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THE RESEARCH AND DEVELOPMENT
Washington, D. C.

RDB 173/7

Agenda 37th Meeting RDB
17 January 1951

Item 2 Policy of the Department of Defense on Basic Research.

1. THE PROBLEM

1.1 To revise the Board's policy on basic research. OSD1.941207.058

2. DISCUSSION

2.1 The present policy of the Research and Development Board with respect to basic research is contained in the Master Plan. It states that basic research is essential to military research and development and that basic research supported by the Department of Defense should be maintained at not less than the current level.

2.2 The Executive Secretary requested an ad hoc group to review the over-all situation concerning basic research in the light of the current national emergency. The report of that group, RDB 173/8, attached, constitutes the basis for Board consideration.

2.3 It is the conclusion of that ad hoc group that it appears desirable to bolster the present policy to insure that adequate attention is given basic research. It is obviously necessary to exploit quick returns from basic research, but because of the probable long-term nature of the present national emergency, it is also necessary to maintain stability in the basic research program. The latter will become increasingly difficult of accomplishment in the face of urgent demands for development of critical end-items of equipment and expansion of applied research programs.

2.4 The attached draft policy on basic research, RDB 173/9, has been prepared to revise the policy to meet current conditions. It defines basic research more carefully, establishes a minimum level of effort for basic research based on the total research and development budgets, and specifies the responsibilities of the

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ACCESSION# 60A-1364
BOX# 1
FILE NAME: Basic Research

departments and the Research and Development Board for the conduct of basic research programs and the application of basic research findings to military problems. It is recognized that the proposed draft does not provide a ceiling for basic research beyond which such effort shall not extend. It appears this fact will present no sizeable problems, at least until such time as it becomes necessary to consider major reductions in the over-all research and development budget.

3. RECOMMENDATIONS

3.1 It is recommended that the Board:

3.1.1 Approve RDB 173/9, Draft Policy of the Department of Defense on Basic Research.

ATTACHMENTS: RDB 173/8, Memo to Executive Secretary, RDB, from the Ad Hoc Group on Basic Research Policy for the RDB, dated 27 October 1950.

RDB 173/9, Draft Policy of the Department of Defense on Basic Research, dated 29 December 1950.

RDB 173/8

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ONR:102:ATW:dm
27 October 1950

JOINT MEMORANDUM

From: Ad Hoc Group on Basic Research Policy for the Research and Development Board

To: Executive Secretary, Research and Development Board

Subj: Research Policy and Requirements in the Department of Defense as of October, 1950

Encl: (1) Copy of Subject Policy Statement

1. The Ad Hoc Group on Basic Research Policy for the Research and Development Board submits the enclosed recommendations in response to your verbal request.
2. Careful consideration has been given to both the past situation with respect to basic research obligations and planning and also to requirements in the light of the present degree of emergency in the research and development program.
3. If further explanation or other elaboration of the research policy as outlined may be needed, the members of the Ad Hoc Group stand ready individually or collectively to give any further assistance desired.

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and Development
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DONALD H. LOUGHRIDGE
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RESEARCH POLICY AND REQUIREMENTS IN THE DEPARTMENT OF
DEFENSE

AS OF OCTOBER, 1950

A. POLICY BEFORE 25 JUNE 1950

1. The policy of the Department of Defense with respect to re-
search includes a strong policy statement in its Master Plan as
follows:

"Basic research is essential as a foundation for all
military applied research and development. Government
financial support should be such as to maintain it at
not less than current level."

In support of this policy there is now in existence an active,
comprehensive basic research program, supported by the Department
of Defense. This policy has also received the support of the
Joint Chiefs of Staff. There has also been widespread sentiment
among the committees of RDB and the research groups in the three
departments as to the importance of maintaining this policy.

2. The reasons for this policy are well known and may be summed
up as follows:

a. Basic research is fundamental to applied research and develop-
ment. It is therefore essential in a military research and development
program.

b. Outstanding research discoveries and information are
directly available to the Department of Defense, thus eliminating
as far as possible the lag between a scientific discovery and its
military application.

c. A sound basic research program actively engages the majority of the foremost research experts in the country in the fields of the basic physical and medical sciences. These authorities are immediately available for consultation.

d. The program establishes direct, cooperative relations between military and scientific personnel throughout the country.

e. It builds centers of scientific research immediately available in an emergency.

f. The support of basic research in important scientific areas makes available thousands of trained young scientists yearly, for government, industrial and university research, a highly valuable asset in case of an emergency.

B. PRESENT AND FUTURE CONSIDERATIONS

1. Since 25 June 1950 the Department of Defense is faced with immediate review of its research and development program. Clearly, increased military effort is indicated. In this review it is essential to include consideration of the existing Master Plan statement on policy with respect to basic research and to determine whether this statement should be modified or not, and, if so, in what direction. Thus, as an immediate, practical matter there are two primary considerations:

a. Degree to which a stable basic research program should be maintained, supported by the Department of Defense.

b. Degree to which existing basic research should be supplemented or modified in view of the present or of some future degree of emergency.

2. It is the considered belief of the undersigned that this situation should be viewed from both the long-range and the short-range viewpoint. It is clearly necessary that quick returns from basic research should be exploited both now and in the future. It is equally necessary that research in the Nation should be maintained in a constant state of readiness. It is this forefront of scientific achievement which offers most opportunity of providing the all-important margin in technical superiority. It is only by constant emphasis and attention to basic research and its findings that this superiority can be maintained. It is only in this way that the Department of Defense can promptly discover and exploit future technical potentialities of significance similar to microwave radar, the VT fuze and atomic weapons.

C. ANALYSIS OF CURRENT SITUATION

1. It is assumed that the present degree of emergency will persist, in greater or less degree, for an unforeseeable period of years, perhaps as long as ten or twenty.

2. It is further assumed that this period will be characterized by the following:

a. A periodic or continuous series of incidents like the present.

b. At any time an all-out emergency arising which calls for total mobilization.

c. Urgent demands for development of critical end-items, accompanied by general pressure for expansion of applied research and development.

d. Sufficient funds available to undertake most of this expansion of applied research and development.

e. Scientific and engineering manpower again in great general demand, especially on the part of industry and government. This will include calling of reserve officers into active service.

f. A severe shortage of scientific manpower in selected scientific areas.

D. CONCLUSIONS AND RECOMMENDATIONS

1. It is the opinion of the undersigned that the present RDB policy with respect to basic research should be maintained, and, in fact, strengthened by the requirement that the Department of Defense maintain its own support of basic research at a planned level (defined below) as a minimum. This policy should be continued in the present degree of emergency for the same reasons as stated under A.1. above, all of which are even more important in a critical period. The research and development program must continue to be up-to-date and have

immediately available the findings of basic research. There is no other way of ensuring continued technical supremacy. This provides the essential "defense in depth" on the research and development front.

Furthermore, it is regarded as highly important that this basic research effort be recognized as a responsibility of the Department of Defense. Exclusive dependence upon other agencies or institutions for support of basic research is unacceptable. It is only by responsibility for direct support of essential research that maximum returns can be obtained. Any other answer is "second-best" and as such prejudicial to national security.

This policy should be stated clearly and firmly so that there shall be no misunderstanding. It is the opinion of the undersigned that any attempt to conceal or ignore basic research would be unfortunate and would lead in the end to its loss from the Department of Defense.

2. Under these circumstances it is recommended that the RDB policy with respect to basic research be continued as follows:

Basic research is essential as a foundation for all military applied research and development. Financial support by the Department of Defense should be such as to maintain it at not less than a planned level.

This planned level should be six (6) per cent of the average budget for research and development in the Department of Defense over the

preceding five years, with the additional provision that this level should in any case not fall below an annual expenditure rate of \$30 million.

3. For purposes of identifying items to be included by the Departments in their basic research programs the following definitions are recommended:

a. Basic research is a theoretical or experimental study directed toward the increase of knowledge. Immediate practical application is not usually a direct objective of the investigator. Such practical application, either immediate or in the future, is however properly a concern of the Department of Defense.

This definition is the present approved definition in the RDB Master Plan, with a slight change in the last sentence ("is ... properly a concern" instead of "may ... be a concern").

b. Basic research performed under an inclusive developmental contract or corresponding military laboratory project shall not be included under the program governed by this policy unless the contract or project explicitly states performance of basic research. In the latter case the department responsible will include in its basic research program the estimated portion to be spent on basic research.

4. In order to carry out this policy it is recommended that the following steps be taken:

a. Every effort should be made by the Departments to identify

research findings which can be immediately exploited into application. Funds and the necessary machinery should be made available for following through on these.

b. Continuing analysis should be made of the Department of Defense research program to identify areas and programs which give maximum promise of significant applications at some future time. Included here should be spots where there are research "bottle-necks". These should receive continuous support.

c. A stable, continuing basic or fundamental research program should be guaranteed in broad areas underlying defense requirements in order

- 1) To provide a continuous basis for a. and b.
- 2) To furnish a steady supply of trained scientific manpower.
- 3) To provide research centers in "stand-by" status, which may undertake critical basic or applied research problems with a maximum of flexibility and a minimum of delay.
- 4) To bring closer contact between scientists and Department of Defense personnel, both military and civilian.

d. Research and development military establishments should be provided adequate funds and personnel procedures to promote and expedite the undertaking of urgent developments. Departments should see that management of military research and development establishments

is able to deal successfully with these problems.

5. In order to establish this policy and its application on a continuing basis it is further recommended that a competent unit of men with distinguished records in research and research administration be set up under the Chairman, Research and Development Board (a) to review and implement this policy and (b) to coordinate the program with civil and other Government agencies.

27 October 1950

RDB 173/8

DRAFT
Gould:Eastman/Mack
29 December 1950

THE RESEARCH AND DEVELOPMENT BOARD
Washington 25, D.C.

RDB 173/9

29 December 1950

POLICY OF THE DEPARTMENT OF DEFENSE ON BASIC RESEARCH

1. STATEMENT

The Research and Development Board announces the adoption of the following policy:

(1) Since basic research is the essential foundation for all military applied research and development, it is in the interest of the Department of Defense to insure that adequate attention is given to basic research in those areas affecting national security and that the level of effort for the conduct of such research is stabilized. Accordingly, in order to assure proper emphasis, the funds obligated annually by each department in support of basic research shall not be less than six (6) per cent of the average of its research and development budgets for the preceding five (5) years; and the funds obligated annually by the Department of Defense as a whole for the same purpose shall not be less than \$30 million.

(2) This policy implements in part the provisions of Section 214 (b) (2) and (4) of the National Security Act of 1947 as amended, and Section III L of the Directive of the Board.¹

2. DEFINITIONS

(1) Basic research is a theoretical or experimental study directed toward the increase of knowledge, either by advances into unknown areas or by detailed filling in of areas whose general boundaries are already known. Immediate practical application is not necessarily a direct objective of the investigator. However, such practical application, either immediate or in the future, is properly a concern of the Department of Defense.

¹
RDB 1/6 14 September 1949

(2) Some basic research is performed under broad, inclusive, program-type developmental projects. Such effort shall not be considered as coming under the provisions of this policy unless it is clearly identified.

3. CLASSIFICATION OF BASIC RESEARCH BY THE MASTER PLAN

For the purpose of budgeting and other reviews, the Master Plan for Research and Development classifies basic research under military sponsorship as follows:

(1) Basic research for which the sponsor envisions specific military application supporting one technical objective substantially more than any other is classified in that technical objective;

(2) Basic research for which the sponsor envisions specific military application supporting two or more technical objectives, but no one technical objective primarily, is classified in the supporting research and development category;

(3) Basic research for which the sponsor cannot yet determine a specific military application is classified in the basic research category.

4. APPLICATION OF FINDINGS OF BASIC RESEARCH TO MILITARY PROBLEMS

(1) Every effort shall be made by the departments and the Research and Development Board to identify and to disseminate research findings that may have military applications, regardless of whether the research was performed by the Department of Defense. These findings may result from purely basic research activity or from research done in conjunction with a development program.

(2) Continuous analysis shall be made by each department of its basic research program to identify areas and programs that give promise of significant military application at some future time.

5. BOARD RESPONSIBILITIES

(1) The Board will review all basic research being carried out within the Department of Defense and will determine that such effort is properly classified.

(2) The Board will determine the total planning figure for the basic research program of the Department of Defense.

(3) The Board will provide guidance to the departments concerning shifts in emphasis within the basic research program:

(a) To insure an adequate program under budgetary limitations;

(b) To achieve the maximum potential benefit from the program; and

(c) To foster basic research in fields of science in which our limited knowledge especially restricts our military capabilities.

(4) Wherever possible, the Board will assist the departments:

(a) To examine basic research not supported by the Department of Defense to discover possible military applications;

(b) To maintain liaison with the Interdepartmental Committee on Scientific Research and Development, the National Science Foundation, and other research agencies; and

(c) To coordinate the Department of Defense basic research program with those of other civil and government agencies.

BY DIRECTION OF THE BOARD:

ERIC A. WALKER
Executive Secretary

Approved by the Board
at its _____ meeting,
_____.

THE RESEARCH AND DEVELOPMENT BOARD
Washington 25, D. C.

RDB 173/9

17 January 1951

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(2) This policy implements in part the provisions of Section 214 (b) (2) and (4) of the National Security Act of 1947 as amended, and Section III L of the Directive of the Board.¹

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BY DIRECTION OF THE BOARD:

Eric A. Walker

ERIC A. WALKER
Executive Secretary

Approved by the Board
at its 37th meeting,
17 January 1951

RDB 173/9