
Section IV

Summary of Issues

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The major issue highlighted by the OTA survey and the foregoing analysis is whether the Federal role in maritime R&D is adequate or whether it should be enhanced for the benefit of both the maritime industry and the Nation as a whole. If it is to be enhanced, then one or more of a range of suggestions for new or modified institutions could be put in place. Since some of the existing institutions are valuable and productive, it is also important to preserve the successful elements as a part of any future institutions.

If the present Federal system is considered adequate, then perhaps no changes are desirable and existing programs should be continued much as they are.

A majority of the respondents to the OTA survey are among those advocating some change. Those advocates, however, do not agree on any one specific alternative. Also, if made, any changes should offer clear benefits to the Nation as a whole as well as to the maritime industry.

It appears from the OTA analysis that, while aspects of the Federal maritime R&D effort are useful and productive, a number of problems limit the benefits to the U.S. industry and hinder the pursuit of such national goals as technological pre-eminence.

Problems identified with existing Federal maritime R&D are in the following categories: 1) government contracting, 2) disseminating R&D results, 3) outreach, 4) cooperative R&D, and 5) promoting application of new technology.

Government Contracting.—Research and development, by its very nature, requires experimentation, risk-taking and somewhat open-ended exploration of new ideas. The most important criteria for selecting a good project, and someone to perform it, are the potential of the idea and the expertise of the people who will work on the project. The government's contracting process is not designed to be sensitive to such selection criteria. It was developed mainly for the purchase of materials at the lowest prices. Consequently,

many R&D contracts take years to execute, are given to the lowest bidder, and are not selected to meet long-range technology goals. This has discouraged some of the best innovators and stifled some of the best ideas.

One participant at the OTA workshop stressed that, if a more effective shipbuilding R&D program is to be achieved, then the Navy (i.e., the Naval Sea Systems Command) must understand the problem better and institute much needed changes. The Navy is currently almost the exclusive customer for the U.S. shipbuilding industry. Therefore, "the U.S. Navy will be the principal beneficiary of the (shipbuilding R&D) program for years to come and must join the industry in fully understanding and making the changes in the ship design, procurement, and contracting processes that are necessary to exploit the full potential of these improved methods. "

If government-supported maritime R&D is to be enhanced or expanded, improved contracting procedures should be a major consideration.

Disseminating R&D Results.—The OTA survey indicates that in the past many private firms have not received the results and/or the benefits of much of the R&D efforts sponsored by Federal agencies. At least two problems have been described. One is that reports and abstracts are not always published in the proper format and journals, with complete data and results of R&D work. The other is that relevant information on new technologies is not always disseminated to a wide group of those who will be able to make the best use of it. Information and technology transfer systems of the past have had a number of problems, but, if an R&D project is worthy of Federal support, there should be an equal effort to make the results as useful as possible to as broad a group as possible. Any new institution for R&D should be developed with careful attention to procedures for disseminating the end product.

Outreach.—The OTA survey indicates that a majority of the number of firms in the industry

do not participate in the ongoing Federal R&D effort. Many feel that much of the work is not relevant to their needs. Some other recent studies of ship operations R&D indicate that a number of operators have not participated in federally sponsored R&D efforts and consequently the results have not been widely accepted.

Future R&D work and institutions would benefit from wider participation and acceptance from the industry. While it is difficult to achieve such participation, there have been recent examples of excellent participation and acceptance in some specific cases (e.g., the NAS Ship Structures Committee work and the MarAd National Shipbuilding Research Program and Cargo Handling Program).

Cooperative R&D.—Since the U.S. maritime industry itself is made up of diverse sectors, the opportunities for cooperative R&D may be limited to special cases where groups of firms have the clear interest and need. In other cases R&D by individual firms may be the best approach; in still other cases, direct Federal support of basic and long-range research may be the best.

The OTA survey indicates that some firms are eager to participate in a government/industry cooperative R&D venture; others are cautious but

would support some versions of cooperative ventures; and still others do not see the need nor the benefit of such approaches. Under these circumstances, it appears important to provide enough flexibility within any new R&D institution both to sponsor cooperative ventures where they make sense and to sponsor independent R&D where it makes sense.

Promoting Application of New Technology.—**A persistent problem in the U.S. maritime industry appears to be the application of certain advanced technologies or the pursuit of innovations seeking such goals as increased productivity or improved competitiveness.** Several studies have identified a need for encouraging new maritime ventures, new products, or the adoption of new technologies. If a new R&D institution were developed, attention also should be given to the application of useful new technologies in business ventures. One participant in OTA's workshop suggested that a Government role in R&D should be to assist and encourage the innovator or new venture entrepreneur through the creation and support of maritime venture capital funds. Whatever approach to future Federal R&D programs may be followed, the application of advanced technologies developed to enhance U.S. maritime enterprises is an important consideration.