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OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
Washington, D. C. 20301

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DSB

MINUTES
EXECUTIVE COMMITTEE
DEFENSE SCIENCE BOARD
11 March 1964
Room 3E-112, The Pentagon

24 March 1964

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WNRC:
ACCESSION# 68A-5157
RG: 330
FILE NAME #95-DSB Defense ~~Board~~ Science Board
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ATTENDANCE LIST

Executive Committee Members Present

Dr. Frederick Seitz, Chairman
Dr. Thomas E. Caywood
Dr. Clifford C. Furnas
Dr. Lyle H. Lanier

Dr. Lloyd P. Smith
Dr. Ernst Weber
Dr. William W. Hammerschmidt,
Executive Secretary

Executive Committee Members Absent

Dr. Allen E. Puckett, Vice Chairman

Dr. H. Guyford Stever

Invited Participants

Lt. Gen. Wm. J. Ely, USA

Deputy Director of Defense
Research and Engineering
(Administration & Management)

Dr. Chalmers W. Sherwin

Deputy Director of Defense
Research and Engineering
(Research & Technology)

Dr. Daniel Alpert

Member, Defense Science Board

Dr. Allen V. Astin

Member, Defense Science Board

Mr. Harold A. Wheeler

Member, Defense Science Board

Mr. J. B. Macauley

Consultant to Director of Defense
Research and Engineering

Dr. Lawton M. Hartman

Special Assistant to Deputy
Director of Defense Research
and Engineering (Research &
Technology)

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ITEM 1 - Call to Order

The Chairman called the meeting to order at 0945, 11 March 1964, in Room 3E-112, The Pentagon, with those present as listed above.

The minutes of the preceding meeting, held on 8 January 1964, were approved as previously circulated.

The Chairman noted the irradiated food program at the Army Quartermaster Research Laboratory at Natick, Massachusetts as a possible information item for the May meeting of the Board, since some excellent work is being done there with possible fallout for the civilian economy.

The Chairman observed that the small-war problem may deserve attention by the Board in the near future. There is some question about the adequacy of our present planning and policy for future contingencies. It was agreed that such a study might best be entered through the behavioral sciences.

The Chairman suggested a survey of the Air Force's Project Forecast as a possible agenda item for the Board meeting in May.

The next regular meeting of the Executive Committee will be held in the Pentagon on Wednesday, 13 May 1964.

ITEM 2 - Subcommittee on DOD Research Policy (Furnas, Brooks, McDonnell, Piore, Puckett, Seitz)

Dr. Furnas, the Subcommittee chairman, introduced this item. He noted increasing sentiment in the technical community that its coupling with Defense needs, roles and missions is weakening. At the same time, other agencies are supporting an increasing fraction of the national research effort. The total amount of Defense support of research is not the only problem. Of concern also is (a) the distribution of support between larger and smaller research centers, (b) the matter of "institutional support" to universities, (c) the proper balance between in-house and contract support and (d) the interaction of direct support with independent R&D support through ASPR-XV or the new proposals for contractors' independent technical effort (CITE).

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Part I of the report of the Subcommittee, entitled "Policy on Support of Basic Research", was submitted to the Executive Committee for approval.

ACTION TAKEN:

The Executive Committee approved Part I of the Subcommittee report. The Chairman requested the reconstituted Subcommittee to proceed with Part II of the study and to report at the May meeting of the Executive Committee.

ITEM 3 - Subcommittee on Management of Research and Exploratory Development (Wheeler, Alpert, Phillips, Root)

The Subcommittee chairman, Mr. Wheeler, opened the discussion. He reported on the meeting of the Subcommittee, held the preceding day, with Dr. Chalmers Sherwin, Dr. Lawton Hartman and the team that has been formed to conduct the study. The study appears to be proceeding in an orderly way, assisted by a small task force, from the Arthur D. Little Company, led by Dr. Gordon Raisbeck.

In accordance with a memorandum from Dr. Brown (Tab A), the study will be carried forward by the in-house and contractor teams subject to periodic reviews and a final report by the Subcommittee.

Mr. Wheeler noted with regret that Dr. Lanier had left this subcommittee in order to serve as chairman of a new DSB subcommittee on behavioral sciences (see Item 6 below). He noted with pleasure the impending appointment of Dr. Root to the Subcommittee. (This appointment has since been made.)

ACTION TAKEN:

The Chairman asked the Subcommittee to report again at the May meetings of the Board and Executive Committee.

ITEM 3A - Advisors' Activities

Dr. Alpert introduced this item (listed on the agenda as Item 5) with a report on his recent conversations on this subject with General Ely, Dr. Fubini and Dr. Sherwin. He summarized his letter to Dr. Seitz (Tab B) recommending changes in the structure of assignments. Various actions are being considered to improve the situation.

ACTION TAKEN:

The Chairman asked the Executive Secretary to continue with the review of advisors' activities.

ITEM 4 - Subcommittee on Technical Personnel (Astin, Smith, Weber)

Dr. Astin, the Subcommittee chairman, opened the discussion. He noted considerable improvement in the recruitment of technical personnel for Federal laboratories except in the senior positions, which still present serious recruitment and selection problems. The Subcommittee had met on February 12 with Dr. Sherwin, Secretary Flax and other senior Service representatives to get an overview of current technical personnel problems. It concluded that existing reports and recommendations are strong enough to permit great improvement but some important recommendations yet remain to be implemented.

It came out during the discussion that solution of current major personnel problems will require a review and possible reorganization of the structure of laboratory management within the Services. The solution may require a better formulation of long-range Service needs in research and development, after which major programs would be assigned the Service laboratories.

ACTION TAKEN:

The Chairman asked the Subcommittee to report again at the May meeting of the Executive Committee.

ITEM 5 - Advisors' Activities

This subject was introduced at this meeting under Item 3A above. The discussion continued with particular respect to the office of the Assistant DDR&E for Research. By a recent action, a Joint Discussion Forum (JDF) has been instituted for each of four major research areas: physical sciences, engineering sciences, environmental sciences and life sciences. These groups will meet in May shortly after the Board meeting. (It was suggested that one or two Board members be asked to meet with each JDF in May if possible.) Dr. Sherwin also suggested that it would be very useful if one or two Board members would visit Defense laboratories from time to time and discuss the scientists' work with them.

ACTION TAKEN:

The Executive Committee approved the suggestion that a slate of eight Board members be drawn up to meet with the Joint Discussion Forums in May. The Chairman also requested Dr. Sherwin to report on progress in this area at the Board meeting in May.

ITEM 6 - Other Business

a) Subcommittee on Behavioral Sciences

The Chairman announced his intention to establish a Subcommittee on Behavioral Sciences and asked Dr. Lanier to serve as its chairman. The Federal Council on Science and Technology recently formed a committee on behavioral sciences under the chairmanship of Dr. Henry Riecken of the National Science Foundation. This committee will study the government-wide problem. Dr. Licklider, the Defense member of the Federal Council committee, is preparing a report on the Defense program for a June meeting of that committee. This report will serve as a point of departure for the DSB subcommittee.

b) Subcommittee on Limited Warfare

It was agreed that this subcommittee would be useful and important, but that the new Subcommittee on Behavioral Sciences, concentrating first in the area of limited warfare, would suffice for the time being.

c) Further Consideration of Management Policy

This item was not discussed.

ITEM 7 - Executive Session

Dr. Brown was obliged to appear before a committee of the House of Representatives at this time and so was unable to meet with the Executive Committee. (The next day, the Chairman, Dr. Furnas, Dr. Sherwin and the Executive Secretary did meet with Dr. Brown. At that time Dr. Brown concurred in the establishment of a DSB Subcommittee on Behavioral Sciences. He also concurred in the proposal that Board members should sit with the Joint Discussion Forums in their review of Defense research programs.)

The meeting of the Executive Committee was adjourned at 1610 hours.

Wm W Hammerschmidt

Wm. W. Hammerschmidt
Executive Secretary
Defense Science Board



DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D.C. 20301

17 February 1964

MEMORANDUM FOR THE CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Defense Science Board Tasks

During my last meeting with the Executive Committee of the Defense Science Board, I requested the Board to undertake, or continue as the case may be, the following tasks and to report their findings to me at an early date:

- 1) As part of your general study of DOD research policy, study and report on the interaction of the DOD policy for directly supporting basic research with the DOD policy for indirect support of research and development through procurement contracts.
- 2) Study and report on ways to improve DOD management of applied research and early development so as to increase creativity and innovation in DOD-supported programs.
- 3) Study and report on ways to improve the in-house laboratory program with particular reference to technical personnel and other career Civil Service problems.

Each of the last two problems now has a member of my staff assigned to it on an essentially full-time basis and I will make a similar assignment to the first problem if necessary.

I would like the DSB, or subcommittees of the Board, to review from time to time the material prepared by these staff members and to make a final report on that material. I understand that to this end the DSB Subcommittee on Management of Research and Exploratory Development, chaired by Mr. Wheeler, is now actively working with Dr. Sherwin and Dr. Hartman and that the Subcommittee on Technical Personnel, chaired by Dr. Astin, is similarly working with Dr. Sherwin and Mr. Glass.

Harold Brown
Harold Brown

cc: Assistant Secretary of Defense
(DDDR&E)
Deputy Directors, Defense Research
and Engineering

UNIVERSITY OF ILLINOIS
Coordinated Science Laboratory
Urbana, Illinois

C
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P
Y

February 25, 1964

Dr. F. R. Seitz
National Academy of Sciences
2101 Constitution Avenue, N. W.
Washington 25, D. C.

Dear Dr. Seitz:

In response to a recommendation of Dr. Hammerschmidt, I have given some serious attention to the question of DSB advisor's activities. A review of the advisor's assignments was independently suggested by Dr. Weber and me in the course of our own efforts to carry out earlier assignments. The following observations and recommendations are made following conversations with members of the DSB and with Drs. Fubini, Sherwin and General Ely of ODDR&E.

1. Although some of the individual members of the DSB have performed in a uniquely effective way in their roles as advisors on formally assigned tasks, a sizable number of the assigned topics have proved to be quite unmanageable or difficult to cope with;
2. When a formally assigned task area lies outside the given Board member's area of interest or is so large as to be unmanageable, the resulting advisor's reports represent a questionable investment of time for either advisor or advisee;
3. Despite the above observations, there is a genuine interest on the part of key members of the ODDR&E to have the advice and participation of individual members of the DSB in addition to their participation in Committee deliberations on such tasks as those outlined by Dr. Brown in his memorandum of 17 February;
4. In view of the above, I propose for consideration that the advisor's role be changed as follows. The Board member should be called upon to propose for individual investigation tasks which he considers to be of direct personal interest as well as of importance to the ODDR&E. Upon the concurrence of the DSB chairman, he would proceed on such

Dr. F. R. Seitz
Page two

February 25, 1964

assignments and write summary reports or letters as the task was completed. Whether these should be called advisor's reports or "Board member's reports" is open for discussion; I prefer simply a letter or report to the DSB chairman.

On the basis of conversations with members of the DOD, individual problem areas could profitably be assumed in virtually every phase of DOD activity, such as (a) DOD management of its own function, (b) "expert" evaluation of DOD missions, and (c) relationship of DOD to the industrial or university community.

Sincerely yours,

/s/

Daniel Alpert

cc: W. Hammerschmidt

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OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
Washington, D. C. 20301

45 DSB

MINUTES
EXECUTIVE COMMITTEE
DEFENSE SCIENCE BOARD
8 July 1964
Room 3E-112, The Pentagon

14 August 1964

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ATTENDANCE LIST

Honorable Harold Brown

Director of Defense Research
and Engineering

EXECUTIVE COMMITTEE MEMBERS PRESENT

Dr. Frederick Seitz, Chairman
Dr. Allen E. Puckett, Vice Chairman
Dr. Thomas E. Caywood
Dr. Clifford C. Furnas

Dr. Lyle H. Lanier
Dr. Lloyd P. Smith
Dr. H. Guyford Stever
Dr. Wm. W. Hammerschmidt,
Executive Secretary

EXECUTIVE COMMITTEE MEMBERS ABSENT

Dr. Ernst Weber

PRESENT BY INVITATION

Dr. Allen V. Astin
Lt. Gen. Wm. J. Ely, USA

Mr. O. William Helm
Mr. John B. Macauley
Mr. James W. Roach

Dr. L. Eugene Root
Dr. Chalmers W. Sherwin

Mr. Paul J. Sturm

Mr. Harold A. Wheeler

Member, Defense Science Board
Deputy Director of Defense
Research and Engineering
(Administration & Management)
Office of Naval Research
Consultant to ODDR&E
Assistant Director (Engineering
Management), ODDR&E
Member, Defense Science Board
Deputy Director of Defense
Research and Engineering
(Research and Technology)
Assistant Director (Plans & Policy),
ODDR&E
Member, Defense Science Board

ITEM 1 - Call to Order

The Chairman called the meeting to order at 0915, 8 July 1964, in Room 3E-112, The Pentagon. The names of those in attendance during the meeting are listed above.

The minutes of the preceding meeting, held on 13 May 1964, were approved as previously circulated.

ITEM 2 - Subcommittee on Management of Research and Exploratory Development (Wheeler (chairman), Alpert, Phillips, Root)

Mr. Wheeler, the subcommittee chairman, reported on recent progress of the study on innovation, which was begun in April 1963. Two groups of weapons systems have been under study:

	<u>Army</u>	<u>Navy</u>	<u>Air Force</u>
Group I.	Longer Range 105mm Howitzer	Mark 26 Torpedo	Hound Dog Missile
Group II.	Sergeant Missile	Polaris Missile	Minuteman Missile

A third group of 3 weapons systems may be added soon to provide additional cases for study. The results obtained to date from Group I have been disappointing; Group II is more encouraging, but still leaves much to be desired.

Mr. Wheeler presented a list (Tab A) of salient factors which he had found to be common to the development of (a) over-the-horizon radar and (b) Nike-Ajax and Hercules. This list may be regarded as a sample of the principles expected to emerge from the study. The subcommittee intends to have some written material ready for the September meeting of the Executive Committee.

ACTION TAKEN:

The Chairman asked the Subcommittee to report again at the September meeting of the Executive Committee.

ITEM 2A - Letter from Mr. Wheeler to Dr. Seitz

Mr. Wheeler discussed a letter from him to the Chairman dated May 28, 1964 on the subject of our continuing struggle with the U.S.S.R. This struggle is in many respects a war, but one without a familiar set of rules. It involves weapons, not only military and naval weapons, but also those not recognized as weapons by international law. We are not winning this total war; in fact, we are on the defensive and appear to be losing ground as the years go by. Mr. Wheeler suggested two points for consideration by the DSB:

- 1) The psychology of our national approach is not now a war psychology; rather, it lacks sufficient fighting spirit.
- 2) We could make better use of our capacity in industry and in other areas with a "cold war" mobilization of our effort.

Considerable discussion ensued concerning the problem of our national goals and motivations, of the need for better analysis of them and of the effect of a disarmament psychology on our will to win over the Communists.

ACTION TAKEN:

The Chairman asked Mr. Wheeler to devote further attention to this broad issue.

ITEM 3 - Subcommittee on Defense Contractor Effort (Root (chairman), Haggerty, Heinemann, Millikan, Pratt)

Dr. Root reported on the activities of the subcommittee, which held its first meeting on July 1 and 2 (since then the subcommittee has held two more meetings). He went over, in some detail, the memorandum from Dr. Brown (Tab B) to the Chairman requesting that the Board conduct this study. If successful, the subcommittee will be able to show how more opportunity for useful innovation can be provided for in the contractual system. This would make for a reasonable updating of ASPR-XV and other contractual regulations affecting Defense R&D. The first main problem is to examine the areas of exploratory development (category 6.2 in the budget format) and advanced development (6.3) for adequacy with respect to provision for innovation, i. e.,

in practice are they permissive and flexible enough to allow for innovation? The Program Definition Phase (PDP) barrier may tie us too quickly to requirements.

The relation of the development funds involved here to Contractor Independent Technical Effort (CITE) funds must also be studied, since the latter are procurement funds, not RDT&E funds. (CITE funds are reimbursement to contractors for R&D expenses presumed to have been incurred by them in connection with DOD procurement.)

ACTION TAKEN:

The Executive Committee will look forward to a first report by the Subcommittee at the September meeting.

ITEM 4 - Subcommittee on Civilian Technical Personnel
(Astin (chairman), Smith, Weber)

The subcommittee chairman, Dr. Astin, presented a memorandum (Tab C) as a progress report of this subcommittee. The memorandum includes a proposal for the institution of a Technical Career Training Program in the Department of Defense. The Department of Commerce recently started such a program under the leadership of Dr. J. Herbert Holloman, Assistant Secretary of Commerce for Science and Technology. The first group of 21 men has been chosen--from the Bureau of Standards, Weather Bureau, Patent Office and Coast and Geodetic Survey--and will start their training in the fall at the Brookings Institute. Initiation of a similar program in the DOD, perhaps to start in the fall of 1965, would be a significant step forward in the development of the managerial competence of senior technical staff.

ACTION TAKEN:

The Executive Committee expressed great interest in the progress report and in the proposal for a DOD Technical Career Training Program. The subcommittee will report further at the September meeting of the Executive Committee.

ITEM 5 - Subcommittee on Technical Military Personnel
(Stever (chairman), McCormack, Simon, Weber)

This subcommittee was established at the May meeting of the Board and had met in June (it has a second meeting on July 27th). A copy of the memorandum from Dr. Brown to the Chairman, requesting this study, i. e., of ways to improve the career patterns of technical military officers, is attached (Tab D). Dr. Stever, the subcommittee chairman, summarized the three main topics discussed at its June meeting: (a) the Reserve Officers Training Program, (b) the retention of technical officers and (c) inducements to a technical military career. Enrollment in university ROTC programs is dropping off, although the quality still is up. Data are needed on the contribution of the ROTC to the supply of technical career officers, comparing ROTC with the Service academies and other sources. Retention of technical officers presents serious problems and is tied in with the adequacy of existing inducements to start and continue a technical military career. The rare officer who has truly outstanding research capability, and perhaps little interest in management, should also be considered. Recent Service reorganizations may have had a broad adverse effect on the prospects for technical officers. The subcommittee will study and report on the importance of these factors in the total problem.

ACTION TAKEN:

The Chairman asked the subcommittee to report again at the September meeting of the Executive Committee.

ITEM 6 - Subcommittee on Behavioral Sciences (Lanier (chairman),
Caywood, Pool, Wolfle)

Dr. Lanier, the chairman, reviewed the work of this subcommittee, which had held two meetings to date. (Since then the subcommittee has had a third meeting, on July 27th.) This group has had strong staff cooperation and support, particularly from Mr. Seymour J. Deitchman in ODDR&E, and has gotten well into its task of reviewing the DOD behavioral science program as it pertains to the causation and conduct of small wars, especially in Southeast Asia. The Special Operations Research Office (SORO) at American University is working directly under contract with the Army Research Office in this area, so the subcommittee will devote attention to their program.

The so-called "AGILE" project of ARPA is also directly involved, originally with special hardware development but lately also with operations research and studies of field requirements.

ACTION TAKEN:

The Chairman asked that the subcommittee report again at the Executive Committee meeting in September.

ITEM 7 - Subcommittee on DOD Research Policy (Furnas (chairman), Brooks, McDonnel, Piore, Puckett, Seitz)

Dr. Furnas, the subcommittee chairman, opened the discussion with a report on progress to date, noting that the subcommittee would hold its next meeting the following day (July 9th) for further review of the problem. Mr. O. W. Helm of ONR, who is assisting the subcommittee, then gave a summary of the answers in hand from the questionnaire to the Board (Tab E)--the return being about 50% on July 8th. This summary will be used by the subcommittee in the preparation of a report this fall. These replies have been a great help in the discussion and formulation of principles that should underlie all Defense research policy. Their tone is generally in favor of a broad, liberal attitude toward the support of research with Defense funds, despite the strong mission-orientation of the DOD.

ACTION TAKEN:

The Chairman asked the subcommittee to report again at the Executive Committee meeting in September, at which time an initial outline of Part II of the Report on Research Policy may be expected (Part I was issued as of December 31, 1963).

ITEM 8 - Other Business

a) Old Business

This item was in two parts: (1) a review of matters to be discussed with Dr. Brown during the Executive Session and (2) a short discussion of the UCLA Defense Science Seminar, conducted by Dr. McMillan, for younger scientists.

b) New Business

There was a short discussion of possible DSB assistance to Dr. Brown on a current ODDR&E study to plan how the RDT&E program might be adjusted to various levels of disarmament or cold war defense structuring.

ITEM 9 - Executive Session

At this time the Executive Committee met with Dr. Brown and reviewed the work of the Board, the Executive Committee and the Subcommittees. Dr. Brown noted with approval the progress being made.

After setting the next meeting for Wednesday, 16 September 1964 in the Pentagon, the meeting of the Executive Committee was adjourned at 1605 hours.

Wm W Hammerschmidt

Wm. W. Hammerschmidt
Executive Secretary
Defense Science Board

14 August 1964

Outline by H. A. Wheeler
dated 9/7/63

Over-the-Horizon Radar
NIKE - AJAX and HERCULES

Positive Correlation:

- (1) Started by perception of single man, in environment encouraging thinking.
- (2) Continuity in development, with freedom of some redirection.
- (3) Adequate funding at all stages of development.
- (4) Government selected contractors--no "proposals" or competitive bids.
- (5) Adequate direction and support and encouragement from Government representatives.
- (6) Other individuals of unusual competence and enthusiasm joined the development at early stages.
- (7) Familiarity with other related studies for information.
- (8) Government pressure at proper stages.



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

JUN 26 1964

MEMORANDUM FOR THE CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Sponsorship of Innovation

Within the general framework of my memorandum to you dated 17 February 1964 which sets forth three tasks concerning research and development, creativity and innovation, and technical personnel, I would like to add another task somewhat more specific in nature:

"Examine the case for establishing funding for innovation efforts; determine the relationship of this effort to that currently entitled IR&D and Bid/Proposal (CITE); examine the case for 1) funding independently or 2) funding through existing or proposed cost principles or 3) funding through direct contract in the Advanced and Exploratory Development categories; formulate criteria and methodology for awarding funds for all CITE and innovation effort to DoD contractors in a practical, competitive and timely manner."

As Dr. Fubini and I emphasized during our discussion of Dr. Root's presentation on "The Sponsorship of Innovation" during the May Board meeting, we are vitally interested in the creation of new ideas and innovation by industry and wish to encourage such effort. It remains to suggest ways of improving our present efforts in this area. This involves the prime consideration of obtaining more satisfactory methods of innovation funding both in the categories of Advanced and Exploratory Development and in cost allowable areas. Furthermore, any conclusion that several times as much innovation will occur if a billion dollars (15%) is added to the RDT&E budget in some category will take considerable proof. If we can come up with a modification of present ways of doing things which encourages innovation, we should be able to replace some present unproductive expenditures to provide the funding.

Without prejudging the deliberations of those to whom you assign this problem, this Office suggests some preferred ground rules for their effort:

- 1) The execution of whatever plan is finally approved should be accomplished within the framework of the individual military services, rather than by using a separate OSD channel.
- 2) Evaluation of innovation efforts appears to be just as difficult as the evaluation of the current IR&D. Any proposed evaluation mechanism must be soundly based and have some objective standard. It must contain major elements of competition and quality. Of particular concern is the mechanism for selecting a few outstanding innovation contractors from the very large number of competent defense contractors.
- 3) Funds must be awarded to a few selected contractors in meaningful units to insure that the innovation support is above "critical size".
- 4) It is desirable to integrate closely the review of innovation funding with the review of what is currently termed CITE, and with current methods of funding of Exploratory and Advanced Development. It is not the present intention of this office to establish a separate funding category for innovation efforts but rather to include them under the general heading of Contractor Independent Technical Effort (CITE).

This Office strongly desires to establish and maintain an environment which fosters new concepts which will answer the defense needs of the country. I recognize that an over-rigid application of existing regulations could well have an inhibiting effect on the process of bringing proposed innovations to a physical form where their merits can be clearly considered. I hope that the proposed Defense Science Board Subcommittee on Defense Contractor Effort can assist us in formulating a method of identifying and funding worthwhile innovative activities which will be workable in today's competitive environment without overburdening the Defense contractors with excessive administrative requirements.

Harold Brown
Harold Brown

United States Government
MEMORANDUM

C
O
I
U. S. Department of Commerce
National Bureau of Standards

DATE: July 8, 1964

TO: Dr. Frederick Seitz, Chairman
Defense Science Board

FROM: A. V. Astin, Chairman
DSB Subcommittee on Technical Personnel

Supplementing the formal report of the DSB Subcommittee on Technical Personnel, I would like to suggest that the DSB urge the Defense Department to undertake the formulation of systematic career development programs within the services. Well planned career development programs could do much to improve both the competence and morale of the present civilian scientific and engineering staffs in the Army, Navy, and Air Force. The existing Federal training authority could be more extensively utilized than it is now, and special programs using primarily internal facilities and transfer of personnel would be helpful. A specific proposal along these lines based upon a plan we have developed within the Department of Commerce is attached.

In many ways the military branch of the Defense Department has set an excellent pattern for development. The military program involves extensive periods in formal schooling, as well as planned rotation of assignments. One present inhibition on a career development program involving assignment of people between laboratories is the lack of adequate legal authority to pay personnel transfer costs. The Civil Service Commission has drafted legislation which is now pending before the Congress. A strong DOD assist to this legislation might help to get it enacted.

My final suggestion is that the development of a career development program might be a logical assignment for Task 97.

/s/ A. V. Astin

TAB C

A PROPOSAL FOR A TECHNICAL CAREER TRAINING FELLOWSHIP PROGRAM
IN THE DEPARTMENT OF DEFENSE

It is proposed that the Department of Defense initiate a Technical Career Training Program in order to improve the managerial competence of a limited number of its brighter young staff members and at the same time to broaden their outlook concerning the role of their particular organizational units in the total DOD framework. Training programs would be of approximately nine months duration and would include formal classwork on managerial procedures and the organization of science in Government and actual work experience in another organizational unit in the Department of Defense. At the end of the training period, the training fellows would return to their regular positions or to new positions that the sponsoring agency might wish to establish.

It is suggested that the Army, Navy, and Air Force each be authorized to nominate 30 individuals for appointment as Department of Defense Technical Career Training Fellows. The individuals should be from the scientific and engineering professional staff, between the grades GS-13 and 16 and should be below age 45. Concurrently each service would suggest a minimum of 30 positions to which training fellows from other services could be appointed.

The program could be initiated in the Fall of 1965. It should begin with a four to six week class work program on techniques of research management and include a general survey course on the structure of science in the Government. Such courses might well be given under contract with institutes such as the Brookings Institute or Harvard University. Upon completion of the formal training program, the individuals would be assigned to positions in other services as far as possible in accordance with expressed preferences for such positions. These positions would be held until the following June.

DRAFT

Progress Report

DSB Subcommittee on Technical Personnel

1. The subcommittee was appointed on January 7, 1964 with Dr. Allen Astin as Chairman, Dr. Lloyd P. Smith and Dr. Ernst Weber as members.
2. The subcommittee has reviewed a number of reports pertaining to in-house laboratories and technical personnel which were issued during the last few years, such as:

<u>Report</u>	<u>Date</u>
Conference on Management Problems of Military RDT&E, Fort Monroe, Va.	6-8 July 1960
Remarks by Dr. H. Brown: Research and Engineering in Defense Laboratories	19 Oct. 1961
The Competition for Quality, Federal Council for Science and Technology: Current Salary Levels	January 1962
Non-salary Factors	April 1962
SAB Ad Hoc Committee on In-House Laboratories, (USAF)	April 1962
Bureau of the Budget: Government Contracting for Research and Development	16 May 1962
DSB Subcommittee on In-house Laboratories (C. Furnas)	6 September 1962
Scientific Manpower, in Civil Service Journal	April-June 1963
Task 97, Review of Defense Laboratories, Progress Report Awards and Honors for Scientists	June 1963
Personnel Administrative Problems in Research and Development (OIR Special Study Group)	July 1963
SAB: Air Force Technical Personnel	October 1963

The conclusions in most reports are rather general, can easily be agreed to, but lack sufficient specificity to indicate actions to be taken by whom and how.

3. The subcommittee heard presentations by Dr. Chalmers W. Sherwin and Mr. Edward M. Glass specifically assigned by the Director of Defense Research and Engineering to study and report on ways to resolve problems surrounding the most effective use of technical personnel; and by Dr. Alexander H. Flax, Assistant Secretary of the Air Force (Research and Development), Mr. Charles L. Poor, Deputy Assistant Secretary of the Army (Research and Development) and Dr. Howard J. White, Jr., Special Assistant (R&D) to the Assistant Secretary of the Navy (Research and Development), relating to implementations of earlier policy statements by the Secretary of Defense, dated October 14, 1961. From these presentations and ensuing discussions it appears that priority should be given to the following specific recommendations:
 - a. Each service (and DDR&E) should seek to formulate explicitly the over-all long range objectives of its RDT&E programs.
 - b. Each service (and DDR&E) should evaluate realistically its entire in-house laboratory system against these long range objectives and define a realistic and workable system of missions with appropriate separation of research, development and testing functions.
 - c. Actions to combine or segregate, to endorse or abolish, certain in-house laboratories should then be taken promptly and effectively, providing necessary flexibilities for evolving new areas of effort.
 - d. A realistic procedure should be formulated for the evaluation of laboratory managers (perhaps with outside visiting teams), coupled with effective use of a dual promotion ladder for senior personnel, and authority for reassignments geographically or within levels, but with differing scopes of responsibility.

To assist in the implementation of these recommendations, this subcommittee further suggests the appointment of a study and review team composed of knowledgeable personnel from the three military services, from DDR&E and from industry, such as successful directors of research.

4. Task 97 has apparently performed well in its broader assignments and has been reconstituted as an Action Group, engaged in follow-up visits to laboratories to gain on-the-spot information on the real day-by-day problems.

It definitely looks that many managers are not aware of, or are not using, the full range of authorities already available. Perhaps a key problem is the appropriate selection of management personnel with emphasis on management rather than administration of the laboratory. Certainly, seniority should not, and never be the dominant factor in promotion to management positions. The title does not create the abilities which must be demanded for effective leadership.

In other cases laboratory managers are inhibited from using their authorities because they have no direct control over their support services (procurement, supply, personnel, libraries, etc.) such as when they are a tenant or a post or station which is not in R&D chain of command. Also where laboratories are part of commodity oriented logistic and supply organizations, the echelons above them do not appear to have the understanding of the R&D process and the environment required for appropriate operation.

5. The subcommittee will continue to stay close to Task 97. Some of the immediate problems that stand out are:
 - a. Promotion to PL-313 and Supergrade positions is unattractive for those who have held for some time GS-15 positions because of salary differences. Hopefully this will be resolved by the Executive Pay Bill now before Congress.
 - b. Encouragement of unionization really runs counter to the spirit of research laboratories where strict division of manual and mental work can in fact impede progress and lead to discouragement.
 - c. The need for officers with technical background is great, especially where technical management (rightly or wrongly) is expected.
 - d. Continuing professional education for senior personnel is becoming increasingly important. This should include technical subjects as well as managerial subject matter.

- e. Any impairment of morale will make the strongest people leave first. If seniority remains the main factor for promotion from among those remaining, then second or third grade managers are practically assured. The longevity of lesser grade people in responsible jobs is also an established fact.
- f. The cancellation of the student trainee examination by the Civil Service Commission may seriously affect the cooperative and summer work study programs which have been an excellent source of recruiting by the laboratories.

Time delays in obtaining personnel actions processed through the system are destroying the ability of laboratories to compete with outside organizations for quality scientists and engineers. It is generally true that because of salary differentials and probably other reasons, the laboratories seem to be unable to attract their fair share of young Ph. D.'s.

Military Construction appears to need the attention of top management. Not only are the conditions of buildings and the general environment, with some exceptions, much below the standards of Government supported industrial or university laboratories and those of the not-for-profit organizations, but the restrictions and obstacles in the way of minor construction, alteration and modification has reached serious proportions.

Fiscal controls over funding of laboratory programs appear to be overly restrictive and limit the flexibility and freedom of action necessary at the laboratory level. These controls should be re-examined with the possibility of fewer program elements, restructuring of projects or the possibility of funding certain of the laboratories on a line item basis.

Respectfully submitted

Allen Astin
Lloyd P. Smith
Ernst Weber

6/29/64



DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D.C. 20301

14 July 1964

MEMORANDUM FOR THE CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Defense Science Board Tasks

Pursuant to our conversation with Secretary Vance, I would like to add the following task to those which I have requested the Defense Science Board to undertake:

Study and report on means to improve the career patterns of technical military officers, considering also the need for fair competitive opportunities for nontechnical military officers as well.

To provide staff assistance for this study, I will make available the assistance of a military officer or civilian assigned to my office, this assistance to be given so as not to interfere excessively with his primary duties.

Harold Brown
Harold Brown

cc: Deputy Secretary of Defense
Assistant Secretary of Defense
(DDDR&E)
Deputy Directors, Defense Research
and Engineering

1. Should the DOD support basic research not immediately identifiable with military objectives and, if so, how much of it? About what percent of DOD funds for research, development, test and evaluation (RDT&E), currently expended at the rate of about \$7 billion per year, should be used to support basic research? (The total DOD budget is about \$50 billion this year.)
2. If the DOD considers only its own mission in supporting research, will this leave serious gaps in the national research effort?
3. One of the general purposes of the National Science Foundation is:

"At the request of the Secretary of Defense, to initiate and support specific scientific research activities in connection with matters relating to the national defense by making contracts or other arrangements for the conduct of such scientific research."

Should the DOD make full use of this mission of the NSF? Thus far it has been used very little if at all.

4. Are there meaningful criteria that we can use for evaluating the relevance and profitability of research and early development programs with respect to the DOD objective?
5. a) Should the DOD grant qualified academic institutions general discretionary funds for research, i. e., make "institutional grants" analogous to the independent research program in industry, and if so should the amount granted be based on the total amount of present DOD contracts and grants or on some other basis?

b) Should the DOD increase its "program" support to universities at the expense of "project" support?
6. In its support of research should the DOD consider not only the merit of the investigator receiving the contract or grant and his available resources for the research but also the location, size, standing or other characteristics relevant to our national research capability of the institution employing him?
7. Does the not-for-profit corporation largely or wholly supported by DOD funds still have a legitimate role to play? Have you noticed any decrease, or increase, in the effectiveness and productivity of these groups? Any other thoughts on the subject?