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DEFENSE SCIENCE BOARD SUBCOMMITTEE

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Final Report

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SCIENTIFIC AND TECHNICAL INFORMATION

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Office of the Director of Defense Research and Engineering
Washington, D C.

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FINAL REPORT

of the

DEFENSE SCIENCE BOARD SUBCOMMITTEE

ON

SCIENTIFIC AND TECHNICAL INFORMATION

16 July 1963

The Defense Science Board
Office of the Director of Defense Research and Engineering

OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON 25, D.C.

1 August 1963

TO: THE SECRETARY OF DEFENSE

THROUGH: THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

The Defense Science Board respectfully submits its report on "Scientific and Technical Information." The findings and recommendations are the work of a Subcommittee operating under the same title which consisted of Dr. Lyle H. Lanier, Chairman, ~~Dean~~ Morrough P. O'Brien and Dr. Carl F. J. Overhage. This Subcommittee is to be greatly commended for the fine and expeditious work they did. Also, special mention should be made of the fine cooperative efforts of Vice Admiral Charles B. Martell of the Office of the Director of Defense Research and Engineering.

The recommendations of the Subcommittee appear in the body of the report under four main headings: (I) general assignment of responsibility; (II) objectives and scope of the scientific and technical information system; (III) functions of the scientific and technical information system; (IV) organizational components of the scientific and technical system. Many of the recommendations have already been implemented.

In my opinion, the activities of the Subcommittee are a good example of the effective aid which the Defense Science Board can render. You will recall that in the spring of 1962 there was considerable pressure from certain committees in Congress to improve the collection, retrieval and dispensing of scientific information. This matter was discussed at considerable length by the Defense Science Board and various members submitted constructive suggestions.

The above-mentioned Subcommittee was established at the meeting of the Defense Science Board on 6 September 1962. It submitted a "First Report" on 6 December 1962 which was transmitted to the Director of Defense Research and Engineering

on 18 December 1962. The recommendations made therein were used in the preparation of the DOD Directive of 31 December 1962 entitled "Department of Defense Technical Information." In addition to the memorandum directive that was issued on this subject, probably the most significant development was the establishment of the recommended position of Defense Director of Technical Information. The appointment of Dr. Walter M. Carlson was announced 18 December 1962. In short, through the channels of intensive work on the part of the Subcommittee, with effective collaboration of the DDR&E staff, it was possible to achieve rapid implementation in orderly fashion while the investigation was still under way.

Since the major policies and structure organization have now been established, the DSB Subcommittee on Scientific and Technical Information has now been dissolved. However, it is the intention of the Board to keep an eye on the operation and, if it would appear to be useful, the same or a similar subcommittee could be re-established at any time in the future.

Finally, I wish to express my great appreciation of Dr. Harold Brown's interest and cooperation in this very important matter.

Respectfully submitted,

C. C. Furnas

C. C. Furnas, Chairman
Defense Science Board

Enclosure:
Report of the Defense Science Board on Scientific and Technical Information, 16 July 1963

OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON 25, D.C.

16 July 1963

Dear Dr. Furnas:

The Subcommittee on Scientific and Technical Information has completed the task assigned to it by the Defense Science Board and submits herewith its final report.

The Subcommittee was established at the meeting of the Board on 6 September 1962. Most of its work was done during the following three-month period, which culminated in a "First Report" on 6 December 1962. That report had been sent previously in draft form to members of the Board, and had been revised in the light of the comments received from them. It was transmitted by you to the Deputy Director of Defense Research and Engineering (Administration and Management) on 7 December, and to the Director of Defense Research and Engineering on 18 December 1962, as a partial basis for the DOD directive of 31 December 1962 on technical information.

The Subcommittee on Scientific and Technical Information remained in existence during the following five months--mainly to keep the Defense Science Board informed of developments during the initial stages of the implementation of its recommendations for improved management of scientific and technical information within the Department of Defense. The Subcommittee's technical consultants and its chairman also served to a limited extent during this period as an informal advisory group for the newly-appointed Defense Director of Technical Information. Oral reports of progress were presented to the Defense Science Board at its meetings on 10 January and 9 May 1963, together with copies of official documents that established Department of Defense policies, assigned responsibilities, and reconstituted one of the Department's main information agencies. At the meeting on 9 May 1963, the Board agreed that the task of the Subcommittee had been completed and it was dissolved.

This final report includes substantially all of the content of the First Report, with some rearrangement and other minor revisions. In addition, brief reference is made to developments since 6 December 1962, and some comments upon certain issues have been added. The latter reflect mainly the views expressed in Board meetings and in letters from members.

Respectfully submitted,

Lyle H. Lanier

Lyle H. Lanier, Chairman
Defense Science Board Sub-
committee on Scientific and
Technical Information

Enclosure:
Final Report of DSB
Subcommittee on Scientific
and Technical Information

Dr. Clifford C. Furnas, Chairman
Defense Science Board
Room 3E-1060, The Pentagon
Washington 25, D. C.

CONTENTS

INTRODUCTION

The Subcommittee on Scientific and Technical Information was appointed by the Defense Science Board ~~on 6 September 1962~~ to study scientific and technical communication within the Department of Defense and to propose recommendations for the improvement of the Department's information program concerning research, development, testing and evaluation. Questions had been raised by Congressional committees relative to the need for such improvement, and the Director of Defense Research and Engineering had asked the Defense Science Board to undertake a systematic review of the problem.

continued on p. 3

As an initial step, the chairman of the Board invited its members to submit comments on the adequacy of existing resources and arrangements for the handling of scientific and technical information--with special reference to needs and problems of their own organizations. Their views as to the degree of need for increased national attention to the problem were also requested. Copies of the replies to this invitation were supplied to members of the Subcommittee, and were very helpful in providing a general frame of reference for the study.

Several documents and reports issued by the Senate Subcommittee on Reorganization and International Organization, under the chairmanship of Senator Humphrey, provided useful background information on the problems of scientific and technical communication in Federal and in non-Federal agencies.

Directives and reports concerning the management of scientific and technical communication in the Department of Defense were examined, and numerous conferences were held with staff members of the Department's agencies charged with responsibility for this general function. Staff members in the Office of the Director of Defense Research and Engineering in charge of conducting a survey of current activities in this area provided especially useful information.

Of special significance for the Subcommittee's task was a memorandum issued on 3 October 1962 by Deputy Secretary of Defense Roswell Gilpatric entitled "Policy on Scientific and Technical Information." In that document, the Director of Defense Research and Engineering was asked to "develop a comprehensive DoD policy governing the functions, organization and operation of an integrated DoD scientific and technical program by 1 January 1963." Other officials and agencies were also directed to take certain steps towards the analysis of existing programs and the development of organizational arrangements designed to improve them. In the light of Mr. Gilpatric's memorandum, the Subcommittee concentrated its efforts upon the development of policy recommendations, proposals for organizational arrangements, and suggestions concerning the assignment of responsibilities within the Department of Defense.

The Subcommittee's work was accomplished largely through the activities of a special task group under the chairmanship of William T. Knox, Manager for Planning, Esso Research and Engineering Company (formerly Director of that Company's Technical Information Division). Other members were: Klaus G. Liebhold, Director of the Technical Information Operation, Technical Military Planning Operation, General Electric Company, Santa Barbara, California; G. S. Simpson, Jr., Battelle Memorial Institute, Columbus, Ohio; Charles H. Stevens, Director of the Library and Publications Group, Lincoln Laboratory, Massachusetts Institute of Technology.

Throughout the study, the Subcommittee and its consultants were given highly valuable assistance by Vice Admiral Charles B. Martell, Dr. Robert Stegmaier and Dr. Andrew D. Suttle, Jr., of the Office of the Director of Defense Research and Engineering.

RECOMMENDATIONS

The Subcommittee's recommendations concerning a scientific and technical information program for the Department of Defense are presented under four major headings: (I) general assignment of responsibility; (II) objectives and scope of the scientific and technical information system; (III) functions of the scientific and technical information system; (IV) organizational components of the scientific and technical information system.

I. General Assignment of Responsibility for Scientific and Technical Information

The Director of Defense Research and Engineering should be assigned responsibility for recommending policy and providing coordination and review of an integrated scientific and technical information system that should be established within the Department of Defense. The Military Departments and other agencies of the Department of Defense should be responsible for establishing and maintaining those scientific and technical information programs that would be required to perform their assigned functions of research, development, testing and evaluation--in conformance with the over-all information system.

The Defense Intelligence Agency and the military intelligence agencies should retain all of their present responsibilities for the production and processing of technical intelligence as defined and described in DoD Memorandum dated May 11, 1962, subject: "Technical Intelligence." The Director of Defense Research and Engineering, through the Director of Technical Information (a new position), should arrange with the Defense Intelligence Agency for the appropriate type and amount of information exchange between that agency and the RDT&E programs of the Department of Defense.

The Assistant Secretary of Defense (Installations and Logistics) should continue to be responsible for technical information programs dealing with procurement of material, supplies, tools and equipment,

and for defense facilities, as covered in the DoD directive dated January 30, 1961, subject: "Assistant Secretary of Defense (Installations and Logistics)."

II. Objectives and Scope of the Scientific and Technical Information System

The importance of the establishment of a well-organized, comprehensive scientific and technical information program to the timely, effective, and efficient conduct of the mission of the Department of Defense cannot be overemphasized. The effective performance of its investigative functions of research, development, testing and evaluation will depend heavily upon the maintenance of such a program. It should be so organized and conducted as to provide for the necessary communication of scientific and technical information within the Department of Defense, and between the Department and its contractors, other Federal agencies, and the scientific and technical community in general. This program should be designed to accommodate the varied input - output of scientific and technical information required by research scientists, engineers, contract officers, and management within both the Department of Defense and civilian agencies participating in its programs. It should encompass the input of pertinent foreign translation. It should utilize modern techniques for information processing, including the use of computer-type equipment where such equipment is effective and efficient. It should provide support for research and development designed to improve the methodology of information processing--with special reference to the needs of its own scientific and technical information system.

III. Functions of the Scientific and Technical Information System

The functions of a comprehensive scientific and technical information system of the Department of Defense should include the following types of activities:

A. Aggressive acquisition of results of research, development, testing and evaluation by Department of Defense organizations and contractors--both those which are relevant to current operational programs of the Department and those which possess high general scientific and technical value. The acquisition of such non-DoD-generated information as is relevant to current programs of the Department will also be aggressively pursued.

B. The establishment of improved editorial policies and standards for DoD's scientific and technical reports, with a view to reducing the length and improving the quality of such documents as scientific and technical communications.

C. Elimination of unnecessary duplication among the documents that are handled by information agencies of the Department of Defense--for example, the redundancy that occurs through the issuance of essentially the same material in different publications.

D. Prompt announcement on the broadest scale of scientific and technical publications generated within the Department of Defense or through its support. Such announcements should be disseminated both within the Department of Defense and to the rest of the U. S. technical community, commensurate with security needs. Announcement media will vary in content, form, and frequency, depending on the needs of the several groups served.

E. Prompt and informative abstracting and indexing of these documents. Abstracting and indexing methods used in documentation centers of the Department of Defense should aim towards general compatibility with methods employed by other Federal Government documentation centers, and should also, to the fullest extent practicable, be compatible with methods employed by abstracting, indexing and storage systems of non-governmental agencies.

F. Prompt, selective distribution of DoD scientific and technical documents directly from the originating source to those DoD agencies and contractors having current or prospective need for this information.

G. Prompt distribution, on request, of DoD scientific and technical documents from documentation centers to members of the DoD technical community, supplementing the secondary distribution activities of the originating facilities.

H. Preparation and maintenance of a collection of information about current and planned scientific and technical programs sponsored by the Department of Defense--including such information as program objectives, method of approach, manpower, investigators, timing, and expenditures.

Critical summaries of this information should be made. The agency or agencies responsible for this function should cooperate fully with the Science Information Exchange, commensurate with security needs.

I. Preparation and distribution of critical reviews of scientific and technical literature especially pertinent to the DoD mission, drawing on non-DoD, as well as DoD, information resources. Reviews in security-classified subject areas will be distributed according to applicable security regulations.

J. Financial support for those components of the over-all scientific and technical information system from which the scientific and technical programs of the Department of Defense draw significantly, such as abstracting and indexing services by government and non-government sources.

K. Financial support for research and development on information methodology and equipment relevant to the scientific and technical programs of the Department of Defense--such support to be closely coordinated with the activities of other Federal agencies in these areas.

L. Effective cooperation with the Office of Technical Services, Department of Commerce, to make publicly and promptly available all results of the scientific and technical programs of the Department of Defense consistent with security regulations. The importance of civilian application of the results of these programs in advancing the national economy should be recognized and such use encouraged so far as allowable.

M. Encouragement to DoD scientists and engineers, and similar employees of DoD contractors, to participate in technical meetings, especially those devoted to working-level discussions of specialized topics, to visit research laboratories for the exchange of technical information, and to contribute articles and monographs to scientific and technical journals.

IV. Organizational Components of the Scientific and Technical Information System

The Subcommittee recommends that the Department of Defense establish and maintain the following types of positions and functions:

A. A Director of Technical Information, reporting to the Director of Defense Research and Engineering, whose primary and full-time responsibilities will include developing and recommending policy, and providing planning, coordination, and review of the scientific and technical information activities of the Department of Defense. A board advisory to the Director of Technical Information should be constituted whose membership should include outstanding information specialists representing varied scientific and technical backgrounds--from both government and non-government agencies.

B. Similar focal points of planning, coordination and review in the Military Departments and other appropriate agencies of the Department of Defense.

C. A documentation center or centers with responsibilities for acquiring, announcing, abstracting, indexing, storing and retrieving documents reporting the results of DoD-funded research, development, testing and evaluation. Such a center or centers should satisfy central archival needs of the Department of Defense for scientific and technical information.

D. An agency responsible for assembling into a centralized collection the project information necessary for planning and control by management, including comprehensive and up-to-date indexes of current scientific and technical programs.

E. A coordinated complex of specialized information centers closely linked to the RDT&E operational activities of the Department of Defense and specializing in selected scientific and technical subject areas. These information centers should be responsible for preparing state-of-the-art reviews and similar evaluative reports in their fields of competence, and for actively seeking opportunities in the DoD-wide programs for encouraging the use of this information.

F. Technical libraries at all locations where RDT&E programs of the Department of Defense are conducted--the size and complexity of the library to depend on the particular information needs at that location.

G. A clearing house of information concerning the RDT&E information agencies supported by the Department of Defense--to be coordinated with similar activities in other government agencies.

CONCLUSION

It should be emphasized that the Subcommittee has not recommended the establishment of a "monolithic" information center into which all scientific and technical information would be channeled and from which all such information would be sought by users. Instead, it has proposed that a coordinated structure of information agencies be established, in appropriate functional relationship to RDT&E activities of the Department of Defense. At the same time, provision would be made for such centralized documentation and "clearing house" functions as would best meet the administrative and technical needs of the Department.

It is a pleasure to record that since completion of its "First Report" on 6 December 1962, very substantial progress has been made towards the implementation of the Subcommittee's recommendations. Probably the most significant development was the establishment of the position of Defense Director of Technical Information in the Office of the Director of Defense Research and Engineering. The appointment of Mr. Walter M. Carlson to this position was announced on 18 December 1962.

In addition, three important official documents have been issued since the "First Report" was transmitted to the Director of Defense Research and Engineering:

1. A Department of Defense Directive, subject: "Department of Defense Technical Information," No. 5100.36, 31 December 1962.

2. A Department of Defense Instruction, subject: "Assignment of Functions for the Defense Scientific and Technical Information Program," No. 5129.43, 22 January 1963.

3. A Department of Defense Instruction, subject: "Defense Documentation Center for Scientific and Technical Information (DDC)," No. 5100.38, 19 March 1963.

The Subcommittee is gratified also to note the establishment of a Committee on Science Information by the Federal Council of Science and Technology, and that Vice Admiral Charles E. Martell, Deputy Director of Defense Research and Engineering, is serving as its present chairman. One of the problems of considerable concern to the Subcommittee was that of effective coordination between the science-information activities of the Department of Defense and those of other Federal agencies. Through the new FCST committee, it should be possible more easily to avoid unnecessary duplication of effort, to achieve greater compatibility among information handling systems, and to assure more complete exchange of scientific and technical information throughout the national scientific community.

In concluding this report, two special problems raised by several members of the Defense Science Board should be mentioned. The first concerns the responsibility for authorizing the public release of scientific and technical information, which is now vested in the Assistant Secretary of Defense (Public Affairs). It is the Subcommittee's view that careful attention should be given to the possibility of shifting this responsibility to the Director of Defense Research and Engineering--with appropriate delegation of responsibility to field agencies. It is recognized that good reasons exist for the present centralization of this authority, but we believe that much improvement in the organization and dissemintation of technical information would result from our proposal.

The second general issue concerns responsibility for the determination of "need-to-know" relative to scientific and technical information. This authority is now vested in the Assistant Secretary of Defense (Manpower). Although again we recognize that good reasons exist for this arrangement, nevertheless there are persuasive arguments for shifting this responsibility to the Director of Defense Research and Engineering. It is hoped that further consideration will be given to this means of facilitating the accessibility of scientific and technical information for the benefit of the entire technical community.

Lyle H. Lanier, Chairman

Morrough P. O'Brien

Carl F. J. Overhage