

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

DSB 3/32

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MINUTES
THIRTY-SECOND MEETING
of the
DEFENSE SCIENCE BOARD
13 May 1965

*Tab B
not attached*

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MINUTES
THIRTY-SECOND MEETING
of the
DEFENSE SCIENCE BOARD
13 May 1965

DSB MEMBERS PRESENT

Dr. Frederick Seitz, Chairman	- President, National Academy of Sciences
Mr. Patrick E. Haggerty	- President, Texas Instruments, Inc.
Dr. W. W. Hammerschmidt	- Office of the Director of Defense Research and Engineering
Dr. Walter H. Brattain	- Member of Technical Staff, Bell Telephone Laboratories
Dr. Robert W. Cairns	- Director of Research, Hercules Powder Co.
Professor David T. Griggs	- Institute of Geophysics and Planetary Physics, UCLA
Dr. John Ide*	- National Science Foundation
Dr. Lyle H. Lanier	- Executive Vice President and Provost University of Illinois
Dr. Finn J. Larsen	- Vice President, Honeywell Incorporated
Maj. Gen. James McCormack, USAF(Ret.)	- Vice President, Massachusetts Institute of Technology
Dr. Gerald M. McDonnell	- Department of Radiology, University of California Medical Center, Los Angeles
Dr. William G. McMillan	- Chairman, Chemistry Department University of California, Los Angeles
Mr. Thomas L. Phillips	- President, Raytheon Company
Dr. Allen E. Puckett	- Executive Vice President, Hughes Aircraft Company
Dr. Andrew D. Suttle, Jr.	- Vice President for Research and Professor of Chemistry, Texas A&M University
Dr. Eric A. Walker	- Chairman, Naval Research Advisory Committee

* Representing Dr. Haworth

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DSB MEMBERS PRESENT (cont.)

- Dr. Kenneth M. Watson - Physics Department, University of California, Berkeley
- Dr. Ernst Weber - President, Polytechnic Institute of Brooklyn

DSB MEMBERS ABSENT

- Dr. Allen V. Astin - Director, National Bureau of Standards
- Dr. Hugh L. Dryden - Deputy Administrator, National Aeronautics and Space Administration
- Dr. Leo Goldberg - Department of Astronomy, Harvard University
- Dr. Lawrence R. Hafstad - Chairman, General Advisory Committee, Atomic Energy Commission
- Dr. Leland J. Haworth - Director, National Science Foundation
- Mr. Perry W. Pratt - Vice President and Chief Scientist United Aircraft Corporation
- Dr. L. Eugene Root - President, Lockheed Missiles and Space Company
- Dr. Lloyd P. Smith - Vice President for Research, Philco Corporation
- Dr. H. Guyford Stever - Chairman, Air Force Scientific Advisory Panel

OSD OFFICIALS AND INVITED GUESTS

- Honorable Eugene G. Fubini - Assistant Secretary of Defense (Deputy Director of Defense R&E)
- Dr. Daniel Alpert - Director, Coordinated Science Lab., University of Illinois
- Mr. Seymour J. Deitchman - Special Assistant for Counter-insurgency, ODDR&E
- Lt. Gen. Wm. J. Ely, USA - Deputy Director, Administration & Management, ODDR&E
- Mr. Daniel J. Fink - Deputy Director, Strategic & Defensive Systems, ODDR&E
- Dr. Harold H. Hall - Chief Scientist for Remote Area Conflict, ARPA

OSD OFFICIALS AND INVITED GUESTS

Dr. Charles M. Herzfeld	- Deputy Director, ARPA
Col. Raymond S. Isenson, USA	- Staff Assistant to Deputy Director, Research & Technology, ODDR&E
Brig. Gen. Glenn A. Kent, USAF	- Military Assistant to Deputy Director, Strategic & Defensive Systems, ODDR&E
Mr. James W. Roach	- Assistant Director, Engineering Management, ODDR&E
Mr. Thomas F. Rogers	- Assistant Director, Communications & Electronics, ODDR&E
Mr. George Salton	- Staff Member, Office Assistant Director, Communications & Electronics, ODDR&E
Dr. Nicholas N. T. Samaras	- Assistant Director, Chemical Technology, ODDR&E
Dr. Chalmers W. Sherwin	- Deputy Director, Research & Technology, ODDR&E
Mr. Paul J. Sturm	- Assistant Director, Plans & Policy, ODDR&E

GUESTS FROM THE MILITARY DEPARTMENTS

Rear Adm. F. A. Bardshar	- Chief, R&D, J-5 Division, Joint Chiefs of Staff
Dr. Robert O. Burns	- Office, Deputy Chief of Naval Operations (Development)
Lt. Gen. W. W. Dick, Jr., USA	- Chief of Research & Development, OGRD, Department of the Army
Brig. Gen. E. B. Giller, USAF	- Director of Science & Technology, Office, Deputy Chief of Staff/R&D, Department of the Air Force
Brig. Gen. Walter E. Lotz, USA	- Director of Army Research, OCRD, Department of the Army
Lt. Col. P. G. Olenchuk, USA	- J-5 Division, Joint Chiefs of Staff
Mr. Vincent S. Roddy	- Office, Deputy Chief of Staff for Research and Development, Department of the Air Force
Col. Vester M. Shultz, USA	- J-5 Division, Joint Chiefs of Staff
Dr. R. A. Weiss	- Deputy & Scientific Director, Army Research, OCRD, Dept. of the Army
Col. H. Williams, USMC	- J-5 Division, Joint Chiefs of Staff

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~~CONFIDENTIAL~~ITEM 1 - Call to Order

The 32nd meeting of the Defense Science Board was called to order by the Chairman, Dr. Frederick Seitz, at 0915 on 13 May 1965 in conference room #7, 1E-801, The Pentagon. A list of those who attended the meeting is given above.

The minutes of the 31st meeting were approved as previously circulated. The Chairman noted the following changes in Dr. Brown's senior staff since the January meeting of the Board: Mr. Daniel J. Fink has succeeded Mr. Fred A. Payne as Deputy Director for Strategic and Defensive Systems and Mr. J. K. Nunan has succeeded Mr. James H. Probus as Assistant Director for Undersea Warfare and Battle Support Systems.

ITEM 2 - Executive Committee Report

Most of the work of the Executive Committee had been concerned with subcommittee activities that were scheduled for special reports later in the meeting. The only subcommittee report specifically included under the present item was that by Dr. Weber who reported, in Dr. Astin's absence, on the Subcommittee on Civilian Technical Personnel. He began his report by commenting on certain significant features of the distribution of grades for professional workers in the Services' laboratories. He noted what he called "a snowdrift effect" in the distribution, i. e., that the distribution of grades crests at a level around GS-12 or 13 and then tends to drop off rapidly for the higher grades. He noted in particular that Army crests at GS-12 (\$10,250 - 13,445) in its laboratories; the Navy laboratories show a broader top and the Air Force crests at GS-13 (\$12,075 - 15,855) in its laboratories. A correlation of advanced degrees with the supergrades GS-16 to GS-18 (or equivalent PL-313 positions) may be possible but the evidence is not clear. A correlation of mission with numbers of supergrades does exist. In general, professional pay in the Services' laboratories appears to lag behind that of the not-for-profits with a differential on the order of 10 to 20 percent.

Mr. Edward M. Glass, who is handling laboratory and personnel problems for Dr. Sherwin, will attempt to get better figures for comparison of Service laboratory pay and benefits with those prevailing in technical industry and universities. Several Board members offered to help Mr. Glass obtain the necessary figures in their own organizations. According to Mr. Glass, existing statistical data are not in a suitable form for accurate comparison of the salaries and benefits of laboratory staffs within and without the Federal Government.

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~~CONFIDENTIAL~~ACTION TAKEN:

The Subcommittee on Civilian Technical Personnel will report again at the July meeting of the Executive Committee.

ITEM 3 - DOD Laboratory Management

This item was continued from the January meeting (see Item 2, Minutes of the 31st Meeting). Two quite different reports were presented during this period: 1) a report on the continuing study of management of *research and exploratory development, falling under the cognizance of the Subcommittee on Management of Research and Exploratory Development, chaired by Mr. Wheeler, and 2) a report by Dr. Sherwin on the progress of plans to revamp the Defense laboratories.*

With respect to the study of innovation, Dr. Sherwin introduced Colonel Raymond S. Isenson, USA, who had joined his staff to help him on that study. Colonel Isenson opened his remarks by noting that the study by the Arthur D. Little Company should soon be available for distribution. He then proceeded to summarize the main points of that study, noting that the ODDR&E staff here do not necessarily agree with all the A. D. Little hypotheses and conclusions. A copy of Colonel Isenson's summary is attached as Tab A.

As reported in the minutes of the Executive Committee meeting on May 12th, Dr. Sherwin plans to obtain a much larger sample--perhaps the case histories for a hundred weapons systems. This next phase in the study will work mainly with in-house teams but will do some work under contract. It will include studies involving nuclear weapon development since the AEC laboratories have an excellent record of innovation.

The Board comment on this work was enthusiastic and there was general agreement that these studies should continue with provision for ample professional effort on them.

With respect to the new plans to improve the DOD laboratory system, Dr. Sherwin said that he had received 11 replies from members of the Board, of which 3 were in general agreement with the plan and the rest had varying degrees of opposition to it. He noted some concern that the in-house laboratories would be asked to become the prime source of advanced development ideas and, in effect, would become both judge and jury for advanced development work (this difficulty in confounding the laboratory's role as "honest broker" to its Service with that of a competitor with potential

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Defense contractors for the same development project has been noted before in our Board review of laboratory problems). Dr. Sherwin assured the Board this is not intended to happen. Dr. Sherwin noted that about half of the in-house laboratory work is research and about half is technical support. He believes that we would be better off with good laboratories loosely coupled with military weapons systems development offices than with poor laboratories under military control. He cited the AEC weapon laboratories at Livermore and Los Alamos as first rate, loosely coupled laboratories. He believes that in-house laboratories must be kept in competition with those of industry for development projects and reduced in force if they lose out on contracts.

Dr. Sherwin noted the new plan for the Army Materiel Command and its laboratories as reported by General Besson, the Commanding General of AMC, to the Research and Engineering Policy Council (as noted in the minutes of the Executive Committee meeting for May 12th). This new plan features a new director of laboratory organization who would report directly to General Besson and would be responsible for the over-all management of the entire laboratory program of AMC and its subordinate commodity commands.

Dr. Sherwin concluded with the remark that he would separate the contract and research functions in the in-house laboratories. The laboratories would be allowed to monitor contracts and act as judges only in fields in which they themselves had no prime activity.

Following Dr. Sherwin's report there was considerable discussion of it and of the proper function of the Service laboratory. It was again noted that one of their prime functions--and a principal justification for their technical competence--has been as judges and counselors to the DOD in the area of technical specifications, technical performance and contract liaison generally. The danger was noted that Defense laboratories, if not sufficiently responsive to their Service needs, would tend to become absorbed in their own pet projects to the neglect of more urgent Service problems. Some concern was expressed that loose coupling with military needs would tend to produce such lack of responsiveness.

ACTION TAKEN:

The Subcommittee on Management of Research and Exploratory Development will report at the July meeting of the Executive Committee and at the September meetings of the Board and Executive Committee. The Board will continue to review and comment on the new laboratory plans as they evolve.

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ITEM 4 - Report on Technical Military Personnel

Dr. Weber reported for this subcommittee in Dr. Stever's absence. He summarized the preliminary draft of their report, reviewing and enlarging upon their report to the Executive Committee the preceding day. Among the specific conclusions and recommendations which the subcommittee is considering are the following:

1) Giving technical officers special credit for advanced work done after their baccalaureate degree, if their graduate work is pertinent to their Service needs.

2) Giving special encouragement to the officer after his first tour of duty. Dr. Weber noted the importance of assigning field duty to the technical officer in order to better couple him into Service needs.

3) Providing for more personal and special career handling of all officers, including technical officers; also better informing the young officers of provision for their career development in their Service.

Dr. Weber noted that the Army study called "TECSTAR" is intended to help solve officer assignment problems in the Army but appears to be rather massive. Dr. Weber also noted a report handed him during the meeting by Brig. General Edward B. Giller, USAF, entitled "The Pay of Military Scientists and Engineers, A Comparative Analysis." This comparative analysis will be useful in the work of the subcommittee in preparing its final report.

4) Providing for continued technical education throughout the professional life of a technical officer, with the emphasis being on management and broad technical problems.

5) Improving the system of pay and benefits for all officers, but perhaps especially for the technical officer. The critical periods with regard to retention are (a) at the end of the first tour of duty and (b) at the end of the 20-year active duty period when an officer can accept immediate retirement on a partial annuity and begin a second career.

6) Granting technical officers their fair share of the general awards and commendations available. The subcommittee recommends against special awards for technical officers per se.

Dr. Weber said that the subcommittee plans to submit its final report at the September meeting of the Board.

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The discussion that followed Dr. Weber's report included the following high lights:

1) The importance of technically trained general officers for managing research and development in furtherance of the over-all Service needs and missions.

2) The possibility of promoting a few officers very rapidly, so that they may become general or flag officers in their middle thirties, even if the Service loses older men as a result of this selection and rapid promotion.

3) The need for training officers to use research and development in furtherance of their Service objectives and of providing for this training as a major goal in the revamping of the Service laboratory system.

4) The crucial role of the efficiency or fitness report in the promotion and assignment of an officer. This report is often filled out by a nontechnical officer on a technical officer.

5) The importance to technical officers' morale of the fact that few such officers eventually reach four-star rank.

6) The importance of motivation, especially in young men. They tend to be much less conscious of retirement plans and other provisions for security of that sort.

7) "Comparison ranking" as a possible scheme for pushing the most promising officers and eliminating the poor ones. In such a scheme the middle group pretty well takes care of itself.

ACTION TAKEN:

The Subcommittee will report again at the Executive Committee meetings in July and September.

ITEM 5 - Project WEST FORD

Dr. Alpert, the chairman of this subcommittee, presented their final report. He noted that the work of the subcommittee was greatly aided by Professor Duane H. Cooper of the University of Illinois, acting as technical advisor, Mr. Thomas F. Rogers, Assistant Director for Communications and Electronics, and Mr. George L. Salton of Mr. Roger's staff. Dr. Alpert

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reviewed the history and principal characteristics of the WEST FORD experiment which he characterized as a good experiment, well designed and well conducted. However, two basic new technical advances have intervened since the conception of the WEST FORD means of communication: the greatly increased reliability (a) of missile launches and (b) of electronic equipment in satellites. When a possible WEST FORD system is compared with a satellite communication system using active repeaters one is forced to the conclusion that the WEST FORD system would in almost all foreseeable circumstances give less performance for the investment than would a redundant satellite system. Complete evaluation of the two systems in terms of military requirements was impossible so only some salient systems comparisons were made. Special attention was given to the ability of the two different systems to maintain their transmission rates under jamming and to the problem of keeping the systems exercised so that they would be at a reasonable operating efficiency at all times.

As a result of their considerations and analyses, the subcommittee recommended against the WEST FORD system in favor of a redundant repeater satellite system. The WEST FORD system could conceivably be superior only in some special and rather unlikely military situations involving electronic countermeasures. In view of the negative nature of the subcommittee's findings, there was no need to go into the question of the acceptability of an operating WEST FORD system to U. S. and international science, so that matter was given no further consideration. The subcommittee noted that the Lincoln Laboratory team that conducted the WEST FORD experiment had done a good job in setting the experiment up, had thoroughly checked the experiment out with radio and optical astronomers, had cooperated fully with them and had done a good job over-all in handling the test and its results.

ACTION TAKEN:

The Board accepted the report of the Subcommittee on WEST FORD as presented by Dr. Alpert, subject to its final editing.

ITEM 6 - Report on Project AGILE

Dr. Puckett, chairman of the Subcommittee on AGILE, reviewed their activity in connection with this study. They had talked with the senior members of the AGILE project in ARPA, with Mr. Seymour J. Deitchman of the ODDR&E staff, and with relevant Service people in the Pentagon, at Eglin Air Force Base, Florida, and at the Aberdeen Limited War Laboratory. He noted that this project was begun in 1961 as special new DOD effort in counter-insurgency and had done an excellent job in stimulating hardware development

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for counterinsurgency. However, the time had come to re-examine AGILE's role as the Services have had time to develop their own effort in this area. The responsibility for development of COIN hardware does rest with the military services and should be discharged by them or assumed by them as soon as possible.

Dr. Puckett listed the following as the main conclusions of the subcommittee report:

- 1) The AGILE project should be continued but should be re-directed, without major discontinuity, toward somewhat different emphases.
- 2) AGILE management of hardware programs should be phased out as quickly as possible and picked up by the Services.
- 3) The AGILE program should continue to be a source of quick funding and of coordination of Service efforts where Service lines are crossed.
- 4) AGILE should continue to support the development of COIN hardware for indigenous forces.
- 5) AGILE should support work toward the systems approach but should keep this work practical.
- 6) AGILE should continue to be alert for gaps in hardware development and for "neglected techniques."
- 7) While behavioral research for counterinsurgency should continue to be supported in ARPA, it probably should be done in the main body of ARPA rather than through the AGILE project.
- 8) The AGILE budget for Fiscal Year 1966 would probably be adequate if it remains at about the same level as for this year as there is little evidence that a more ambitious program need be undertaken.

With the conclusion of Dr. Puckett's report for his subcommittee, Dr. Herzfeld, the prospective director of ARPA, thanked the subcommittee for its very useful study and said that he agreed in the main with the subcommittee's conclusions. He proceeded to discuss the balance of funding for behavioral science between the basic research being done in the Behavioral Science Division of ARPA and the more specific advanced research being done under AGILE auspices. He said he thought it would be a mistake to completely merge the two programs. He stated his agreement with the subcommittee's

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conclusions on the general budget for the AGILE project and with respect to phasing out the hardware program for the Services. With reference to the behavioral science program, Dr. Lanier noted that the Army is now stepping up its behavioral science effort as recommended by the recent report of the Board subcommittee of which he was chairman.

ACTION TAKEN:

The Board accepted the report of the Subcommittee on Project AGILE, subject to final editing by the Subcommittee.

ITEM 7 Review of DOD-Industry Procedures

This item was introduced by Mr. James W. Roach, Assistant Director for Engineering Management, who highlighted some of the more important aspects of the technical DOD-industry interface. His remarks were supplemented from time to time by Dr. Fubini, who sat with the Board through this item.

Mr. Roach noted that the report made last September by the Subcommittee on Defense Contractor Effort had served as a foundation or tool for the current attempt to rewrite rules for DOD-industry procedures. He said that it is still too early to go into the foregoing matter in depth but he will be glad to discuss it at a later Board meeting. The ODDR&E staff is trying to set up a frame work of policy and supporting instructions to implement the Board report. They are reviewing and updating various directives on reporting procedures, on the Program Definition Phase of development, etc. They believe that the basic concept of PDP still is sound but has been frequently misunderstood so they are in the process of clarifying the policy without changing the basic intent. The term "Project Definition" may be changed to "Final Definition", which will start only after a conditional decision has been made to go ahead with the full development program.

With regard to Contractor Independent Technical Effort, the general ground rules for CITE are pretty well agreed upon so far as DOD and NASA are concerned. Current effort is directed toward developing the necessary specifics. This quite complicated matter will probably require intensive study for a considerable time to come, involving as it does allowable costs to the contractor in view of his past and projected efforts as well as the whole knotty question of independent research and development funds.

Mr. Roach noted that a directive on source selection was signed out several weeks earlier. This directive (4105.62) was previously distributed to the Board. Another DOD directive (5010.14) had also just been issued and is attached as Tab B. Its aim is to give the project manager unprecedented authority to manage his project, reporting directly to the head of his major Service command, such as the Army Materiel Command, the Office of Naval Material, and the Air Force Systems Command.

Mr. Paul Sturm, Assistant Director for Plans and Policy, then reviewed progress in improving the procedure for requirements definition. This subject has been under review by Mr. Sturm and a DOD steering committee since last fall and has resulted in a final draft report which deals with such matters as planning, improved procedures for requirements definition, their relation to operational concepts, the role of the Joint Chiefs of Staff, the manner in which OSD will conduct its review, CITE, other relations to industry, and improved training of appropriate military officers in this staff area.

In the discussion that followed the reports by Mr. Roach and Mr. Sturm, it was brought out that the purpose of Final Definition is to validate answers previously received, and to check out their firmness before a commitment is made by DOD to go into Engineering Development (6.4). Board members expressed their continued concern about the prospects for innovation during Engineering Development under the new system.

ACTION TAKEN:

The Board expressed its continuing interest in the matter of procedures for regulating the relationship of DOD with its technical contractors.

ITEM 8 - Executive Session

The Chairman noted the numerous studies in which the Board has been engaged over the past 12 months. He said that no new studies will be undertaken at this time but that at the September Board meeting we will take up possible tasks for the future. Before next January we should also take some time to review the relationship of the Board to the DOD staff it advises. He noted that the Defense Science Board had grown out of the older Research and Development Board, and that in its evolution the DSB has probably reached about the right combination of its membership provided that it matches well with the structure of the Office of the Secretary of Defense. However, it is probably about time for the Board to review its role once again. This will be done at the next meeting of the Executive Committee scheduled for July 14th

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and then again in the executive session of the September meeting of the Board (which is scheduled for Thursday, September 9th, with the customary dinner meeting on September 8th).

The thirty-second meeting of the Board was thereupon adjourned at 1600 hours.

Wm W Hammerschmidt

W m. W. Hammerschmidt
Executive Secretary
Defense Science Board

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BRIEFING FOR DSB

13 May 1965

By: Colonel Raymond S. Isenson

SUBJECT: General Results of ADL Study

In their summary of the Study on RXD Management, the A. D. Little people present a number of hypotheses and then offer, as supporting evidence, applicable findings from their case studies. Because the final report, to be published soon, discusses these hypotheses and analyzes the gathered information in some detail and the DSB subcommittee will make a presentation in a few months on this same subject, I propose only to describe, briefly, several of the hypotheses and supporting evidence. The primary purpose is to acquaint you with the general nature of the report's conclusions. The thoughts are those of ADL; not necessarily in agreement with those of DOD personnel.

1. Most RXD Events Result in Modest Innovations. Of the several hundred ideas examined in the backgrounds of six weapon systems, only two, both Research Events, could be considered key ideas or major technological breakthrough. The two events so dignified had to do with the invention of the transistor and the development of a high temperature shock tube.

2. The Environment is Strongly Affected by the Laboratory Director. In 46 of 52 cases, the directors of the laboratories in which the Exploratory Developments took place were ranked by A. D. Little as good or excellent in capability. The criteria for rating included:

- a. Breadth and Depth of Technical Insight.
- b. Previous technical accomplishment affording to the director a measure of stature in the S&T community.
- c. Skill in communicating with and motivating subordinates.
- d. Aggressiveness and imagination in the promotion and pursuit of objectives which inspired confidence in (sic) sponsors.

- e. The ability to keep alive and nurture ideas.

3. One or More of Seven Different Investment Strategies Were Recognized as Having Been in Effect at the Time and Place of Identified Events. Among These strategies were:

- a. Invest in fields characterized by rapid change, continuing interest to weapons technology, and a relation to a clear current need for weapons improvement.
- b. When the need is clear, support evaluation work on all ideas which show even remote promise of meeting the need.
- c. Force technological progress by attempting to develop a weapon system even though advances in a number of areas will be essential to success.

4. Generally the Burst of Successfully Utilized Activity Constituting the RXD Event Starts Only When Three Particular Elements Are Present.

- a. An explicitly understood need, goal, or mission.
- b. A source of ideas; and
- c. Resources.

This set was noted in 49 of 52 events. The time-sequence distribution of the joining of the third, or triggering element, was about even.

- a. The recognition of a need which could be satisfied by available ideas and resources - 14/52.
- b. The occurrence of an idea or an invention which met a need, using available resources - 22/52.
- c. The allocation of resources to look for ideas in order to meet a recognized need - 16/52.

5. Most Utilized RXD Results From Ideas Conceived Within the Performing Organization. The decision to initiate work was made locally in 41 of 52 Events. In only 4 of 52 was the Event conceived by its sponsors and transmitted in a formal document such as an RFP.

6. Research and Exploratory Development Flourish in an Adaptively Organized Group. Nearly every (51/52) local environment in which Exploratory Development activities were carried on was adaptive rather than authoritarian.

7. A Consensus - Collaboration Relationship With Sponsors Is Desirable. A consensus-collaboration relationship (as opposed to a coercion-compromise system) between the group doing the RXD and its sponsor was usually found (38/52). A number of non-exclusive factors were identified which support and encourage the relationship. These include:

- a. Long personal association between the parties (21/52).
- b. Strong technical insight on the part of both parties (14/52).

8. Individuals Closely Associated With the Conception or Execution of an Event Are Successful Instruments for the Assuring of Bringing about Utilization of that Event. (42/52)

9. Informal Communication Is as Important in Effective Utilization of Exploratory Development as It Is in the Initiation.

In most Events (33/52) no papers, patents, or reports were cited as being important in bringing about the first utilization of the Event results.

It should be pointed out here, that in making a case for the consensus-collaboration relationship, the value of informal communications between the laboratory and the Event sponsors were established.

Again, the report explores these and like hypotheses in considerable detail. If the brevity of my synopsis leads to misunderstanding, I can only apologize to you and to A. D. Little - There is one copy of the final draft of the summary available if you'd care to see it.