged down in considering whether a given risk analysis of fault-tree analysis was good analysis. And it was not until we stood back from this enormous volume of literature that we began looking at the whole LNG system in terms of what parts of it were most vulnerable to failure and we began to put the various risks in perspective.

C. Establishing a 200-Mile U.S. Fisheries Zone

This study looked at some of the problems and opportunities for the U.S. in establishing a 200-mile fisheries zone. The most difficult research task, which was never fully resolved, was to obtain information in detail required on the industry and the resource. There was a kind of Catch 22. On the one hand, the 200-mile zone represented an ambitious effort to manage the living resources of the sea by controlling the level of fishing effort. But, since it had never been attempted, the data on the potential impacts of this new fisheries management approach were either very limited or non-existent. This problem has no doubt appeared in doing other OTA studies, and it is one that is not likely to go away. Perhaps we have matured to the point where we might consider a collective strategy for OTA to approach assessments where the resource (such as fish) is scarce and new Federal management schemes are proposed or enacted to deal with projected or existing scarcities.

D. Coastal Effects of Offshore Energy Systems

This was one of the first, large technology assessments completed at OTA, and it has been "mined" extensively for lessons learned. It's major lesson: "Don't put all your eggs in one contractor's basket". That lesson seems to have been heeded by everyone. A second important lesson of that study was not to begin major data collection efforts until you have a satisfactory analytic framework to process it.

E. Oil Transportation Tankers

When this study of marine pollution and safety measures related to tankers appeared, there was little Congressional interest in considering some of the issues raised. It gathered dust for several months but was available when, in the winter of 1976, a number of serious tanker accidents occured in U.S. waters. Then, there were major demands on staff for briefings and assistance in hearings. Fortunately, qualified staff was available, but it underscores the need to assure some continuity in most of the subject areas in which the agency does assessments.

II. Some General Lessons

A. Every large technology assessment turns out to be something different than was planned. Therefore, one should always try to build a "mini assessment" into the plans, thus, reducing the costs of the inevitable fallibility of the plan.

B. Large panels almost never work. If the study dictates a large panel, it is better to establish a number of small working groups to provide the necessary advice.

C. The completed OTA report is only one part of the job. Sometimes, the follow-up work on a given study can require more time and effort than the study itself.

D. Rarely is enough time in the planning process devoted to conferring with all potential committee clients and in analyzing the legislative environment in which the product will be used. One

exception in this program was committee work preparatory to the nuclear waste study.

E. All our studies invariably conclude that one or more government agency should do something different -- e.g., spend more or less money, tighten or reduce restrictions. Too little attention is given to non-governmental options even though they are not as significant to the client.

F. All of our studies have too many options and too little analysis of the consequence of the options.

G. There is a disturbing tendency toward arriving at a common format for our reports at the risk of killing innovative approaches.

H. There should be a debriefing after each study is completed, and the results of that should be available in the information center as part of a "continuing education" program.

I. More employee indoctrination might cut down on mistakes at various steps in the assessment process. Employees normally begin work with minimal familiarization with the policies and procedures of the office.

J. Putting engineers and scientists in the same office with social scientists does not create an interdisciplinary team. The disciplines must be repeatedly forced to engage.

K. It takes time to develop a constituency for OTA products on Capitol Hill. The committees do not automatically welcome us with open arms. We must provide quality work on a fairly regular basis to earn their respect.

L. There is not ever enough time to find out what others in OTA are doing that may be useful for work underway and most of the information exchange mechanisms developed to date consume more time than can be justified.

April 11, 1980

TECHNOLOGY ASSESSMENT TASK FORCE

(Transportation Program)

During several of our meetings on Technology Assessment, members of the Task Force have expressed the opinion that it is sometimes very difficult to separate OTA's "Assessment Process" from whatever "methodologies" may be used in the conduct of each assessment. In providing the input from the Transportation Program, I will first identify various lessons learned from specific previous and ongoing projects and then present those lessons and problems generic to most of our studies. The intent is not to specifically separate process from methodology, but only to present how we have been educated in the course of conducting assessments and the major problems we have encountered.

LESSONS LEARNED AND PROBLEMS

Automatic Train Control (ATC) 1975-76

This was a one year study conducted in-house with one consultant (who later became an OTA employee) basically working as a staff member. The function of this contractor was to salvage the work done by the major contractor who failed to adequately accomplish his objective. There were three reasons for this failure: (1) The bias that the contractor had in this area of train control and exhibited in the draft report; (2) the lack of understanding specifically what OTA wanted; and (3) the difference in what the contractor normally does for a client and what he should do for OTA as a client. There was an active and constructive advisory panel with some members writing various portions of the final report.

The report itself was organized around a series of issues that helped to focus the effort and to get the work done and approved. Issues were developed and short write-ups of each were reviewed by the advisory panel. After this review, larger write-ups with supporting data were prepared and reviewed and finally used in the development of the Summary & Findings.

The final document was very well received by the technical community with portions of it being reprinted by a major ATC manufacturer as a handbook. The full report is used as a textbook for new professional employees at the Chicago Transit Authority (CTA).

Two major problems were encountered in this assessment - one, the problem with the major contractor, and secondly the problem of getting the report written (i.e., it took about twice as long as anticipated).

Automatic Guideway Transit (AGT) 1974-75

This report was conducted in a relatively short time period (six months) with a very low budget and was a spin-off of the automatic train control study. It was written completely by working panels with two consultants to manage and coordinate the overall effort. The report was well received by Congressional Committees and had a major influence on the Urban Mass Transportation Administration programs and budget, contributing to the Downtown People Mass (DPM) Program now being conducted by UMTA.

The major lesson learned from this project was that an intensive effort was required in getting the Summary together - much longer and more involved than anticipated - due primarily to the review process. Also, the assessment demonstrated that having expert panels prepare the report is a workable and effective method.

Automobile Assessment 1976-78

This study ran for approximately 2 1/2 years and was very costly resulting in the project exceeding the original budget and schedule. There were several major reasons identified:

- o The original study plan was overly ambitious in scope and much too optimistic in schedule resulting in an inadequate original budget. At several points, the magnitude and difficulty of the effort to produce a final report were underestimated. In fact, it took as long to write the OTA report as it took to plan and execute the analysis.

- o OTA staff, with suitable experience, was not available to do the job at the start and therefore, most of the initial work was done by two contractors. Neither contractor really did the job called for in the Statement of Work. This resulted in a considerable amount of staff effort (six people) required to put the contractors' work into shape and produce an acceptable report.

- o There was a complete turnover of the committee staff during the assessment. As a result, the original issues of concern were no longer present in the staff when the assessment was finally completed. The dilemma here is the trade-off between length of study, comprehensiveness of the study, and the loss or changing support from the committees.

- There was a run-away advisory panel which at times tried to act as project directors and who were also highly politicized. There was intense controversy between the panel and various OTA staff and at different periods the panel had three chairmen. One of the problems with the panel was that their role (to advise) was never accepted by them with the panel acting like a collective project manager or board of directors (e.g., elaborate minutes, votes, and participation in contractor selection).

From a positive point of view, a very active and successful public participation program was conducted. Further, the dissemination process, after the report was completed, was substantial -- resulting in extensive nationwide press coverage. The report seems to have been widely read and is still of major interest.

Railroad Safety 1976-78

This was one of two mandated assessments conducted by OTA. Since it was mandated by Congress in the Railroad Safety Act of 1976 (July 1976), it bypassed the normal procedures that other proposed studies have to follow before being approved. However, although supplemental funds were authorized, they were not appropriated - this and other problems delayed the actual start of this study until May, 1977.

The major portion of the work was undertaken by a large contractor with a substantial budget. Due to several problems (i.e., the principal investigator not devoting sufficient time to the job, contractor not understanding exactly what we wanted, bringing in too many support people without adequately determining beforehand what the problem was and how to solve it, and trying to collect massive amounts of data in hopes that

something would be useful), the contractor bombed. With two permanent OTA staff and a support staff of three, we basically started over and used some of the contractor's work and delivered the report on time. But, it required intensive work for about five months to meet this deadline.

After the report was completed, we gave several briefings to the Committee members and staffs, to the railroad industry, and railroad labor groups. We were asked to give further presentations to individual railroads and the report is still being referenced whenever a major train accident or derailment occurs.

Advanced Group Rapid Transit - AGRT 1979

This project reaffirmed the belief that it is possible to provide useful information to the requesting committees in a short period of time (6 months) and at a relatively modest cost ($80K). To be sure, it took another 10 months to complete the rewrite, edit, review and published, but the essential information was in the committee's hands less than 2 months after the Board approved the study.

The methodology was eclectic. Literature was reviewed as usual, but the need to involve people, both experts and the general public in the information gathering and evaluating processes was a must. At least in this study it was very important to not only follow the usual advisory panel routine, but also get out and talk to local officials and citizens. Ten cities were visited, and the staff came away with some perspectives and understandings that could not have been obtained any other way. The value of these public participation efforts proved to be extremely high. With respect to the TAB approval, this was a fast track study with much of the work having been accomplished before the Board gave its formal approval to proceed.

By executive branch standards the few contracting problems we encountered were miniscule. But, because we were under severe time pressure, the difficulty we had in getting the preferred individual under contract lost us valuable time. In retrospect we would have been better off just doing the work in-house.

The time between delivery of information to the Committee in draft form and publication of the polished version took a long time (10 months). Part of that blame lies in-house. Since the Committee had already made its decisions based on the earlier draft there was not a large push for the report. As in some previous examples, the internal review and rewrite process was unnecessarily protracted.

Impact of Advanced Air Transport Technology

The original proposal for this study was specifically directed at the impacts of the introduction of advanced supersonic transports into the future commercial fleet. Russell Peterson, former OTA Director, felt this subject was too controversial and political, and proposed that we broaden the scope to include the impacts of advancements in the technology of other types of aircraft - both passenger and cargo. However, the budget (determined by Peterson) did not reflect the increased scope of work.

The project was divided into four studies. Each was to culminate in a report, delivered at different times during the assessment. Soon after the project was approved, a planning meeting was held to help clarify the major issues and focus the study. Persons with expertise in various areas related in the study, as well as those with public interest concerns, were invited to attend. Some of these people ended up being on either the advisory panel or working groups. One of the major problems with the initial report on

Advanced High Speed Aircraft was a requirement by the requesting Committee to have some early findings to assist them with the NASA authorization hearings in early 1979. This put us under extreme pressure to get out an initial draft. The difficulty was further compounded by our drawn out review process.

The study made use of both an advisory panel and several working groups. This was a worthwhile activity and produced results at much lower cost than the expensive use of contractors. From the standpoint of substantive input and review, the administrative work in preparing and conducting the meetings was extremely time consuming and required significant effort from the project director and staff. Another major problem in this study was the review process of the Advanced High Speed Aircraft (AHSA) report. For whatever reason, the report was continually being reviewed without any definite sign that a milestone had been reached or that the document was being improved. The political sensitivity of the topic may have been a cause for this, but since OTA generally deals with "controversial" issues, a system should be available for review which minimizes changes and revisions.

General Comments

Based on the discussion of these six Transportation Program assessments, I would like to identify major problems, failures, lessons learned and findings of a generic sense resulting from the experience at OTA:

1. Inadequate definition of scope of technology assessment (T.A.) proposals, and a lack of understanding of what will be required to accomplish the objectives.

2. Failure to estimate realistically the resources required - both

dollars and personnel.

3. Failure to staff the assessment adequately and in a timely fashion, and subsequent utilization of persons with little or no background in the subject area.

4. Failure to allow sufficient time for the review, rewrite, edit, and approval process. A minimum of 9 months is required for the average assessment, under our current procedures, including publication.

5. Constant feedback loops are needed in every assessment. The process of conducting any assessment is not linear and this feedback forces us to continually re-evaluate. This is good but the problem occurs in attempting to plan and carry out this feedback loop(s) without causing excessive delay and costs in the assessment process. This generally results in a great deal of work required in a limited amount of time; the extra effort falls on the project director and staff to meet the previously approved scheduled deadlines.

6. To put together a worthwhile proposal requires clearly thinking the problem through. However, in some cases, planning work cannot actually get started on a project until it is approved. Therefore, some of the planning effort is done after a study is approved and not beforehand when the proposal is developed.

7. Because there is no clear cut procedure for reviewing, and revising an assessment report, we sometimes feel like the process is hindering the substance. That is, we become bogged down and frustrated with the process and in turn lose sight of the substance.

8. There is a fine line between being a project director and getting

involved in the substantive research work. With the "process" taking so much time, project directors are likely not to move as rapidly up the learning curve as desired, because they are spending an excessive amount of effort managing the project. Furthermore, because of internal staff limitations, contractors are conducting most of the work without the OTA perspective.

9. Transportation has found that the use of small budget contracts with specific work statements, meets our needs better than the larger contracts. This forces us to think through the problem first and then identify where specific assistance is required. However, we run into the problem identified in 6. and 8. above in dealing with the time this takes as well as the trade off between being a project manager and/or researcher.

10. Dissemination of OTA reports should be encouraged and enlarged. As part of our function of providing timely information to the Congress, we should spend more effort in giving briefings, presentations, etc., to spread the word.

11. Advisory Panel selection continues to be a problem from the standpoint of balancing the roles and satisfying all the "perceived" concerns. However, to satisfactorily handle all of the concerns, the panel sometimes ends up with too many members (more than about 15) which then becomes unmanageable. One of the processes Transportation has followed is to determine first what groups should be represented on the panel, based on the objectives and subject matter of the assessment, and then try to identify the specific participants.

12. Finally, some general feelings about the various methodologies:

- o Social Impact Analysis - like playing tennis with no net.
- o Scenario Building - a Frankenstein monster, they develop a life of their own
- o Computer-Based Modeling - the assumptions are everything, the results mean almost nothing
- o Forecasting - anybody's guess beyond 5 years
- o Evaluation Research - probably not applicable to T.A.
- o Survey Research - very expensive, a bitch to administer, and not very helpful in evaluating that which is not yet and may never be
- o Cost-Effectiveness Analysis - probably beyond our means to do adequately
- o Cost Benefit Analysis - problems in quantifying
- o General Systems Analysis - forces us to first identify the problem before jumping in with both feet to "solve" it.

OTA **STAFF MEMO**

April 10, 1980

TO: Task Force

FROM: Fred Wood

RE: Summary of OTA Support Offices Input to Task Force

As part of the Phase I survey, I sought input from all OTA support offices. This memo summarizes some of the points raised in the course of discussions with Administration (Tom McGurn and Al Landry), Personnel (Lynn Davis and Dale Donohue), Liaison (Marvin Ott), Senior Editor/Public Communications (John Burns), Information Center (Martha Dexter), Publishing (John Holmes) and Secretaries/AAs (Sue Bachtel et. al.).

Several individual offices submitted written input, copies of which are attached. Also I have attached various other relevant materials prepared over the last 6-9 months.

1. Need for improved internal communication of project status.

Several offices expressed the desire for more awareness of where things stand with the various projects. Support offices need to understand more of the flavor and progress of studies. All projects are not equal, but have differing levels of complexity. Support office staff perhaps should be able, for example, to participate in proposal development and attend panel meetings. This will help them better understand the needs of projects/programs.

It is hard to make the best decisions based on the limited information currently available about project status.

2. Need for improved internal understanding of the role and function of OTA support offices.

Several offices expressed the view that project/program staff do not fully understand the role and function of support offices. It was suggested that all of the support offices conduct an outreach program and prepare some kind of handbook, or perhaps this could be done as part of the Task Force process. The Information Center was cited as a support office which has done a good job of outreach.

It was recognized that there will always be areas of dynamic tension between the project/program offices and the support offices, and that tensions will tend to be aggravated when resources (time, dollars, people) are tight. But certainly there should be a great incentive to minimize misunderstanding, hassles, and wasted effort wherever possible.

3. Need for new staff orientation and in-service staff training.

Several offices emphasized the need for some kind of orientation for new OTA staff on the basic role, process, functions of OTA, etc. There is currently no orientation program. For in-service training and orientation, a wide variety of possible topics were identified:

--technology assessment methodology
--OTA publishing process
--OTA administrative procedures
--financial accounting/budgeting
--project management
--the legislative process
--report writing
--contract monitoring
--using word processors effectively
--project planning

4. Need for exit interviews and project closeout reports.

Some suggested that an interview and/or written report be completed whenever a person leaves OTA or whenever a project is closed out. This will help capture learning from past experience on a continuous basis and can serve as a very useful input to this Task Force or its successor. Perhaps the Task Force can develop a form to be filled out by project directors upon project completion.

5. Need for more effective mechanisms to share human resources.

Several people pointed out the need to share expertise (both research and administrative) more effectively across project/program/division lines. Turf protection is a major barrier, and the current system may not provide sufficient incentives for cooperation. There appears to be little willingness at present for programs/divisions to help each other out. How about establishing a data base of in-house skills, disciplines, experience, etc. so that we at least know our own capabilities?

6. Need to improve our ability to identify and meet committee needs.

Several people underscored the importance of building more systematic linkages with committees and improving our sense of committee needs. One of the roles of the Liaison Office will be to help OTA to do a more consistently good job in identifying and meeting committee needs. It will be important to reach out to a wider range of committees. Project proposals may need to be scoped differently to more effectively relate to a broader range of committee perspectives. Another role for the Liaison Office will be to look for opportunities for interim responses--short term responses tied to larger, longer term projects. Liaison will track on an ongoing basis Hill activities that bear on current (and already completed) OTA studies, and in general will try to make matches between Hill needs and OTA expertise.

7. Need to improve our ability to articulate what the OTA assessment process is all about.

Some people mentioned the importance of sharpening OTA's image on the Hill and improving congressional understanding of the OTA assessment process. The operational definition of TA as practiced by OTA needs to be pinned down a little better and communicated more effectively to our primary clientele. It was suggested by some that we stress the uniqueness of the OTA process (e.g., use of advisory panels; identification and evaluation of range of options; seeking out perspectives of cross section of stakeholders; mix of in-house, consultant, and contractor expertise; balanced, independent objective analysis; integration of technology description and forecasting, impact assessment, and policy analysis). We may also want to look for new ways to illustrate OTA's relevance to the legislative process (e.g., with respect to requirements for legislative impact statements in areas of privacy and regulatory impact).

8. Need to educate contractors and panelists on the OTA process and methodology.

Several people emphasized the importance of providing a briefing(s) and written material on the OTA process to contractors and panelists when they first start working with OTA. This hopefully will lead to more realistic expectations and more productive working relationships. A number of panelist problems seem to relate at least in part to misunderstanding of their role in the OTA process. And a substantial amount of spinning of contractor wheels can be attributed to difficulty in coming to grips with what kind of work OTA expects and what sorts of methodologies are acceptable. Perhaps we need to provide a methods package to all new contractors.

9. Need to streamline OTA administrative, budgeting, manuscript preparation, and publishing procedures.

Some people mentioned the need to reduce the "administrative overhead" at OTA, and that too much time and effort was spent trying to clarify and implement a variety of administrative procedures. Some felt this was due largely to incomplete or erroneous understanding on the part of project/program staff, a problem which could be remedied in part by staff orientation and handbooks (as mentioned earlier). Others felt that a more searching look at OTA administrative procedures across the board was required, especially for budgeting, manuscript preparation, and publishing.

OTA **STAFF MEMO**

March 7, 1980

TO: Fred Wood

FROM: Personnel Officer

SUBJECT: Comments on the Technology Assessment Process

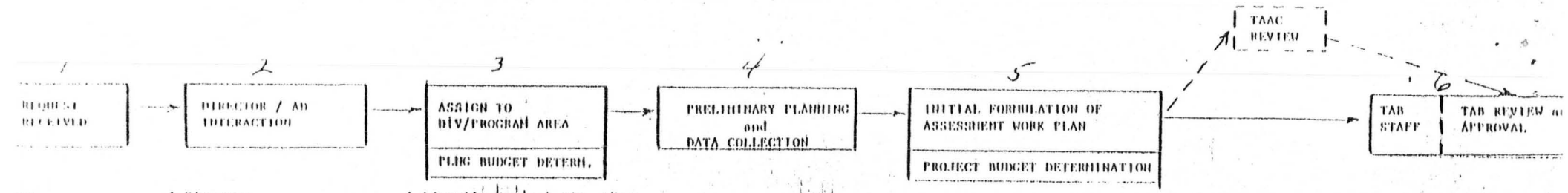
Enclosed is a copy of the TA process flow chart which you presented to us. We have numbered each box and have drafted comments concerning the various stages. They are listed on our enclosure.

Hopefully, these comments will be useful to you.

Lynn

Box Number	Personnel's Comments
#1	Make certain copy of request goes to Personnel for manpower planning considerations.
#2	Involve Personnel for staffing, re-assignments, manpower logistics.
#3	Caution: Never make a non-OTA staff member a Project Director.
#5	Ask Personnel for: all pertinent applicant resumes, and staff backgrounds which could be useful, and its list of current consultants whose affiliation or education could be used. Discuss with Personnel possibility of new hires or staff re-assignments.
#8	Caution: Panelists should reflect a broad spectrum of: backgrounds, education, affiliation and geographic distribution. If hired as consultants, Personnel can notarize appointment papers at first meeting.
#13	Consult Administration and Personnel for salary guidelines. Do not confirm salary with contractors/consultants until Dr. Gibbons signs papers. Avoid giving "outsiders" any office space or any committment beyond 12 months. Allow two weeks lead time to appoint or contract with outsiders before starting date.
#21	Make any requests for temporary clerical help through Personnel.
#34	Advise Personnel of staff available for new assignments.

PROJECT SELECTION



om:
Congress
(Committees)
TAB
Dir. with TAB
approval

* Discuss:
  - scope
  - resources
  - possible priority
  - obstacles to success
* May include:
  - Admin Officer
  - Publishing Officer
  - Senior Editor
  - Program Manager

* Identify Project Dir. who:
  - manages project
  - coordinates staff and advisor inputs
  - is involved with development of & writing of final report
* Assign Planning Cost Code
* Set Planning Budget

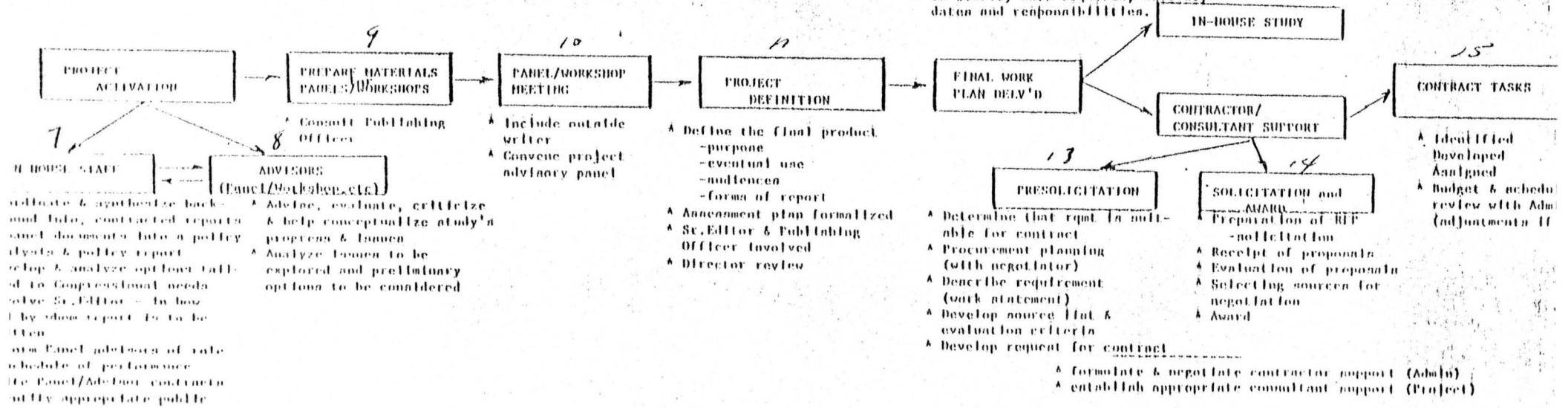
* Analyze existing literature including legislative history; Committee hearings & reports; GAO, CRS, CBO projects & reports.
* Interact with Congr. Committees & staff
* Interact with ad hoc panels & advisors

* Define Work Statement and tasks within Work Statement
* Determine period of performance
* Determine internal/external resource needs
* Determine contractor/consultant panel support required
* Identify prospective contractors capable of performance
* Determine obstacles to success
* Approval of PM and AD
* Consult Publishing Officer re his budget estimates
* Prepare budget
* Admin Office review budget within OTA-wide financial context. Specific budget interpretation details are resp of Admin.
* Determine if competitive or non-competitive contract(s). If no formal competition required, contact prospective contractors to clarify work required, delivery dates and responsibilities.

* Prioritize proposed projects

* All proposed assessment TAB for approval. Give staff 2 weeks before TA
  Address issues of:
  - rationale for under assessment
  - proposed budget
  - proposed period of nance, including per milestones and comp date.
* Prioritize proposed pro
* Dir. can OK up to $10K quick-response studies planning for full-scale assessments
* This is project go-ahea

. PLANNING and PREPARATION



ordinate & synthesize background info, contracted reports panel documents into a policy alysis & policy report
elop & analyze options fulfilling Congressional needs
olve Sr.Editor - in how l by when report is to be tten
ain Panel advisory of rate schedule of performance
ite Panel/Advisor contracts ntify appropriate public olvement participants

* Consult Publishing Officer

* Include outside writer
* Convene project advisory panel

* Advise, evaluate, criticize & help conceptualize study's progress & issues
* Analyze issues to be explored and preliminary options to be considered

* Define the final product
  - purpose
  - eventual use
  - audiences
  - forms of report
* Assessment plan formalized
* Sr.Editor & Publishing Officer involved
* Director review

* Determine that rqmt is suitable for contract
* Procurement planning (with negotiator)
* Describe the requirement (work statement)
* Develop source list & evaluation criteria
* Develop request for contract

* Preparation of RFP
  - notification
* Receipt of proposals
* Evaluation of proposals
* Selecting sources for negotiation
* Award

* Identified
  Developed
  Assigned
* Budget & schedu review with Adm (adjustments if

* formulate & negotiate contractor support (Admin)
* establish appropriate consultant support (Project)

III EXECUTION

16 CONTRACT MANAGEMENT

- Estimate tasks to be undertaken by contractor
- Project Directors & Program Managers follow work of contractors closely -- redirect where necessary
- Periodic status reports from contractors

17 USE OF AD HOC PANELS, WORKSHOPS CONSULTANTS, etc.

18 INTERACTION WITH CONGRESS (& other Federal agencies)

- Invite to panel meetings
- Develop spin-off studies useful to Congress

19 STAFF, PANELS REVIEW CONTRACTOR/CONSULTANT DRAFTS

- Refine and modify
- Get diverse inputs
- Working panels organized around specific tasks
- Writer of report should be involved

20 PUBLIC PARTICIPATION

- This actually starts in Planning & Preparation phase, but should be constantly kept in mind
- Liaison with public and private stakeholders and parties-at-large

21 CONTINUING PROJECT CONTROL

- Quality, Budget, Schedule, Performance
- Interaction with Project Director/Program Managers
- Monthly status reports to AD/Director
- Periodic project status review to Director
- Publishing Officer involved:
  - how to produce
  - what layout
  - what charts, graphs, etc.

22 1st. DRAFT

- Writer involved

IV REVIEW

23 INTERNAL REVIEW

Allow time for thorough review
Project Director & staff first to review draft -- to assure report is balanced, comprehensive, factual, technically sound & free of bias -- and tailored to needs of Congress & Committees
Proper format & style
- policy analysis
- technology assessment
- technical analysis
Senior Editor involved
A/D and Director review

24 ADVISORY PANEL REVIEW

- Panels work closely with staff in developing 1st draft, thus are involved in early draft review

25 EXTERNAL REVIEW

- Stakeholders
- Parties-at-Interest
- Impacted groups
- Interested Govt bodies

26 INTERNAL REWRITE

- Writers involved

27 ASST DIRECTOR'S CLEARANCE

- One sign-off sheet showing names & titles of persons reviewing -- internal & external

28 DIRECTOR'S FINAL REVIEW

- Press release prepared
- Summary
- One-pager
- Copy of draft to Publishing Officer

29 TECH MEMO
BACKGROUND PAPER

30 TAAC / TAB REVI
TAB / & APPROV
STAFF

- Dir. submit manuscript TAB along with not intent to release
  - If no objectio 2 weeks, can r to public
  - If majority of registers obje within 2 weeks release pendin action at next

V. PUBLICATION, DISTRIBUTION & USE

31 PUBLISH FINAL DOCUMENT FOR CONGRESS

32 CONGRESS

- Hearings
- Legislation

33 MEDIA
PUBLIC
OTHER

34 assessment close-out

** Assessment close-out
- final budget & obligation report for project
- review (& audit) contracts for close-out where possible
- close out cost code
- staff reassignments within program

** Determine need for follow-on
- budget, cost code, etc.

OTA **STAFF MEMO**

April 10, 1980

TO: Task Force

FROM: Fred Wood

RE: Input from Senior Editor/Public Communications Officer

The Task Force input from the Senior Editor and Acting Public Communications Officer consists of two items: my notes on the presentation by John Burns at the January 17, 1980 senior staff seminar, and a copy of John's May 22, 1979 memo to Jack Gibbons on ensuring editorial quality of OTA reports.

Notes on January 17, 1980 Staff Seminar

Remarks by John Burns

1. The objective of OTA reports should be to communicate effectively with an educated lay audience which includes the Congress. OTA should try to reach the Congress both directly (through reports and briefings) and indirectly through the media, constituents, specialized groups, etc.

2. OTA is one of the youngest support offices on the Hill and has served, up to now, only a relatively small set of committee members and staffs. As a result, OTA's visibility is less than that of its sister agencies. On top of this, people on the Hill and in Washington generally are very busy and do not have time to read long documents. Furthermore, the news media has difficulty in dealing with reports which do not present clear findings.

3. Thus, OTA needs to present its reports in forms and shapes most useful and interesting to the Hill.

4. A proposed format for OTA reports includes the following:

- Summary report--aimed at a lay audience, to be published separately and as the front-end of the full report. The summary report is the first thing and frequently the only thing that people read. Writing of the summary report should be given higher priority, perhaps with a first cut prepared earlier in the report writing process.

- Full report--also aimed at lay audience and written in lay language to the maximum extent possible but in more depth than the summary report.

- Technical appendices--written for the experts.

4. Thoughts on assuring editorial quality:

- Editorial quality doesn't happen at the end of report writing; it has to be built in from the start.

- Editorial consulting is needed at an early point in the study, either an in-house person or outside consultant who can sit in on panel meetings and is familiar with OTA report writing procedures, etc.

- The summary needs greater emphasis. The bottom line of the study should be the top line of the report.

- The summary report should be self contained. Most members don't have time to read big reports. Plus the summary can be useful as a constituent service as a self-mailer to people in the district.

6. Thoughts on press relations:

- Press briefings can be effective. If you can get the press to commit the time to attend a briefing, they are more likely to write a story. Need to develop a press contact list. May help to have participation of members of requesting committee and/or TAB or at least some strong statements from members.

- Press impact is Hill impact.

- OTA may get better news coverage through a press briefing with advance release of the report. The press should be given 3-4 days notice of the briefing, and OTA should delay release of the report for 3-4 days after the briefing.

- Press briefings should be a joint effort between the project staff and public communications office.

Staff Discussion Comments

7. (Niblock) Perhaps OTA needs to develop a stable of available, quality writers.

8. (Ott) The ideal situation is to have a writer on the project team.

9. (Buyrn) We need somebody more than an editor but less than a total rewriter on each project. The writer-editor starts with some kind of draft material.

10. (Baynard) OTA staff should have good writing ability themselves, or they shouldn't be working here.

11. (Naismith) We need more Hill briefings.

12. (Woteki) On the environmental contaminants report, we conducted several committee staff briefings and sent copies of the report (with a personal note) to interested staff and then followed up with a phone call to see if staff had any questions.

13. (Gibbons) We need to coordinate all press briefings with the requesting committees. Committee needs and preferences should be considered. Current practice is to release final draft reports to requesting committees at the same time they go to TAB.

14. (Gibbons) In general, we need more effort in marketing our product and identifying our audiences. We need to use a variety of approaches: summary report, full report, press briefing, press conference, committee staff briefing, etc.

May 22, 1979 Memo to Gibbons

A copy of John's memo is attached.

Attachment

22 May 1979

MEMORANDUM TO JACK GIBBONS

From: John Burns

About: Ensuring the Editorial Quality of OTA Reports

Editorial quality control has apparently been one of OTA's more persistent and perplexing problems. Many memos have been written, meetings held and efforts undertaken to try to ensure that every OTA report meets at least respectable standards of editorial quality. Yet the editorial quality of OTA reports remains exceedingly uneven. In its first, formative years, OTA could get away with a certain amount of shoddy work. It no longer can. OTA's effectiveness, even its continued existence, will depend upon how widely read and well regarded its reports are. Its reports must attract the attention and earn the respect of expert and layman alike. That means reports experts will accept as sound and authoritative and laymen will read, understand and act upon. And if laymen can't or won't read these reports, it really doesn't matter what experts think.

Some basic assumptions:

o English is (and, if it isn't, should be declared) the official language of OTA. That means English as used and understood by the so-called "intelligent" or "informed" or "educated" lay person, such as a member of Congress.

o The Congress (including staff), the "informed and interested" public, and the members of the media are "lay" audiences: they are not, for the most part, technicians and scientists; even when they are they must speak "English" as they engage in the public discussion of issues; and they are, all of them, already overloaded and incessantly deluged with more "information" than they can possibly handle. They will read and use OTA reports to the degree that those reports are both readable and worth reading.

o If OTA really believes its reports are worth reading and wants them to play an important part in the discussion and resolution of public issues, it should make those reports as readable and as "public" as possible.

I have three main recommendations:

1. <u>At the start of every project, the senior editor, the Assistant Director and the project leader must agree on how, and by whom, the writing of the report will be handled</u>. Some projects may have people on board who are competent writers. Others may not. What is important is that it be decided, at the start, what writing talent is or needs to be brought on board and how, when and by whom the writing will be done; and that whoever does the writing and/or eventual integrating must be involved with the project from the very start.

-- If nobody on a project staff has the writing skills required, then a writer should be brought in as a consultant at the very start. The writer should be used as needed and paid as used -- thus no project "slots" need be used up and costs can be kept down. The writer should sit in on initial staff and panel meetings, on later panel and other important meetings, and be kept up-to-date as the project progresses, so that he or she will be sufficiently familiar with the material and the issues before doing or working on an actual draft. The senior editor should have concurrence in the hiring of a writer, although the writer will work as a consultant to the project and under the supervision of the project director. The senior editor should maintain a list of good freelance writers OTA can draw on as needed.

-- My general premise here is that a report simply isn't going to end up organized and written well unless it starts out trying to be. The "writing" of the report is not something done at the end, but from the very first and all along. The final form may, of course, be very different from what anybody has in mind at the start -- indeed, at the start nobody may have anything but the fuzziest idea what the report may end up looking and reading like. But I think it's vital to focus, from the start, on what you want to end up with.

-- The "good, intelligent" writer, whether already on board or brought on as a consultant, would serve as a surrogate for the "intelligent lay person" the report ought ultimately to be aimed at. The writer needs to get involved at the start so that: 1) the writer can sink in and soak up the stuff in order to write it in ways that are both "English and accurate"; and 2) through the writer, the ultimate lay audience can, in effect, have a voice in shaping the project from the start.

-- Bringing in a writer at the eleventh hour to perform whatever skin surgery he or she is supposed to perform usually results in a report that looks, in fact, like it's just emerged from skin surgery.

2. The summary/overview section of the report should be done so that it can be published and distributed both separately and together with the body of the report. If it is, in fact, a clear, cogent summary of the report -- with its main findings and essential background material -- this section, published separately and widely distributed, could serve as the single most effective vehicle for reaching all the various audiences for an OTA report: the Congress, Congressional staff, the media, the interested and informed public. Too many OTA reports with important things to say have languished in relative obscurity because the reports themselves are simply too huge, too heavy and, at times, too impenetrable in form and style.

-- We should consider breaking out and publishing separately particular sections of reports that are more or less self-contained and would interest particular audiences.

-- We should also consider publishing interim findings when it seems timely to do so -- when, for example, a particular section of a study is one, the subject is "hot," but the rest of the report isn't yet ready for release.

— In general, I think organization and form are especially critical in reports with both the density of detail and overall mass and weight of those OTA often produces. A good deal of thought and attention should be given to shaping the different parts of such reports to reach different, if overlapping, audiences: the summary/overview to reach the widest audience; the body for concerned Congressional and other people; technical and other addenda for the experts.

3. The senior editor should, as a matter of course, see and review the initial outline of each assessment as well as the first draft sent out for general review. He should especially focus his editorial efforts on the summary/overview section to make certain it captures and communicates the essentials of a report to an intelligent lay reader.

Two other recommendations:

4. When an OTA report seems good enough, we should explore the possibilities of commercial publication. Praeger published the nuclear proliferation report after OTA approached them. We are currently talking to two publishers about the possibilities of publishing several recent OTA reports. Commercial publication would bring OTA reports to the attention of a much wider audience than we normally reach. And there are a number of commercial publishers — Lexington, Heath, Ballinger, Praeger and many others — who should be interested in many of the kinds of things OTA does.

5. If people aren't aware of our reports, it won't matter how substantive and readable they are. Much more should be done to systematically "market" OTA reports — to make the widest possible audience aware of our reports and their main findings as well as to get them out (at least the summary/overview sections of the good ones) to that audience. In addition, we need to pinpoint all of those audiences especially interested in a particular report, and parts of a report, and work out ways of reaching these effectively.

— One way of doing this: have the Public Affairs Office prepare, well in advance of the release of each report, a "marketing" or "public affairs plan" that identifies the appropriate audiences (including general media and trade press) for that report and spells out what should be done when and how to make those audiences aware of the OTA report and its "message" and to get that report, or appropriate parts of it, to those audiences. This plan would be reviewed by the project director and his or her people, the Assistant Director, the Deputy Director and Director, and the Senior Editor.

Hannah Arendt once warned that "the 'truths' of the modern scientific world view, though they can be demonstrated in mathematical formulas and proved technologically...no longer lend themselves to normal expression in speech and thought." To that degree, she went on to point out, these "truths" cannot enter into the political market-place and serve as a basis for public decision-making, for — in her words — "speech is what makes man a political being," and "men in the plural...men in so far as they live and move and act in this world, can experience meaningfulness only because they can talk with and make sense to each other and themselves."

If OTA cannot bridge that gap between what the "experts" know and lay people can understand, if it cannot produce sound and substantive reports that people in the political market-place (in the widest sense of that word) can and will read, understand and use as bases for discussion and decision-making, then OTA has no reason to exist.

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OTA **STAFF MEMO**

4-8-80

TO: Fred Wood

FROM: Martha Dexter

RE: Phase I Survey: Information Center

Attached is the Phase I Survey from the Information Center for the Technology Assessment Methodology Task Force. I hope the form is satisfactory and that the comments prove useful. If you need any further information, please do not hesitate to contact me.

TECHNOLOGY ASSESSMENT METHODOLOGY AND MANAGEMENT

PHASE I SURVEY -- INFORMATION CENTER

I. Profile of information requirements and expectations of OTA staff

1. OTA staff tend to focus on their particular study subjects and on relevant legislative information. New staff often request general background materials on technology assessment methodology.

2. Literature search services, primarily via computer terminals in the Information Center, provide staff with background materials in their particular subject areas.

3. The staff expect efficient and timely document and information retrieval in all formats. Often requests are generated from citations in literature searches, but frequently staff request hard-to-locate documents and actual data in the form of statistics, legislative status, etc.

4. OTA staff appreciate the various current-awareness services, such as Current Contents, for ongoing information during the assessment process.

5. OTA staff rely on the Information Center to act as a centralized liaison for obtaining documents from Congressional committees, from the Library of Congress and the Congressional Research Service, and from other government agencies.

II. General observations re: problems in communication of information

1. We find that often programs and projects have problems with information flow within their areas. For example, frequently staff members are unaware of the document collections of others on their project or in their program. In other words, there is some degree of duplication of effort in obtaining information.

2. Similar problems exist in information flow between programs. We often find staff members are unaware of others in different programs who are working on similar subjects.

3. The question of "information overload" frequently comes up. We realize that OTA staff are constantly bombarded with information, both through our own current-awareness services and through networks established by individual staff members. However, some OTA staff frequently experience confusion and difficulty in defining the extent and amount of information they need.

4. Finally, we find some confusion, but much interest, in several other areas: information about OTA and Congress, about the legislative process, about internal OTA administrative procedures, and about other information resources.

III. Lessons learned: Activities of the Information Center

1. Over the past two years, we have discovered that OTA staff increasingly appreciate our efforts to centralize and systematize information flow.

2. We have designed several services which act as educational programs for the staff, most notably our orientation program and the Brown Bag Seminar Series. OTA staff have been very responsive and enthusiastic about these services.

3. Due to positive staff response to information programs, we hope to expand on this and include specialized reference seminars (e.g., legislative reference, statistical sources, etc.) and to provide a "consulting service" to staff to help them in organizing their interal information collections.

IV. Conclusion

Our experience in working with OTA staff leads us to believe that the staff appreciate efforts to centralize information flow, to share experiences, and to participate in internal educational programs. Based on our observations, we would suggest:

1. A general OTA orientation program, or a program which focuses on administrative and management procedures and guidelines.

2. Formal documentation of assessment experiences and centralized access to it. This could be in the form of a 2-3 page "assessment de-briefing" and could be available in the Information Center.

For our part, we appreciate and encourage any comments or suggestions for improving the Information Center services. We feel our services should be reflective of the needs of OTA staff, and look forward to any suggestions arising from the Phase I Survey.

OTA **STAFF MEMO**

April 7, 1980

Memo to: Fred Wood

From: Sue Bachtel Sue Bachtel

Re: OTA Task Force on TA Management and Methodology--
Comments from OTA Secretaries and Administrative
Assistants at Meeting of March 28, 1980

1. One person said that over the 4 years she has been with OTA there has been a noticeable slow improvement administratively--a 180° turnaround.

2. There was general agreement when one person mentioned that the flow chart was the first time they had seen the steps of an assessment--ever.

   One person cautioned, however, against using too "technical" language to explain the steps of an assessment--too confusing.

3. Someone asked how and who determined the assessment methodology--whether it depended upon the budget. Was there any criteria and who determined it--TAB?

4. There seemed to be strong consensus that OTA needs an evaluation process for its outside contractors and also in-house contractors. Many times a contractor who was not satisfactory to one program will show up in another much to the surprise of the people in the first program. OTA needs a "pool" of names of successful contractors. Support staff feel that they, too, should participate in the after-the-fact evaluation of contractors (who is good to work with, who turns in work on time). Also they agreed that OTA contractors need an orientation period because otherwise it is they who divert time from other tasks to teach contractors "the ropes."

5. AA's need better identity, a better definition of their role in the assessment process. The relationship of the Division Assistants to the AA's needs to be better defined.

6. Secretaries need to be able to earn overtime pay as well as compensatory time off. This would save a lot of time and money paying temporaries; i.e., when the crunch comes if secreteries could be paid to do the extra work they could do it cheaper because they don't have to learn the "system." Also when the crunch comes and they work over time just to earn compensatory time, they ironically can't use the compensatory time because of the work "crunch." Definite consensus that the secretaries would like to earn overtime and feel it would be beneficial to OTA. "After people have been working overtime a long time, compensatory time means nothing." (Marya) Vigorous agreement on this point.

7. Consensus that "professionals" need to be educated on how to turn out professional drafts of their work--footnotes, completeness, etc. Much sloppy work.

8. Vigorous consensus that professionals need to be educated on what types of material should be typed on the linolex and that it should not be a substitute for a xerox machine. Many things are typed on linolex which should be typed on a regular IBM selectric. Linolex is very expensive and time consuming for some tasks. Secretaries and AA's should be the ones to determine what goes on linolex machines.

9. Better communication needed from Admin. Many did not hear about the change from IBM service to EBM typewriter service until a week after the change had been made--one person engaged an IBM serviceman who came to fix her machine only to find out that IBM no longer had the contract.

10. Need explicit guidelines from Publishing Office about how linolex disc materials are transferred to the punched tape, etc.--the formatting of drafts on linolex needs to be spelled out.

11. Need a whole OTA staff meeting on the Management Information System and how it works.

Very big consensus and spirited conversation that much time and money are wasted in OTA on re-doing and re-doing budgets; the loss of time is "ludicrous." The more times you are asked to re-do a budget in a different format, the greater the chance for error.

There is no communication among the members of the Admin. staff. Not that they don't get along; they just don't know what their colleagues are doing or the relationship of others' jobs to theirs. They don't share information.

Problem of the slowness in getting contractors paid. One person had asked and asked about a voucher being sent to GAO. It was finally found (recently) having been sitting in a drawer since November 1979.

One of the problems of Admin. is that each person's job is so separate that there exists no backup capability--no common pool of knowledge about the administrative procedures. When JHG was to explain the 2/27/80 new "travel procedures" Geneva Watkins, who handles travel, was not included in the makeup of the memo.

Surely, Admin. works hard, very hard! But they need a "trouble shooter" or a liaison person to the AA's. The Admin. staff are very competent--they just need organization/knowledge of each others' jobs.

12. The Service Center does not stock enough quantities of often used supplies, things that are needed all the time. Much time is wasted going outside purchasing simple items such as ruled pads.

13. Would like to have a pool of good temporaries names.

14. Agreement that support staff should be included in follow on activities re the OTA Task Force on Management and Methodology.

Attached is a memo of April 2 from Marsha Mistretta enumerating in greater detail some of the comments made here.

The secretaries and administrative assistants welcomed the opportunity to participate in this process and were quite articulate about their concerns suggestions.

OTA STAFF MEMO

April 2, 1980

TO: Sue Bachtel

FROM: Marsha Mistretta MM

RE: Comments on March 28 Meeting with Fred Wood

There were a lot of complaints voiced at the meeting with Fred Wood. Although I have only been with OTA for a year and haven't gone through the entire assessment process as an Administrative Assistant, I find myself in agreement with the other support staff on many problems they encounter.

I have gone through my notes from the meeting and there are two key points in the Management portion of the assessment process where Administrative Assistants encounter difficulties. These are: 1) Admin and 2) temporary secretarial help.

I think a lot of time is misspent in dealing with Admin. The problems are:

a) Contractor invoices.

There are often unexplained delays between the time the invoice is received in Admin and when it goes out to GAO for payment.

b) Checking monthly obligation reports.

In terms of staying on budget -- when there are errors, it is time consuming and has been difficult to get Admin to show us copies of invoices -- for temps, in particular. This problem may be clearing itself up, but there should be the option to see invoices if requested and for changes to be made if there are errors. Right now this can usually be done, but it is quite a hassle for the Administrative Assistants and for Admin.

c) Budget work.

As was pointed out at the meeting -- doing the budget in a dozen different ways is time consuming and often confusing. I would think

that if budget figures are in the computer in Admin, they should be able to rearrange them if need be.

Possible solution. Ann Woodbridge handles most of the problems. The general opinion is that she is quite competent. Errors or problems probably occur earlier in the processing chain. Does Admin need more and/or better staff?

The problem of getting good temps, I think, is pretty common knowledge. Dale Donahue handles personnel matters for our program. I know he likes to spread the business around among various agencies and not give just one agency all the orders. So far Temporary Staffing has successfully met my requirements. Kelly Services is only used occasionally, but they have also been acceptable. When I request help I usually ask for a person from Temporary Staffing and I have found that this tends to eliminate a majority of the temporary help problems.

I hope these comments will be useful to Fred and the Task Force. These problems seem somewhat minor in comparison to the entire assessment process, but each small problem adds up and smoothing out some of these procedures would be a help for the Administrative Assistants.

OTA **STAFF MEMO**

April 10, 1980

TO: Task Force

FROM: Fred Wood

RE: Improving Internal OTA Communication

In the late spring of 1979, OTA senior staff discussed ways to improve internal OTA communication. Marvin Ott summarized the results of that discussion in a memo dated May 31, 1979 and reproduced below. Some of the suggestions have already been implemented.

Objective: Improve Internal communication within OTA for better coordination and mutual learing.

Means:

- Forms of interaction could include regularly scheduled brown bag lunches, formal meetings, and interoffice memos.

- Subjects to be communicated:

  --Lessons and experiences (e.g., re contracting) acquired in doing assessments in order to assist project leader at the outset of an assessment.

  --Basic assumptions and conclusions of assessments so there is an awareness concerning what OTA has already said or is about to say on a subject.

  --Information concerning the timing and topics of forthcoming project panel meetings.

  --Use staff seminars as a "dry run" in advance of the first panel review of a draft assessment.

  --Circulation of staff biographies with areas of expertise.

Objectives: Address methodological or substantive problems or data gaps that are of concern throughout OTA.

Means:

- Task force(s) assigned to do analyses that will serve as guidelines or background material for assessments. The analysis would be a resource available to project staff to be used or not as appropriate. Subjects might include modeling methodologies, national economic projections, etc.

- Seminars or meetings with Congressional staff about the needs, plans, and priorities of Congressional Committees and of other Congressional support agencies.

- Sharing of personnel across divisional boundaries and use of individual staff to consult on special topics with OTA (e.g., public participation).

Objective: Stimulate intellectual life at OTA and provide access to external expertise and perspectives.

Means:

- Staff seminars (alternative approaches):

  —Based on assessments.

  —Based on topics of personal interest (prepared paper).

  —Based on paper presented by invited scholar.

  —Based on debate format.

  —Joint seminar with selected organization.

  —Ad hoc conferences with Executive and Legislative staff to examine a major public policy issue relating to science and technology.

- Outside speakers.

OTA **STAFF MEMO**

April 10, 1980

TO: Task Force

FROM: Fred Wood

RE: Public Participation in OTA Studies

On August 22, 1979, Jack Gibbons conducted a staff seminar on public participation. Bob Niblock and Nancy Naismith helped plan the session. My notes on the seminar discussion are summarized below:

Opening Remarks by Dr. Gibbons

1. OTA has a responsibility to take into account the parties at interest in all of our studies.

2. We need staff people who are sensitive to public concerns and have some experience in public involvement. This can be done partly through periodic in-house seminars and in-service training. We can bolster our internal resources by compiling lists of organizations and identify OTA staffers with expertise in particular areas.

3. There are multiple points of entry in the assessment process for involvement of parties at interest:

- Selection and definition of project.

  --criteria of selection
  --composition of advisory panel (what categories of groups, perspective, disciplines, etc. should be represented?)
  --focus of project
  --identification of customers for project (what study format will be most useful?)

- Execution of project

  --literature search
  --field visits
  --workshops
  --expert consultants/contractors

- Review of reports

  --internal review process
  --external review list (what representatives from the public sector should be included?)

--maintain records on who reviewed reports, what their comments were, and OTA responses to same.

- Communication of study results

  --written reports
  --oral briefings
  --testimony
  --TAB hearings

- Oversight of OTA

  --TAB
  --TAAC
  --Congress

4. OTA could establish flexible but rather specific guidelines for use by each project. Projects have done a lot in the way of public participation, but--on an ad hoc rather then systematic basis.

Staff Discussion Comments

5. Executive branch agencies should be used as a source of technical data. But policy analysis and development of findings should be independent of the Executive branch.

6. How much resources should be devoted to public participation? We always need some public representation on each advisory panel, but this should not just be a token representation. The advisory panel as a public participation mechanism needs to be kept in balance with field visits, outside review of draft reports and other mechanisms.

7. There are several rationales for public input: to keep OTA honest, to help identify socio-political impacts, to provide an outlet and forum for public groups to express their views, to help provide insurance that the OTA process is balanced and objective.

8. Some OTA staff feel that an advisory panel should not be considered a necessity for every project. Others feel strongly that advisory panels are necessary and serve critical functions (as identified earlier).

9. OTA needs to build on institutional memory on public participation techniques, perhaps in a handbook format. The handbook could be made available to all projects, and could list public input techniques by societal sector and impact area, and by stage of the assessment process.

Nancy Naismith
December 7, 1979

draft

Selecting, Caring for and Nuturing Your Panel

What is a panel?

A group of people who meet and function as a group over the lifetime of a study, to assist the staff and improve the quality of the work.

There may be other groups, panels, workshops, and chances for individuals to shape the study. The panel under discussion here is typically the "advisory" panel; the major resource for our work.

What is the purpose and the composition?

The make-up of the panel will reflect its purpose, and that purpose will reflect the study objectives. The utility of a panel includes at least some of the following:

1. Guidance to staff on issues and technical questions
2. Prevention of bias through diversity of viewpoints
3. Prevention of the appearance of bias
4. Respectability and opportunity for marketing of the study
5. Review and critique of study materials

6. The panel is not an exercise in concensus, but an attempt at fairness and imagination

Who should participate?

1. Most efforts at making a panel begin with a list of the critical issues of the study, and a list of the affected publics, along with a list of the major legislative players. After the category list is made, the names of real people are considered. This process will take a considerable amount of time and effort.

2. People may be from groups, but are chosen and expected to act as individuals. (Their participation does not mean that their group endorses the study.)

3. The level of "importance" of the individuals will vary with demands of the work and institutional preference.

4. Members of the Executive Branch and contractors are not to participate on the panel.

5. Working size is generally between eight and 20.

6. Strive for some new exposure, take some risks, look for unusual combinations of breadth.

7. The historical composition of OTA panels as of 12/78:

626 panelists on 50 panels
Affiliations
37% Universities 22% Business 6% Trade Associations
12% Public Interest Groups 5% State and Local Govs
3% Labor 6% Federal Govs 13% Other

Background
37% Scientists 17% Engineers 12% Economists
2% Sociologists 4% Political Scientists
5% MDs 5% Attorneys 18% Other

Geographic
23% Northeast 19% North Central 41% South
16% West 1% Other
D.C., Mass., NY & Virginia are high

8. Panels are predominently white male

9. Consider costs - compensation, travel, per diem

What are the logistics?

1. Draft the list in consultation with others. Check references (availability, cooperativeness, etc.) Talk with the person in a general way about the topic, and ask for other suggestions.

2. Submit a draft list to the Program Director. After obtaining agreement, circulate the draft list to other programs. The list must be approved by the Director before invitations are issued to participate.

3. When the list is approved,call or have the Director call. Give the initial meeting date.

4. Send a letter giving information on project, dates, and responsibilities of panel members. (This should be standardized.)

5. No proxys are allowed to sit at the table at a meeting. ANYONE may attend as an observer and participate at the discretion of the chair.

6. Panels traditionally have a Chairman. This is not mandatory.

How to Use the panel best?

1. Involve them early in the process and keep them informed.

2. Meetings range from 1 to 4 days (and evenings)

3. In general, a panel can help best if the meeting is well structured in advance and materials have been provided.

4. Panels are often asked to write brief statements or submit written comments.

What are some typical panel pitfalls?

1. The Ne Plus Ultra Blue Ribbon Panel (or Chairman)

2. The Ho-Hum panel

3. The Full-Cry Panel

OTA INFORMATION SERVICES
ANNUAL REPORT
FISCAL YEAR 1979

DECEMBER 1979

INFORMATION SERVICES STAFF

Martha M. Dexter, Librarian
Marian R. Ulincy, Assistant Librarian
Suzanne Boisclair, Library Technician
Jane Banks, Library Technician

TABLE OF CONTENTS

FISCAL YEAR 1979

A detailed outline of Information Services activities in FY79 is attached. The overall emphasis during the year included:

1) Advances in reference services, especially in the areas of staff orientations, legislative reference, and computerized literature search services.
2) Improved collection maintenance and technical services operations.
3) Time-efficient and cost-effective document delivery.

Fiscal Year 1979 was a productive year in consolidating, coordinating, and improving information services in OTA.

SERVICES

During FY79, the Library focused attention on providing consistent, quality service to all programs in OTA.

1) Brochures
In an effort to inform OTA staff of services available to them, the library staff developed a Guide to Information Services which was published and distributed in December and August.

2) Orientation Program
To carry the brochure idea a step further, the library planned ongoing orientation programs for each program in OTA. The orientations are held in the Library and serve to illustrate the coordination of information services that are described in the Guide to Information Services. Each orientation is designed for the subject area of the particular program with special emphasis on sample literature searches.

3) Current Contents
The Current Contents service, a long-time favorite of OTA staff, was improved by increasing the availability of Current Contents journals. Routing lists on these journals were eliminated and loan periods were reduced to overnight use thus assuring staff that these top-priority journals will be available when they need them.

4) New in the Library
During FY79, the library staff upgraded the new books newsletter New in the Library by including brief abstracts of each book and by expanding on library news items.

5) Computerized Literature Search Service
Library staff encouraged increased use of the literature search service through orientations and distribution of sample searches. The library now accesses over 150 bibliographic, statistical, and legislative data bases covering virtually all subjects. A total of 1,416 literature searches were performed during FY79. A high-speed CRT terminal and printer were acquired to improve access to commercial data bases in a more cost-effective and time-efficient manner.

6) Legislative Reference
In response to overwhelming staff interest, the Library increased legislative reference facilities. In addition to the regular subscription to the U.S. Code Annotated, the Library acquired the U.S. Code Congressional and Administrative News with back volumes to 1970. The USCCAN includes texts of all public laws with the texts of the accompanying House, Senate, and Conference reports. The Library continued to advertise to staff the availability of computerized retrieval of legislative information via the LEGIS and SCORPIO data base systems.

COLLECTION DEVELOPMENT

During FY79, the library staff continued efforts to provide a balanced and timely collection of in-house reference and research materials.

1) Books
Regular scanning of key journals and publishers catalogs in addition to staff suggestions provided a selection base for anticipating user requests. Approximately 1,200 new books were ordered and processed into the collection during FY79.

2) Subscriptions
Journal subscriptions continued to rank a high priority in providing the most timely information. A total of 675 subscriptions were maintained during FY79, 210 of which were maintained in the library as a general OTA collection. 108 titles were covered regularly in the Current Contents service.

3) Technology Assessment Vertical File
Research materials which do not fall into the categories of books or journals were organized in FY79 into a technology assessment vertical file. The collection also serves as a repository for legislative history materials relating to the establishment of OTA. Staff speeches and testimony in addition to key articles and pamphlets about OTA and technology assessment are also housed in the collection. Initially, a computerized index was developed in cooperation with the Senate Computer Center. However, the relatively small size of the file and the priorities of the Senate Computer Center have lessened the feasibility of an automated index. FY80 plans include easier access to the file through a standard card catalog system which is described below.

4) Organizations Vertical File
In an effort to provide timely information on important organizations and associations, the library developed a vertical file of brochures and publication lists of organizations relating to the work of OTA.

5) Audio-Visual Materials
Tape cassettes of selected AAAS and World Future Society meetings and seminars as well as selected CRS audio briefs were acquired for loan to interested staff members. In addition, the Publishing Office provided the library with slides used in OTA reports. The slides are now centrally available for use by all OTA staff.

COLLECTION MAINTENANCE

1) Book Circulation
A central concern during FY79 was development of an adequate circulation system for books borrowed from the Library of Congress. During FY79, the Library of Congress instituted a standard loan period of one-month loan with a one-month renewal and recalled all books more than six months overdue. A massive effort on the part of library staff resulted in the return of 80% of the overdue books, with negotiations still pending on the remainder. In an effort to comply with Library of Congress borrowing rules, the OTA Library developed and initiated a circulation system which systematically generates overdue notices to OTA staff. The Loan Division of the Library of Congress has been very appreciative of our response to their regulations.

2) Microfiche Backfiles

To preserve the integrity of the OTA Library journal holdings and to provide adequate backfiles for research, the library established a collection of microfiche backfiles of selected journals. Journals requiring excessive space (i.e., Science) and journals of lasting research value (i.e., Technology Review) were selected. In addition, backfiles of the Federal Register to 1977 were also obtained.

3) Card Catalog

In an effort to improve access to the OTA book collection, the card catalog was converted from a dictionary catalog (i.e., author, title, and subject in one alphabet) to a divided catalog (i.e., an author-title catalog and a separate subject catalog). The divided catalog improves user access when searching for books by subject only.

DOCUMENT DELIVERY

1) Microfiche

On June 1, 1979, the OTA Library converted selected document delivery to microfiche format. The system primarily affected documents from the CRS SCORPIO Citation data base file and from NTIS. Requests from the CRS microfiche file were reproduced into microfiche copies on equipment in the Library, and NTIS documents were ordered in microfiche. The following figures illustrate the savings accrued under the system from June 1st to September 30th:

CRS Microfiche

800 documents reproduced

Paper copies: 800 x est. 10 pages/document = 8000 pages
8000 pages x 10¢/page = $800.00

Microfiche copies: 800 fiche x 5¢/fiche = $40.00

Number of pages copied on reader-printer = 1994 x 10¢/page = $199.40
i.e.$200.00

$800 = all paper copies
$240 = microfiche copies + reader printer copies
$560 = savings (70%)

NTIS Documents

Average monthly expenses before June = $500/month
Average monthly expenses June-September = $235/month

$2000 = all paper copies
$ 940 = all microfiche copies
$1060 = savings (53%)

Overall

	Paper copies	Microfiche	Savings	
CRS Microfiche	$ 800	$ 240	$ 560	
NTIS	2000	940	1060	
Total	2800	1180	1620	58% savings

In addition to actual dollar savings, the turn-around time for providing the documents improved by approximately 66%.

2) Interlibrary Coordination

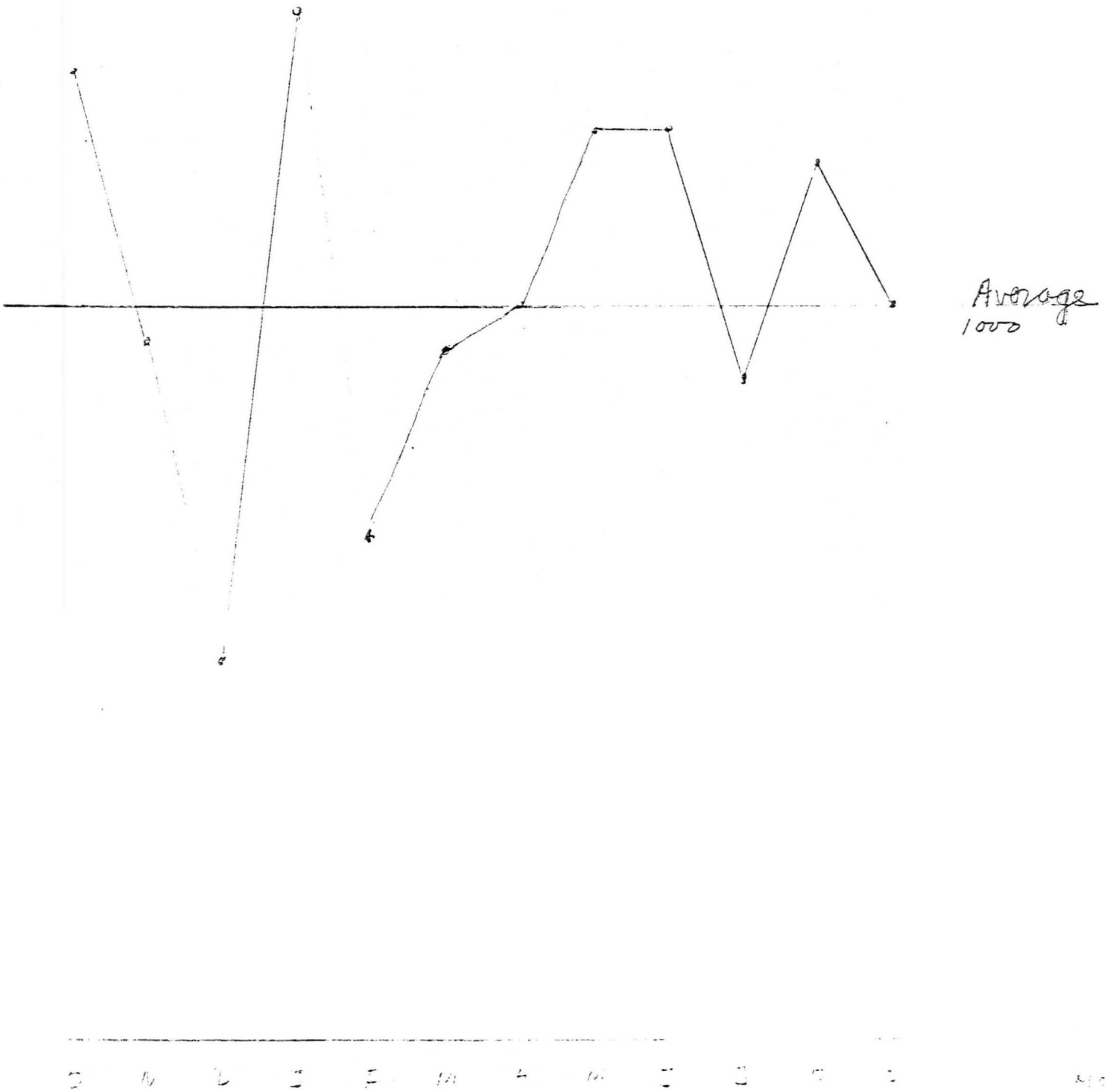
The library continued to serve as the liaison for OTA in requesting the reference services of CRS and the Loan Division of the Library of Congress. The liaison activities focus on requests for photocopies of articles, issue briefs, CRS reports, and Library of Congress books. Since the OTA Library is the focal point for all requests in OTA, we can often satisfy the requests in-house and use Library of Congress services as a back-up to our own activities. CRS continued to supply OTA with microfiche copies of documents in the SCORPIO system and with microfiche copies of CRS reports, thus expanding the OTA Library's in-house collection. In addition to the judicious use of Library of Congress resources, the OTA Library also participates in the nationwide interlibrary loan network, and maintains deposit accounts with NTIS and GPO for rapid retrieval of government publications. A wide variety of contacts have been established with government agencies, associations, publishers, and other organizations in an effort to maximize efficient document delivery for OTA staff.

LIBRARY STAFF

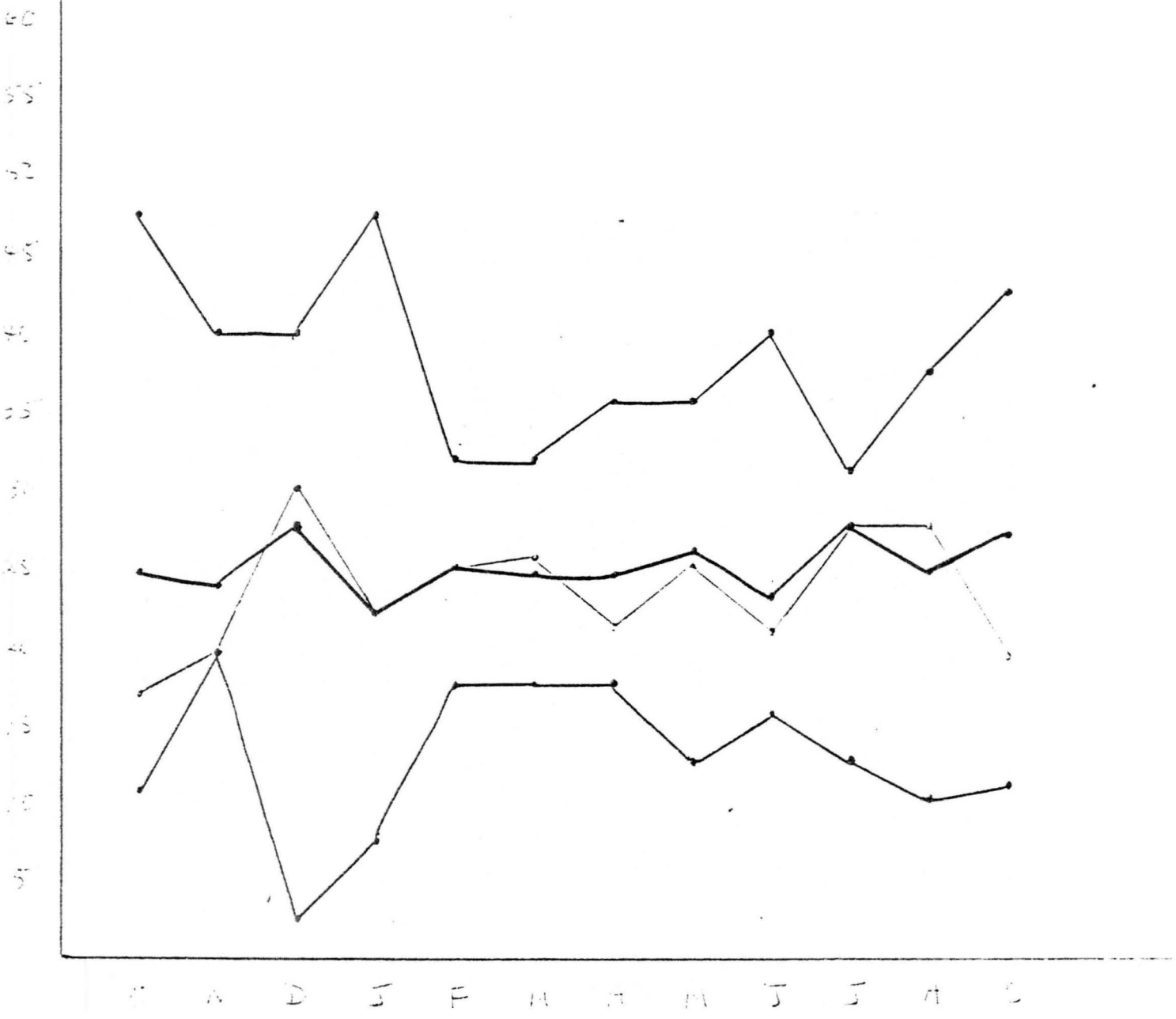
During FY79, several changes in staff occurred. Robin Johnson resigned as Librarian on April 6, 1979, and Martha Dexter assumed the position as of April 9, 1979. Martha was formerly Assistant Librarian. Marian Ulincy became Assistant Librarian on June 11, 1979, coming to OTA from the American Bankers Association Library where she was Assistant Head of Public Services. Vicki Bayer resigned as Library Technician on the NCG Contract in June, and Jane Banks assumed the position as of August 1, 1979, coming to OTA from the Center for Naval Analyses Library. Suzanne Boisclair continued as Library Technician in charge of periodicals.

REQUESTS FOR INFORMATION
BY MONTH

TOTAL NUMBER = 12,024



PERCENTAGE DISTRIBUTION BY SOURCE
BY MONTH



Govt. agencies
Other
OTA Library

FISCAL YEAR 1980

In addition to the services and continuing projects of FY79, the library plans for continued growth in FY80. The major emphasis at the outset of FY80 is to encourage the use of internal OTA Library resources. This is being accomplished in two ways: 1) outreach to the programs by expanding the orientation program; and 2) a concentration on improving control of and access to all materials in the library. The overall goal for FY80 is to provide centralized, coordinated, accessible information for all programs and staff members in OTA.

A second goal is to further the concept of the library as an information center, as a place that is not just a repository of books but a focal point for obtaining any information in any format. Again, orientations will inform the staff of our capabilities, and we will announce our services in our newsletter. For our part, the library staff will continue to establish the contacts and the networks to accommodate all requests for information.

A final goal is to improve communication between the programs and the library. Only through effective communication of new projects and issues can we in the library most efficiently accommodate resource needs in OTA. We hope to accomplish this goal through encouraging OTA staff to include the library on informational routing lists and staff seminars. Our goal is to put the library in the forefront of research in OTA as a logical first-step in the report process.

FISCAL YEAR 1980

SERVICES

With the success of the program orientations in FY79, the library staff plans an expanded orientation program for FY80. Emphasis will be placed on specific aspects of library services. Suggested subject orientations include legislative reference and sources for statistical data. A further program will include training interested OTA staff members in the use of the SCORPIO and LEGIS data base systems. The library brochure, Guide to Information Services, will be revised and updated at least twice during the year.

COLLECTION DEVELOPMENT

1) Technology Assessment Vertical File
A major staff project for FY80 is the development of a card catalog for access to the technology assessment vertical file. An extensive consolidation and assessment of the collection is currently under way to insure a useful and complete file of information on OTA and technology assessment. The collection will be indexed using the SCORPIO data base thesaurus to provide compatibility with an index familiar to library users. The vertical file card catalog will serve as a complement to the book collection card catalog, and will insure that all materials in the OTA Library are easily accessible.

2) Subscriptions
During FY80, the library plans include a consolidation of journal holdings and an emphasis on library current awareness services. 1980 subscription renewals have been completed following new guidelines established by the library. Emphasis is placed on the value of the Current Contents service as an alerting tool. Thus, all program subscriptions which duplicated library holdings were cancelled, with the idea that Current Contents will keep staff informed of current articles. During the renewal review, programs were encouraged to critically evaluate their journal subscriptions and cancel unnecessary titles. The overall result was an $8000 savings in OTA subscriptions for 1980 ($25,000 to $17,000).

COLLECTION MAINTENANCE

1) Book Circulation
A major effort is under way in FY80 to improve book circulation records. A double file will be established, one by book and one by borrower. By maintaining two files, the library will be able to issue periodic statements to OTA staff informing them of what books they currently have on loan. The system is designed to encourage staff to keep track of library books, and to provide an adequate accounting when staff members leave OTA.

2) Book Cataloging

Books in the OTA Library are processed using the Library of Congress cataloging system. However, the Library of Congress does not catalog many of the publications we receive. As a result, library staff are developing a system for cataloging these publications to provide ready access to them. The project involves extensive subject indexing of the backlog of uncataloged materials, and is expected to efficiently handle incoming publications on a day-to-day basis.

SPACE ACCOMODATIONS

Library staff are currently assessing the physical arrangement of the OTA Library with an eye toward efficient use of space. With expanding book and periodical collections, it will be necessary in FY80 to consolidate back volumes of journals and display Current Contents journals separately. At present, we do not foresee the need for acquiring additional furniture or equipment. Judicious use of stack and floor space should accommodate expanding collections this year.

PROFESSIONAL DEVELOPMENT

A key element in the efficient operation of the library is the education and development of the library professional staff. In the rapidly changing field of information technology, it is important for library staff to keep abreast of new developments which can enhance information services in OTA. Library professional staff maintain active participation in library and information science professional associations, and have already attended several important professional conferences. Martha Dexter attended the American Society for Information Science Conference in October, Marian Ulincy attended the first annual Online Conference in November, and both librarians participated in the White House Conference on Libraries and Information Services. Both librarians are active in the local library community and look forward in the coming year to participating in educational meetings and seminars. The Special Libraries Association Conference will be held in Washington in June 1980 and both librarians plan to attend.

STAFF

In order to maximize efficient services, a minimum staff of four is required in the library. Currently, three staff positions are permanent with a library technician position employed through the NCG contract. This position is vital to the smooth operation of services in the library. The library technician is responsible for all book ordering, processing, and circulation, interlibrary loans, card catalog maintenance, and vertical file indexing. These tasks are at the core of library maintenance and thus affect all other library services. We propose that this position be made permanent in FY80 to insure the stability of technical services in the OTA Library.

OTA Publishing Office

Background Information

Fiscal Year 1981 Appropriations

Prepared by
John C. Holmes
Publishing Officer
February 1980

CONGRESS OF THE UNITED STATES
Office of Technology Assessment
WASHINGTON, D. C. 20510

Contents

Background

Before OTA's move to our present quarters, the publishing of official reports and other printed material was very disorganized due to the space accommodations and time-consuming contractual involvement of writing specifications, purchase orders, contracts, and transporting materials. To make simple last-minute corrections to a report in its final stages would take up to a week in some cases.

Upon being notified of the impending move to our present quarters, I had proposed that we install our own capability for in-house composition. Installing our own system to produce OTA's reports would assist in achieving the following results:

- **Reduce the time lag** of responding to congressional committee requests by approximately 2 weeks.
- **Ensure proprietary control** over report information until the congressional Technology Assessment Board has given approval.
- **Improve the overall quality** of the final product.
- **Conserve costly and wasteful man-hours** by reducing retyping and proofreading requirements on final production copy.
- **Conserve paper.** This would be achieved by reduction of the number of pages in draft reports that would come about when set in type as against typewritten manuscript.
- **Reduce costs.** It is anticipated that OTA would realize a conservative overall cost avoidance of approximately 50 percent, or roughly $30,000 annually.

The proposal was approved by Acting Director DeSimone and permission obtained from Senator Howard Cannon, Chairman, Joint Committee on Printing, to purchase electronic composing equipment on September 29, 1977.

The Publishing Office solicited bids from various equipment manufacturers and the Compugraphic Corporation was the low-responsive bidder.

The equipment was installed on November 11, 1977, and by December 1, 1977, we were in full operation.

OTA Publications Program

Fiscal Year 1979 Summary of Statistics

Number of Publications

OTA has published 102 final reports since its inception in 1974 through fiscal year 1979 (see exhibit A). Forty-five of these publications were produced since FY 1978—19 in FY 1978 and 26 in FY 1979.

Distribution of Publications

The average number of copies ordered by OTA during FY 1979 was 3,648. Of this number 1,500 to 2,000 are immediately distributed by the Senate Services mail room to those addressees furnished by OTA's Public Communications Office. The normal breakdown of which is:

555—to the full Congress and requesting committees
600-1,500—news media, daily and weekly newspapers, trade journals, etc.
50—State Legislative Reference Libraries
25-100—Executive branch agencies.

In addition, the program offices distribute copies to individual panel members, consultants, and concerned industry representatives. A balance of stock is kept on hand to service members of Congress and constituents.

Unsolicited Requests for Publications

Telephone and mail requests for various OTA publications received and filled by the Public Communications Office from 1974 to date indicate a steady upward trend (see exhibits B (1) and (2)). This data reflect only those inquiries directed to our Public Communications Office—numerous requests are handled by the individual program offices.

Public Sector Information on Availability of OTA Reports

Dissemination of information as to the availability of OTA publications in the public sector is conveyed by one or more of the following avenues:

1. Selected U.S. Government Publications listing (GPO) that is distributed to over 1½ million persons on a monthly basis.
2. Specific disciplinary area notification by GPO to those persons requesting same, i.e. biology, physics, etc. The number of persons notified is widely dispersed due to areas of interest. Certain categories may reach into the 5-digit area.
3. OTA publication briefs and press releases reaching individuals and the news media which may consequently be further advertised in trade and scientific journals.
4. Automatic distribution by GPO to the Regional Depository Libraries under the Congressional Depository Act. (Approximately 750 libraries are receiving our publications that are published by GPO.)
5. Through the National Technical Information Service (NTIS) public relations pamphlets.
6. OTA "List of Publications" pamphlet (OTA-P-58).

GPO Sales of OTA Publications Versus Overall Federal Government

The total number of Government publications sold by GPO from all agencies as of October 1978 was approximately 40.3 million copies.* The number of OTA publications sold by GPO as of October 1978 was 46,091. This figure has increased to 76,586 copies as of December 31, 1979 (see exhibit C(1)).

In comparison, the number of National Science Foundation publications sold by GPO as of October 1978 was 21,518 copies.*

NTIS Sales of OTA Publications

NTIS, an agency of the Department of Commerce, sells scientific and technical documents to the public. The documents are available in microfiche or reproduced offset copies.

NTIS has sold, as of September 30, 1979, 9,604 copies of OTA publications, 3,302 in paper back and 6,302 copies in microfiche format (see exhibit C(2)).

The cost of paper copies from NTIS is generally higher than GPO and is of inferior quality.

The combined total of OTA publications sold in hard, paper, and microfiche copies total 86,190 copies.

Private Sector Publishing

Three OTA publications were reprinted almost in toto in a 6 x 9″ format by private publishers: 1) "Nuclear Proliferation and Safeguards," approximately 5,000 copies were reprinted by Praeger Publishers; 2) "Effects of Nuclear War," 3,000 copies were reprinted by Allanheld, Osmun Publishers; and 3) 1,000 copies of "Residential Energy Conservation" are also being reprinted by Allanheld, Osmun Publishers.

Highlights

Twenty-six major reports were published during FY 1979 or one major report every 2 weeks. During FY 1978, we published 19 major reports or one report every 2¾ weeks (see exhibit D).

- total number of pages increased by 2,184
- average printing costs reduced by $20.56 per page
- average cost per copy decreased by $0.20
- average printing cost per publication decreased by $2,372

Exhibit E details the 26 publications produced during FY 1979.

Overall Costs for Publishing and Printing

The total costs for publishing and printing during FY 1979 showed a decrease in overall expenditures from $344,573 in FY 1978 to $318,965 in FY 1979 (see exhibits F(1) and (2)) while production has risen. This cost reduction can be contributed to following the mandates of the Appropriations Committee in avoiding the rise of multicolor printing, preplanning on production schedules, and tighter specifications regarding: quantity on each publication, paper, and inks.

*Personal communication with the Superintendent of Documents, U.S. Government Printing Office, September 1978.

Composition Highlights
Fiscal Year 1979

During fiscal year 1979, the Publishing Office:

- Composed 22 final reports with a total of 4,034 pages.
- Published 15 one-pagers and 5 newsletters; prepared approximately 1,448 nameplates and nametags; 378 vue-graphs; 27 forms; 44 charts; 48 signs; telephone, organization, and cost code listings; and the calendars of events. Outside procurement for these items is estimated at $25,000.
- Had an average composition cost per final page of $15.24 (including author's alterations) versus $62.40 (excluding author's alterations) for hot-metal composition at GPO.
- Realized a cost avoidance in the composition of publications of over $190,243. (Exhibit H)
- Composition of OTA publications in lieu of reproducing typewritten material results in a reduced amount of pages per publication. This reduction in turn evolves in approximately a one- to two-third reduction in the following areas.

—Less paper	—Less manpower
—Less storage	—Less bindery time
—Less negatives	—Less postage
—Less platemaking material	—Less energy
—Less ink	—Less pollution
—Less press time	—etc.

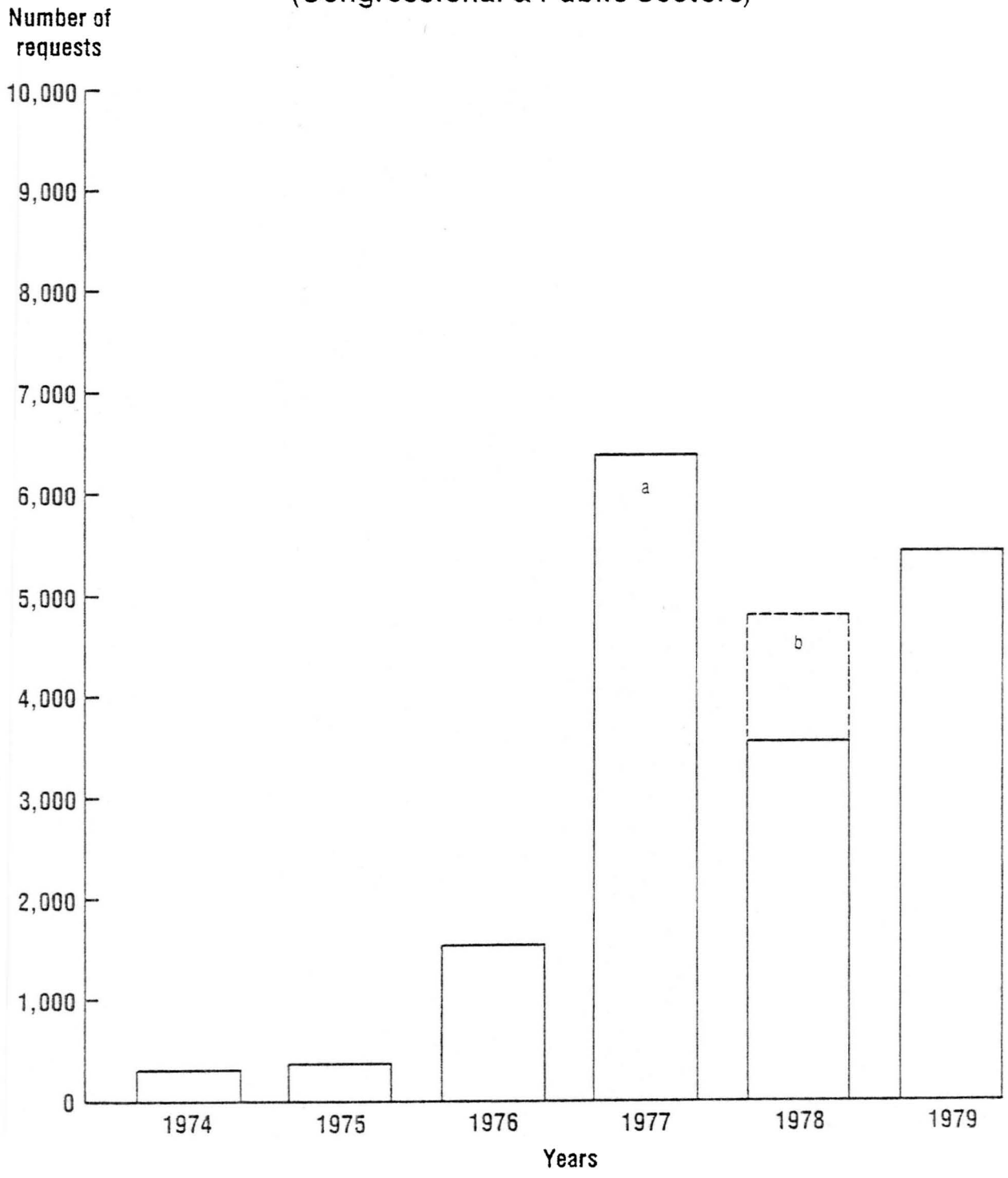
- Enabled OTA to respond to congressional requests in a more timely and qualitative manner.

List of Publications, Fiscal Year 1974-79

Pub #	Title of publication
OTA-A-1	Annual Report, March 15, 1974
OTA-A-2	Technology Assessment Activities of the National Science Foundation, June 12 and 13, 1974
OTA-H-3	Drug Bioequivalence, July 1974
OTA-M-4	Requirements for Fulfilling a National Materials Policy, August 1974
OTA-T-5	Automobile Collision Data: An Assessment of Needs and Methods of Acquisition, February 1975
—	An Analysis of the Department of the Interior's Proposed Acceleration of Development of Oil and Gas on the Outer Continental Shelf, March 1975
—	An Analysis Identifying Issues in the Fiscal Year 1976 ERDA Budget, March 1975
OTA-A-6	Annual Report, March 15, 1975
OTA-O-7	An Analysis of the Feasibility of Separating Exploration From Production of Oil and Gas on the Outer Continental Shelf, May 1975
OTA-T-8	Automated Guideway Transit: An Assessment of PRT and Other New Systems, June 1975
OTA-O-9	Oil Transportation by Tankers: An Analysis of Marine Pollution and Safety Measures, July 1975
	Analyses of Effects of Limited Nuclear Warfare, September 1975
OTA-T-10	The Financial Viability of Conrail, September 1975
OTA-T-11	A Review of Alternative Approaches to Federal Funding of Rail Rehabilitation, September 1975
OTA-E-12	An Analysis of the ERDA Plan and Program, October 1975
OTA-E-13	An Analysis of Impacts of the Projected Natural Gas Curtailments for the Winter 1975-76, November 1975
OTA-T-14	A Review of National Railroad Issues, December 1975
OTA-T-15	Energy, the Economy, and Mass Transit, December 1975
OTA-T-16	An Assessment of Community Planning for Mass Transit, February 1976, Volume 1: Summary, February 1976
OTA-T-17	Volume 2: Atlanta Case Study, March 1976
OTA-T-18	Volume 3: Boston Case Study, March 1976
OTA-T-19	Volume 4: Chicago Case Study, March 1976
OTA-T-20	Volume 5: Denver Case Study, March 1976
OTA-T-21	Volume 6: Los Angeles Case Study, March 1976
OTA-T-22	Volume 7: Minneapolis-St. Paul Case Study, March 1976
OTA-T-23	Volume 8: San Francisco Case Study, March 1976
OTA-T-24	Volume 9: Seattle Case Study, March 1976
OTA-T-25	Volume 10: Washington D.C. Case Study, March 1976
OTA-T-26	Volume 11: Technical Report, February 1976
OTA-T-27	Volume 12: Bibliography, February 1976
OTA-E-28	Comparative Analysis of the 1976 ERDA Plan and Program, May 1976
OTA-F-29	OTA Board Hearings, Food Information Hearings, September 1976
OTA-T-30	Automatic Train Control in Rail Rapid Transit, May 1976
OTA-A-31	Annual Report, March 15, 1976
OTA-E-32	A Review of the U.S. Environmental Protection Agency Environmental Research Outlook FY 1976 Through 1980, August 1976
OTA-T-33	The Feasibility and Value of Broadband Communications in Rural Areas: A Preliminary Evaluation, April 1976
OTA-H-34	Development of Medical Technology: Opportunities for Assessment, August 1976
OTA-F-35	Food Information Systems: Summary and Analysis, August 1976
OTA-M-36	An Assessment of Alternative Stockpiling Policies, August 1976
OTA-O-37	Coastal Effects of Offshore Energy Systems, November 1976
OTA-O-38	Volume II—Working Papers
OTA-O-39	Coastal Effects of Offshore Energy Systems, (Pamphlet), December 1976
OTA-M-40	An Assessment of Information Systems Capabilities Required to Support U.S. Materials Policy Decisions, January 1977
OTA-X-41	Technology Assessment Activities in the Industrial, Academic and Governmental Communities (hearings before the OTA Congressional Board), December 1976
OTA-X-42	Technology Assessment in Business and Government: Summary and Analysis, January 1977
OTA-TCI-43	A Preliminary Analysis of the IRS Tax Administration System, March 1977
OTA-M-44	Engineering Implications of Chronic Materials Scarcity, April 1977
	General Issues in Elementary and Secondary Education (Hearings Before the Subcommittee on Elementary, Secondary, and Vocational Education), May 10-11, 1977
OTA-O-45	Establishing a 200-mile Fisheries Zone, June 1979
OTA-O-46	Volume II—Working Papers
OTA-F-47	Perspectives on Federal Retail Food Grading, June 1977
OTA-E-48	Nuclear Proliferation and Safeguards (Praeger)
OTA-F-49	Organizing and Financing Basic Research to Increase Food Production, June 1977
OTA-E-50	Nuclear Proliferation and Safeguards—Appendixes, June 1977
	Volume I
	Volume II

OTA-E-51 Analysis of the Proposed National Energy Plan, August 1977
OTA-A-52 Annual Report, March 15, 1977
OTA-O-53 Transportation of Liquefied Natural Gas, September 1977
OTA-M-54 Brochure: Oil Shale Technology
OTA-H-55 Cancer Testing Technology and Saccharin, October 1977
OTA-H-56 Policy Implications of Medical Information Systems, November 1977
OTA-E-57 Gas Potential From Devonian Shales of the Appalachian Basin, November 1977
OTA-P-58 OTA Publications Listing, July 1979
OTA-E-59 Enhanced Oil Recovery Potential in the United States, January 1978
OTA-E-60 A Technology Assessment on Coal Slurry Pipelines, March 1978
OTA-T-61 An Evaluation of Railroad Safety, May 1978
OTA-O-62 Renewable Ocean Energy Sources: Part 1 Ocean Thermal Energy Conversion, May 1978
OTA-O-63 Working Papers: Renewable Ocean Energy Sources: Part 1, Ocean Thermal Energy Conversion, May 1978
OTA-T-64 Working Papers: An Evaluation of Railroad Safety, May 1978
OTA-R-65 Application of R&D in the Civil Sector, June 1978
OTA-E-66 Volume I: Application of Solar Technology to Today's Energy Needs, June 1978
OTA-T-67 Brochure-The Automobile: It's Driving Us To Think, August 1978
OTA-A-68 1977 Annual Report, August 1978
OTA-M-69 Working Papers: Volume II, Materials and Energy From Municipal Waste, July 1978
OTA-R-70 The Role of Demonstrations in Federal R&D Policy, July 1978
OTA-R-71 Impact of a Department of Education on Federal Science and Technology Activities, August 1978
OTA-H-72 Policy Implications of the Computed Tomography (CT) Scanner, August 1978
OTA-R-73 Government Involvement in the Innovation Process—a Contractor's Report, August 1978
OTA-F-74 Nutrition Research Alternatives, September 1978
OTA-H-75 Assessing the Efficacy and Safety of Medical Technologies, September 1978
OTA-M-76 Volume II: Working Papers—Analysis of Laws Governing Access Across Federal Lands: Options for Access in Alaska, September 1978
OTA-E-77 Volume II: Application of Solar Technology to Today's Energy Needs, September 1978
OTA-R-78 The Health of the Scientific and Technical Enterprise, October 1978
OTA-F-79 Emerging Food Marketing Technologies, October 1978
OTA-I-80 A Preliminary Assessment of the National Crime Information Center and the Computerized Criminal History System, December 1978
OTA-P-81 OTA Priorities 1979, January 1979
OTA-M-82 Volume I Analysis of Laws Governing Access in Alaska, February 1979
OTA-T-83 Volume I: Summary and Findings, Technology Assessment of Changes in the Future Use and Characteristics of the Automobile Transportation System, February 1979
OTA-T-84 Volume II: Technical Report, Technology Assessment of Changes in the Future Use and Characteristics of the Automobile Transportation System, February 1979
OTA-A-85 Annual Report to the Congress for 1978, March 1979
OTA-E-86 The Direct Use of Coal-Prospects and Problems of Production and Combustion, April 1979
OTA-E-87 Volume II: Working Papers, Residential Energy Conservation, April 1979
OTA-M-88 Management of Fuel and Nonfuel Minerals in Federal Land, April 1979
OTA-NS-89 The Effects of Nuclear War, May 1979
OTA-H-90 Selected Topics in Federal Health Statistics, June 1979
OTA-F-91 Drugs in Livestock Feed, June 1979
OTA-E-92 Volume I: Residential Energy Conservation, July 1979
OTA-M-93 Volume I: Materials and Energy From Municipal Solid Waste and Beverage Container Deposit Legislation, July 1979
OTA-F-94 Open Shelf-Life Dating of Food, August 1979
OTA-T-95 Railroad Safety: U.S.-Canadian Comparison, August 1979
OTA-H-96 A Review of Selected Federal Vaccine and Immunization Policies: Based on Case Studies Of Pneumococcal Vaccine, September 1979
OTA-BR-H-1 Computer Technology in Medical Education and Assessment, September 1979
OTA-M-97 Technical Options for Conservation of Metals: Case Studies of Selected Metals and Products, September 1979
OTA-F-98 Volume I—Summary, Pest Management Strategies, September 1979
OTA-F-99 Volume II—Working Papers, Pest Management Strategies, September 1979
OTA-TM-E-1 Gasohol, September 1979
OTA-T-100 Volume III—Public Participation, Technology Assessment of Changes in the Future Use and Characteristics of the Automobile Transportation System, September 1979

Public Communication Office Inquiries for Information on OTA Assessments, Calendar Years 1974-79 (Congressional & Public Sectors)



[a]One-quarter of this total was requests on Solar Energy.
[b]Projected due to three months of missing data.

Public Communications Office Inquiries[a] for Information on OTA Assessments, Calendar Years 1974-79 (Congressional and Public Sectors)

Energy, Materials, and International Security Division

Title of assessment	'74	'75	'76	'77	'78	'79	Totals
Energy Program							
ERDA Plan & Program	—	15	58	9	—	—	82
ERDA Comparative Analysis	—	—	86	16	18	19	139
Analysis of EPA R&D	—	—	118	17	3	6	144
Natural Gas Curtailments	—	—	21	23	—	—	44
Onsite Solar Energy	—	—	—	1,596	310	155	2,061
Enhanced Oil Recovery	—	—	—	433	107	29	569
National Energy Plan	—	—	—	780	32	—	812
Nuclear Proliferation	—	—	—	607	54	26	687
Coal Slurry Pipelines	—	—	—	7	485	48	540
Devonian Shale Gas	—	—	—	50	72	2	124
Direct Use of Coal	—	—	—		—	226	226
Residential Energy Conservation	—	—	—	—	—	908	908
Gasohol	—	—	—	—	—	225	225
Energy From Biological Processes	—	—	—	—	—	8	8
Subtotal	—	15	283	3,538	1,081	1,652	6,569
Materials Program							
National Materials Policy	—	—	24	3	2	5	34
Alternative Stockpiling Policies	—	—	—	1	1	7	9
Materials Information Systems	—	—	—	64	2	—	66
Chronic Materials Scarcity	—	—	—	37	2	15	54
Access Across Federal Lands	—	—	—	—	—	67	67
Management of Fuel & Non-Fuel Minerals	—	—	—	—	—	43	43
Materials & Energy From Waste	—	—	—	—	4	176	180
Conservation of Metals	—	—	—	—	—	55	55
Oil Shale Technology	—	—	—	—	—	—	—
Water Supply	—	—	—	—	—	4	4
Subtotal	—	—	24	105	11	372	512
International Security and Commerce Program							
Limited Nuclear Warfare	—	—	—	—	1	5	6
Effects of Nuclear War	—	1	8	—	—	345	354
Alternative Global Futures	—	—	—	—	—	9	9
Technology & East-West Trade	—	—	—	—	—	99	99
Benefits of Steel Casting	—	—	—	—	—	7	7
Impact of Technology on Industry Competitiveness	—	—	—	—	—	6	6
Subtotal	0	1	8	0	1	471	481
EMISD Total	0	16	315	3,643	1,093[b]	2,496	7,553

Public Communications Office Inquiries[a] for Information on OTA Assessments, Calendar Years 1974-79 (Congressional and Public Sectors)—continued

Health and Life Sciences Division

Title of assessment	'74	'75	'76	'77	'78	'79	Totals
Health Program							
Drug Bioequivalence	298	90	14	5	1	4	412
Drug Utilization	—	—	110	28	—	—	138
Development of Medical Technologies	—	—	82	42	3	22	149
Cancer Testing Technology & Saccharin	—	—	158	148	57	25	388
Medical Information Systems	—	—	—	165	114	9	288
CAT Scanners	—	—	96	75	50	30	251
Efficacy & Safety of Medical Technology	—	—	—	3	96	140	239
Federal Health Statistics	—	—	—	—	—	68	68
Immunization & Vaccination Policy	—	—	—	—	—	48	48
Computer Technology in Medical Education	—	—	—	—	—	17	17
Fetal Monitoring	—	—	—	—	—	2	2
Health Promotion & Disease Prevention	—	—	—	—	—	8	8
Meeting Human Needs	—	—	—	—	—	12	12
Subtotal	**298**	**90**	**460**	**466**	**321**	**385**	**2,020**
Food and Renewable Resources Program							
Food Information Systems	—	—	134	70	12	24	240
Retail Food Grading	—	—	—	84	9	4	97
Organizing & Financing Basic Research	—	—	—	108	101	19	228
Nutrition Research	—	—	—	—	140	63	203
Food Marketing Technologies	—	—	—	—	39	17	56
Drugs in Livestock Feed	—	—	—	—	—	60	60
Open Shelf-Life Dating	—	—	—	—	—	48	48
Pest Management Strategies	—	—	—	—	—	86	86
Environmental Contaminants	—	—	—	—	—	200	200
Subtotal	**—**	**—**	**134**	**262**	**301**	**521**	**1,218**
Genetics and Population Program							
— — —	—	—	—	—	—	—	0
HLSD Total	**298**	**90**	**594**	**728**	**622[b]**	**906**	**3,238**

Public Communications Office Inquiries[a] for Information on OTA Assessments, Calendar Years 1974-79 (Congressional and Public Sectors)—continued

Science, Information, and Transportation Division

Title of assessment	'74	'75	'76	'77	'78	'79	Totals
National R&D Priorities and Policies Program							
R&D in Civil Sector	—	—	—	—	13	7	20
Role of Demonstrations in Federal R&D	—	—	—	—	62	33	95
Impact of a Department of Education	—	—	—	—	10	—	10
Government and Innovation	—	—	—	—	54	40	94
Scientific and Technical Enterprise	—	—	—	—	15	13	28
Subtotal	—	—	—	—	154	93	247
Oceans Program							
Separating Exploration From Production of Oil & Gas on OCS	—	12	8	2	4	—	26
Oil Transportation by Tankers	—	21	12	16	8	5	62
Coastal Effects	—	—	102	369	25	21	517
200-Mile Fisheries Zone	—	—	—	173	25	5	203
Transportation of LNG	—	—	—	93	45	—	138
Ocean Thermal Energy Conversion	—	—	—	—	23	17	40
Subtotal	—	33	122	653	130	48	986
Telecommunication and Information Systems Program							
Broadband Communications in Rural America	—	—	57	35	5	6	103
IRS Tax Administration System	—	—	—	82	2	14	98
Computerized Criminal Records	—	—	—	—	—	24	24
Subtotal	—	—	57	117	7	44	225
Transportation Program							
Auto Collision Data	—	4	2	6	1	—	13
Automated Guideway Transit	—	63	35	1	4	—	103
Financial Viability of Conrail	—	—	11	—	1	—	12
Rail Rehabilitation	—	—	7	2	2	—	11
National Railroad Issues	—	—	15	1	—	6	22
Energy, Economy, & Mass Transit	—	45	77	15	9	24	170
Community Planning for Mass Transit	—	—	100	34	8	7	149
Automatic Train Control	—	—	25	28	5	—	58
Railroad Safety	—	—	—	13	2	13	28
Auto Brochure	—	—	—	—	3	—	3
Future Characteristics of Auto	—	—	—	—	—	226	226
Railroad Safety: U.S.-Canada	—	—	—	—	—	21	21
Transbus	—	—	—	—	—	1	1
Subtotal	—	112	272	100	35	298	817
SITD Total	—	145	451	870	326[b]	483	2,275
Miscellaneous Inquiries							
Publication brochure, Director's testimonies, publication briefs, annual reports, etc.							
Miscellaneous Total	—	77	201	1,119	1,619[b]	1,576	4,669
Grand Total	298	328	1,561	6,360	3,660[b]	5,461	17,715

[a]Totals do not include inquiries directly to Program offices.
[b]Totals for CY 1978 are for 9 months due to incomplete data. projections would indicate a grand total of 4,880 inquiries.

Exhibit C(1)

Summary of Sales of OTA Publications Through the Superintendent of Documents, GPO (July 1976 through December 1979)

Number of individual titled publications put on sale to the public 83
Total number sold 76,586
Estimated GPO gross income from sales* $271,880

Program	Number of publications	Total no. sold	Estimated gross income
Energy	16	25,054	$137,743
Food	10	5,898	17,601
Health	9	21,023	48,511
Materials	8	2,906	12,774
Oceans	6	5,602	19,018
Transportation	20	11,792	27,647
R&D, miscellaneous	8	3,070	6,679
Administration	6	1,241	1,907
Totals	83	76,586	$271,880

Exhibit C(2)

Summary of Sales of OTA Publications Through the National Technical Information Service (July 1976 through September 1979)

Number of individual titled publications put on sale to the public 86
Total number sold (hard copy) 3,302
(microfiche) ..... 6,302 } 9,604
Estimated NTIS gross income from sales $38,785

Program	Number of publications 6/30/78	Number of publications 7/30/79	Total no. sold—hard copies 6/30/78	Total no. sold—hard copies 7/30/79	Total no. sold—microfiche 7/78	Total no. sold—microfiche 9/79
Energy	10	17	491	1,078	716	1,380
Food	4	6	107	178	279	400
Health	4	6	106	203	278	410
Materials	4	6	74	156	317	477
Oceans	8	10	384	523	639	823
Transportation	19	23	750	848	1,570	1,899
R&D, miscellaneous	5	12	107	234	261	605
Administration	4	6	74	82	250	348
Totals	58	86	2,093	3,302	4,310	6,302

Totals	No. of copies sold	Estimated dollar amount
GPO	76,586	$271,880
NTIS	9,604	$ 38,785
Grand Totals	86,190	$310,665

*Estimated Gross Income is derived using single copy sales price as of 12-31-79. Educational and nonprofit organizations receive a 25-percent discount on volume purchases. This volume purchase figure is not included due to unavailability of data.

GPO Printing Costs of OTA Major Reports
Fiscal Years 1978-79

	1978	1979	Difference (FY 78-79) +Increase −Decrease
No. of Publications	19	26	+7
Total No. of Copies	83,400	94,850	+11,450
Total No. of Pages	3,430	5,614	+ 2,184
Expenditures (actual and estimated)	$182,995	$188,739	+$5,744
Avg Cost Per Page	$53.35	$32.79	−$20.56
Avg Copies Per Publication	4,389	3,648	−741
Avg Cost Per Copy	$2.19	$1.99	−$0.20
Avg Cost Per Publication	$9,631	$7,259	−$2,372

GPO Printing Costs of 26 Major Reports
Fiscal Year 1979

Pub. no.	Report title	Type of report	No. of pages	No. of copies	GPO cost
OTA-R-78	Health of the scientific and tech. enterprise, 10/78	final	24	3,000	1,939
OTA-F-79	Emerging food marketing tech., 10/78	final	96	3,000	4,546
OTA-I-80	Nat'l crime inf ctr & CCH, 12/78	final	92	3,000	4,199
OTA-P-81	OTA priorities 1979, 1/79	final	56	35,000	8,088
OTA-M-82	Alaska lands—Vol. 1, 2/79	final	272	1,500	6,979
OTA-T-83	Auto assessment—Vol. 1, 2/79	final	48	3,000	3,182
OTA-T-84	Auto assessment—Vol. 2, 2/79	final	382	1,800	15,392
OTA-A-85	1979 annual report, 3/79	final	120	5,000	8,373
OTA-E-86	Direct use of coal, 4/79	final	418	2,500	13,498
OTA-E-87	Residential energy—Vol. 2, 4/79	final	644	250	3,500*
OTA-M-88	Fuel & non-fuel minerals, 4/79	final	446	1,500	12,079
OTA-M-89	Effects of nuclear war, 5/79	final	158	3,000	8,483
OTA-H-90	Federal health statistics, 6/79	final	220	2,200	5,165
OTA-F-91	Drugs in livestock feed 6/79	final	78	3,000	3,907
OTA-E-92	Residential energy—Vol. 1, 7/79	final	362	3,000	16,768
OTA-P-58	Publications listing (revised), 7/79	final	28	6,000	$ 2,022
OTA-M-93	Materials and energy from waste—Vol. 1, 7/79	final	292	1,600	9,206
OTA-F-94	Open-shelf life dating, 8/79	final	116	3,000	6,782
OTA-T-95	Railroad safety—U.S.-Can. comparis, 8/79	final	120	500	3,231
OTA-H-96	Selected Fedl vac. and immuniz. policies, 9/79	final	224	3,000	7,500*
OTA-M-97	Technical options for conserv. of metals, 9/79	final	136	1,500	6,000*
OTA-F-98	Pest management strategies—vol. 1, 9/79	final	144	3,000	7,000*
OTA-F-99	Pest management strategies—vol. 2, 9/79	final	830	1,000	15,000*
OTA-T-100	Auto assessment—Vol. 3, 9/79	final	78	3,000	8,000*
OTA-TM-E-1	Gasohol, 9/79	tech. memo.	78	1,000	4,800
OTA-BR-H-1	Computer tech. in med. educ., 9/79	back. paper	152	500	3,600*
	TOTALS		5,614	94,850	$188,739

*GPO estimated cost.

Publishing and Printing Expenditures—Fiscal Year 1979 Cost Summary

(actual and estimated)

	1st quarter			2nd quarter			3rd quarter			4th quarter			Yearly
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	totals
Stationery	651	4,524	1,524	855	2,091	628	976	5,248	4,541	727	4,606	2,272	**28,643**
		(6,699)			*(3,574)*			*(10,765)*			*(7,605)*		
Graphics	1,796	10,490	3,208	9,371	535	10,530	2,845	2,834	3,200	2,436	1,901	796	**49,942**
		(15,494)			*(20,436)*			*(8,879)*			*(5,133)*		
Editorial.	—	—	3,246	2,794	960	2,940	—	2,784	1,788	—	—	—	**14,512**
		(3,246)			*(6,694)*			*(4,572)*			*(-0-)*		
Printing of publications . . .	9,296	5,646	8,723	8,088	25,553	17,440	30,532	11,334	9,072	27,996	10,013	52,175	**215,868**
		(23,665)			*(51,081)*			*(50,938)*			*(90,184)*		
Maintenance contracts	833	833	834	833	833	834	833	833	834	833	833	834	**10,000**
		(2,500)			*(2,500)*			*(2,500)*			*(2,500)*		
Totals (quarterly		**(51,604)**			**(84,285)**			**(77,654)**			**(105,422)**		**318,965**
Totals (monthly).	**12,576**	**23,160**	**17,535**	**21,941**	**29,972**	**32,372**	**35,186**	**23,033**	**19,435**	**31,992**	**17,353**	**57,077**	**26,580**

monthly avg.

NOTES: *Stationery items* include: letterheads, envelopes, mastheads and blank paper, forms, memopads, etc.
Graphics include: all art for publications, slides, vuegraphs, inhouse art supplies, nameplates, and tags.
Editorial costs include: technical editing and proofreading.
Maintenance costs are for maintaining computer typesetting equipment.
These totals do not include staff personnel salaries nor equipment depreciation.

Publishing and Printing Expenditures—Fiscal Year 1978 Cost Summary

(actual and estimated)

	1st quarter			2nd quarter			3rd quarter			4th quarter			Yearly
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	totals
Stationery	1,144	3,688	2,319	7,126	2,264	2,583	1,022	2,281	5,178	—	1,428	5,772	34,805
		(7,151)			*(11,973)*			*(8,481)*			*(7,200)*		
Graphics	2,481	2,971	8,345	3,114	9,255	7,926	4,353	5,418	1,453	14,073	9,959	1,726	71,074
		(13,797)			*(20,295)*			*(11,224)*			*(25,758)*		
Editorial.	—	—	—	—	855	3,919	5,917	450	—	—	—	1,800	12,941
		(-0-)			*(4,774)*			*(6,367)*			*(1,800)*		
Printing of publications . . .	1,339	56,287	2,872	2,991	5,651	9,460	493	13,705	46,142	8,831	12,543	57,147	217,461
		(60,498)			*(18,102)*			*(60,340)*			*(78,521)*		
Maintenance contracts	691	691	691	691	691	691	691	691	691	691	691	691	8,292
		(2,073)			*(2,073)*			*(2,073)*			*(2,073)*		
Totals (quarterly)		**(83,519)**			**(57,217)**			**(88,485)**			**(115,352)**		344,573
Totals (monthly).	**5,655**	**63,637**	**13,627**	**13,922**	**18,716**	**24,579**	**12,476**	**22,545**	**53,464**	**23,595**	**24,621**	**67,136**	28,714

monthly avg.

NOTES: *Stationery items* include: letterheads, envelopes, mastheads and blank paper, forms, memopads, etc.
Graphics include: all art for publications, slides, vuegraphs, inhouse art supplies, nameplates, and tags.
Editorial costs include: technical editing and proofreading.
Maintenance costs are for maintaining computer typesetting equipment.
These totals do not include staff personnel salaries nor equipment depreciation.

Publishing Office Expenditures for Composition Fiscal Year 1979

Personnel

Man-years	Salary total	Total
3.5	$55,290	$ 55,290

Supplies

Photographic film and chemicals	$	4,230*
Miscellaneous—paste wax, art paper, graphic materials, etc.	$	791
Total supplies	$	5,021

Overhead

Space rental, composing and graphics area (351 sq. ft. at $8.10)	$	2,843

Equipment

Equipment depreciation for CY 1978	$	14,578

Maintenance

Electronic composition (preventive maintenance)	$	10,000
Grand totals—composition expenditures	**$**	**87,732**

*Cost of photographic film has increased as of January 1980 from $26.45 per roll to $64.24 or 143 percent.

Composition Cost Comparison on 22 Major Reports Fiscal Year 1979

Pub. no.	Report title	Type of report	No. of pages	Per page cost	
				GPO cost	OTA cost
OTA-R-78	Health of the scientific and tech. enterprise, 10/78	final	24	$ 1,498	$ 365
OTA-F-79	Emerging food marketing tech., 10/78	final	96	5,990	1,463
OTA-I-80	Nat'l crime inf ctr & CCH, 12/78	final	92	5,741	1,402
OTA-P-81	OTA priorities 1979, 1/79	final	56	3,494	853
OTA-M-82	Alaska lands—Vol. 1, 2/79	final	272	16,973	4,145
OTA-T-83	Auto assessment—Vol. 1, 2/79	final	48	2,995	732
OTA-T-84	Auto assessment—Vol. 2, 2/79	final	382	26,083	6,370
OTA-A-85	1979 annual report, 3/79	final	120	7,488	1,829
OTA-E-86	Direct use of coal, 4/79	final	418	23,837	5,822
OTA-M-88	Fuel & non-fuel minerals, 4/79	final	446	27,830	6,797
OTA-M-89	Effects of nuclear war, 5/79	final	158	9,859	2,408
OTA-H-90	Federal health statistics, 6/79	final	220	13,728	3,353
OTA-F-91	Drugs in livestock feed 6/79	final	78	4,867	1,189
OTA-E-92	Residential energy—Vol. 1, 7/79	final	362	22,589	5,517
OTA-M-93	Materials and energy from waste—Vol. 1, 7/79	final	292	18,221	4,450
OTA-F-94	Open-shelf life dating, 8/79	final	116	7,238	1,768
OTA-T-95	Railroad safety—U.S.-Can. comparis, 8/79	final	120	7,488	1,829
OTA-H-96	Selected Fedl vac. and immuniz. policies, 9/79	final	224	13,978	3,414
OTA-M-97	Technical options for conserv. of metals, 9/79	final	136	8,486	2,072
OTA-F-98	Pest management strategies—vol. 1, 9/79	final	144	8,986	2,195
OTA-T-100	Auto assessment—Vol. 3, 9/79	final	78	4,867	1,189
OTA-BR-H-1	Computer tech. in med. educ., 9/79	back. paper	152	9,485	2,316
	TOTALS		4,034	$251,721	$61,487

*GPO prices based on no changes. Final page cost of $62.40 does not include author's alterations or tabular matter. For all practical purposes the average cost of a single page including author's alterations would approximate $100.00 per page. OTA's cost of $15.24 per page includes author's alterations.

OTA Publishing Office Composing Equipment With Depreciation Values*

Equipment title	Date acquired	Original cost	CY 1976	CY1977	CY1978	CY1979	CY 1980	CY 1981	CY1982
Headliner	5-4-76	$ 5,450	$5,450	$4,360	$ 3,324	$ 2,398	$ 1,471	$ 545	$ 0
Processor	5-4-76	645	645	516	393	284	174	65	0
Unified composer	11-1-77	12,320	—	—	9,856	7,515	5,421	3,326	1,232
Unified composer	11-1-77	12,320	—	—	9,856	7,515	5,421	3,326	1,232
Scanner	11-1-77	18,032	—	—	14,426	11,000	7,934	4,869	1,803
Unisetter	11-1-77	13,152	—	—	10,522	8,023	5,787	3,551	1,315
RC processor w/ access.	11-1-77	4,801	—	—	3,841	2,929	2,112	1 ,296	480
Floppy disc reader	11-1-77	4,455	—	—	3,564	2,718	1,960	1,203	446
Fontpac, output, memory	11-1-77	5,202	—	—	4,162	3,173	2,289	1,405	520
Tabouret	12-7-77	70	—	—	56	43	31	19	7
Storage cabinet	12-7-77	96	—	—	77	59	42	26	10
Drafting stool & table	12-7-77	371	—	—	297	226	163	100	37
Map cabinet	12-7-77	400	—	—	320	244	176	108	40
Lamp	12-7-77	60	—	—	48	37	26	16	6
Totals		$77,374	$6,095	$4,876	$60,742	$46,164	$33,007	$19,855	$7,128

*Depreciation based on 5-year longevity: year 1—80%; year 2—61%; year 3—44%; year 4—27%; year 5—10%