

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

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MINUTES  
TWENTY-EIGHTH MEETING  
of the  
DEFENSE SCIENCE BOARD  
9 January 1964

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

DSB 3/28

MINUTES  
TWENTY-EIGHTH MEETING  
of the  
DEFENSE SCIENCE BOARD  
9 January 1964

DSB MEMBERS PRESENT

- |                                     |  |
|-------------------------------------|--|
| Dr. Frederick Seitz, Chairman       | - President, National Academy of Sciences                                  |
| Dr. Allen E. Puckett, Vice Chairman | - Vice President and Aerospace Group<br>Executive, Hughes Aircraft Company |
| Dr. W. W. Hammerschmidt             | - Executive Secretary Defense Science<br>Board                             |
| Dr. Daniel Alpert                   | - Director, Coordinated Science<br>Laboratory, University of Illinois      |
| Dr. Allen V. Astin                  | - Director, National Bureau of Standards                                   |
| Dr. Walter H. Brattain              | - Member of the Technical Staff, Bell<br>Telephone Laboratories            |
| Dr. Thomas E. Caywood               | - Peat, Marwick, Caywood, Schiller<br>and Company                          |
| Dr. Clifford C. Furnas              | - President, New York State University<br>at Buffalo                       |
| Dr. Leo Goldberg                    | - Department of Astronomy, Harvard<br>University                           |
| Prof. David T. Griggs               | - Institute of Geophysics & Planetary<br>Physics, UCLA                     |
| Mr. Patrick E. Haggerty             | - President, Texas Instruments, Inc.                                       |
| Dr. Leland J. Haworth               | - Director, National Science Foundation                                    |
| Mr. Edward H. Heinemann             | - Vice President, Engineering, General<br>Dynamics Corporation             |
| Dr. Gerald M. McDonnell             | - Department of Radiology, UCLA  |
| Dr. William G. McMillan             | - Chairman, Department of Chemistry,<br>UCLA                               |
| Mr. Thomas L. Phillips              | - Executive Vice President, Raytheon Co.                                   |
| Dr. L. Eugene Root                  | - President, Lockheed Missiles and<br>Space Company                        |

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- Dr. Lloyd P. Smith - Vice President for Research, Philco Corporation
- Dr. H. Guyford Stever - Professor of Aeronautics and Astronautics, MIT
- Dr. Kenneth M. Watson - Physics Department, University of California at Berkeley
- Dr. Ernst Weber - President, Polytechnic Institute of Brooklyn
- Mr. Harold A. Wheeler - President, Wheeler Laboratories, Inc.

INVITED PARTICIPANTS

- Dr. Harold Brown - Director of Defense Research and Engineering
- Dr. Robert O. Burns - Director, Technical Analysis and Advisory Group, Office of Deputy Chief of Naval Operations (Development)
- Rear Admiral L. D. Coates, USN - Chief of Naval Research
- Lt. Col. Louis O. Elsaesser, USA - Office of Assistant Director (Chemical Technology), ODDR&E
- Lt. Gen. Wm. J. Ely, USA - Deputy Director of Defense Research and Engineering (Administration and Management)
- Dr. Eugene G. Fubini - Assistant Secretary of Defense (Deputy Director of Defense R&E)
- Mr. Edward M. Glass - Special Assistant to the Deputy Director of Defense Research and Engineering (Research and Technology)
- Dr. Lawton M. Hartman - Special Assistant to the Deputy Director of Defense Research and Engineering (Research and Technology)
- Mr. Willis M. Hawkins - Assistant Secretary of the Army (R&D)
- Dr. Richard A. Kern - Professor of Medicine, Emeritus, Temple University Hospital
- Dr. Joseph C. R. Lickliger - Director, Behavioral Sciences Command and Control Research, ARPA
- Mr. John B. Macauley - Assistant to the Director of Defense Research and Engineering
- Dr. Nathan Marcuvitz - Assistant Director of Defense Research and Engineering (Research)
- Dr. Clifford F. Rassweiler - Vice President for Research and Development, Johns-Manville Corporation



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- Mr. James W. Roach - Assistant Director of Defense Research and Engineering (Engineering Management)
- Mr. Vincent Roddy - Office, Deputy Chief of Staff for Research and Development, Department of the Air Force
- Dr. Chalmers W. Sherwin - Deputy Director of Defense Research and Engineering (Research and Technology)
- Dr. Robert L. Sproull - Director, Advanced Research Projects Agency
- Dr. Jack T. Thurston - Assistant Director of Defense Research and Engineering (Chemical Technology)

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ITEM 1 - Call to Order

The 28th meeting of the Defense Science Board was called to order by the Chairman, Dr. Frederick Seitz, at 0930 in Room 4C-1052, The Pentagon, with those present as listed above. Four members of the Board were unable to attend, viz: Dr. Lanier, who was on a trip to India, and Drs. Benedict, Dryden and Walker, who had previous commitments. The appointments of five members-at-large expired on 31 December 1963 and they were appropriately honored at the dinner meeting at the Cosmos Club the preceding evening. They were Dr. Kern, Dr. Kuhn, Mr. Littlewood, Dr. Overhage and Dr. Rassweiler. The appointment of four members-at-large was announced, namely:

Professor David T. Griggs, Institute of Geophysics and Planetary Physics, University of California at Los Angeles;

Dr. Gerald M. McDonnel, Department of Radiology, University of California at Los Angeles;

Dr. L. Eugene Root, President of Lockheed Missiles and Space Company;

Professor Kenneth M. Watson, Physics Department, University of California at Berkeley.

The minutes of the 27th meeting were approved as previously circulated.

ACTION TAKEN:

The Board approved the minutes of the 27th meeting and welcomed the new members to the Board.

ITEM 2 - Executive Committee Activities

The Chairman introduced this item by reviewing the meeting the preceding day between the Executive Committee and Dr. Brown. This meeting afforded Dr. Brown an opportunity to suggest where the Board's effort could be most useful to him. At this meeting, the Chairman handed Dr. Brown the Board report on "The Military Role in Space" for forwarding to Secretary McNamara. This report will be distributed to the Board as Tab A\* of these minutes.

\*For DSB distribution only

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The Chairman's outline of areas of concern to the Board included the following highlights:

- 1) The command and control situation is in trouble, but it appears that the Board can be of little help at present.
- 2) The Board's review of basic sciences will continue under a reconstituted subcommittee chaired by Dr. Furnas. The first part of the continuing study will be issued soon. Dr. Brown's limited funds are forcing hard new decisions in research and he wants Board help on them. The Board may also be able to help in presenting issues to Congress. Properly informing and advising Congress on research and development has become a matter of prime importance.

Dr. Furnas commented that his subcommittee should keep in touch with both the panel of the President's Science Advisory Committee studying national research policy and activities of the National Academy of Sciences in the area of science and public policy.

- 3) The Board will continue to study ways to improve Federal technical personnel, at the request of Dr. Brown.

- 4) The Chairman said the Board should review the proposed new regulations for Federal support of contractors' independent technical effort associated with Defense procurement contracts. Certain proposed changes in the ASPR XV regulations are cause of considerable concern. Dr. Brown had concurred in the desirability of the Board watching these developments.


- 5) The matter of improving and monitoring DOD-University relations was presented to the Federal Council for Science and Technology by Dr. Fubini and is being followed up there.

In addition to the foregoing summary by the Chairman, Dr. Root brought up the problem of protecting innovation against over-management. Management policy may not, at present, sufficiently encourage and protect new ideas, tending to judge them by overly stringent standards. We need organizational arrangements to protect creativity.

Drs. Brown and Fubini participated in an ensuing discussion of independent research and development regulations and of Dr. Root's subject.

The Chairman concluded this item by stating that we should study the matter raised by Dr. Root and consider it at the next Executive Committee meeting. Dr. Brown concurred in this proposal.

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ACTION TAKEN:

The matters for action listed above will be reviewed by the Executive Committee at its next meeting and designated subjects will be studied by the appropriate subcommittees.

ITEM 3 - Subcommittee on DOD Research Policy

Dr. Seitz said that he would dispense with the report of this subcommittee since the report is, as noted in Item 2, due to be issued shortly as the first part of a continued study. Thereupon Dr. Nathan Marcuvitz, Assistant DDR&E for Research, brought the Board up to date on the objectives and structure of the Defense Research Program. This \$300 million-per-year program is divided into two major elements--one for visible programs and one for independent discretionary use by individual laboratory directors. Of this program, about 40% is in-house, 30% in universities, 15% in industry, 10% in not-for-profits and 5% is spent abroad. Dr. Marcuvitz further described in detail both (a) the arrangement of specific substantive program areas and (b) developing plans to start up new deliberative machinery for better review, and better visibility, of the different programs.

ACTION TAKEN:

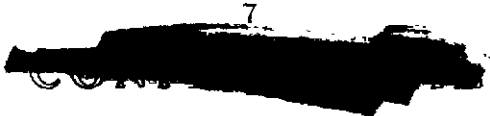
This matter will be an agenda item for the May meeting of the Board.

ITEM 4 - Subcommittee on Management of Research  
and Exploratory Development

Mr. Wheeler, the chairman of the subcommittee, reported on progress on this study since the September meeting of the Board. The plan is to explore a small number of samples in depth and see if they show a pattern that led to key advances. Dr. Root's remarks, cited in Item 2, on the adverse effect of over-management on innovation, are pertinent to this study. Progress to date includes (a) the assignment of the study as a full-time one to Dr. Lawton M. Hartman of the ODDR&E staff, (b) the assignment of a team of Service representatives full-time for six months or so to serve under Dr. Hartman and (c) arrival at an advanced stage of negotiation on a contract to study the problem. The contractor is to supply material for a report by Dr. Hartman's team, which will in turn ask the subcommittee to comment upon the report to the Board.

ACTION TAKEN:

The Subcommittee will meet in March to review progress and report to the Executive Committee at its March meeting.





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ITEM 5 - Subcommittee on Technical Personnel

Dr. Astin, the subcommittee chairman, opened the discussion. There are critical problems that should be faced in our effort to improve the quality of Federal technical personnel; the present pay situation is one of the worst. The subcommittee will be assisted on these problems by Mr. Edward M. Glass, a special assistant to Dr. Sherwin for Federal laboratory and personnel matters.

Mr. Glass reviewed progress in this area since the Board made its report on "Government In-House Laboratories" on 6 September 1962. Of the five major recommendations of that report, three are moving ahead and two are lagging, the latter being (a) the establishment of a system of national recognition for Federal technical personnel and (b) the implementation of a "reverse sabbatical leave program for competent university and industrial scientists to work in government laboratories." The Board could especially help on the last matter by persuading scientists and engineers to accept "term appointments" (now available up to 4 years) in Federal laboratories.

This item ended with a plea from Dr. Sherwin for more enlightened response by the Nation's scientists and engineers to their social responsibility for public service in technology, to bring under better control the Federal technological giant that has appeared in our midst.

ACTION TAKEN:

The Subcommittee will meet in February and report to the Executive Committee at its March meeting.

ITEM 6 - Executive Session

a) Advisors' Reports

Dr. Alpert remarked on the need for extensive reassignment of Board advisorships. Both this matter and the recommendations contained in the annual advisors' reports (Tab B\*) will be considered at the March meeting of the Executive Committee.

b) Other Old Business

Nothing was introduced under this item.

c) New Business

A subcommittee on behavioral sciences will be established in the near future. Dr. Lanier has agreed to serve as chairman.

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The next meeting of the Board will be held in the Pentagon on 13-14 May 1964.

At the conclusion of this item the Chairman left the meeting and the Vice Chairman, Dr. Allen E. Puckett, took the chair.

ITEM 7 - The DOD Program in Behavioral Sciences

This item consisted of a presentation by Dr. Joseph C. R. Licklider, director of the program in behavioral sciences of the Advanced Research Projects Agency. This program was a partial response to the July 1960 report of the Smithsonian Institution entitled "The Technology of Human Behavior," a report which came under final Board review at its meeting on 11 May 1961. The Director of Defense Research and Engineering started implementing the report in November 1961 and considerable activity has resulted in selected areas since then. Not nearly as much has been done as was recommended in (a) persuasion and motivation research or (b) research on proper organization in the Defense Department and its military arms.

ACTION TAKEN:

This matter will be considered at the March meeting of the Executive Committee.

ITEM 8 - Notes on the BW/CW Program

This item was presented by Dr. Jack T. Thurston, Assistant Director of Defense Research and Engineering for Chemical Technology, who outlined the current Defense program in this area. He outlined requirements for various agents, with particular emphasis on incapacitating agents, and emphasized various inadequacies of the present agents. Field testing the agents presents a particularly crucial problem and Dr. Thurston dwelt at some length on this matter.

ACTION TAKEN:

This item was noted with interest.

As noted in Item 6, the next meeting of the Board is scheduled for 13-14 May 1964 in the Pentagon.

The 28th meeting of the Defense Science Board was adjourned at 1605.

*Wm W Hammerschmidt*

Wm. W. Hammerschmidt  
Executive Secretary  
Defense Science Board

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17 February 1964