THE STRENGTHENING OF AIR FORCE IN-HOUSE LABORATORIES

1961 - 1962

by

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FOREWORD

In a Memorandum to the Chief of Staff, USAF, dated 16 July 1962, the Office of the Assistant Secretary of the Air Force (Research and Development) requested that the USAF Historical Division Liaison Office (AFCHO) be directed to accomplish a "two pronged project" which would document and analyze the "Air Force in-house laboratory posture." The first AFCHO response to this request, the Memorandum stated, should be "a review of actions taken [by the Air Force] since the 14 October memorandum of the Secretary of Defense in strengthening the in-house laboratories." The study presented in the following pages endeavors to meet the first of the two requirements which were assigned to AFCHO by the Vice Chief of Staff, USAF.

A second and considerably larger study will be issued by AFCHO during calendar year 1963. This forthcoming study will, within the terms of reference contained in the 16 July Memorandum, be "an historical analysis of policies, actions, attitudes and results relating to in-house laboratories since the Von Karman report was issued in 1946. [It should be] a much longer range project which will bring together for the first time all the information on this subject and will be most useful in analyzing and portraying the Air Force's use and support of the in-house laboratories over

the past two decades." Mr. Carl Berger, the author of this first, briefer, and essentially current study on Air Force in-house laboratories, will also prepare the second, more comprehensive, and longer range AFCHO study covering this highly important and often controversial area of Air Force activity.

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PREFACE

This brief historical account covers a series of events during 1961-1962 which produced a significant improvement in the position and condition of the Air Force's in-house research and development (R&D) laboratories. In the years before 1961, while vast and increasing resources were being allocated to private contractors to perform USAF research and development, the in-house establishment remained stagnant or suffered a slow decline in competence. In light of the continuing accelerated march of science and technology, the Air Force laboratories faced a bleak future as their physical plant fell into obsolescence, and their scientists and engineers resigned in increasing numbers to accept higher paying, or more challenging, positions in industry. But then, in 1961, the picture brightened considerably as a result of congressional criticism and studies of the government's defense research policies and programs, followed by an intensive re-examination by the Administration.

The important background events leading to this favorable change are briefly examined in Chapter I. Succeeding chapters describe the specific actions taken by the Air Force to halt and reverse the decline of its in-house

laboratories. A detailed chronological account of the key events of the period, which marked a new beginning in the life of the laboratories, is provided in the appendix.

CHAPTER I

THE McNAMARA MEMORANDUM

In the spring and early summer of 1961 several committees of Congress issued reports critical of Department of Defense (DOD) policies for the conduct of research and development. The House Committee on Appropriations, for example, commenting on the increasing use of private agencies for technical management and scientific evaluations, declared that: "...the government is moving toward a chaotic condition in its personnel management because of this practice. Some hard decisions must be made in regard to this mushrooming phenomenon before tremendous injury results to vital Defense programs and programs of other Departments and agencies of the federal government."[1]

The Appropriations Committee voiced its particular concern over the use of non-profit organizations.* It noted that the salaries of their personnel were higher than those of government employees, in some cases being excessive, although they were paid "indirectly by the taxpayers to the same extent as employees under civil service are paid directly by the taxpayers."[2] Similar criticisms were made on the floor of the House during debate on the defense appropriations bill for fiscal year 1962. The

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*Specifically set up by the government to provide specialized technical and scientific support to DOD.

members complained that the uncontrolled salary levels in "quasi-government" agencies encouraged the "raiding" of federal R&D organizations to obtain scarce scientists and engineers.[3]

In the Senate a subcommittee on government operations in July 1961 initiated a general review of federal R&D budgeting policies. In a foreword to the subcommittee report, the chairman, Sen. Hubert H. Humphrey, remarked that: "...The Congress as a whole cannot be content with budgetary practices in research and development which may have been adequate in a bygone day but which are not adequate now when the Government is spending every day three-fourths of a billion dollars for research and development."[4] Senator Humphrey posed a dozen questions for government officials to answer. One of them dealt with the needs, opportunities, and problems associated with the government's intramural (in-house) research establishment, as contrasted with contractual arrangements.[5]

On 31 July 1961, in the light of these congressional and other criticisms, President John F. Kennedy requested David E. Bell, Director of the Bureau of the Budget, to undertake a comprehensive review of government contracting policy relating to technical operation and management of R&D facilities and programs.[6] The President said:

> I would like to have you explore the circumstances and conditions under which contractor operations provide the most effective means for accomplishing the Government's objectives in the areas under review. I would also like to have full consideration given to the limitations which make direct Federal operations difficult, and to the development of proposals for adjustments and new concepts in direct Federal operations which would provide the Government with greater flexibility in determining whether the public interest would best be served by the use of contractors or direct Government operations.

The President named a Cabinet-level group to serve on what became known as the Bell Committee. Members included Secretary of Defense Robert S. McNamara; Dr. Glenn T. Seaborg, Chairman, Atomic Energy Commission; James E. Webb, Administrator, National Aeronautics and Space Administration; John W. Macey, Jr., Chairman, Civil Service Commission; and Dr. Jerome B. Wiesner, Special Assistant to the President for Science and Technology. Dr. Alan T. Waterman, Director, National Science Foundation, also was invited to participate.

Concurrently with the Bell Committee review,* Secretary McNamara directed Dr. Harold Brown, Director of Defense Research and Engineering, to examine the Defense Department's R&D establishment. A Task 97 Study Group

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*In its final official report published in April 1962, the Bell Committee concluded that it was in the national interest to continue to rely heavily on contracts with non-federal institutions for scientific and technical work. However, to halt the erosion of the government's R&D establishment, the committee recommended a sharp improvement in its working environment.

headed by Mr. John Golden submitted its first "Progress Report and Preliminary Recommendations" to Dr. Brown in the early summer of 1961.[7] In this 37-page document, the study group described many deficiencies in the operation of in-house laboratories, declared that morale of scientists in some of the most important research organizations was bad, and warned that "disillusionment with the Defense Department and the Military Services as managers is approaching the critical state."

The group attributed this unhappy situation to the fact that the salaries of top scientists and engineers within the defense laboratories were not competitive with university-affiliated or industrial research organizations, and the laboratories were buried "within a wearisome administrative structure which has seldom been effectively adapted to the existence of the laboratory." In addition, despite the general recognition of the value of research, it had been virtually impossible to establish fundamental principles of effective executive management within the laboratories. Further, many of the defense laboratories were handicapped by substandard facilities.[8]

After studying these findings, Secretary McNamara in September directed Dr. Brown to undertake a new study of plans and policies that would lead to "near-term improvements" as well as to "long range trends of ever-improving

efficiency and effectiveness" in defense research and engineering.[9] Several weeks later, on 14 October 1961---on the basis of the Task 97 report and Brown's recommendations---Secretary McNamara issued an important directive aimed at strengthening the in-house R&D establishment. Addressing himself to the three service secretaries, the Director of Defense Research and Engineering, and other top DOD officials, Mr. McNamara expressed his profound concern for the maintenance of a vigorous program and the highest morale within the laboratories. "The Department of Defense," he said, "must ensure that these laboratories, which constitute one of our greatest assets, are properly supported and utilized."[10]

The Secretary of Defense outlined a number of principles for conducting a program of strengthening the in-house laboratories.[11] He said:

> a. The in-house laboratories shall be used as a primary means of carrying out Defense Department programs. They shall provide scientific and technical advice in the exercise of Government responsibility for development and acquisition of new weapons.
>
> b. Clear lines of technical management and responsibility shall be established for each in-house laboratory. To this end, the policies and practices of rotation of duty for officer-scientists will be such as to permit extended tours of duty in positions for which they have demonstrated technical proficiency. In addition, procedures will be established by which the principal laboratories of each Service will be brought under the more effective control of the Assistant Secretaries for Research and Development of the Military Departments.

c. Depending upon the mission and nature of the work of the particular laboratory, a fraction of the annual laboratory budget shall be set aside for work judged by the laboratory director to be of promise or importance without need of prior approval or review at higher levels. The results of this work shall be reviewed by the Assistant Secretaries for Research and Development of the Military Departments.

d. Full and complete advantage shall be taken of the existing PL-313 provisions which set compensation rates for senior technical personnel in the Defense laboratories. This specifically includes recognition of outstanding performance by the working scientists and engineers who are not in administrative positions.

e. Working with other interested government agencies as appropriate, the Department of Defense will make every effort to secure rates of compensation for its senior personnel which, commensurate with the responsibilities which they exercise and with their professional talents, are consistent with levels set outside as well as inside the government service.

Several days later Dr. Brown addressed members of the Naval Research Laboratory on "the place of in-house laboratories in getting research and engineering done in the Department of Defense." He said that there were two essential services that in-house laboratories were required to provide: (a) studies of the rapidly changing fields of science and engineering to find materials, techniques, processes, and ideas which might have some as yet undetermined military value; and (b) seeing that special problems of DOD were brought to the attention of the nation's scientific and technical community.

Dr. Brown also stated that the laboratories were needed to provide objective scientific and engineering advice to the government on R&D contracts, and to manage or help manage weapon system development and test programs. The laboratories in addition played a primary role in the technical education of military officers. "We all realize," he said, "that too many high-level review teams have reported on (in-house) problems over too long a period of time---and that the rate of progress in providing relief has been too slow. Too many obvious actions have been left undone or half-done...For example, many of the Defense laboratories remain buried within procurement agencies despite the formation of RDT&E commands and Assistant Secretaries/Research and Development within the military departments." Citing McNamara's 14 October directive as a start toward resolving some of the laboratories' problems, Dr. Brown promised concrete action in the immediate future to improve the situation and posture of the department's R&D establishment.[12]

The Air Force Situation

Dr. Brown's comment that "too many high-level review teams" had studied the problem of defense laboratories, with little positive results, was directly applicable to the Air Force situation. Between 1945 and 1960 there had been at least eight major studies of the USAF R&D organiza-

tion. However, with the exception of the Ridenour Committee report of 1949 which led to the creation of the Air Research and Development Command, subsequently reorganized as the Air Force Systems Command (AFSC), these studies produced only minor improvements. The most recent study, conducted by an ARDC task force headed by Col. Frank J. Seiler (completed in November 1960), dealt with "High Quality In-House Basic Research Laboratories." The task force came up with 13 conclusions and made 19 recommendations to strengthen the Air Force laboratories. However, in the year that followed, the Air Force to all intents and purposes ignored the Seiler Report.

Actual implementation of the report's recommendations did not begin until after issuance of McNamara's directive of 14 October. The Air Force response centered in the office of the Assistant Secretary for R&D (Dr. Brockway McMillan), the Air Force Chief Scientist (then Dr. Leonard S. Sheingold), and the Deputy Chief of Staff for Research and Technology (Lt. Gen. James Ferguson), working closely with the Office of Aerospace Research (OAR) and AFSC.

In the final months of 1961, and in the year that followed, Headquarters, USAF initiated a series of actions which soon produced a much-improved working environment for the laboratories. These actions were based partly on the recommendations of the Seiler Report and the McNamara

directive, and partly on new recommendations, such as those made by Dr. McMillan and the Scientific Advisory Board (SAB). On 3 November 1961 Gen. Curtis E. LeMay, the Chief of Staff, had asked the SAB to "examine research and development activities in the Air Force with major emphasis on a drastic improvement in our in-house laboratories in accordance with the intent of Secretary McNamara's memorandum of 14 October 1961."[13] The Board organized an ad hoc committee under Dr. Sheingold which proceeded to examine all aspects of the problem, including management, organization, policies, facilities, personnel, and funding. But even as the SAB study got under way, the Air Force instituted a number of changes which promised to greatly enhance the work of the in-house laboratories.

CHAPTER II

MANAGEMENT AND PERSONNEL ACTIONS

A major criticism of the in-house research establishment had been directed at the labryinth of administrative agencies that had grown up over the years. The Task 97 Study Group pointed out that while various layers of this highly complex management structure had authority to delay or emasculate a R&D program, few could or would accept responsibility for approving or killing it. In the several instances where laboratories were buried within basically procurement organizations, the top military and civilian officials also remained far more concerned with their contracted programs, much of it in R&D, than with the needs of their own in-house research.

It was in an attempt to eliminate these unfavorable conditions that the Secretary of Defense had directed action to insure that "clear lines of technical management and responsibility" were established for each laboratory. In addition, he had asked the principle defense laboratories be placed under the effective control of the Assistant Secretaries for R&D.[14]

Organizational Changes, 1961-1962

On 24 October 1961 Eugene M. Zuckert, Secretary of the Air Force, reported to Mr. McNamara that he had assigned

responsibility for improving laboratory conditions to Dr. McMillan. Mr. Zuckert also reported that the Air Force would expedite several changes and adopt new procedures, and would seek to shorten the command lines between McMillan's office and the laboratories.[15]

Even while the above response was being made, Dr. McMillan began discussions with Gen. Bernard A. Schriever, head of AFSC, and Maj. Gen. Daniel E. Hooks, OAR's commander. Schriever and Hooks were asked to provide information on the specific points raised by the McNamara directive, and to take appropriate action on the conclusions and recommendations of the year-old Seiler Report.[16]

The Air Force Council of Scientists

A month earlier, in September 1961, the first of several important organizational innovations took place with the creation of an Air Force Council of Scientists under the leadership of the Chief Scientist, Dr. Sheingold. The mission of the Council was "to improve the technical lines of communication between the key technical civilians of the Air Force and the military community who represent the Air Staff and Command level, and to improve the utilization of all scientific resources to the utmost benefit of the Air Force."[17]

Although its membership was initially limited to higher-level R&D personnel within Air Force headquarters,

the Council later was expanded to include scientists and technical administrators from the field---a move partially aimed at providing additional prestige and recognition to the in-house establishment. The mission, function, and membership of the Council were formally announced on 6 February 1962.[18]

Beginning on 4 December 1961, the Council of Scientists held a series of general meetings---attended by USAF, OSD, and Civil Service Commission (CSC) representatives---to thoroughly air the special problems of the laboratories. The first of these meetings was held in the Pentagon; others followed on 27-28 February 1962 at Orlando AFB, Fla., on 23-24 May at Andrews AFB, Md., and again in the Pentagon on 3-4 October. In the course of these meetings, the Council identified many of the specific roadblocks to a strong in-house research organization and threw its support behind recommendations to provide corrective actions.

The Special Assistant for Laboratories

A second important organizational innovation resulted from Dr. McMillan's efforts to bring his office into a more direct relationship with the laboratories. After considering several plans, the Assistant Secretary decided this could best be accomplished through the establishment within his office of the new position of Special Assistant

for Laboratories. Secretary Zuckert approved the McMillan proposal on 1 February 1962.[19] Named to fill the position was Mr. Edward M. Glass, technical director of the Materials Laboratory, Wright-Patterson AFB, Ohio, who was charged with "the single responsibility of improving the in-house laboratories of the Air Force."[20] Mr. Glass had been among the several laboratory representatives who made presentations to the Council of Scientists on 4 December 1961 on the problems and special needs of in-house research.

In the months that followed, Mr. Glass served as Dr. McMillan's representative on several key committees dealing with in-house problems. For example, in the spring of 1962 he and another Air Force representative, Mr. M.J. Feldman, joined a special Task 97 Civilian Personnel Group (along with CSC and Army and Navy representatives) that visited nine DOD laboratories.* These visits, and others made by Mr. Glass during the summer and fall, elicited much useful and specific information on the internal problems of the laboratories and formed the basis for recommending corrective actions to cognizant Air Staff offices.

The Research and Technology Division, AFSC

In addition to the Council of Scientists and the Special Assistant for Laboratories, yet another major organi-

*Air Force installations visited included the Air Force Flight Test Center, Edwards AFB, Calif.; Rome Air Development Center, Grifiss AFB, Rome, N.Y.; and the Aeronautical Systems Division, Wright-Patterson AFB, Ohio.

zational innovation during 1962 was the establishment of the new Research and Technology (R&T) Division. The idea for such a division arose during the high-level reviews set in motion by the McNamara directive. In particular, the Air Force research and development structure was critically examined during the SAB ad hoc committee meetings in November-December 1961.

Subsequently, AFSC studied a proposal to centralize its in-house research programs under a single division, which it suggested should include OAR as well as AFSC laboratories. Then, in January 1962, General Schriever formally endorsed the proposal to Headquarters USAF. Dr. McMillan and his staff took it under review and, during February---on the basis of Dr. McMillan's suggestions---the AFSC plan was modified to encompass program and unit integration within AFSC alone (omitting OAR units). In giving his approval to the revised plan, Dr. McMillan reported to Mr. Zuckert that "the breakout of this organizational entity...with direct line relationships to laboratory organizations" should help clarify laboratory authority, mission, purpose, objectives, and interrelationships and provide a new basis "for major improvements in the strengthening of our laboratory organizations..."[21]

On 10 March 1962 Headquarters, USAF directed General Schriever to proceed with the activation of a provisional

R&T Division, effective 4 April 1962, for the purpose of planning the details and concept of operations of the permanent unit. During the next three months a small AFSC staff set up offices at Bolling AFB, D.C., and pursued this planning under the guidance of Maj. Gen. Marvin C. Demler, then Director of Advanced Technology, DCS/R&T, Headquarters, USAF. On 17 July 1962 the Secretary of the Air Force authorized AFSC to activate a permanent division at Bolling, effective 22 July,[22] with General Demler as its first commander.

In formulating plans for the new division, Demler and his staff sought to incorporate into the concept of operations a number of the recommendations made by the several R&D task forces. They proposed to make the division the focal point for prompt decision-making and overall direction, and to establish strong, technically competent laboratories with clear and consisely stated missions and with sharply delineated lines of authority and responsibility. Other goals sought were to: reduce intermediate echelons of review, with laboratories reporting directly to the division commander; and improve and streamline management procedures, particularly in the procurement, supply, and personnel support areas.

In late August 1962, General Ferguson, DCS/R&T, enjoined the Air Staff to support the new division.[23] General Demler, in the meantime, proceeded with the final planning

for the build-up of the organization. One of the major tasks involved identification and then the orderly transfer of a number of AFSC research and development units to the division's control. By the end of October 1962, these units had been identified (under their new names) as: the Air Force Propulsion Labor tory, Materials Laboratory, Flight Dynamics Laboratory, and Avionics Laboratory, all at Wright-Patterson AFB; Air Force Weapons Laboratory, Kirtland AFB, N. Mex.; Air Force Rocket Propulsion Laboratory, Edwards AFB; and Air Force Electromagnetic Laboratory, Griffiss AFB. Completion of the transfer was expected to take a year.

Management Changes, the Office of Aerospace Research

In the case of the Office of Aerospace Research, the major organizational change of the period was the consolidation of the two directorates of the Air Force Cambridge Research Laboratories (AFCRL) at L.G. Hanscom Field, Bedford, Mass., in October 1961. This reorganization of OAR's largest laboratory complex was aimed at establishing central management authority under the commander, Brig. Gen. B.G. Holzman. At OAR headquarters, General Hooks in January 1962 appointed a Special Assistant to expedite implementation within the command of the Seiler Report recommendations.[24]

General Hooks also issued a formal policy letter which

discussed OAR's philosophy and approach to the in-house research program. Concerning research management, he said that while OAR would continue to exercise executive line management and centralized planning, he would delegate authority as program managers to the laboratory commanders.[25] This "loosening of the strings" was followed up in a number of specific areas. For example, laboratory chiefs were given authority to approve overseas travel and to obtain personnel entry clearances for scientists.[26] This not only expedited overseas travel by reducing leadtime, but also eliminated an irritant to the scientists performing the travel. OAR also authorized its subordinate commanders to communicate directly with Headquarters, USAF on matters relating to diplomatic clearances and operating rights of their scientists overseas,[27] and to approve and issue blanket travel orders for civilians Grade GS-15 and above, and officers in the grade of colonel and above. In addition, OAR authorized its laboratories to sponsor or conduct technical or scientific symposia.[28]

Through these and several other administrative decisions, OAR achieved a certain reduction in delays and red tape within the command. The in-house laboratories were thus given greater freedom to pursue their research programs.

A New Laboratory at the Air Force Academy

The Office of Aerospace Research also sponsored the creation of a new research laboratory at the Air Force

Academy (AFA). The idea was first discussed in February 1962 during meetings between Academy and OAR officials. The AFA representatives suggested that an advanced scientific research program at the Academy could provide both important experience to outstanding cadets, and at the same time would be a worthwhile project for OAR. After considering the proposal, OAR agreed to sponsor the laboratory, provided it pursued basic aerospace research in fields of interest to the command. Subsequently, the two organizations developed a detailed plan which was presented to the Air Staff on 29 May 1962, where it received an enthusiastic endorsement. On 4 June General LeMay approved the plan "in principle."[29]

During July Dr. McMillan directed his Special Assistant to review the proposal and its relationship to existing Air Force installations. On 23 August Mr. Glass submitted a detailed report on the background and planning for the laboratory, and he outlined some special problems he foresaw in areas of personnel, support, administration, etc. Mr. Glass concluded with the following recommendations (excerpts):[30]

1. That the Air Force approve the establishment of the new laboratory at the Academy (since the LeMay decision of 4 June had only approved it in principle).

2. That the Office of Aerospace Research proceed to issue an appropriate operations order.

3. That the new laboratory be established as a "show case" laboratory within the Air Force.

While strongly endorsing these recommendations,[31] McMillan also took note of the special problem areas and asked the interested Air Staff officials to study them. In the interim, during the summer months the Academy and OAR continued their planning for the new unit (tentatively designated the Colorado Astronautical Research Laboratory). They decided the laboratory, which was to be fully operational by 1 October 1963, should undertake research in chemistry and aerospace mechanics. Named as its first commander was Col. Richard C. Gibson, Professor of Astronautics at the Academy. Effective 1 September 1962, the laboratory also was designated as Detachment 5, Headquarters, Office of Aerospace Research.[32]

On 29 October Dr. McMillan recommended to General LeMay that the new laboratory be named after the late Col. Frank J. Seiler, who had died unexpectedly several weeks earlier. The Chief of Staff in his "decision" paper of 4 June had suggested that "a suitable name, honoring a distinguished Air Force officer, should be devised for this organization." Dr. McMillan pointed out that Colonel Seiler had been "one of the principal architects of the Air Force in-house laboratory posture," and that the now-famous Seiler Report had been used as a primary source of ideas in the efforts to strengthen the Air Force laboratories.[33] A favor-

able response was expected.

Centralized Control of Manpower

A special management problem which arose during the spring of 1962---which highlighted one of a number of contradictory Air Force policies---was in the area of manpower controls. During visits to Air Force installations in April-June 1962, the Task 97 Civilian Personnel Group learned that Headquarters, AFSC was planning to centralize control of civilian and military manpower allocations. Laboratory scientists complained that this would result in new inflexibilities for laboratory operations. If rigidly adhered to, it would eliminate the authority of laboratory directors to move personnel or spaces or change disciplines listed in manpower vouchers without a detailed justification to AFSC headquarters.

In response to a query from Dr. McMillan, General Schriever reported on 2 June 1962 that the new manpower controls were being imposed on the basis of a 1 November 1961 directive from the Vice Chief of Staff. Similar controls were also in effect or being placed in effect within other commands.[34]

On 22 June Dr. McMillan requested the Chief of Staff to re-examine the directive in the light of the in-house laboratory improvement program. He pointed out that such controls ran counter "to the concept of operations I have been fostering for the in-house laboratories---that of

decentralizing as much authority as possible to laboratory directors."[35] He said that only through the establishment of a freer organizational climate could the Air Force nurture research creativity and "take full advantage of local judgment and ingenuity of our local organizations."[36]

On 23 July the Vice Chief reported that, in view of these objections, the R&D commands could "make an exception to the general rule of centralized control of manpower in the case of the laboratory directors."[37] Several days later AFSC and OAR were notified of this decision. They were directed to tailor their manpower control policies to provide maximum flexibility to the laboratory direcotrs, but at the same time to retain a capability "to be responsive to USAF and DOD reporting requirements regarding manpower identification and utilization." The latter was to be in the form of "after-the-fact" reporting of all manpower changes.[38] This favorable outcome of a potentially restrictive policy was growing evidence that the unique requirements of in-house research were being recognized at the highest levels of command.

Contradictory Policies Again

Despite the above, the complexities of the government's overall programs and policies were such that a threat of new restrictions on laboratory operations again developed in October 1962. The new threat ironically was related to

the passage of the federal salary reform bill of 1962, which itself had been aimed at improving the status of the government scientist.* However, following the bill's passage, the White House issued a memorandum of instructions aimed at improving manpower controls and personnel utilization in the executive branch. The heads of departments and agencies were directed to undertake a systematic program of manpower inspection and reviews to achieve better employee utilization.[39] The purpose, in view of a large budget deficit, was to keep both the cost and level of government employment down.

After studying the President's manpower policy memorandum, the Special Assistant for Laboratories became concerned over its possible impact on the build-up of the in-house capability. In some aspects, the memorandum appeared to negate some of the recommendations of the Bell Committee report of April 1962.[40] Mr. Glass also noted:

> Policy letters such as this usually have a "snow-balling" effect as they propel from echelon to echelon. At the middle management levels in an organization, in particular, we usually find the most restrictive constraints established on the basis of such broad policy. I am hopeful that we will be able to maintain the flexibility that we need so that we can maintain the degree of growth that is essential to the future of AFSC and OAR....

The future impact of the President's memorandum on the laboratories was being studied by Dr. McMillan at the close of November 1962.

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*See discussion on pages 26-27.

Challenging Assignments

Another criticism of in-house R&D management policies concerned the claim that the best and most interesting projects were "farmed out" to contractors, while government laboratories were left with "routine missions and static programs which do not attract the best talent." The Bell Committee, citing the importance of "having significant and challenging work to do" in the operation of a successful R&D organization, recommended that the Assistant Secretaries take steps to insure "that assignments to government research facilities are such as to attract and hold first-class men."[41]

On 3 May the Deputy Secretary of Defense, Roswell L. Gilpatric, in a memorandum to the three services discussing the contents of the Bell Committee report, stated that the President had requested each department and agency to act on the committee's recommendations. One necessary step was to review R&D work assignments "to make sure that those assignments are sufficiently challenging to attract and hold" the government's scientists and engineers.[42]

In a general reply on 5 June, Secretary Zuckert reviewed the series of broad organizational and management changes under way to strengthen USAF laboratories, and concluded that "with optimum administration, organization, and management factors, we expect an immediate and continuing

improvement in challenging work assignments and effective use of the capabilities of in-house scientists."[43]

One of the significant advances in this area occurred several months later when Lt. Gen. Howell M. Estes, Jr., Deputy Commander for Aerospace Systems, AFSC, designated AFCRL to be the focal point for investigations of intensity levels, characteristics, and location of radiation areas in space.[44] AFCRL also became project manager for one of the USAF satellite packages.

Personnel Actions, 1961-1962

The Secretary of Defense, it will be remembered, had also directed the military departments to take full advantage of the provisions of Public Law 313 to strengthen their laboratories. This law, passed by Congress in 1947, was aimed at providing a sufficiently high and flexible pay scale to enable the government to attract and retain scientific and engineering talent. Unfortunately, according to the Task 97 Study Group, the defense laboratories had made "incredibly poor use" of the salary levels permitted under the law, and the CSC had become reluctant to seek additional position authorizations from Congress.[45]

The Air Force Acts to Improve Its PL-313 Posture

In October 1961, after a review of the Air Force's PL-313 situation, Dr. McMillan personally examined all recom-

mendations for the higher pay positions. By January 1962 there had been a significant turn for the better in the PL-313 situation, and Dr. McMillan reported action taken to elevate by approximately $1,000 the salaries of 43 key Air Force scientists and technical personnel.[46] At the same time the Air Force sought, and later obtained, additional position authorizations, increasing the total number of PL-313's to 147.

Elsewhere, both AFSC and OAR directed their laboratory commanders to give greater emphasis in recommending PL-313 appointments to outstanding researchers and engineers not in management positions. In January 1962 the AFSC commander further directed that future PL-313 requests be made in two priority lists---one for supervisory and technical management personnel and another for creative scientists and engineers doing "bench work."[47] A special AFSC "Public Law 313 and Supergrade Action Board" reviewed all requirements for such positions and passed on the qualifications of candidates.

During the first six months of 1962 an increasing number of scientists and engineers received salary raises, and there was also a discernible improvement in the administrative processing of recommendations. Within AFSC the PL-313 salary increases ranged from $500 up to $2,500, which boosted the command's salary average for these positions

from $15,839, as of June 1961, to $16,858 a year later. Five AFSC PL-313's moved into the top salary bracket of $19,000.[48] The Office of Aerospace Research reported similar improvements for its PL-313 scientists.*

Although the processing of PL-313 papers still required many months, there had been considerable improvement which was attributed to: (a) centralization of the decision-making in Dr. McMillan's office, and handling most notifications and inquiries by telephone rather than by mail; (b) shortening the internal processing time within the Civil Service Commission; and (c) better defined processing guides for acting on laboratory requests.[49]

The Federal Salary Reform Act of 1962

While the PL-313 measures served to improve the position and morale of some key Air Force scientists, the most important personnel action of 1962 from the viewpoint of strengthening the in-house establishment was enactment of the Federal Salary Reform Act of 1962. The act had stemmed from many salary studies in the field of science and engineering made during preceding months. For example, in a study on "The Competition for Quality" the Federal Council for Science and Technology reported in April 1961 that the sal-

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*Cash incentive awards of $5,000 also were given on 23 July 1962 to two OAR scientists, Dr. Karl G. Guderly, and Mr. Donald C. Reynolds, of the Aeronautical Research Laboratory.

ary gap between scientists in civil service and those outside the government frequently amounted to several thousands of dollars.[50] A year later, in April 1962, the Bell Committee confirmed the disparity:[51]

> ...Contractor salaries consistently are higher than Federal salaries regardless of highest degree held and period of time at which measured. Contractors offer higher average starting salaries, and consequently provide the average employee with a higher maximum salary expectancy. The difference in favor of the contractor is so consistent and so great that at any point during employment, the average contractor employee with only a bachelor degree can expect to receive a considerable higher salary than the average Federal employee with a doctor degree.

These unfavorable circumstances inevitably led to a gradual deterioration of the in-house R&D competence as many experienced government scientists and engineers departed for financially greener pastures. The exodus occurred at a time when federal expenditures for contracted research and development were rising at a tremendous rate. In February 1961, seeking to arrest and reverse the decline of the government's scientific capabilities, President Kennedy proposed new pay reform legislation. He specifically requested Congress to raise the salaries of federal scientists and engineers over a three-year period to levels comparable with those paid in private industry.

Eight months later, on 11 October 1962, after conducting hearings on the President's plan and tying it to postal rate increases, Congress passed Public Law 87-793--a two-

step reform of the salary structure. In passing this law, Congress adopted the significant principle that federal salary rates should "be comparable with private enterprises salary rates for the same level of work." The law also specifically removed restrictions on the number of top level scientific and engineering positions, created 411 new supergrade (GS-16, 17 and 18) positions, and lifted their salary ceilings from $18,500 to $20,000. In addition, the law increased PL-313 salaries to a top of $20,000 and authorized higher salary rates for many of the middle-level scientists, engineers, and technicians.[52]

It was certain that the new law would make government employment more attractive, and make an important contribution to the strengthening of the in-house laboratories.

The Retention of Officer-Scientists

Over the years the laboratories and the Air Force had suffered an "appalling loss" of young R&D officers who left the service after completing their mandatory tours of duty. Virtually none stayed on, due in large measure to the great difference between military pay and salaries offered both by industry and civil service. Another important factor was the lack of assignment stability.

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with advanced degrees. Only one of the 32 intended to remain in the Air Force. Twenty-five said they planned to leave at the earliest opportunity. Most of these pointed to their inadequate salaries, but also voiced their deep concern over assignment instability. Twelve officers indicated they would probably stay in the Air Force "if they could be assured their next assignment would be a continuation of their present assignment." Twenty-one preferred a military to a civil service career, "if pay were equal to civil service."[53]

McNamara's directive of October 1961 had directed the services to establish extended tours of duty for officer-scientists, and during the period some steps were taken in this area. On the other hand, the basic problem of military pay, as with civil service pay, rested with Congress. A DOD Military Pay Study Group during the fall of 1962 studied various proposals, with the emphasis on large increases for junior officers and enlisted men just completing first tours. The Study Group recommendations were to be forwarded to the President, who was expected to submit a military pay proposal to Congress early in 1963.

In the meantime, there was one small area in which DOD could act to eliminate the differences between military and civilian personnel. On 1 July 1962 it increased military per diem from $12 to $16, equalizing this rate of compensation

to that of its civilian employees.

Classification of Scientific Positions

During 1962 the Air Force also took action to improve the classification of its scientific and technical personnel. It had been found, as in the case of the PL-313's, that R&D field agencies were slow and reluctant to seek the higher classifications and salaries available under Civil Service Commission regulations. There was a distinct attitude of conservatism in classification at all levels of command.

The Task 97 Civilian Personnel Group uncovered this situation during its visits to the laboratories in April-June 1962. The Group found "inordinate delays" in implementing new classification standards issued by CSC, and a less than full use being made of the "impact-of-the-man-on-the-job" concept to provide higher ratings.[54] Position classifiers frequently operated on the somewhat obsolete principle that administrative management duties were a prerequisite for raising key research positions to the higher grades.

At the Air Force Flight Test Center it was found that operating officials were unfamiliar with these opportunities. Personnel officials there were encouraged to take advantage of the flexibility in classification standards to increase the grades, particularly those in research positions.[55]

On the other hand, when the Aeronautical Systems Division did take a more liberal approach on granting higher grades to scientific personnel, a CSC post-audit team criticized the practice.[56]

In the fall of 1962 the CSC attempted to clarify its classification policies with a series of field seminars on its latest doctrines, particularly the concept of the man-on-the-job. However, with the passage in October of the salary reform law, it was expected the CSC would again carefully scrutinize "grade creep," a problem of concern to Congress.

Revised Standards

A related problem noted by the Task 97 Study Group was the need to revise or update classification standards for financial management, systems engineering, and procurement specialities, in order to reflect recent AFSC system development and acquisition activities. AFSC described the financial management positions as "a very new breed" associated with management of billion-dollar projects and requiring skills that did not seem to fit budget, comptroller, procurement, or other current standards. The systems engineering positions were occupied by members of teams working on such major programs as Dyna-Soar and the B-70. Although some of the engineers did not have supervisory responsibilities, they were experts directing contractor efforts in fields on the frontiers of knowledge. Similarly,

procurement specialist standards were considered inadequate for the responsibilities held.[57]

To resolve this problem, AFSC and CSC jointly studied the positions in question and prepared draft standards which, if finally approved, would allow GS-14 and higher grades for many of these jobs.[58]

Scientific and Technical Education Programs

In still another area, the Air Force studied ways and means of providing new educational opportunities to its scientists and engineers. The Seiler task force in 1960 had recognized the tremendous motivational force in having "a positive, continuous program for substantial professional growth" and it urged the Air Force to set aside a pool of manpower spaces "as replacement of spaces being utilized by individuals participating in graduate study."[59] The task force also had recommended alloting spaces to expand the small college "cooperative" program---a work-study arrangement in which college studies in science and engineering devoted a portion of their time in government laboratories and received compensation. The "co-op" program was viewed as an important device for recruiting these young scientists and engineers after they graduated.

The Bell Committee had also recognized a similar requirement, that of continually upgrading the capabilities of federal employees through education and training. The

committee reported that with technology rapidly changing, the on-the-job scientists and engineers often found themselves "out of date after a decade or so out of the university."[60] As a remedy, the committee recommended:

> ...the Government must strengthen its educational programs for its own personnel, to the extent of sending them back to the university for about an academic year every decade. This program, necessary as it is, will only become attractive if the employee is ensured job security on his return from school and if his parent organization is allowed to carry him on its personnel roster.

Indirectly the Bell Committee touched on a basic difficulty inhibiting expansion of educational programs---manpower spaces and authorizations. It was the lack of such spaces, in the light of other more demanding needs, that had prevented the Air Force from providing more educational opportunities. In April 1962, as one possible solution, OAR suggested "a somewhat unorthodox approach." It recommended the Air Force authorize field commands to exceed their total professional scientist authorization by three percent to provide coverage for full-time study and other educational programs.[61]

AFSC also urged the Air Force to provide more manpower spaces to expand the "co-op" program. In a letter to General LeMay on 16 May 1962, General Schriever noted that there was a steadily increasing competition for graduates and "...it has become evident that we must expand our Cooperative program if we are to be assured a reasonable share of young

scientists and engineers.[62]

On 17 July the Deputy Secretary of Defense further emphasized a need for action in this area. Mr. Gilpatric pointed out to the three service secretaries that ample authority existed in law and in DOD and CSC regulations to conduct extensive educational programs. He encouraged the services to give increased emphasis to education and training programs "as a means of assuring a steady flow of fully qualified personnel, to retain competent civilian employees and to provide incentives for recruitment purposes."[63]

Nevertheless, the basic problem---tight manpower ceilings---remained. In September the Task 97 Action Group, after considering various aspects of the problem, proposed to free the services from some of these stringent manpower controls. It recommended that positions in the research and development "pipeline" be exempt from manpower ceilings. These would include college recruits during their first year of employment, summer aides and "co-op" students at both the undergraduate and graduate levels; also full time employees obtaining college level training or retraining, including those taking post-doctoral level work in universities or at other research laboratories.

Both Dr. McMillan and Mr. Benjamin W. Fridge, Assistant Secretary of the Air Force (Manpower) supported

the above Task 97 Action Group recommendations. On 16 October 1962 Dr. McMillan informed Dr. Brown that an exemption of "pipeline" employees from manpower ceilings would be a major breakthrough in the in-house laboratory strengthening program.[64]

Earlier, a special task force established by Lt. Gen. William S. Stone, Deputy Chief of Staff/Personnel, examined the entire problem of improving the scientific educational programs for both military and civilian employees to meet future Air Force requirements.[65] On 29-30 August the task force recommended four short-range and five long-range actions.[66] Subsequently, General Stone approved several of these, including one allowing 426 qualified officers enrolled in the Air Force Institute of Technology to continue their work for master and doctoral degrees in science and engineering.[67]

CHAPTER III

FUNDING, FACILITIES AND PROCUREMENT ACTIONS

Beginning in November-December 1961 the Air Force had initiated studies to implement paragraph c. of the McNamara directive which had specified that "a fraction of the annual budget shall be set aside for work judged by the laboratory director to be of promise or importance without need of prior approval or review at higher headquarters." Participating in these studies were the Assistant Secretary for R&D, the Deputy Chief of Staff/R&T, the Air Force Comptroller, and other headquarters officials. The views of AFSC and OAR were solicited. In a response in early January 1962, Headquarters OAR touched upon what it considered a key problem: providing the laboratory commanders with the flexibility to use such money "without prior extensive documentation and prior approval at higher echelons."[68] OAR doubted this could be done under existing USAF regulations.

The Laboratory Director's Fund

In the early months of 1962, Air Force regulations notwithstanding, Dr. McMillan and the Air Staff developed a plan for establishing a special discretionary fund in fiscal year 1963. Under the plan, the Air Force would reprogram $10 million from its applied research program to provide for the first year's operations. For fiscal year

1964 the amount would be boosted to $20 million.* Before implementing the program, R&D commands were to provide information on each director (his judgment, competence, and experience), the number of technical personnel in his laboratory, his mission, etc.[69]

On 11 April Dr. McMillan voiced approval of the positive action taken by General LeMay and the Air Staff and predicted that many benefits would accrue to the Air Force. The Assistant Secretary urged that once the fund was in operation, complete authority be given "to the Laboratory Directors to select promising and important areas of work without prior approval or review at higher levels." He further recommended that the concept be kept as simple and straight forward as possible. In particular, he recommended that "the use of these funds should be unencumbered with restrictive reviews and procedures, red tape and involved or lengthy justification and documentation."[70]

The sole check, Dr. McMillan said, was to be an after-the-fact review. Preliminary reports were to be furnished verbally to the AFSC and OAR commanders, the Air Force Chief Scientist, and himself. Following completion of the research, results were to be presented orally and as a written report, with the latter made available to the Department of Defense and other appropriate agencies.

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*Subsequently reduced to $11 million.

On 24 April 1962 the Air Staff formally notified AFSC and OAR about the fund, and asked that information on their directors, laboratories, personnel, etc. be provided.[71] OAR later submitted the names of two directors, AFSC named eight directors of the fund, and they also provided data on the breakdown of the $10 million among their individual research laboratories.[72] Dr. McMillan reviewed and approved the commands' selections and the proposed levels of funding,[73] and in August the Comptroller released the $10 million.

For the laboratories it was a highly unusual situation to possess "free" money, and some personnel expressed doubts that they would be allowed to proceed. Indeed, the inbred concern over fiscal responsibility was difficult to overcome, as seen on 21 August when AFSC notified its directors that while it did not plan to impose any restrictions, they were not excused "from those laws, and regulatory documents based on laws," which pertained to the expenditure of government funds. In order to facilitate the program, AFSC suggested that action papers in compliance with the laws be clearly marked: "Expedite, Laboratory Director's Fund." If directors felt such laws and regulations were unduly restrictive, specific proposed changes were to be identified to AFSC.[74]

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the Air Force and OSD could determine whether this approach to the strengthening of the laboratories was effective.

P-690 Funds

Despite the interest and in some cases enthusiasm aroused by the director's fund, the P-690 allocations remained the life-blood of the laboratories, being used to pay not only civilian personnel but to purchase supplies, equipment, services, and minor modifications to R&D facilities. Unfortunately, as Dr. McMillan remarked in April 1962, the P-690 funds had been "woefully inadequate for years,"[75] fluctuating wildly, being allocated and then partially withdrawn to meet other Air Force needs. As one consequence, laboratories frequently could not obtain expensive but essential equipment.[76]

In March 1961 the government's laboratory policies in this connection were severely criticized before a House panel on science and technology by Dr. Maurice J. Zucrow of Purdue University.[77] Dr. Zucrow had said:

> ...We appropriate money year by year, and pay no attention to the fact that new instruments are constantly being developed and that current laboratory equipment is depreciating and becoming obsolete. I am told that there is no way where a Government laboratory can accumulate money and set it aside as a depreciation reserve fund for modernizing its equipment. I am further told that a separate appropriation from the Congress is needed when a laboratory needs major new equipment. This in itself is detrimental to operating a government laboratory at the

highest technical level, and is not conducive to interesting newly graduated Ph.D.s in entering Government service. Industry is allowed depreciation, why not Government laboratories?

An alternate possibility which greatly interested USAF scientists involved the use of P-610-680 R&D contract funds. These RDT&E funds had been expanding at a tremendous rate, increasing from $940 million to nearly two billion dollars in the five years between fiscal years 1958 and 1962. Of these amounts, the portion alloted for basic research, mostly accomplished in-house, rose only from $34 million to $52.7 million---an actual percentage decline from 3.6 to 2.7 percent of the budget.[78]

As early as 1960 the Seiler task force had recommended that the Air Force authorize the reprogramming of P-610-680 contract funds to provide direct laboratory support. The task force also suggested that the laboratories be allowed to purchase needed in-house items of equipment costing more than $5,000 from the P-610-680 area. But, as noted earlier, there had been no immediate action on the Seiler Report recommendations.

In January 1962 AFSC, resurrecting the Seiler task force recommendation, urged Headquarters USAF to authorize the use of P-610-680 funds "for direct costs such as peculiar equipment associated with approved programs to be performed in our in-house laboratories."[79] The Office of Aerospace Research also requested authority to reprogram a

a minimum of five percent of its P-610-680 budget to the support of the in-house program.[80]

Six months elapsed before Headquarters, USAF acted on these recommendations and finally recorded a "breakthrough." In June 1962, at the request of Mr. Zuckert, the Assistant Secretary for R&D set up a special project with the Air Force Comptroller to resolve the basic problem of inadequate level of P-690 support.[87] On 16 July the Comptroller reported that procurement of laboratory equipment with P-610-680 funds had merit and that it would be a consideration during preparation of the 1964 budget.[82]

Two months later, on 26 September, the Comptroller officially recognized "the validity of the use of 'project' funds for procurement of non-standard and local purchase equipment for laboratory use to perform in-house research."[83] He informed AFSC and OAR that:

> Projects included under Research and Exploratory Development elements, involving contractual efforts, may be utilized for the procurement of non-standard and local purchase equipment and supplies specifically for use in Air Force laboratories, provided that such procurement is directly in support of the specific project from which the funds are obtained.

In reporting to Dr. McMillan, the Comptroller said that the new policy was effective immediately.[84] This decision constituted one of the major achievements of the period in the Air Force effort to strengthen and improve the in-house research establishment.

Facilities and Construction

Another area that had troubled Air Force laboratories was their historic inability to obtain adequate research facilities on a timely basis. Laboratory directors long had complained that construction in support of R&D programs was "out of phase with both research programs and system development." As with other areas of R&D support, the preference in construction matters had gone to industrial contractors,[85] who were generally able to obtain large government allocations with minimum delay and proceed swiftly to the construction of facilities.

The prolonged delays in obtaining in-house facilities were due in some measure to the need to obtain congressional approvals through the Military Construction Program route. Congress not only required detailed information on proposed construction, but once a facility had been authorized by law, and described in terms of cost, scope, location and usage, changes could only be made with congressional approval. Thus, despite the need to obtain new facilities to meet rapidly changing technological conditions, the laboratories had to wait upon lengthy authorization procedures and endure delays that sometimes ran to five and six years.

Another aspect of the scientists' complaints about "the system" was that their facility requirements were

historically lumped with other military construction. This put them into competition with the combat forces for funds, a competition which they generally lost.[86] In an effort to resolve this situation, AFSC in November 1961 urged Headquarters, USAF to separate and consider R&D facilities apart from the overall military construction program. A special ad hoc panel of the Scientific Advisory Board similarly proposed that the funding of technical facilities be removed from the MCP budget and incorporated into the RDT&E program package.[87]

However, it was realized that such a revolutionary change would take several years and much effort to effect. For the immediate future, the Air Staff studied several other approaches. One of these involved a proposal, tentatively approved by Dr. McMillan in October 1962, seeking congressional approval for a general purpose facilities appropriation in the FY 1964 Military Construction Program to be used for urgently-needed R&D items.[88]

In the meantime, progress was being made in funding required facilities. For FY 1963 Congress appropriated $73.2 million for USAF technical facilities---well above the $28.1 million provided the Air Force the previous year.

Procurement and Supply Difficulties

For a number of years laboratory personnel had complained that the USAF procurement and supply system was unresponsive to the needs of their activity. They charged

that the Air Force system, through its emphasis on strong supply and management discipline, had the effect of slowing down and delaying by months and sometimes years the work of the in-house establishment. For example, scientists at the Air Force Flight Test Center reported that procurement documents for a single piece of equipment had traveled about the Headquarters for 18 months because the forms were not properly prepared.[89] The weaknesses of the overall defense supply system in supporting R&D had been recognized as early as 1954 by a congressional committee. It had concluded that standard procurement and logistic procedures and regulations were "inappropriate" when applied to the research operation, and clearly diminished the productivity of the R&D organizations.[90]

Despite this early recognition of the general problem, little was done during the next eight years to relieve the situation. It was only with the sudden surge of interest in the wake of the McNamara directive that attention turned to one of the Seiler Report recommendations. It urged that cash purchasing officers be physically placed in the major research organizations to directly service the needs of the scientists and reduce delays.

In January 1962 the Aeronautical Research Laboratory was given authority to establish an internal cash purchasing office to see if an improvement in supply support could

be achieved. Results were quite startling. OAR reported to Dr. McMillan that the first 30 transactions in January had averaged three days from initiation to delivery, as compared to December's rate of 40 days per purchase.[91]

The improvement in supply effectiveness was so dramatic that the Air Force Systems Command took a look at the procedure and then formally adopted it (on 21 March) for its major laboratories. AFSC authorized the contracting officers to handle cash purchasing up to $100 and to use other quick reaction techniques for purchases to $2,500.[92]

Even as laboratory hopes were being rasied by the decentralization of supply control, another of several contradictory Air Force policies (as they affected the laboratories) was announced and threatened to stop further progress. This particular policy took the form of a revision to Air Force procurement instructions (AFPI Revision No. 15, dated 16 April 1962), specifically deleting authority to decentralize cash purchasing for highly technical material.[93] When AFSC brought the deleterious effects of the revision to the attention of Air Staff officials, the Director of Procurement Management agreed to an exception for the R&D establishments.[94]

Base Equipment Management Offices

In December 1961 still another threat to efforts to achieve a more flexible supply operation came to the attention

of laboratory personnel. It involved an Air Force plan to establish a Base Equipment Management Office (BEMO) by 1 July 1962 at each base and certain other Air Force locations. The BEMO was to be accountable for all equipment at a base for both host and tenant units, thereby relieving the units of this responsibility. This would free R&D supply personnel, it was explained, "so that they can concentrate their efforts on providing scientists with the needed equipment."[95]

However, in the opinion of some laboratory administrators, the proposed system would simply create a new, inefficient, and troublesome layer of organization above the laboratories. "If past experience is any criterion," one official commented, "the establishment of a BEMO will be another unit that is non-R&D oriented and will therefore have little appreciation of the incompatibility of R&D requirements with those of the operational units."[96] Similar expressions of concern were voiced in May 1962 during meetings of the Air Force Council of Scientists, claiming that the BEMO concept as proposed would be unable to meet the highly specialized supply requirements of the laboratories.

On 25 May Dr. McMillan urged the Assistant Secretary for Materiel to reexamine the BEMO plan with a view to exempting R&D organizations. He described the actions the Air Force had taken to improve in-house conditions and

stated that the proposed supply system would "introduce new inflexibilities into the new way of life we are trying to create..."[97]

In the weeks that followed, further discussions between the Special Assistant for Laboratories and materiel and supply personnel led to a happy solution. It involved giving authority to the laboratory directors to establish internal BEMO's directly under their control and responsive solely to the needs of the scientists.

The first unit authorized to establish its own BEMO was the Aeronautical Systems Division.[98] In August 1962, after a team from the Office of the Director of Supply and Services visited several laboratory complexes, the Air Force Cambridge Research Laboratories and the Aeronautical Research Laboratory also were authorized to establish BEMO's.[99] In addition, several organizations obtained the use of an "N" account, giving them direct access to Air Force Logistics Command depots for items unavailable in base supply.

In commenting on the above positive actions, the Special Assistant for Laboratories said on 31 August 1962: "I feel that we now have a much greater degree of understanding of the nature of laboratory work on the part of our logistical people and (the) necessity for supply support which is responsive to the needs of our laboratories."

Mr. Glass predicted that more effective teamwork between R&D and supply personnel would result in many benefits to the Air Force.[100]

CHAPTER IV

SUMMARY

In the twelve-month period following issuance of the McNamara directive of 14 October 1961, the Air Force successfully attacked many individual problems that had plagued and weakened in-house laboratory operations. In fact, as Dr. McMillan commented in a memorandum to General LeMay on 25 October 1962, "we have succeeded far beyond my most optimistic expectations."

Many noteworthy achievements highlighted the year. The Air Force had established the Council of Scientists, the Special Assistant for Laboratories, and the Research and Technology Division. Administrative changes within OAR had fostered a more favorable environment for its scientists. Plans for a new research laboratory at the Air Force Academy were well advanced. Policy and procedural changes allowed the laboratories greater freedom in areas of manpower control, local cash purchasing, and base equipment management. Enactment of the Federal Salary Reform Act of 1962 and favorable interpretations on PL-313 positions eased somewhat the pressures of salary and grade inequities. Finally, funding procedures for the construction of facilities and the purchase of equipment with other than P-690 money were in process of improvement.

These and other advances were the result of efforts at many levels of government--congressional and executive---to strengthen the in-house research establishment. However, much more remained to be done. In his memorandum to General LeMay, Dr. McMillan pointed out that:[101]

> While we must continue to solve individual problems as they are uncovered and defined, I feel that in order for the gains we have made to be consolidated and lasting, we must translate them into firm Air Force policy statements and regulations, not only at USAF level and in the R&D regulations (80-series) but at all levels of management above the laboratories and all regulation series associated with the support of R&D organizations.

The hope and long range aim of Secretary McMillan and his staff was the creation "of a true Air Force Scientific Community." However, being a small pebble on a large beach, the Air Force laboratories were certain to face continual difficulties arising from the contradictory policies that seemed endemic to a large organization. With new edicts expected to be laid down in the areas of manpower and funding, directed at the Air Force in its totality, the threat remained that the special needs of in-house research would be forgotten or ignored. Thus, the permanent strengthening of the laboratories appeared dependent on a continuing effort to obtain recognition and support at the highest levels of command.

NOTES

(Unless otherwise indicated, sources and documents are located in the files of the Special Assistant for Laboratories, Office of the Assistant Secretary of the Air Force, R&D.)

Chapter I

1. House Cmte on Appropriations, Department of Defense Appropriation Bill 1962, 87th Cong, 1st sess, No. 574, 23 Jun 61, p. 53.

2. Ibid.

3. Congressional Record, House, 87th Cong, 1st sess, 28 Jun 61, Vol. 107, p. 10676.

4. Senate Cmte on Government Operations, Hearings, Federal Budgeting for Research and Development, 87th Cong, 1st sess, 26-27 Jul 61, Pt II, iii.

5. Ibid., v-vi.

6. Ltr, President Kennedy to David E. Bell, Director, Bureau of the Budget, 31 Jul 61.

7. Telecon, Carl Berger and John Golden, 4 Oct 62, subj: Task 97 Study Group.

8. Task 97 Study Group, "Progress Report and Preliminary Recommendations," Review of Defense Laboratories (undated), pp. 1-2.

9. Memo, Secretary of Defense Robert S. McNamara to Secys Army, Navy, Air Force, 28 Sep 61, subj: Management of Research and Engineering.

10. Memo, McNamara to Secys Army, Navy, Air Force, DDR&E, et al., 14 Oct 61, subj: In-House Laboratories.

11. Ibid.

12. Address, Dr. Harold Brown, DDR&E, to Naval Research Laboratory, Washington, D.C., 19 Oct 61.

13. Ltr, Gen. Curtis E. LeMay, C/S USAF, to Lt. Gen. Donald L. Putt, Chairman, Scientific Advisory Board, 3 Nov 61.

Chapter II

14. Memo, McNamara to Secys Army, Navy, Air Force, DDR&E, et al., 14 Oct 61, subj: In-House Laboratories.

15. Memo, Eugene M. Zuckert, Secretary of the Air Force, to McNamara, 24 Oct 61, subj: In-House Laboratories.

16. Memo, Dr. Brockway McMillan to AFSC/OAR, 23 Oct 61, subj: In-House Laboratories.

17. Charter, Air Force Council of Scientists, 1 Dec 61.

18. AF Reg. No. 20-6, 6 Feb 62, subj: Organization and Mission--Council of Air Force Scientists.

19. Memo, Zuckert to DDR&E, 1 Feb 62, subj: More Effective Control of In-House Laboratories.

20. Ibid.

21. Memo, McMillan to Zuckert, 9 Mar 62, subj: Applied Research.

22. Ltr, DAF to AFSC, 17 Jul 62, subj: Activation of the Headquarters, Research and Technology Division.

23. Ltr, DCS/R&T (Gen Ferguson) to AFCSS, et al., 23 Aug 62, subj: Proposed Plan for a Research and Technology Division.

24. Ltr, OAR to USAF (AFRDR), 5 Jan 62, subj: Actions Regarding In-House Laboratories.

25. Ltr, OAR to AFOSR, et al., 8 Jan 62, subj: Policy on the Conduct of In-House Research in OAR.

26. OAR Reg. No. 10-1, 1 Jan 62, subj: Overseas Travel.

27. Ltr, OAR to AFCRL, et al., 8 Jan 62, subj: Procedures for Processing USAF Foreign Military Rights Requests.

28. OAR Reg. No. 80-3, 22 Jun 62, subj: Approval to Conduct Technical and Scientific Symposia, Conferences and Meetings.

29. Decision, AFCAC, 4 Jun 62, subj: Research Laboratory at the Air Force Academy.

30. Memo, Edward M. Glass to SAFRD, 23 Aug 62, subj: Research Laboratory at the Air Force Academy.

31. Memo, McMillan to DCS/Personnel, 23 Aug 62, subj: New Air Force Academy Laboratory.

32. Special Order G-30, Hq OAR, 7 Aug 62.

33. Memo, McMillan to C/S USAF, 29 Oct 62, subj: Appropriate Name for the Detachment 5 Laboratory at the Air Force Academy.

34. Ltr, Gen. Bernard A. Schriever to McMillan, 2 Jun 62, subj: Task 97 Civilian Personnel Group.

35. Memo, McMillan to C/S USAF, 22 Jun 62, subj: Centralized Control of Manpower.

36. Ibid.

37. Ltr, AFCCS to SAFRD, 23 Jul 62, subj: Centralized Control of Manpower.

38. Ltr, AFOMO to AFSC/OAR, 26 Jul 62, subj: In-House Laboratories.

39. Memo, President Kennedy to Heads of Departments and Agencies, 11 Oct 62, subj: Improving Manpower Controls and Utilization in the Executive Branch.

40. Memo, Glass to McMillan, 30 Oct 62, subj: The President's Policy Letter on Manpower.

41. Rpt to the President on Government Contracting for Research and Development, Bureau of the Budget, 30 Apr 62, p. 47. Hereafter referred to as the Bell Committee Report.

42. Memo, Roswell L. Gilpatric, Deputy Secretary of Defense, to Secys of the Military Departments, et al., 3 May 62, subj: Government Contracting for Research and Development.

43. Memo, Zuckert to Gilpatric, 5 Jun 62, subj: Government Contracting for Research and Development.

44. Ltr, Lt. Gen. Howell M.Estes, Jr., AFSC, to Brig. Gen. B.G. Holzman, AFCRL, 28 Sep 62, subj: Air Force Cambridge Research Laboratories Support Responsibilities.

45. Task 97 Study Group, op. cit., p. 24.

46. Memo, McMillan to DDR&E, 11 Jan 62, subj: Use of Existing Provisions of PL-313.

47. Ltr, Schriever to DCAS, et al., 2 Jan 62, subj: Public Law 313 Authorizations for In-House Laboratories.

48. Rpt of AFSC Ad Hoc Group on In-House Laboratories, 30 Nov 61, Tab B, p. 1.

49. Staff Study, Public Law 313 Positions, undated.

50. Rpt of the Standing Committee of the Federal Council for Science and Technology, "The Competition for Quality," 14 Apr 61.

51. Bell Committee Report, Annex 5, p. 2.

52. Public Law 87-793, 87th Cong, H.R. 7927, 11 Oct 62, Part II, Federal Salary Reform, p. 10.

53. Ltr, Hq USAF (Gen Timberlake) to OAR (Gen Hooks), 8 May 62, subj: Increasing Technical Proficiency of Young Officers.

54. Rpt on Problems in the Management of Federal Research and Development Laboratories, Bureau of Inspections, U.S. Civil Service Commission, June 1962.

55. Progress Rpt No. 3 on Problems and Actions Associated with the Air Force In-House Laboratories, 10 Sep 62, p. B-1.

56. Ltr, C.W. King, AFSC, to E.M. Glass, SAFRD, 15 Aug 62, subj: Conservatism in Classification.

57. Progress Rpt No. 3 on Problems and Actions Associated with the Air Force In-House Laboratories, 10 Sep 62, p. B-3.

58. Ibid.

59. Rpt of the ARDC Task Force to the Commander, ARDC, on High Quality In-House Basic Research Laboratories, 15 Nov 60, p. 22.

60. Bell Committee Report, 52-53.

61. Ltr, OAR to Hq USAF, 5 Apr 62, subj: Manpower Authorizations for Civilian Educational Programs.

62. Ltr, Schriever to LeMay, 16 May 62, subj: Increasing Technical Competence Through Cooperative Education.

63. Memo, Gilpatric to Secys of Army, Navy, Air Force, 16 Jul 62, subj: Educational Programs for Civilian Employees.

64. Memo, McMillan to DDR&E, 16 Oct 62, subj: Manpower Support of Research and Development Programs.

65. Ltr, AFPTR-E to AFSC, et al., 6 Sep 62, subj: Memorandum for Record of 29-30 August Meeting of the Task Force on Technical Education.

66. Ltr, AFPTR to AFPDC, 18 Oct 62, subj: Status Report on the Task Force on Technical Education.

67. Interview, Carl Berger with Lt. Col. R.E. Showalter, AFPTR, 19 Oct 62.

Chapter III

68. Ltr, OAR to AFRDR, 5 Jan 62, subj: Actions Regarding In-House Laboratories.

69. Ltr, AFCCS to SAFRD, 4 Apr 62, subj: In-House Laboratories; Funds for Laboratory Directors.

70. Memo, McMillan to C/S USAF, 11 Apr 62, subj: In-House Laboratories; Funds for Laboratory Directors.

71. Ltr, DCS/R&T to AFSC and OAR, 24 Apr 62, subj: Fund for Laboratory Directors.

72. Ltrs, OAR to AFRDC, 31 May 62, subj: Funds for Laboratory Directors; AFSC to AFRDC, 3 Jul 62, same subject.

73. Memo, McMillan to C/S USAF, 22 Jun 62, subj: Fund for Laboratory Directors; also memo to C/S USAF, 16 Jul 62, same subject.

74. Ltr, Hq AFSC to AMD, et al., 21 Aug 62, subj: Laboratory Director's Fund.

75. Memo, McMillan to Schriever, 24 Apr 62, subj: In-House Laboratories.

76. Rpt of AFSC Ad Hoc Group on In-House Laboratories, 30 Nov 61, Tab F, p. 1.

77. House Cmte on Science and Astronautics, 3rd Meeting, Panel on Science and Technology, 87th Cong, 1st sess, 2 Mar 61, pp. 50-51.

78. Senate Cmte on Government Operations, Hearings, Federal Budgeting for Research and Development, 87th Cong, 1st sess, 27-27 Jul 61, Part I, p. 107.

79. Ltr, AFSC to Hq USAF, 2 Jan 62, subj: Revision of AF Budget Code for RDT&E.

80. Ltr, OAR to Hq USAF, 5 Jan 62, subj: In-House Laboratory Research.

81. Memo for the Record, E.M. Glass, 26 Jun 62, subj: Discussion with Mr. Zuckert on In-House Laboratories.

82. Progress Rpt No. 2 on Problems and Actions Associated with the Air Force In-House Laboratories, 2 Aug 62, p. D-2.

83. Ltr, AFABF-MR to AFSC and OAR, 26 Sep 62, subj: Funding of Management and Support Requirements--RDT&E Appropriation.

84. Ltr, AFAAC (Lt. Gen. F.A. Bogart) to SAFRD, 2 Oct 62, subj: P-690 Funds.

85. Task 97 Study Group, op. cit., pp. 34-36.

86. Rpt of AFSC Ad Hoc Group on In-House Laboratories, 30 Nov 61, Tab C.

87. Rpt of SAB Ad Hoc Group on In-House Laboratories, April 1962, p. 24.

88. Interview, Carl Berger with Maj. Carl Anderson, AFSSV, 25 Oct 62.

89. Rpt on Problems in the Management of Federal Research and Development Laboratories, Bureau of Inspection, Civil Service Commission, June 1962, p. 65.

90. House Cmte on Government Operations, 24th Intermediate Rpt, Organization and Management of the Military Research and Development Programs, 83rd Cong, 2nd sess, 4 Aug 54, p. 33.

91. Ltr, OAR to SAFRD, 9 Feb 62, subj: In-House Laboratories.

92. Ltr, AFSC to ASD, et al., 21 Mar 62, subj: Policy on Procurement Support of In-House Laboratories.

93. Ltr, Hq AFSC to Hq USAF (Mr. Glass), 20 Jun 62, subj: Task 97 Civilian Personnel Group.

94. Ltr, AFSC to SAFRD, 2 Jun 62, subj: Task 97 Civilian Personnel Group, Atch 3.

95. Ltr, AFRDC to OAR, 14 Dec 61, subj: Equipment Accounting and Reporting.

96. Ltr, AFCRL (Dr. A.M. Gerlach) to Dr. Leonard S. Sheingold, 7 Feb 62, subj: Equipment Accounting and Reporting.

97. Memo, McMillan to Mr. J.S. Imirie, SAFMA, 25 May 62, no subject.

98. Memo, Hugh E. Witt, DCS/S&L to McMillan, 18 Jun 62, subj: Supply Support for In-House Laboratories.

99. Ltr, AFSSS-MP to AFSSS, 14 Aug 62, subj: Trip Report - Review of Supply Support to In-House Basic Research Laboratories, 1-3 Aug; ltr, Hq USAF (AFSSS) to OAR, 16 Aug 62, same subject.

100. Memo, Glass to Cmdrs AFSC, OAR and R&T Division, 31 Aug 62, subj: Supply Support for In-House Laboratories.

Chapter IV

101. Memo, McMillan to C/S USAF, 25 Oct 62, subj: Policy and Regulations on Air Force In-House Laboratories.

CHRONOLOGY

15 Nov 60 — An ARDC Task Force report on "High Quality In-House Basic Research Laboratories" recommended 19 actions to strengthen the Air Force's research establishment.

14 Apr 61 — In a report on "The Competition for Quality," the Federal Council for Science and Technology strongly recommended a modernization of the existing federal salary structure. The report noted that private industry was able to compensate its best people more adequately, and to recruit new ones, while the government found it "increasingly difficult to compete in the highly competitive market for the best research personnel." The council urged that federal salary rates be increased to appropriate levels, and that the salary structure be made more flexible to provide a means of recognizing superior performance.

23 Jun 61 — The House Committee on Appropriations issued a report highly critical of the government's policies and programs in the area of defense research and engineering. It expressed special concern over "excessive" salaries being paid by government-sponsored non-profit organizations.

26 Jul 61 — In a report on federal budgeting for research and development activities, Sen. Hubert H. Humphrey of the Senate Committee on Government Operations warned that: "...the Congress as a whole cannot be content with budgetary practices in research and development which may have been adequate in a bygone day but which are not adequate now when the Government is spending every month three-fourths of a billion dollars for research and development."

31 Jul 61 — President Kennedy requested David E. Bell, Director of the Bureau of the Budget, to undertake a comprehensive review of the government's policies on the use of contracts with private institutions to provide for operation of R&D facilities and programs, and to determine whether the public interest would best be served by the use of contractors "or direct Government operations."

Aug 61	A Task 97 Study Group organized by Dr. Harold Brown, DDR&E, and headed by Mr. John Golden, Weapon Systems Evaluation Group, completed a "Review of Defense Laboratories." In its progress report which included preliminary recommendations, the group discussed many weaknesses uncovered in the laboratories.
Sep 61	Dr. Leonard S. Sheingold, Chief Air Force Scientist, established a Council of Scientists "to improve the technical lines of communication between the key technical civilians of the Air Force and the military community who represent the Air Staff and Command level, and to improve the utilization of all scientific resources to the utmost benefit of the Air Force."
14 Oct 61	In a memorandum to the service secretaries and other DOD officials, Secretary of Defense McNamara expressed "profound concern" for the maintenance of a vigorous program and high morale within the in-house laboratories. He directed a number of management, budgetary, and personnel changes be made to strengthen the in-house establishment.
19 Oct 61	Dr. Harold Brown, DDR&E, in remarks to scientists of the Naval Research Laboratory, cited the McNamara memorandum as the start of a sustained effort to improve and strengthen the competence of the defense laboratories.
Oct 61	Dr. Brockway McMillan, Assistant Secretary of the Air Force(R&D) took over responsibility for reviewing and approving PL 313 recommendations and appointments.
3 Nov 61	Gen. Curtis E. LeMay, USAF Chief of Staff, requested the Air Force Scientific Advisory Board "to examine research and development activities in the Air Force with major emphasis on a drastic improvement of our in-house laboratories in accordance with the intent of Secretary McNamara's memorandum of 14 October 1961."
20 Nov 61	An Ad Hoc Committee on In-House Laboratories, organized by the SAB, held its first meeting in the Pentagon. Among the conferees were: Dr. Sheingold, Mr. Golden, Dr. McMillan, Gen. Bernard A. Schriever (AFSC), Maj. Gen. Daniel E. Hooks (OAR), and Brig. Gen. R.L. Wassell, DCS/R&T.

30 Nov 61 — A special AFSC Ad Hoc Group on In-House Laboratories issued a report on manpower, funding and other actions needed to strengthen the research organization.

4 Dec 61 — The Air Force Council of Scientists sponsored a Pentagon meeting attended by DOD and Air Force R&D officials, and representatives of the Civil Service Commission. The conferees discussed a range of topics dealing with in-house problems, and heard specific recommendations from field representatives.

18 Dec 61 — In a report to Dr. McMillan, General Schriever said studies were underway within AFSC to establish a new Research and Technology Division.

18-19 Dec 61 — The SAB Ad Hoc Committee heard presentations on in-house problems by: Brig. Gen. B.G. Holzman, Dr. W.J. Price, E.M. Glass, and Dr. John Burgess, representing OAR and AFSC research laboratories.

5 Jan 62 — The Office of Aerospace Research reported the appointment of a Special Assistant to expedite actions to implement the recommendations of 15 Nov 60 "Seiler Report."

15 Jan 62 — AFSC established a special award program for scientific and technical achievement in aerospace research and development and administration. The award program included a plaque, a certificate, and $500 to be presented to winning candidates.

15 Jan 62 — To speed supply reaction the Aeronatical Research Laboratory intiated operation of an internal cash purchasing office. Its first 30 transactions resulted in a three-day reaction time from initiation to delivery, as compared to a December rate of 40 days per purchase.

Feb 62 — President Kennedy submitted a federal salary reform proposal to Congress. He recommended a three-step boost in the salaries of government scientists and engineers to achieve comparability with private industry.

Feb 62 — A special SAB Ad Hoc Panel on Technical Facilities recommended that: "The funding of technical facilities should be removed from the military construction budget and placed in the research and development program so the

same management structure can be used to exercise authority to keep interdependent programs and facilities in balance from a timing and resources application point of view."

1 Feb 62 — Secretary Zuckert authorized Dr. McMillan to obtain the services of a Special Assistant for Laboratories. Mr. Edward M. Glass, technical director of the Materials Laboratory, Wright-Patterson AFB, was named to the new post and given "a single responsibility, that of improving the in-house laboratories of the Air Force."

21 Mar 62 — AFSC authorized its laboratories to appoint cash purchasing officers to handle transactions not to exceed $100. AFSC also authorized use of the order-invoice-voucher for transactions over $100 and up to $2,500, whenever necessary.

30 Mar 62 — Dr. Brown, DDR&E, reconstituted the Task 97 Study Group as an Action Group. Mr. Edward M. Glass, Special Assistant for Laboratories, was named as the Air Force representative on the new unit.

Apr 62 — The SAB Ad Hoc Committee on In-House Laboratories issued its report. It endorsed the establishment of the AFSC Research and Technology Division, and the recommendations of the special panel on technical facilities.

4 Apr 62 — A provisional Research and Technology Division, AFSC, was activated at Bolling AFB, D.C., "in direct support of the expressed desires of the Secretary of Defense to strengthen the laboratory structure and to improve the in-house technical capabilities of the Armed Services."

4 Apr 62 — General LeMay approved a plan to establish a special Laboratory Director's Fund of $10 million for FY 1963. The funds were to be obtained from a reprogramming of applied research funds. AFSC was to be allocated $7.5 million, OAR $2.5 million.

30 Apr 62 — The Bell Committee issued its report on government contracting for research and development. The committee concluded that it was in the national interest for the government to continue to rely heavily on contracts with

non-federal institutions to accomplish scientific and technical work. However, to halt the erosion of the government's in-house establishment, the committee recommended actions be taken to sharply improve the working environment within the laboratories.

30 Apr 62 — A Special Task 97 Civilian Personnel Group, composed of DOD and Civil Service Commission representatives, began a two-day visit to the Air Force Flight Test Center, Edwards AFB, Calif., to gather information on personnel and related problems.

7-8 May 62 — The Task 97 Civilian Personnel Group visited the Rome Air Development Center, Griffiss AFB, Rome, N.Y.

15 May 62 — The Air Force issued a revised regulation 80-4 announcing its policy was "to achieve and maintain an internal research capability (basic and applied) of highest quality." The in-house laboratories were recognized as "one of our greatest assets..."

31 May 62 — The Office of Aerospace Research named the following Laboratory Directors to receive the unencumbered fund: Brig. Gen. B.G. Holzman, AFCRL, and Col. R.L. Fontana, ARL. The selections were approved by Dr. McMillan.

4 Jun 62 — General LeMay approved "in principle" a plan to establish a new basic research laboratory at the Air Force Academy, sponsored by OAR.

4-6 Jun 62 — The Task 97 Civilian Personnel Group visited the Aeronautical Systems Division, Wright-Patterson AFB, in a continuation of its fact-finding mission.

18 Jun 62 — Hq USAF authorized the Aeronautical System Division to operate a separate base equipment management office. Similar authority later was given AFCRL and ARL.

20 Jun 62 — A progress report on problems and actions associated with the Air Force laboratories was issued by Mr. Glass, the Special Assistant for Laboratories.

1 Jul 62 — DOD raised to $16.00 the per diem authorization for military travel. It previously was $12.00.

3 Jul 62	AFSC designated the following officials to be responsible for the Laboratory Director's Fund: Col. A.I. Karstens, Aerospace Medical Laboratory, AMD; Col. J.P. Taylor, Director of Aeromechanics, ASD; Col. W.P. Glover, Director of Avionics, ASD; Col. G.M. McNeese, Director of Armament Development, Eglin AFB; Col. H. W. Norton, 6595th Test Group, Edwards AFB; Dr. J.S. Burgess, Rome Air Development Center; Col. D.I. Prickett, Director of Research, AFSWC.
15 Jul 62	Task 97 Action Group published an Interim Report on Delineation of Personnel Problems Affecting the In-House Laboratories of the Department of Defense, based on visits to DOD laboratories during April-June 1962.
23 Jul 62	Gen. William F. McKee, Vice C/S, announced that the R&D commands could "make an exception to the general rule of centralized control of manpower in the case of laboratory directors." They were to tailor their future manpower control policies so as to provide maximum flexibility to the laboratory directors.
26 Jul 62	The Research and Technology Division, AFSC, was activated at Bolling AFB, D.C., under the command of Maj. Gen. Marvin C. Demler.
1 Aug 62	Progress Report No. 2 on Problems and Actions Associated with the Air Force In-House Laboratories was issued by Mr. Glass, The Special Assistant reported many new benchmarks and "a resurgence of confidence for the future among our engineers and scientists."
29-30 Aug 62	A task force was established by DCS/Personnel, Lt. Gen. William S. Stone, to review the scientific educational programs of the Air Force for both military and civilian personnel.
1 Sep 62	Col. Richard C. Gibson, professor of Astronautics at the Air Force Academy, was named as the first commander of the proposed new OAR laboratory. The unit was designated Detachment 5, Headquarters OAR.
24 Sep 62	Progress Report No. 3 on the In-House Laboratories was published.

26 Sep 62 — The Air Force Comptroller reported that BP-610 through 680 funds previously limited to contract usage would be made available for use of in-house laboratories to procure non-standard and local purchase equipment.

28 Sep 62 — AFCRL was designated as the responsible agency for investigations of intensity levels, characteristics and location of radiation areas in space, by Lt. Gen. Howell M. Estes, Jr., Deputy Commander for Aerospace Systems, AFSC.

11 Oct 62 — Congress adopted a Federal Salary Reform Act in Public Law 87-793. It provided significant salary increases for scientists and engineers, and adopted the principle that federal salary rates should "be comparable with private enterprises salary rates for the same level of work."

29 Oct 62 — Dr. McMillan recommended to General LeMay that the new Air Force Academy Laboratory be named after the late Col. Frank J. Seiler.

20 Nov 62 — Progress Report No. 4 on Problems and Actions Associated with the Air Force Laboratories was issued.

C O P Y

February 1, 1962

MEMORANDUM FOR DIRECTOR DEFENSE RESEARCH AND ENGINEERING

SUBJECT: More Effective Control of In House Laboratories

This is in reply to your memorandum, subject as above, dated 14 December 1961 in which you requested a report on the actions which I plan to take in consonance with the management principle which requires that "...procedures will be established in which the principal laboratories of each Service will be brought under the management control of the Assistant Secretaries for Research and Development of each of the Military Departments," which was originally stated in the memorandum from the Secretary of Defense, subject: In House Laboratories, dated 14 October 1961.

I have authorized my Assistant Secretary for R&D to obtain the services of a Special Assistant for Laboratories. This Special Assistant will be charged with a single responsibility, that of improving the in house laboratories in the Air Force. By placing this position in the Office of the Assistant Secretary of the Air Force (R&D), we are essentially establishing a means whereby the principal laboratories of the Air Force will be brought under the more effective control of the Assistant Secretary (R&D).

We have also located a man who is admirably qualified to serve as the Special Assistant. Mr. Edward Glass, who is now technical director of the Materials Laboratory at Wright Field has demonstrated that he possesses an intimate knowledge of the problems of the in house laboratories and that he is effective in finding ways and means of improving them within the governmental framework. We are confident that this knowledge, experience and demonstrated capability will result in significant improvements when it is applied to all the Air Force laboratories. The recommendations he will make will have a significant effect on the policies of my office. I have informed the Chief of Staff and asked for the cooperation of his staff.

In addition to the planned steps described above, we have initiated many actions. (1) The Assistant Secretary R&D has asked that the SecDef's memorandum of 14 October be given wide dissemination in the in house laboratories. This has been done. (2) An Air Force Council of Scientists has been formed headed by the Chief Scientist. My Assistant

C O P Y

Secretary for R&D is using this as a feedback and control mechanisms in order to assure that actions we initiate have been properly interpreted and executed. (3) By reference to previous studies and the reports of the Air Force Council of Scientists, the Assistant Secretary has identified a series of items which need improvement or change. Suitable requests for some of the needed changes have been issued to OAR and AFSC and most of the remaining deficiencies will be dealth with by the Special Assistant for Laboratories. (4) The Assistant Secretary has asked that AFSC and OAR report bi-monthly on the progress of the foregoing improvements on procedures and policies. The first report is due 10 February. (5) The Assistant Secretary for R&D has initiated an exercise directly with OAR and AFSC whereby selected in house laboratories will undertake some new, not yet identified exploratory research for which funds and manpower over their present ceilings will be provided. (6) The Assistant Secretary (R&D) has reviewed and is continuing to review and re-orient the applied research program of the Air Force in order to improve its quality. Frequent contact is made directly with applied research program directors in each of the technical areas. I believe a significant improvement in the quality of the applied research is resulting. (7) The Assistant Secretary is reviewing changes in the management structure and procedures at AFSC which will place technical control of the applied research program under laboratory chiefs rather than Technical Area Managers. (8) The Assistant Secretary has taken full advantage of the existing PL-313 regulations and is personally reviewing recommendations for new PL-313's and for salary increases. AFSC has already set up some PL-313 positions which are chiefly scientific in nature.

While significant strides have already been taken, it is obvious that much more remains to be done. The Assistant Secretary for R&D has my whole hearted support in carrying out further improvements to achieve a more effective control of the in house laboratories.

/s/

Eugene M. Zuckert
Secretary of the Air Force

C O P Y

April 11, 1962

MEMORANDUM FOR THE CHIEF OF STAFF, USAF

SUBJECT: In-House Laboratories; Funds for Laboratory Directors

I concur with the proposed procedures outlined in your memorandum of 4 April 1962, subject as above, as a basis for implementing subparagraph c. of SecDef 14 October 1961 memorandum, subject: In-House Laboratories.

The potential of this modus operandi is such that many benefits will accrue. I am pleased that the Air Force has been able to take positive action in this direction.

I am confident that the actions to carry out this concept will fully comply with the spirit and intent of subparagraph c. Once the Laboratory Directors have been identified and the amount of funds for each selected Directors established, complete authority must be given for the Laboratory Directors to select promising and important areas of work without prior approval or review at higher levels. Thus, a laboratory director will have the flexibility to undertake new work during an operating year in the manner he considers most appropriate, whether by in-house or by contract or combination of both.

After the fact review will be in accordance with the procedures set forth in my memorandum to DDR&E dated 23 January 1962.

I will expect everyone to do his part in keeping this concept as simple and straight forward as possible. The use of these funds should be unencumbered with restrictive reviews and procedures, red tape and involved or lengthy justifications and documentation. It is only in this manner that we can create a truly quick reaction and flexible capability to exploit new ideas and interesting approaches as they are conceived at laboratory level.

/s/

Brockway McMillan
Assistant Secretary
Research and Development

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18 April 1962

MEMORANDUM FOR DR. MCMILLAN

SUBJECT: Strengthening the In-House Laboratories

This is a progress report on actions taken with respect to the Secretary of Defense Memorandum of 14 October 1961 and in response to the Seiler Report recommendations.

Probably the most significant action relates to the establishment of a fund for use by Laboratory Directors to select promising and important areas of work without prior approval or review at higher levels. A fund of $10 million will be established for this purpose beginning in FY '63, with $20 million being considered for FY '64. Identification of Laboratory Directors and amount of funds for each Laboratory Director will be subject to review and approval of the Assistant Secretary of the Air Force, R&D.

Hq AFSC has been granted authority to proceed with the activation of a provisional Research & Technology Division effective 4 April 1962. The provisional Division will plan the details and a concept of operations to provide the required organizational structure, environment and leadership for the AFSC in-house laboratories and the conduct of high quality research and advanced technology programs. Full utilization will be made of the recommendations resulting from the SAB studies on in-house research. The planning studies of the provisional Division are expected to be completed within 60-90 days. The results of these studies will be reviewed by the Assistant Secretary for R&D before final action is taken on the establishment of a permanent Division.

In compliance with the 14 and 30 March 1962 memorandum from DDR&E, the Air Force is participating in the activities of a newly established Task 97 Civilian Personnel Group. This group, in conjunction with the Civil Service Commission will visit selected service in-house laboratories. The purpose of the visits is to examine the personnel problems associated with attracting and keeping qualified scientists and engineers, or their underlying causes, and to develop quickly an adjustment action required. The three

Air Force organizations selected for these visits are Edwards AFB, Rome Air Development Center and Aeronautical Systems Division.

Supply and procurement backup to the in-house laboratories has been cited many times as a major deterrent to effective operations of high quality laboratories. The OAR Laboratories have been authorized cash purchasing agents physically located within their organization, to provide a more rapid response to the unpredictable research needs of scientists and engineers. One laboratory after one month of experience reports a 93% decrease in procurement time for small purchases through this action. Hq AFSC has established and is implementing a policy to have contracting officers physically located in AFSC laboratories to handle cash purchasing for transactions up to $100.00 and other quick reaction techniques for other small purchases up to $2500.

The Air Force supply system and its responsiveness to the needs of in-house laboratories is being examined at the present time to determine means of reducing complexity and increasing timely and effective support.

Two additional items cited as problem areas by the Seiler Report have been resolved: (1) Technical Libraries have been exempted from the Central Procurement System and (2) the authority to determine exemptions to the Buy American Act, based on non-availability, has been delegated to local levels within Hq AFSC and to OAR for scientific books, specialized equipment and supplies.

The flexibility in setting in-hire rates for some technical specialties for scientists and engineers recommended by the Seiler Report has been partially resolved by the Civil Service Commission. New (higher) minimum salary rates have been established for categories of positions through GS-11. Higher minimum rates for positions above GS-11 were not included because of the Administration's new pay structure proposal to Congress which includes substantially higher salaries for these higher grade positions. The action on the GS-5's through GS-11's will be helpful in attracting and retaining people in these grade ranges.

The Seiler Report recommended additional manpower spaces for full time graduate study and cooperative programs. During FY-62 AFSC is supporting 33 full time graduate students

and OAR 8, for a total of 41 within existing manpower ceilings. In the coop program OAR is supporting 10-15 from their own manpower spaces and AFSC approximately 80. OAR has requested from AFOMO authorization to over-hire 3% of its professional strength per year for sabbatical leave and full-time graduate study and also to provide the opportunity of research workers on leave from their own organizations to work within the in-house laboratories. Thus for training purposes, civilian spaces would be handled similarly to military spaces for AFIT participation. Hq AFSC is currently examining the requirement for additional spaces to cover expanded full time graduate study and coop programs. The question seems to resolve itself into either requiring both AFSC and OAR to use a greater proportion of their spaces for this important purpose or finding other means of permitting these organizations to satisfy this need. I feel that possibly both should be examined. The problem of manpower is a critical one within the Air Force, but I feel that the in-house laboratories have not had their fair share of the pie in the past. To some degree, it parallels the problems associated with P-690 shortages, but in many respects is even more critical. I feel consideration should be given to establishing a pool of civilian manpower spaces under the control of the Assistant Secretary for R&D to be used selectively in supporting expanded educational and in-house programs which are manpower limited. This would be an additional facet to the action taken recently to provide unencumbered funds to laboratory Directors. I plan to discuss this shortly with the manpower people within Hq USAF. A plan of action should be available by 15 June 1962.

The Seiler Report recommended that additional authorizations be provided Laboratories to permit effective utilization of technically educated military personnel and to encourage these officers to consider a career with the Air Force. Hq OAR has recommended to DCS/P that a rotating pool of military spaces be established at Hq USAF from the 2% of the total officer authorizations which are unassigned at any one time for one reason or another. The spaces would be used to permit further training of highly qualified scientific and engineering officers with graduate degrees immediately upon completion of their studies for a minimum of three years. General Timberlake is now studying the feasibility of this approach as a tool for further training and career development of military officers and a means of making an Air Force career more attractive to young technically trained officers. I plan to follow this study closely and examine the overall problems associated with the training,

motivation and career development of technically trained military personnel.

Hq OAR is reviewing its management procedures within the framework of decentralized technical management and with a minimum of paperwork falling upon the working level scientists. During my visits to the Aeronautical Research Laboratories, I was informed that the management climate has definitely improved and that there has been positive decentralization of authority and responsibility. Hq AFSC is continuing its studies to revise the Technical Area Management Concept and to establish a system whereby a laboratory chief would have responsibility for the work conducted within his own laboratory. Final action in this connection is awaiting the studies underway as part of the Provisional Research and Technology Division.

The Seiler Report recommendations pertaining to the use of new classification techniques for research scientists are being applied broadly within AFSC and OAR. A number of laboratories are using the supervisor centered classification plan whereby authority has been delegated to supervisors for classifying civilian positions under their jurisdiction. Improvement has been made in the use of generalist personnel technicians at several laboratories. Instead of the two part time technicians previously used to cover separate classification and placement actions, one technician handles both the classification and placement functions. This has expedited personnel actions and improved service. Full utilization is being made both by AFSC and OAR of the Civil Service Commission "Guide for Evaluation of Positions in Basic and Applied Research." This guide embodies the man-in-the-job concept through which the technical contributions and professional status of the incumbent are considered major factors in setting the grade level of an in-house research position. Additional information on personnel problems and actions should result from the visits to in-house laboratories mentioned above.

To summarize, some progress has been made in the following areas:

a. Unencumbered funds for Laboratory Directors.
b. Establishment of Provisional Research and Technology Division at AFSC.
c. Small purchase procedures.
d. Technical Library procurement support.
e. Exemption from the Buy American Act.
f. Higher minimum salaries for certain categories through GS-11.

g. Use of new classification techniques for research scientists.
h. Actions on PL-313's (not covered in this memorandum).

Action is still pending on the following:

a. Review of Air Force supply system and its responsiveness to the in-house laboratories.
b. Means of using the in-house laboratories as an essential part of the technical education of technical trained officers.
c. The acquisition of modern technical facilities.
d. Manning of the in-house laboratories.
e. P-690 support of in-house laboratories.
f. Examination of practices and needs for full time graduate study, sabbatical leave, coop programs, summer hire and other civilian career development and recruitment programs.
g. Adequate pay structure for R&D personnel.
h. Reduction in management complexity and streamlining of procedures.

Edward M. Glass
Special Assistant

May 25 1962

MEMORANDUM FOR MR. IMIRIE

As you know, I have been placing great emphasis on the strengthening of the in-house laboratories within the Air Force. This is not only the result of the 14 October 1961 memorandum from the Secretary of Defense and the Bell Committee report which was endorsed by the President recently, but by my own strong personal convictions that the future of the Air Force is dependent upon decisive action in this area. I have been pleased with the support that your staff has given to my Special Assistant for Laboratories in connection with rapid procurement assistance to the in-house laboratories.

In the contacts being made with the laboratories of AFSC and OAR, I sense a wave of dissatisfaction and frustration concerning the centralization of more and more activities which partially or completely support the laboratories. Although there is the promise of greater efficiency and better service, when being initiated, the end result always seems to result in poorer service, greater red tape and more energy expended by the technical people in the laboratories per unit of support received.

I would like to address myself at this time to the new mechanized equipment management system (BEMO and CEMO) being established to centralize at operational bases all of the supply functions carried out up to now on a decentralized basis. The Council of Air Force Scientists at its meeting of 23-24 May 1962 expressed its concern over the application of this system to research activities.

While I certainly endorse the objectives of the program on strong supply management and supply discipline in many areas, its applicability to in-house research organizations is questioned. The emphasis for in-house research cannot be solely on efficiency but rather on competence and the flexible, responsive and rapid support of competence. To accomplish this, I have supported the philosophy giving laboratory directors the degree of direct control over service and support activities required for effective support of technical mission assigned to the laboratory. The provisional Research and Technology Division of AFSC was formed on the basis of these principles. I have taken action with the help of your people to have decentralized as much authority as

possible including procurement of small purchases and to have cash purchasing agents and contracting officers located in laboratories in order to assure quick reaction support of scientists and engineers. Further, I have had set up a substantial laboratory director's fund which can be expended by selected directors as they see fit with only after the fact review. I have taken these and other actions because they help create the environment that nurtures creativity and takes full advantage of the local judgment and ingenuity of our laboratory organizations.

The BEMO-CEMO system introduces new inflexibilities into the new way of life we are trying to create for the Air Force in-house laboratories. As a case in point, I understand that 1 August 1962 is the date selected for full implementation of this system at W-PAFB.

The first phase of this centralization is to begin on 1 June 1962 when the Aeronautical Systems Division supply elements are to be temporarily assigned to the base commander. The supply function has been centralized six miles from the laboratory complex. Thus, we have a relatively small, demanding, highly specialized customer separated both organizationally and geographically from its source of supply, stripped of its support people and in competition for services with a SAC operational group. These are the ingredients of real problem areas.

I strongly urge you to have your staff re-examine the proposed implementation of this system with a view of exempting laboratory organizations as was done in the case of hospitals.

I would appreciate your early consideration of these comments.

BROCKWAY McMILLAN
Assistant Secretary
Research and Development

C O P Y

Jun 5 1962

MEMORANDUM FOR THE DEPUTY SECRETARY OF DEFENSE

SUBJECT: Government Contracting for Research and Development

1. Your memorandum of 3 May 1962, subject as above, gave responsibility to the Secretaries of the Military Departments and Heads of separate DOD agencies, under general guidance of the Director of Defense Research and Engineering, for reviewing work assignment to Government research and development establishments, and making such changes as may be needed to make sure that these assignments are sufficiently challenging to attract and hold first-class scientists and engineers.

2. In direct response to this assignment, actions already under way carry out both the word and spirit of the President's request.

a. The 14 October 1961 Memorandum of the Secretary of Defense directed a number of actions aimed at maintenance of a vigorous program and highest morale within in-house laboratories. This directive and resulting actions were clearly the source of the Bell Report reference (page 46) to "Strong leadership being given within the Defense Department by the DDR&E."

b. The in-house laboratories of the Air Force have traditionally participated in important aspects of the total RDT&E program of the Air Force, both contractually and through internal research. This participation has been increased under the personal attention of Assistant Secretary for Research and Development. A position of "Special Assistant for Laboratories" has been created within this office to give full time attention to this problem. There will be continuing efforts toward improvement in order to achieve a new level of attainment in this area. The recently created Council of Air Force Scientists will give in-house scientists a more important part in formulation and evaluation of Air Force research and development programs and projects.

c. Air Force laboratories are providing technical support to System Program Offices in measuring and evaluating contractors' programs, activities and results in system development. This serves two purposes. It brings to bear full Air Force competence and know how on the most current and challenging problems in the Air Force and serves to keep

in-house scientists and engineers sharply aware of current industrial practices and of the most pressing needs of the Air Force for additional research.

d. Beginning in FY 63, selected laboratory directors will be given "unfettered" funds to conduct research programs they consider important and scientifically promising without prior review. It is expected that the use of these funds will result in many interesting, original and challenging programs which should contribute greatly to our ability to attract and retain capable and creative people.

e. The philosophy underlying our basic research laboratories emphasizes high quality research oriented towards the needs and motivations of the bench scientists and an environment within which research can flourish.

f. Within the Air Force Systems Command, a new Research and Technology Division (Provisional) has been established. This organization will define the functions of Air Force in-house laboratories; identify the most competent scientific and technical talent; attract new top quality professional people; provide resources and environment for these creative laboratory people; and insure administrative arrangements to encourage and promote their effective use and performance. With optimum administration, organization, and management factors, we expect an immediate and continuing improvement in challenging work assignments and effective use of the capabilities of in-house scientists.

3. It is my understanding that the Director of Defense Research and Engineering and the Task Force 97 Action Group are preparing implementation, with Air Force cooperation, of Items 1 and 5 of your 3 May 1962 Memorandum, that the DOD General Counsel will respond to Item 2, and that DDR&E and ASD/I&L will cover Item 4.

/s/

Eugene M. Zuckert
Secretary of the Air Force

C O P Y

AFOMO JUL 26 1962

In-House Laboratories

OAR (RRG)

1. A review has been made of the Air Force in-house laboratory problem areas which were identified in a progress report on AFSC laboratories of 20 June 1962. One of the problem areas is the lack of flexibility at the laboratory level regarding use of manpower and personnel resources. The cause was identified as the USAF program to centralize control of manpower at the major command level. Because this problem applies to the OAR laboratories as well, you are being advised of USAF philosophy and policy concerning this subject.

2. Because our in-house laboratories are unique unto themselves, our philosophy and policies must recognize and provide for this peculiarity. Therefore, your centralized manpower control policies should be tailored to provide optimum flexibility to the Laboratory Directors with a built-in Headquarters OAR capability to be responsive to USAF and DOD reporting requirements regarding manpower identification and utilization.

3. This twofold objective can be achieved through a policy statement which (1) affords the Laboratory Directors optimum flexibility with regard to assignment and reassignment of their personnel and manpower resources, and (2) requires immediate "after the fact" reporting of all manpower changes to your headquarters to insure OAR responsiveness to our centralized control system.

4. Because of the secretarial interest, please advise at the earliest possible date of your action on this subject.

FOR THE CHIEF OF STAFF

B.O. DAVIS, JR.
Maj. Gen. USAF
Director
Manpower & Organization, DCS/O

C O P Y

C O P Y

SEP 24 1962

MEMORANDUM FOR COMMANDER, AIR FORCE SYSTEMS COMMAND
COMMANDER OF DIVISIONS AND CENTERS
LABORATORY DIRECTORS

SUBJECT: Progress Report No. 3 on In-House Laboratories

I am pleased to send you the latest progress report on our In-House Laboratory Strengthening Program. Again, we have made significant progress in a number of important areas.

While we will continue to eliminate problem areas and to improve our internal environment for research and technology, our long range objective must encompass the creation of a true Air Force Scientific Community. It must think and act Air Force wide and must minimize its compartmentalized and parochial differences and aspirations. I feel that we have made steps in this direction already.

I hope that you will continue the fine communication system that you have been maintaining since the issuance of these progress reports. Dissemination of this information to the Laboratory scientist and engineer is an important part of the environment that we are trying to create for him.

/s/

Brockway McMillan
Assistant Secretary
Research and Development

C O P Y

C O P Y

Nov 26 1962

MEMORANDUM FOR COMMANDER, AIR FORCE SYSTEMS COMMAND
COMMANDER OF DIVISIONS AND CENTERS
LABORATORY DIRECTORS

SUBJECT: Progress Report No. 4 on In-House Laboratories

I am pleased to send to you again the latest progress report on our In-House Laboratory Strengthening Program. I feel that we have progressed in a number of important areas:

a. The flexibility provided by the Comptroller of the Air Force in authorizing the use of P610 - 680 funds to procure project equipment and supplies should improve our flexibility of action at laboratory level.

b. We are hopeful that OSD will exempt certain "pipeline" positions from our manpower ceilings.

c. Further actions have been taken to improve the internal and public image of our technical organizations.

d. The Federal Salary Reform Act is now law and will eliminate many of the inequities we have experienced in the past. Hopefully, this will enhance our ability to attract and retain quality people.

While we have been able to solve many individual problems and eliminate a large number of minor irritations, we are beginning to concentrate more and more on the "big ones." I feel that the steps being taken by the Air Staff to translate these actions into firm Air Force Policy statements and regulations will be a major means whereby we can continue to provide the proper environment for the in-house laboratories within the Air Force.

/s/

Brockway McMillan
Assistant Secretary
Research and Development

C O P Y