

US ARMY MATERIEL COMMAND



HISTORICAL SUMMARY

FISCAL YEAR 1970

CLASSIFIED BY: Chief, Historical Office AMC

SUBJECT TO GENERAL DECLASSIFICATION

SCHEDULE OF EXECUTIVE ORDER 11652

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**HEADQUARTERS
US ARMY MATERIEL COMMAND
WASHINGTON, D. C. 20315**

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(RCS-CSHIS-6(R2))

Prepared by

Historical Office

Headquarters, U. S. Army Materiel Command

1 December 1972

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PREFACE

This Fiscal Year 1970 Historical Summary covers the eighth year of the Command's organization, operations and activities. As a result of experience in the Vietnam conflict, the Joint Logistics Review Board concluded that construction would be a major problem in any war in an undeveloped country and that data processing and containerization should be expedited in simplifying and speeding logistic support.

This summary is based largely on reports prepared by directorates, staff offices, and Project Manager offices reporting directly to the Commanding General, AMC. However, it has been supplemented by interviews with key personnel of Headquarters, AMC, and, when feasible, by additional research, as indicated by the footnotes. Classified material has been identified by paragraph or section. All other parts of the test not so identified are unclassified.

Required by Army Regulation 870-5, this historical summary will serve as a means of orienting new personnel, as a general reference document, and as source material for more formal logistics histories. At least, it will serve as a holding action until a more definitive history of this period can be written. Furthermore, it will furnish background information for logistics planners and will serve as a source for answering questions of a historical nature.

As in previous years, this summary is the result of a cooperative effort. Andrew A. Putignano prepared a large portion of the text. Captain Howard K. Butler prepared a draft of the chapter on Operational Readiness and several pages on Research and Development. Raymond J. Snodgrass wrote the remainder of the chapters and was responsible for the editing and supervision of the preparation of the overall volume. Recognition must be given to Beatrice B. Newsome and Laura A. Pennix for preparation of the manuscript for final typing, and the typing and proofreading of this history.

1 December 1972

DALE BIRDSELL
Chief, Historical Office

US ARMY MATERIEL COMMAND
HISTORICAL SUMMARY
FISCAL YEAR 1970

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CHAPTER I

(U) INTRODUCTION

Over the past several years the US and South Vietnam forces operated with a high rate of operational readiness for nearly all types of equipment. This was true although these forces were equipped with much sophisticated and complex equipment and were operating in a relatively primitive environment at the end of long communication lines. In spite of these circumstances, there were no shortages of ammunition, fuel, or weapons. Ground and air assaults launched from base camps were supported by large logistic complexes with computerized depots and deep water ports.

With effective logistic operations well established, emphasis shifted to improving management practices during Fiscal Year 1970. By relying on efficient transportation and greater accuracy in stock accounting, substantial progress was made in reducing field stock levels. The Joint Logistics Review Board (JLRB), commonly known as the Besson Board, established in Washington, in March 1969, reviewed these logistics operations and identified fundamental lessons for the future. The Besson Board concluded that the overall support met the operational requirements of the commanders in Vietnam, but that it could have been provided more economically. Among the Board's other important conclusions was that earlier in the war, supplies had been pushed into the theater, and requisitioned, in spite of the limited capability in Vietnam to receive, store and issue the materiel.

At the beginning of the Vietnam conflict, ports, roads, airfields, communications, and logistic operating facilities were lacking in numbers and quality. Culture, economic, geographic, and climatic factors made the nature and scope of operations more difficult. The proximity of enemy sanctuaries in Cambodia and Laos, the jungle environment, and geographic and climatic conditions enhanced the impact of guerilla operations and placed special demands on the US and South Vietnam logistic support forces.

As a result of experience in the Vietnam conflict, the Besson Board found that several lessons had been learned. For example, it concluded that the establishment of a major land based logistics complex for support of contingency operations demanded the early provision of a senior logistician and supporting staff for in-country logistic management. The Board also, concluded that construction would be a major problem in any war in an undeveloped country and that the magnitude of this task must be anticipated. It further concluded that communications planning must address automatic data processing system digital data transmission requirements explicitly and that efforts to exploit containerization should be expedited in both simplifying and speeding logistic support. In urging the vigorous pursuit of reducing requirements for in-country logistic resources, the Besson Board stated: "Don't do anything in-theater that can be done outside the area of combat."¹

¹
Logistic Support in the Vietnam Era--A Report by the Joint Logisticis Review Board, 1970.

The JLRB completed its report in August 1970. The Report consisted of three overall volumes and 18 monographs. General Frank S. Besson, Jr., Commanding General of the AMC from 1 Aug 62 until he resigned in February 1969, was chairman of this board.

General Ferdinand J. Chesarek, formerly Vice Chief of Staff of the US Army served as Commanding General of the AMC from 10 March 1969 to 1 November 1970. The Command's functions encompassed research and development, product engineering, test and evaluation, procurement and production, inventory management, storage and distribution, and maintenance. AMC planned and supported US forces engaged in contingency operations, and supported foreign customers under various international logistical agreements. The Command also provided special teams to assist in training recipients of new materiel and AMC customers in resolving problems in maintenance, supply, storage and distribution.

In 1970, the AMC consisted of a network of 86 military installations and 119 activities in continental US and throughout the world. The Command directly employed approximately 165,000 personnel, of whom 14,000 were military and 151,000 were civilian. The Army's materiel inventory was worth approximately \$27.8 billion of which 50 percent was in depots or in transit and 50 percent in the hands of troops. AMC Headquarters in the Washington, DC area provided overall policy direction for the Command's operations. Nine major subordinate commands, located throughout the eastern part of the United States, served at the mid-management level. They included seven commodity commands that were responsible for management of assigned categories

of weapons, equipment and supplies; one test and evaluation command;
2
and one logistic support command.

Installations and activities reporting to Headquarters, AMC, or to major subordinate commands, accomplished the actual execution of the Army's materiel program. These ranged from depots, laboratories, arsenals, schools, maintenance shops, test ranges, proving grounds, and procurement offices in the United States, to logistics assistance offices and logistics management offices in Europe and the Far East. AMC also used vertical management techniques and established a great number of project management offices to expedite development, production, and supply of selected major or critical weapon or equipment systems.

At Headquarters, AMC, the Commanding General established his span of control through deputies. Besides the principal Deputy Commanding General, there was the Deputy Commanding General for Materiel Acquisition, the Deputy Commanding General for Logistics Support, and the Deputy for Laboratories. Among the other staff elements were the Director of Quality Assurance, the Director for Plans and Analysis, and the Director of Management Information Systems. Special Assistants advised the Commanding General in a number of specialized areas, such as engineering, nuclear-chemical-biological affairs, and joint activities involving other military services. There were also liaison officers located at Headquarters, AMC, who represented various US military

2

See chart of the Army Materiel Command in back of this AMC Historical Summary.

headquarters, and Great Britain, Canada, and the Federal Republic of Germany.

Storage, issue and maintenance support of thousands of supply items were accomplished by a network of 19 depots located throughout the US. The network filled an average of 500,000 requisitions a month from users of AMC materiel throughout the world. Some depots were compact complexes of offices, warehouses, laboratories and maintenance shops located near large cities, while others were huge isolated installations with thousands of acres for open storage. The number of employees ranged from 325 to 5,900.

AMC's laboratories and research centers strived toward improvement in the state-of-the-art in support of the Army's materiel requirements. Each command maintained its own laboratories for research and development support of its assigned mission. Five laboratories/centers reported directly to Headquarters, AMC. Aberdeen Research and Development Center, Aberdeen, Maryland, conducted research in weapons technology, ballistics, weapons systems evaluation, wound ballistics, chemicals, fuels, lubricants, effects of radiation, fallout and thermal radiation. The Materials and Mechanics Research Center, Watertown, Massachusetts, performed basic research on metal, armor, ceramics, and other materials. Harry Diamond Laboratories, Washington, D. C. conducted research on radiation, fuzes, target detection, fluid amplification, and weapon system synthesis. Natick Laboratories, Natick Massachusetts, conducted research on food, clothing, footwear, body armor, tentage, aerial delivery and general equipment for the individual soldier. Aeronautical Research Laboratory, Moffett Field, California,

performed research in subsonic aerodynamics, air resistance in low-speed flights, and rotary wing theory and design. These AMC central laboratories, with the subordinate command laboratories gave the AMC scientific knowledge that was equal to that of their industrial counterparts.

The three major service schools operated by the AMC were oriented toward logistics. These schools also developed technical manuals, provided consultant services, and conducted specialized research. These schools - the Army Logistics Management Center, Fort Lee, Virginia; the Management Engineering Training Center, Rock Island, Illinois; and the Joint Military Packaging Training Center, Aberdeen, Maryland - were characterized by their numerous and relatively short courses. These schools trained an average of 16,000 students each year. In addition to these schools, AMC had the following in-house training programs: AMC Safety School, Charleston, Indiana; Quality Assurance Industrial Training Program, Frankford Arsenal, Philadelphia, Pennsylvania; Metals Inspection and Nondestructive Testing Industrial Training Program, Army Materials and Mechanics Research Center, Watertown, Massachusetts; Corrosion Control Course, Rock Island Arsenal, Illinois; and AMC Ammunition School, Savanna Army Depot, Illinois. In addition to subordinate commands, AMC had more than 50 specialized activities directly responsible to Headquarters, AMC, for specific functions. These ranged from complex organizations with hundreds of personnel to small field offices with only a few employees.

The following offices and centers are examples of specialized activities directly responsible to Headquarters, AMC. The Command had logistics assistance offices in Germany, Hawaii, Korea, Thailand, and

Vietnam. Logistics Management offices were located in Germany, Hawaii, Japan, Korea, Okinawa, and Vietnam. The Foreign Science Technology Center, Washington, DC, provided worldwide foreign intelligence for AMC and prepared studies on foreign sciences, weapons, and other spheres of interest to the Army. The Army Pictorial Center, Long Island, New York, produced and distributed motion pictures, film strips, and recordings for Army-wide educational use. The US Army Mobile Television Detachment, Tobyhanna, Pennsylvania, provided Army-wide mobile television support for testing and evaluating new concepts and equipment.

In accomplishing its research and production missions, the AMC drew heavily upon civilian enterprise. More than 10,000 procurement personnel were located in 65 geographically dispersed procurement offices. During Fiscal Year 1969, approximately 270,627 contracting actions were executed with large firms and almost 560,000 such actions were transacted with small firms.

General Chesarek made several organizational and procedural changes during his tour as Commanding General of the AMC. This was especially true in the field of project management. In effect, he decentralized project management by shifting the reporting channel to the major subordinate command that controlled the technical base of each project. He greatly reduced the number of project managers that reported directly to Headquarters, AMC and eliminated the practice of reporting through major subordinate commands to the CG, AMC. Furthermore, he reduced the overall number of project managers from

68, when he took command, to 45 on 30 June 1970. During this year, the Army upgraded the standards for selecting project managers.

Upon arriving at AMC, General Chesarek initiated action programs to provide complete visibility that would lead to improvement of overall management. In October 1969, the AMC began a program for refining the materiel acquisition process (PROMAP-70). This massive program was established for the purpose of making improvements in the entire life cycle of materiel acquisition. In mid-1969, Deputy Secretary of Defense David Packard focused attention on the problems of weapon systems acquisition. AMC's PROMAP-70 was the outgrowth of a Packard Memorandum and the Secretary of the Army's guidance. Since AMC's eight major subordinate commands and 45 project managers were concerned, this resulted in approximately 250 subordinate command task directors being identified with the program. Life-cycle cost estimating for major systems was expected to result in greatly improved life-cycle cost estimates.

The challenge of the 1970's was to make sure that the program for modernization of equipment continued despite financial limitations. The Command recognized the potential of computer systems that would improve the management, operating capability and effectiveness of logistics

The potential of Project Alpha, for national inventory control points, and Project Speedex for depots, prompted important Command-wide changes in logistical operations. General Chesarek believed that these and other improvements, and the dedication of the AMC workforce would help create better conditions for the Army in the 1970s.

CHAPTER II

(U) RESOURCES AND MANAGEMENT

Personnel and Training

Reorganization and Personnel Reductions

During Fiscal Year 1970, increased DA and AMC-wide emphasis on organizational and managerial techniques to improve efficiency resulted in two reorganizations and personnel reductions at Headquarters, AMC. A manpower survey during February-April 1969 and a headquarters reorganization plan approved by the Commanding General brought about the initial reorganization. The effect was to reduce the overall authorization from 3,299 to 3,067. The military authorization was reduced from 359 to 319 and the civilian from 2,940 to 2,748.¹

This reorganization created the post of Deputy Commanding General for Materiel Acquisition. The action narrowed the span of control for the Commanding General, but improved weapon systems management. Another part of the new reorganization provided for a more comprehensive and unified system of resource management. It was accomplished by transferring organization, mission, and work measurement responsibilities to the Director of Personnel and Training so as to create an organization with responsibilities similar to ACSFOR. In the reorganization of 28 June 1970, AMC total strength

1

Ltr, DA Vice Chief of Staff, 25 Jul 69, Subj: Approval of Plan for Reorganization of HQ, USAMC Management.

authorization was reduced and several changes to the Headquarters TDA were implemented. Emphasis was placed on the reduction of overhead due to reductions in customers and procurement requirements as Vietnamization increased.

In the most significant of these changes, the directorates for Procurement & Production and Materiel Requirements were consolidated and designated Directorate for Requirements & Procurement; the Operational Readiness Office was made a directorate with a brigadier general as director; the Cable Center and Graphics Branch was transferred from the Administrative Office to the AMC Communication Detachment; and the Comptroller's cost and analysis function was expanded. Congressional, DOD, and DA cost-consciousness and emphasis on improving the accuracy of cost estimates in military contracts prompted the reorganization and establishment of the Cost and Economic Information Office as a separate element. In order to reduce fragmentation, the Configuration Management and Product Improvement branches in the Engineering Division, Directorate of Research, Development, and Engineering were combined. Also, the Standardization and Tech Data branches of the Engineering Division were combined.

AMC Manpower Management

Manpower Authorizations. By the end of Fiscal Year 1970 the AMC manpower authorization was 14,725 military and 153,888 civilian employees. The civilian force consisted of 146,823 full time permanent and 7,065 temporary part time employees. This was a

reduction of 138 military and 6,402 civilians for the end of Fiscal Year 1969.

Civilian Personnel Reductions. The second Supplemental Appropriations Act was signed into law on 1 July 1969 and thus eliminated the Hiring Restriction Rider Section 201 that had been incorporated in the Revenue and Expenditure Control Act (PL 90-364). However, because of anticipated further reductions in the AMC civilian employment ceiling, modified hiring restrictions established by AMC were continued in effect until 12 September 1969.² At that time these restrictions were removed, only to be replaced by further limitations on hiring in view of pending reductions.³ The AMC civilian reduction was placed at 5,922 spaces by the end of Fiscal Year 1970.⁴ AMC field activities were directed to take a reduction of approximately 2,000 temporary employees (who could be separated with a minimum of several days' notice) by 15 December 1969, with later separations of permanent employees. Affected AMC activities were notified by messages dated 24 and 25 September 1969. This reduction included the closure of both the Cincinnati and Los Angeles Procurement Agencies involving a savings of 352 spaces.

In a letter dated 30 January 1970, DA provided manpower and

²
Ltr, FOR MR CRA, Dir, Civilian Manpower Management, OACSFOR, to CG, AMC, "Limitations on the number of Civilian Employees-- Direct-Hire, Military Functions," 3 Jul 69.

³
Msg, AMCPT-SA, 12198Z Sep 69, AMC to CO, Advanced Materiel Concepts Agency, et al, "Restrictions on Civilian Employment."

⁴
Ltr, FOR MR CRA, Dir, Civilian Manpower Management, OACSFOR, to CG, AMC, "Revised 30 June 1970 Civilian Personnel Employment Ceilings," 17 Sep 69.

funding guidance for Fiscal Year 1971 showing a further reduction in the AMC civilian employment ceiling of approximately 10,000 by 30 June 1971.⁵ A plan, approved by the Commanding General, provided for the absorption in Fiscal Year 1970 of more than 8,000 of the reductions. This was done to maximize dollar savings in Fiscal Year 1971. Included in the Fiscal Year 1970-71 plan were the closure of the Army Pictorial Center, the Mobile TV Detachment, the Chicago Procurement Agency, and Granite City Army Depot; and placing Navajo and Fort Wingate Army Depots in reserve status. The fact that the division took a substantial portion of the Fiscal Year 1971 reduction in Fiscal Year 1970 resulted in an AMC total civilian authorization to the field of 145,333, which was 8,555 below the DA Fiscal Year 1970 employment ceiling of 153,888. By 30 June 1970, separations of civilian employees had reduced AMC civilian strength to 142,369 or 2,964 below the AMC imposed ceiling of 145,333.

Training. The three major challenges during Fiscal Year 1970 in the field of training included the Program for the Refinement of the Materiel Acquisition Process (PROMAP-70) training; the AMC 5-year ADP Program Training; and the accomplishment of AMC's training mission within an environment of reduced resources.

PROMAP-70 was initially developed in October 1969 within AMC Headquarters under the direction of the Deputy Commanding General for Materiel Acquisition. It was created to provide much needed

5

Ltr, FOR MR CRA EP, Dir, Mpr & Forces, OACSEFOR, to CG, AMC "Procedures for Handling Military and Civilian Personnel Reductions (50 positions or more)," 30 Jan 70.

improvements in the materiel acquisition process. Consequently, PROMAP-70 generated an urgent requirement for additional training and/or revisions to existing training programs in a variety of subject areas. In the training program developed to support PROMAP-70, 34 existing courses at Army Logistics Management Center (ALMC), Army Management Engineering Training Agency (AMETA), Air Force Institute of Technology (AFIT), and Naval Materiel Command (NCM) were identified as appropriate for PROMAP-related training. The training program was further augmented with the development of 12 new courses which were to be implemented as soon as they could be developed.

PROMAP-related courses showed an increase of more than 20 percent in Fiscal Year 1970 over the previous four fiscal years. AMC personnel trained in these courses in Fiscal Year 1970 numbered 3400 compared with a yearly average of 2800 during fiscal years 1966 through 1969. In the new courses being developed to support PROMAP-70, AMC schools trained an additional 150 students in the first five courses which were implemented during Fiscal Year 1970. Development and implementation of the remaining seven courses were programmed for completion in Fiscal Year 1971. The total number of students that were to be trained in the 12 new courses was expected to reach almost 3200.

The AMC Five-year ADP Program, the second major training challenge in Fiscal Year 1970, was met with the continued development and the initiation of a massive training program by the Army Logistics Management Center (ALMC) and the Army Management Engineering Training

Agency (AMETA). A total of 17,000 AMC commodity command personnel were to be trained in the AMC Logistics Program Hardcore Automated (ALPHA) portion of the Five-year ADP Program. This was in addition to 5,000 depot personnel who were to be trained in the System-wide Project for Electronic Equipments at Depots, Extended (SPEEDEX) portion. These training programs resulted in the first large-scale application of innovative educational methodology by the AMC schools.

The third major challenge was the accomplishment of AMC's training needs with reduced resources. In addition to the normal training programs, the initiation of PROMAP-70 and ALPHA/SPEEDEX training created more resource requirements than had to be met. These problems were solved and all missions relating to operation of AMC schools were accomplished. During Fiscal Year 1970, AMC commands and activities were unable to utilize all allocated training spaces because of insufficient funds to finance travel and per diem for all students. This problem was partially solved through increased monitoring of utilization and by command group action.

Funds

The program received by AMC for Fiscal Year 1970 totaled \$11,430.9 million. Of this amount, \$9,136 million was actually obligated.

OMA Program

The initial Approved Operating Budget (AOB) from DA provided an obligation authority (excluding Military Personnel Army expenses) of \$1,631.8 million. This amount plus anticipated automatic reimburse-

ment earnings of \$163.3 million provided a total obligation authority of \$1,795.1 million. Although the \$1,795.1 million provided an additional \$13.5 million, this was inadequate to support essential operations. The major deficiencies were in supply activities (\$127.9 million) and maintenance (\$302 million). Of the total OMA deficiency of \$482.5 million, \$32.6 million covered pay of civilian personnel, \$8.8 million covered second destination transportation, \$53.5 million covered depot supply and management activities, and \$130 million covered aircraft overhaul. The balance of the reported unfinanced requirements related to all areas of OMA operations and represented the additional resources needed for AMC to be responsive to Army-wide requirements of the logistical system.

The DA mark-up of the Fiscal Year 1970 Budget Execution Review resulted in a net increase of \$13.3 million for Approved Operating Budget of \$1,808.4 million. This increase principally covered the Class Act pay raises effective 1 July 1969, the implementation of the benefiting program financing concept (supply), and the additional requirement for first line aircraft (maintenance). During the fourth quarter, additional customer orders and program slippages enabled AMC to restore priority actions, support authorized man years and fixed costs, and apply funds to various AMC programs. Other miscellaneous funding changes during the year resulted in a total OMA obligation authority of \$1,842.6 million.

PEMA Appropriation

The Fiscal Year 1970 PEMA program as originally planned amounted to \$8,523.4 million. This was comprised of \$4,631 million of direct

Army, \$1,475 million for customer orders anticipated, and \$2,417.4 million of prior year carryover. At the end of Fiscal Year 1970 the PEMA program released to the field by Headquarters, AMC amounted to \$6,635.8 million of which \$1,336.8 million was for customer orders; \$3,877.6 million of direct Army; and \$1,421.4 million of direct prior year carryover. Approximately \$400 million of direct Army program was released by DA at year end. Of the \$6,635.8 million PEMA program released by AMC, contract awards totaled \$5,632.6 million.

AIF Operations

During Fiscal Year 1970 AMC through the Army Industrial Fund (AIF) operated the following: eight arsenal facilities, two proving ground facilities, 15 depot maintenance facilities, four research and development facilities, and one pictorial facility. Approximately 43 percent of the AMC civilian manpower was financed through AIF.

Annual costs of goods and services produced by AIF financed installations under AMC were budgeted at \$1,184 million for Fiscal Year 1970 as compared to actual costs of \$1,226 million for Fiscal Year 1969. The Fiscal Year 1970 actual costs came to \$1,186 million. Further reductions in costs of goods and services produced were expected in Fiscal Year 1971 due to the phase-out of the Army Pictorial Center and other anticipated reductions.

Based on program budget decisions issued by OSD, the Fiscal Year 1970 AIF budgets were made to reflect overall dollar and manpower reductions as follows:

	<u>Original Budgets</u>	<u>Reductions</u>	<u>Revised Budgets</u>
Man-years	67,281	115	67,166
End-strengths	67,665	1,281	66,384
Costs Increased (millions)	\$1,199	\$15	\$1,184

A total AIF depot test was approved for Lexington-Blue Grass Depot which began on 1 January 1970. Under this test all depot operations were initially financed under AIF as opposed to the two systems in being prior to 1 January 1970, i.e., the AIF for depot maintenance and OMA for other depot functions. The AMC Steering Committee made an evaluation in June 1970. It was found that since the AIF required an internal operating budget on an organizational basis, the interest and participation in budget operations of all managers at the depot were increased significantly during the test. This resulted in improved financial management at the depot. Under the new procedures all managers budgeted for their operations, and reported their accomplishments and their reasons for deviations from budgets. This situation was opposed to the prior supply function budgeting which was essentially an assignment handled by the Comptroller.

Capital Appropriation Branch

The Capital Appropriation Branch of the Budget Division was established and became operational on 1 July 1969. This unit was established to implement the direction by the Commanding General, AMC, that the AMC Comptroller assume responsibility for all dollar resources made available to AMC. Appropriations and accounts assigned to the new branch for active management included the fol-

lowing: Procurement of Equipment and Missiles, Army; Research, Development, Test and Evaluation (RDTE), Army; Military Assistance Program; Family Housing Management Account (FHMA); and Military Construction, Army. At the beginning of this fiscal year, liaison was established and understanding was obtained with representatives of the Directorate for Installations and Services; Directorate for Research, Development; Test and Evaluation; Deputy for Laboratories; and the AMC Finance and Accounting Division. Operating procedures were established to obtain, on a continuing basis, status reports and program data information in the financial management for the RDTE and FHMA areas.

Installations and Services

During Fiscal Year 1970, the Directorate for Installations and Services (I&S) continued to oversee the vast physical plant of the US Army Materiel Command (AMC), and to provide overall management of its diverse services for nearly 200 Class II installations and activities located throughout the United States.

Effective 20 November 1969, the Explosive Ordnance Disposal Office, consisting of three military officers and two civilians, was assigned to the Special Assistant for Nuclear, Chemical and Biological Affairs. In January 1970, Col. Crawford Young replaced Col. Robert W. Fritz as Director, Installations and Services.

During this fiscal year, the I&S Directorate was assigned four

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Ltr, AMCSA-N, 20 Nov 69, Subj: Reassignment of Explosive Ordnance Disposal Office and Mission within HQ, USAMC.

cost reduction areas: local logistics services; improvement of telecommunications management; real-property maintenance; and operations management and Military Housing Management (MHM). With the exception of MHM, all areas far exceeded goals established by DA. The MHM area fell short of the established goal by 12.4 percent. Overall savings of \$2,688,900 were achieved in this area during Fiscal Year 1970. This represented an accomplishment of 161 percent of the total goal of \$1,665,000.

Real Property Management

Fiscal Year 1970 marked the beginning of retrenchment in the management of real property. It was evidenced by the reduction of over 3,000 personnel spaces at selected installations. This necessitated the curtailment of low priority maintenance and the reduction in strength or elimination of fire departments where the function could be safely assumed by local municipal fire departments.

During Fiscal Year 1970 the number of AMC Class II installations decreased from 85 to 83; and Class II activities decreased from 108 to 105. AMC reported a reduction of acreage from 6,011,346 to 4,825,092. Approximately 1,000,000 acres at the Alamogordo Bombing Range, New Mexico, previously reported by AMC, were transferred to the US Air Force. Thus, total evaluation decreased to approximately 3.71 billion from 3.74 billion. Building space, however, increased from 265,979,251 square feet to 272,806,937 square feet during this fiscal year.

Military Construction

Despite substantial reductions of previous years, AMC pursued a

policy of submitting construction requirements in amounts required to support the Command's missions. The original AMC Fiscal Year 1970 program submitted to DA contained 102 projects estimated to cost \$89,245,000.⁷ Also, included in the submissions were five projects valued at \$58,602,000 for which Program Change Requests (PCR) had been submitted. A subsequent submission was necessitated by deferrals imposed by the Congress on the Fiscal Year 1968 program; and the final submission contained 152 projects valued at \$121,403,000, plus PCR projects estimated to cost \$35,154,000.⁸ The Department of the Army approved 93 of the projects submitted by AMC at an estimated cost of \$86,000,000 and recommended their approval to DOD.⁹ Due to stringent budget limitations, only 56 projects with an estimated cost of \$59,000,000 were approved by DOD and submitted to the Congress for authorization and funding.¹⁰ Congress denied 17 projects with an estimated cost of \$31,908,000 and authorized 40 projects with an estimated cost of \$23,966,000. Of the 40 authorized projects, Congress funded 39 with an estimated cost of \$22,913,000.¹¹

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Ltr, AMCIS-CD, from DCG, USAMC to OCE, 10 Jan 68, Subj: FY 1970-1974 MCA Program.

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Ltr, AMCIS-CD, from DCG, USAMC to ODCSLOG, 1 Apr 68, Subj: FY 1970-1974 MCA Program.

⁹
Ltr, ENGMC-PB, 24 Jun 68, Subj: FY 1970 Military Construction, Army (MCA) Program.

¹⁰
Ltr, ENGMC-PB, 22 May 69, Subj: FY 1970 Program Appropriation Book.

¹¹
PL 91-170 and 91-142.

The original AMC Fiscal Year 1971 Short-Range MCA Program submitted to DA contained 76 projects estimated to cost \$148,169,000.¹² Subsequently, a revised program was submitted which included 109 projects with an estimated cost of \$168,074,000.¹³ The Department of the Army eventually approved 27 of the projects submitted by AMC at an estimated cost of \$28,929,000. Three non-AMC projects were added by DA for a total program of 30 projects with an estimated cost of \$32,137,000.¹⁴

The Department of Defense approved and submitted to the Congress 36 projects with an estimated cost of \$42,828,000. This included nine projects in support of the air and water pollution abatement program with an estimated cost of \$4,473,000.

In response to Executive Order 11507, Prevention, Control and Abatement of Air and Water Pollution at Federal Facilities, 79 projects with an estimated cost of \$79,542,000 were submitted for consideration in the Fiscal Year 1972 MCA program.¹⁵ These projects brought the total submission to DA to 168 projects with an estimated cost of \$208,555,000.

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Ltr, AMCIS-CD Chief of Staff, AMC to OCE, 22 Jan 69, Subj: FY 1971-1975 MCA Program.

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Ltr, AMCIS-CD, from CG, AMC to OCE, 18 Apr 69, Subj: FY 1971-1975 MCA Program.

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Project Listing, ENGMC-P, Military Construction, Army, 2 Oct 69, Subj: Proposed FY 1971 Program.

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Ltr, AMCIS-CD, 5 May 70, Subj: FY 1972 Military Construction, Army Program.

Plans and Analysis

The AMC Board at Aberdeen Proving Ground, Maryland was discontinued on 31 October 1969. Its mission was assigned to Headquarters, AMC, and delegated to the Plans and Analysis Coordinating Office (PACO).¹⁶ Under Phase IV reorganization, PACO was reorganized and redesignated as Plans and Analysis Directorate (AMCPA). The Directorate was expanded when the Environmental Control Office was established on 2 June 1970.

Besides handling numerous short term projects for the Command Group, the Concepts and Plans Division of AMCPA gathered and analyzed personnel data to assist in the preparation of an AMC position for the Army Baseline Force Structure for Fiscal Years 1972-76. On 29 November 1969 the division was tasked with preparing the AMC input for the DA Long Range Stationing Plan. This required obtaining and consolidating a quantity of data for over 200 AMC installations and activities. Corollary actions included coordinating visits of the Chairman of the DA Long Range Stationing Study Group to AMC activities and reviewing the data presented in briefings. The Stationing Plan was submitted to DA on 13 April 1970.

During the second half of this fiscal year, the AMC Study Program was developed and submitted to the Assistant Vice Chief of Staff, Army, together with the AMC report on Manpower and Cost of the Army Study Effort. The AMC Study Program was staffed for publication and distribution throughout AMC to provide visibility of study efforts

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AMC GO 231, 29 Dec 69.

and the avoidance of duplication as well as providing a basic reference source of information or studies for use by professional and management personnel.

A number of important weapons systems analyses were conducted during Fiscal Year 1970. This included Bushmaster, Mechanized Infantry Combat Vehicle (MICV), Scout, Hawk, Lance, Heavy Lift Helicopter, UTTAS, TACSATCOM, NAVCOM, and the XM705. In order to assist in this important analysis process, the Army Materiel Systems Analysis Agency (AMSAA) was placed under the operational control of the Systems Analysis Division of AMCPA.

AMC Safety Program

The end product of the AMC safety program was the prevention and elimination of injuries to military and civilian personnel and damage to government property.

In Fiscal Year 1970 the AMC accident rate showed a marked improvement and a reduction in monetary costs from \$13.9 million (FY 1969) to \$5.5 million (FY 1970). This trend, also, was evident in the number of fatalities which were down from 36 in Fiscal Year 1969 to 19 in Fiscal Year 1970. Eight of these were military personnel involved in privately owned off post motor vehicle accidents. Another significant achievement took place in the reduction of explosions from 118 in Fiscal Year 1969 to 26 in Fiscal Year 1970. Consequently, property damage losses in this area were reduced from \$7.1 million to \$746,000. The cost of fires was reduced 47 percent

from \$2.1 million to \$1.1 million although the number of fires increased from 59 (FY 1969) to 62 (FY 1970).

No nuclear weapon accidents (BROKEN ARROW) occurred during the reporting period. Thirty nine minor incidents (DULL SWORD) and one significant incident (BENT SPEAR) were reported. Technical investigation disclosed the following causes for these accidents: personnel error (7 cases); materiel failure (20 cases); natural events (1 case); undetermined (6 cases); cancelled (1 case); and downgraded to equipment malfunction (5 cases). No modifications were introduced as a result of these investigations, however, some minor changes in components were made and one design study was introduced. In this case a prototype kit for change in PERSHING 1A software was to be produced, tested, and a decision made as to its introduction during Fiscal Year 1971.

It became evident that the AMC Career Program faced a 40 percent attrition by 1973 resulting from the retirement of safety personnel. At the same time, the increasing sophistication of Army weapon systems resulted in greater technical demands upon the AMC Safety Program. In response to these challenges, the AMC Safety Engineering Intern Training Program was established. Graduate engineers were recruited to enter a two-year curriculum conducted by the AMC Intern Training Center and the AMC Field Safety Agency in conjunction with Texas A&M University.

A Standard Safety Office Organization was developed in the Standard Commodity Command Headquarters Organization. This resulted in the elevation of commodity command safety offices to staff level

and the assignment of system safety responsibilities to the Safety Office.

The Cost and Economic Information Office

Formerly under the Directorate of Procurement and Production, the Cost and Information Office (CEIO) was placed on 5 September 1969, directly under the Deputy Commanding General for Materiel Acquisition. Concurrently, CEIO was reorganized into two divisions. The Selected Acquisition Reports (SAR) Division was created to accommodate the increasing number of SAR; and the Contractor Cost and Performance Division became responsible for the remaining CEIO activities.

The efforts of the Contractor Cost and Performance Division involved the commodity commands in the application of Cost/Schedule Control Systems Criteria (C/SCSC) by January 1970. This Criteria prescribed the cost and schedule requirements to be met by the contractor's management system. The Cost Performance Report was approved in February 1970 by the Bureau of the Budget and OSD as the means for obtaining contractor cost and performance data.

Reports Management

The responsibility for the administration of AMC reports management was transferred on 1 February 1970 to the AMC Logistics Systems Support Agency (LSSA) at Letterkenny Army Depot. Operational control

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AMC GO 67, 20 Mar 70.

over LSSA's administration of the function was retained by the Directorate of Management Information Systems.

One of the first and most significant actions assigned to LSSA's new Reports Management Division was PROMAP-70 Task XIV, Reduction of Non-Essential Reporting in AMC. This task established the requirement for these personnel to perform on-site detailed reviews of approximately 180 materiel acquisition reports and provided for the submission of recommendations to modify or terminate these reports as necessary. By 30 June 1970, review teams had terminated eight AMC generated reports and eliminated six DOD required reports.

The Integrated AMC Planning, Programing and Budgeting, and Management Information System (PPB-MIS) was announced in January 1970 as the keystone to the AMC management philosophy of decentralized operations with centralized management control. This system, with a management information feedback loop, not only showed how AMC was doing, but also surfaced potential problems sufficiently far in advance to allow for corrective action.

The Commodity Command Management Information System (CCMIS) was a subsystem of the PPB-MIS. Originally, it was oriented toward the development of indicators which would form the basis for the development by ALMSA of management information system, associated with ALPHA. A subsequent decision by the Commanding General, USAMC, advanced the work of the CCMIS Steering Group to develop performance indicators to support the formulation, execution, and review and analysis of the Fiscal Year 1971 program. Accordingly, a working group was formed under the CCMIS Steering Group. The group reviewed documentation

from the commodity commands on their performance indicators, and screened documents for duplication and/or conflicts. Excluded from this effort were the Logistic Performance Measurement and Evaluation System, the AMC Command Review Document CAMERA, and the Command Supply Discipline Program, which were to be documented by HQ, AMC.

STANO

In January 1969, Brigadier General William B. Fulton was named by the Army, Chief of Staff to head a committee to plan for the phased assumption of Army related responsibilities of the Defense Communications Planning Group. The Fulton Committee recommended the establishment of a dedicated Surveillance, Target Acquisition and Night Observation (STANO) management structure within the Army. This was approved on 5 June 1969 by the Chief of Staff, US Army. The system included the establishment of a STANO Systems Manager at the Army Chief of Staff level; STANO offices in the Department of the Army Staff Agencies; an AMC single point of contact for STANO activities in AMC; and similar points of contact in CDC, CONARC, and the US Army Security Agency.

An initial AMC STANO effort involved coordination throughout Headquarters, AMC and major subordinate commands of the Project MASSTER Charter and Annex A of the STANO Program Control Plan. The plan prescribed test objectives, priorities, concepts, procedures for test scheduling and responsibilities for Project MASSTER Testing.

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Ltr, AMCSO, from DCG/MA, Hq AMC to Distribution A, B-1, B2, dated 2 July 1969, "Establishment of the AMC STANO Management System."

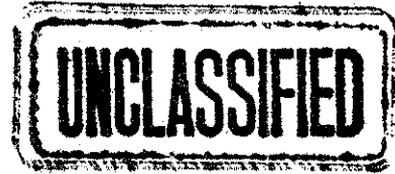
The test program was designed to provide a responsive means of evaluating materiel, the integration of men and STANO materiel as organizations, and the performance of multiple STANO combat functions.

The first dedicated STANO test in which the Headquarters AMC STANO Systems Office participated was conducted during the period of 4 July - 8 December 1969 at Fort Bragg, North Carolina. The test, STANO II, Part I, was a field evaluation, similar to a troop test, conducted by CONARC, with the assistance of CDC and AMC. The field evaluation had a twofold objective. It was to evaluate a proposed concept of employment for selected items of STANO equipment and to provide preliminary data to the STANO III test on the operations reliability of available items of STANO equipment.

On 28 January 1970, Major General Feyereisen, Deputy Commanding General for Materiel Acquisition, was notified that DA/AMC current fiscal procedures were adequate to identify and provide visibility for Fiscal Year 1970 STANO/Project MASSTER fiscal programs in the Research Development, Testing and Engineering (RDTE), and Procurement of Equipment and Missiles, Army (PEMA) areas. Minor changes, however, were required in AMC current fiscal procedures in the Operation and Maintenance, Army (OMA) area. The minor changes were made by Headquarters, AMC Comptroller.

CHAPTER III

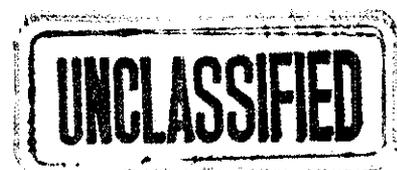
~~(S)~~ OPERATIONAL READINESS



(U) Historical Background

The deployment of large numbers of troops into South Vietnam in the spring of 1965 produced a number of serious logistical problems for resolution by the AMC, the Army's logistical organization. One of the foremost of these problems involved the need for establishing an office that could manage the logistical problems of AMC's customers and at the same time organize all of the Command's actions in the area of materiel readiness. The CG, AMC, quickly acted to meet this requirement with a decision to create the Operational Readiness Office (OPRED) in May 1965. More-over, in order to enhance the powers of this new office so that it could more easily perform its duties, he designated OPRED as an element of the AMC Command Group. At the beginning of Fiscal Year 1970, that office was elevated to directorate level. Effective 1 July 1969, with the approval of the Headquarters, AMC Table of Distribution and Allowance (TDA), the Operational Readiness Office became the Directorate for Materiel Readiness.

OPRED was responsible for three major mission areas. One of the major missions was assigned to each of the following divisions: Logistic Readiness Division, Logistic Assistance Division, and Plans Division. In order to accomplish its mission, OPRED coordinated the materiel readiness program of the AMC, a duty that demanded an integrated AMC response to matters that concerned functions and



commodities. In the second area, logistical assistance, OPRED acted as an interagent for AMC customers in their dealings with the CONUS supply systems by liaison activities and by the dispatch of serious problems to AMC Headquarters. In the third area, plans, OPRED had to construct AMC contingency war plans, and plans for mobilization and emergency operations that were in agreement with other AMC programs and with DA War Plans.¹

OPRED conducted all of these activities with a relatively small number of personnel. In Fiscal Year 1970 its authorized strength was 72 spaces of which 17 were military and 55 were civilian. The office later added 9 spaces when the Retail Supply Management section was transferred to OPRED from the Directorate for Installations and Services. The authorized personnel strength was lower than the Fiscal Year 1969 authorization, which permitted a total of 96 spaces, 26 of which were military and 70 civilian.² Colonel Frank J. Petrilli directed the office from the beginning of this fiscal year until his retirement on 30 August 1969. Colonel William B. Dyer succeeded him as the director of OPRED on 5 September 1969 and served the balance of Fiscal Year 1970.³

¹ (1) AMCR 10-2, 29 Nov 68, subj: Organization, Mission and Functions of HQ AMC. (2) For an historical summary of the establishment of OPRED, see AMC Historical Summary, Fiscal Year 1966, pp. 67-69.

² OPRED Historical Summary, FY 1969, p. 4.

³ OPRED Historical Summary, FY 1970, p. 3.

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(U) Materiel readiness was, and remained throughout Fiscal Year 1970, one of the most important problems that the AMC faced. To confront this problem, and to establish a focal point within the AMC Command Group that would supervise thoroughly the AMC materiel readiness program and assure an adequate in-house response to that program, the AMC relied upon the Logistic Readiness Division with two minor alterations.

(U) The Logistic Readiness Division operated throughout Fiscal Year 1970 under a reorganization that became effective on 1 July 1968. The first of these alterations was the establishment, on 5 June 1970, of the Vietnamization Liaison and Coordination Office (VLCO) within the Division. The mission of this new office was to act as the AMC center for the coordination and the information exchange of all activities that concerned Vietnamization operations.⁴ The second change was a reduction in authorized personnel strength. The office lost 1 military space from its Fiscal Year 1969 allowance, leaving 4 military and 12 civilian spaces.⁵ In spite of the overall OPRED reduction, the Logistic Readiness Division conducted the same activities that it had undertaken in the previous fiscal year.

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AMC Circular No. 1-35, 5 Jun 70, subj: Vietnamization Management.

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OPRED Historical Summary, FY 1970, p. 5.

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Material Readiness Reporting

(U) The Army maintained a readiness reporting system that required quarterly submissions from major commanders. These commanders, operating under DA guidance, prepared the reports, which contained summary evaluations of their units readiness, and dispatched copies of them to the Department of the Army, AMC Headquarters and the commodity commands. ⁶ AMC, once in receipt of these reports, examined them for logistical problems.

(U) AMC, in order to fulfill DA requirements, submitted the requirement to the commodity commands for examination, sending to each command those problems which fell within their commodity management sphere. The respective commodity commands then analyzed the Commander's statements for particular logistics problems, took or prepared to take corrective actions for the problems, coordinated their actions with the major Army commands and reported their findings and activities to the Logistic Readiness Division. Finally, the Division, in unison with the appropriate Headquarters units, made an overall AMC logistical analysis and forwarded it to DCSLOG. The Division accomplished this mission on a quarterly basis in Fiscal Year 1970, and provided, on a similar basis, four readiness highlight summaries to the AMC Command Group. ⁷

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AR 220-1, 22 Apr 69, subj: Unit Readiness.

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Memoranda, AMCOR-RE, subj: Major Command Summary Evaluations of Unit Readiness, 4th Qtr FY 1969, 7 Oct 69; 1st Qtr FY 1970, 9 Jan 70; 2nd Qtr FY 1970, 3 Apr 70; and 4th Qtr FY 1970, 1 Jul 70.

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(U) As a result of these readiness efforts, the Division was able to record progress in the logistical preparedness of all the major commands. Of special importance were the logistical gains that USCONARC, USAREUR, USARPAC, and USARSO registered in the "Equipment on Hand" area, an area of measurement indicators in which the AMC was able to achieve good results by means of its monitorship of these indicators. In addition, USASTRATCOM, USACDC, and USASA all reported improved logistical readiness throughout Fiscal Year 1970, an improvement that was achieved chiefly by the acceleration in equipment deliveries from the AMC complex, despite the large number of Vietnam issues to both US and friendly forces.

Matériel Readiness Reporting by ARADCOM

(U) The US Army Air Defense Command (ARADCOM) in Fiscal Year 1970 published monthly matériel readiness reports and distributed them to AMC Headquarters and to those commodity commands (USAECOM, USAMICOM, USAMECOM, and USAATAC) that managed ARADCOM missile equipment. These reports discussed systems availability for the Hercules and Hawk missile systems, for Fire Distribution Equipment (Birdie), and for Fire Distribution Equipment TSQ-51. These reports had a particular importance because they enabled their receivers to properly understand and support, on a monthly basis, all ARADCOM equipment. These reports revealed, in addition to gross availability data, a great amount of details, including the number of equipment failures, the deadline time for both maintenance

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OPRED Historical Summary, FY 1970, pp. 7-8.

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and supply, the time for DA modification work orders, and a special list of critical repair parts failures that adversely affected systems readiness.

(U) The Readiness Office coordinated AMC participation in this ARADCOM effort for Fiscal Year 1970. The Office distributed several copies of the ARADCOM report to the Director of Distribution and Transportation, the Director of Maintenance, the Director of Materiel Requirements, the Comptroller and the Project Management Staff Officer for Hercules and Hawk. Moreover, the Office on the basis of previously issued letter instructions, required particular commodity commands to perform supply and maintenance analysis of the ARADCOM reports, to return the completed analysis and to furnish information copies to ARADCOM, USCONARC, ARADCOM Regions and DCSLOG.

(C) The combined Fiscal Year 1970 efforts of the Readiness Office, of the involved commodity commands and of ARADCOM in the publication and the implementation of the ARADCOM reports caused little improvement in ARADCOM system availability. Although all four systems, the Hercules and Hawk guided missile systems, and the Birdie and AN/TSQ-51 air defense fire direction systems, exceeded DA standards in average availability for Fiscal Year 1970, they did not, as a group, improve their Fiscal Year 1969 performance very much. While the Hercules and Hawk availability rates, for example, rose from 92 to 93 percent and from 90 to 94 percent, respectively,

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Ltr, AMCOR-RE, 1 Nov 68, subj: Analysis of ARADCOM Monthly Materiel Readiness Reports, RCS AMCOR-101.

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both the Birdie and the AN/TSQ-51 availability rates fell from 98 to
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97 percent.

Joint Logistic Review Board

(U) On 1 March 1969 the Deputy Secretary of Defense established the Joint Logistics Review Board (JLRB) for the review of all logistics support to US combat forces during the Vietnam War, in order to try to improve such support for possible future conflicts. The Chairman of the Board, General Frank S. Besson, Jr. USA, formerly the Commanding General, AMC, presided over key logisticians from all of the Services, as well as the DSA, and air and ground transportation experts from the Joint Staff of the Joint Chiefs of Staff.

(U) The JLRB performed its duties primarily by contact with the major Army commands, including the AMC. Of the Logistics Readiness Division, the Readiness Evaluation Branch became the AMC focal point for all AMC actions and liaison activities in JLRB-AMC relations. The Branch coordinated approximately 10 manyears of AMC efforts with the JLRB during Fiscal Year 1970, thus greatly assisting the Board in submitting a final report to the OSD Logistic
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Review Advisory Committee on 17 June 1970. The most important OPRED inputs were the replies it made to two DA requests for information. The first request involved the capability of AMC to maintain adequate prepositioned materiel reserves, to overcome major

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(1) OPRED Historical Summary, FY 1970, p. 9. (2) OPRED Historical Summary, FY 1969, pp. 10-11.

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DF, AMCDR-RE, 17 Jul 69, subj: Joint Logistics Review Board (JLRB).

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item deficiencies and procurement problems, to be aware of assets, to provide customer assistance to major commands and installations and to ensure the supply performance of inventory control points, especially in regard to high priority installations. The second request asked for a brief assessment of the impact of the Vietnam War on US force readiness. The Branch replied to both requests.

ENSURE

(B) Early in 1968, DA promulgated a procedure, called ENSURE, for the expedition of non-standard urgent requirements for equipment that overseas commands required. According to this procedure, those overseas commanders who desired items for their military operations could request such items by writing to ACSFOR. ACSFOR evaluated their requests and passed judgment upon them. Some of these approved ACSFOR requests came to AMC, which, by regulation, delegated OPRED with the responsibility for maintaining a register of their ENSURE requirements.

(C) One important item that OPRED recorded in this register was status information. This prompted OPRED, late in Fiscal Year 1969, to undertake a new ENSURE responsibility with a Chief of Staff, AMC, directive that required it to submit to the CG, AMC, a monthly

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(1) OSD ltr, 1 Jul 69, subj: Request for Data. (2) DA msg DCSLOG/T-FEPB, 3 Jul 69, subj: Impact of Vietnam on Readiness of Forces RCS OSD-(07)-1544.

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(1) AMCOR-RE ltr, 14 Aug 69, subj: Request for Data. (2) AMCOR-RE ltr, 11 Aug 69, subj: Impact of Vietnam on Readiness of Forces RCS OSD-(07)-1544.

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AMCR 525-2, 7 Feb 68, subj: Expediting Non-Standard Urgent Requirements for Equipment (ENSURE).

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report that showed the status of all outstanding ENSURE requirements.

An office compilation of these reports for Fiscal Year 1970 revealed that AMC completed 79 ENSURE requests, received 22 new requests and maintained 57 of 65 ENSURE projects on schedule during this fiscal year.¹⁵

AMC Lessons Learned

(U) The AMC Lessons Learned Program had as its objective the assurance that AMC would profit from lessons learned during its daily operations.¹⁶ During Fiscal Year 1970, as in previous fiscal years, OPRED was responsible for monitoring the entire AMC program, as well as being the recipient for all lessons learned originating from outside the Command. This duty ended at the close of Fiscal Year 1970; in the future all AMC Headquarters staff elements were expected to act on lessons learned in their own functional areas.¹⁷

Vietnamization Liaison and Coordination

(U) The Vietnamization Liaison and Coordination Office (VLCO) began operations in Fiscal Year 1970 with the task of the determination of the Headquarters AMC role in Vietnamization. To achieve their mission, the officer in charge of VLCO attended conferences for two weeks at MACV and at USARPAC concerning the RVNAF Base Depot Upgrade Program and the ARUN 72-77 MASF Program Review. VLCO

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OPRED Historical Summary, FY 1970, pp. 15-16.

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AR 525-15, 26 Jan 68, subj: Operational Reports - Lessons Learned.

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OPRED Historical Summary, FY 1970, p. 16.

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intended, for future activities, to aid the AMC in Vietnamization by coordinating both the implementation of plans and by the assurance of liaison and unity in action in order to avoid duplication of efforts.

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AMC Operations Center

(U) The mission of the AMC Operations Center (AMCOC) was to screen and evaluate all incoming action messages for both current and possible future logistical problems and to furnish support for such problems on a global basis. The Center correlated materiel from those messages that it deemed important and prepared a weekly briefing for the Director of OPRED, who represented the CG, AMC and the AMC staff at such briefings. The Director could require more briefings if he decided that they were necessary. During Fiscal Year 1970, AMCOC conducted 75 such briefings, presenting within them about 686 significant messages, as well as approximately 100 intelligence extracts. Furthermore, AMCOC also presented in this fiscal year 236 specialized briefings that were under the conduct of other staff officers, representatives of AMC directorates, project managers, staff agencies, major commanders, and speakers from private industry. These specialized briefings concerned all aspects of logistics, ranging in scope from such diverse topics as materiel retrograde to troop construction in SEA.

(U) In addition to briefings, AMCOC engaged in several other activities in Fiscal Year 1970. These included a review for the AMC of the Army Activities SEA report, which placed emphasis on

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Ibid.

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Army operational support of SEA and RVNAF improvement and modernization, and an information survey that AMCOC distributed AMC-wide to determine the values of its briefings. In addition, AMCOC was augmented six times during Fiscal Year 1970 for various civil disturbances, such as the High Heels 69 test and the rail strike. It was designated the focal point for all AMC actions in relation to Hurricane Carmille, the Helicopter Support for Peru and Anti-Chemical Biological Warfare Campaign - Tree Planting Ceremony at Fort Detrick and Edgewood Arsenal.

(U) Logistic Assistance

The Logistic Assistance Division had as its primary mission the resolution, or the assistance in the resolution, of nonroutine logistical problems of AMC customers. Formerly known as the Customer Assistance Division, this organizational element acquired its new designation as a result of DA approval of Headquarters, AMC's TDA which included the new title. The Logistic Division in Fiscal Year 1970 remained, as it had been since its inception, an organization whose existence was largely dependent upon the war in Vietnam and the special logistical needs arising from that war.

The Division, with the aid of its two functionally oriented branches, known as the Materiel Support Branch and the Special Field Activities Branch, faced many critical logistics circumstances in its

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Ibid., pp. 17-21.

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DF, AMCOR-A, 9 Jun 70, subj: Logistic Assistance Division.

operations during this fiscal year. These operations, in fulfillment of its mission, included the provision of staff supervision for a program of logistics assistance visits to worldwide major commands in order to insure adequate support to AMC customers, the staff supervision of logistics assistance offices overseas, and the assumption of the part of proponent for major Army commands and unified commands in the treatment of those nonroutine logistical problems that required the attention of AMC Headquarters. Furthermore, the Division had to execute all of those specific functions that are pertinent AMC regulations outlined, and to perform an additional function added in Fiscal Year 1970, which consisted of the monitorship of all AMC logistical assistance programs under the staff cognizance of the Deputy Commanding General for Logistics Support.²¹

The Logistic Assistance Offices (LAO's), functioning under the staff supervision and the operating control of the logistic Assistance Division, served as a focal point for all AMC nonroutine logistical matters which occurred within the respective sphere of each LAO. Beginning in July 1965 in Europe with a single Customer Assistance Office (CAO), as the LAO's were formerly called, the Division by close of Fiscal Year 1970 oversaw the operations of five other offices, one each of which were located in Hawaii (Pacific), Vietnam, Korea, Okinawa (Ryukyus) and Thailand.

21

- (1) DF, AMCOR-A, 9 Jun 70, subj: Logistic Assistance Division.
- (2) Memo, AMCOR-TS, 24 Nov 69, subj: Logistic Assistance Program, from the DCGLS to his directors.

The LAO's consisted of a small group of people who served as representatives of Headquarters, AMC to the various overseas areas. The Chief of each LAO acted as CG, AMC's personal representative within each overseas command in which he served. In addition, the LAO's carried staff technical representatives from each of the AMC major subordinate commodity commands, from selected projected manager offices and from other AMC elements as warranted. Personnel from the LAO's remained in constant touch with their CONUS headquarters and kept channels open with AMC, DSA, and GSA. By means of these arrangements, the LAO's relayed information to and from overseas commanders in an effort to determine and to resolve those logistical problems that the commanders faced. Finally, the responsibility and the duties of the CONUS LAO's were further strengthened by a message from the CG, AMC, which stated his policy in this matter.

22

AMC Personnel Performing Duties Overseas

Activities such as the LAO's meant that much of the attention of the Logistic Assistance Division was overseas-oriented. Consequently, it was logical that the Division in Fiscal Year 1970 should serve, as it did in the previous fiscal year, as the focal point within Headquarters, AMC, for coordination and accomplishment by AMC personnel of those nonroutine actions that permitted the provision of supply and maintenance technical assistance to Army

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(1) Msg, AMCOR-TS, Gen Chesarek, 17 Oct 69, subj: OCONUS Customer Assistance Office Responsibilities. (2) OPRED Historical Summary, FY 1970, pp. 48-49.

commanders overseas. The principal vehicle for the performance of this mission by the Division was a December 1967 OPRED implementation of a reporting system concerning personnel performing AMC missions abroad. The product of months of study and experimentation, this reporting system provided a monthly outline of pertinent management data that enabled the AMC to improve the utilization of command resources. It was also used to justify existing and proposed personnel spaces within the AMC complex for the support of overseas customers. Gathered primarily from information that the overseas LAO's had initially furnished, the report was issued on the 15th of each month, and contained figures that summarized the number of active duty personnel involved.

Although the AMC did offer technical assistance to many areas around the world in Fiscal Year 1970, tactical and logistical operations in Vietnam forced it to focus primary attention on that country during this period. The following chart reveals the number of AMC personnel on duty in Vietnam as of 15 June 1970:

<u>Organization</u>		<u>Military</u>		<u>Civilian</u>		<u>Contr</u>	<u>Total</u>
<u>Code</u>	<u>Command</u>	<u>PCS</u>	<u>TDY</u>	<u>PCS</u>	<u>TDY</u>		
M1	Hq, AMC		3		2		5
M1	AMC SI&A**	90	4	115	87	26	322
M2	ECOM	3		183	25	81	292
M3	MICOM	13	1	95	11	228	348
M4	TACOM	1	7	74	14	1	97
M5	MUCOM		7	5	2	2	16
M6	AVCOM	1	5	49	23	105	183
M7	TECOM				4		4
M8	WECOM	2	5	38	18	2	65
M9	MECOM			89	16	1	106
Totals		110	32	648	202	446	1438*

*Does not include 366 military PCS (permanent change of station) personnel assigned to FLAT TOP (Floating Army Maintenance Facility).
 **Subordinate installations and activities.

This total of 1438 personnel represented a considerable reduction
23
from the Fiscal Year 1969 figure of 1716 personnel.

Quick Reaction Assistance Program

From the time of its establishment by the AMC in January 1966, the purpose of the Quick Reaction Assistance Program was to insure a speedy response to the demands for assistance in the fulfillment of logistical support requirements in SEA by USARV. The primary means of program implementation was the maintenance of a volunteer list of AMC employees by the AMC subordinate commands, National Inventory Control Points (NICP's) and depots. This list included personnel of various grade and skill levels within some 40 functional areas of supply and maintenance operations and management and who were available to be dispatched with quick reaction assistance teams. Individuals selected for the list had to have current passports, visas and the proper medical inoculations for immediate departure.

Originally intended for Vietnam, the quick reaction assistance team concept was enlarged to affect users of AMC materiel in Okinawa, Thailand, Korea and Europe. Activated at once upon the request of commanders involved and with attached military personnel, if needed, these teams gained special recommendations for their services. At the end of Fiscal Year 1970, about 500 AMC personnel awaited possible
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use on such teams.

23

OPRED Historical Summary, FY 1970, pp. 50-52

24

Ibid., p. 54.

Logistical Assistance for Continental United States (CONUS)

AMC logistical assistance to CONUS, did not fare well as did its overseas programs. This was due to manpower and budgetary reductions. DA and AMC had to decide which operations affected by these reductions would be preserved. This the AMC did in order of priorities. As a consequence, AMC decided to continue at a steady level its overseas logistic assistance programs and to drastically reduce related CONUS programs. The latter included 17 customer and technical assistance offices in CONUS, which functioned under the supervision of various staff offices in Headquarters, AMC and in several of AMC's major subordinate commands. By the end of the Fiscal Year 1970, the AMC had approved plans and initiated actions to eliminate 10 of these offices and to significantly reduce the number of AMC technicians who provided logistic assistance on a permanent change of station basis. AMC intended by this move to act according to its current efficiency campaign and to provide good logistic assistance with less effort.

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Other Projects and Tasks

Besides its regular activities, the Logistic Assistance Division in Fiscal Year 1970, participated in many extra projects and tasks. Most of these concerned requirements from SEA. The Division's operations in connection with SEA ranged widely across a spectrum of items. For example, the Chief, LAO-V was assured of such actions as the following: the procurement of 100 land navigation systems for the USAR-V inventory; the arrangement for the airlift of 1100X20 tires

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Ibid., p. 53

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to Vietnam to alleviate a critical shortage of such tires; the expedition of M132A1 Flame Throwers to Vietnam; and the provision of guidance to LAO-V in its evaluation of NOMEX Clothing that crews were testing in USARV. In addition, the Division joined, in response to a CONARC requirement, a CONARC/AMC/MECOM briefing team.

As the representative of Headquarters, AMC, the mission of the team was as follows: the presentation of an information briefing at each CONUS major Army command, the subjects of which included discussions of AMC's plans, programs, and policies for logistic assistance support of CONARC activities under the provisions of AR 700-4; the MECOM plan for logistic assistance that promised effectiveness and responsiveness despite a program of reduced personnel spaces and funds; and CONARC's plans for the development of an in-house capability for the performance, with minimal AMC help with its supply and maintenance mission. The team also visited Headquarters, ARADCOM, and the AMC representative made similar presentations at each of the commodity commands, in which he summarized the various plans and offered his assistance to the commands in order to aid their compliance with AMC efforts. This project was still active at the close of Fiscal Year 1970. Nevertheless, AMC reckoned that it already had saved 289 personnel spaces and \$422 million.

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CONARC msg ATLOG-M/G, 5 May 70, subj: Technical Assistance Program.

27

OPRED Historical Summary, FY 1970, p. 55.

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Plans

Introduction

(U) The Plans Division continued to function in Fiscal Year 1970 with the structure established by the 1 July 1966 AMC reorganization.²⁸ Its duties consisted of the fulfillment of both special directives and regular tasks, the latter of which included direction and control of the AMC contingency, mobilization and emergency planning, coordination of troop stationing requirements on AMC installations and coordination of activities of the logistics systems and those of the field army. The Division accomplished all of these activities with the aid of its two sub-divisions, the Contingency War Plans Branch and the Emergency Plans Branch.

(U) OPRED's major difficulty in Fiscal Year 1970 involved the correction of a weakness in its liaison with its counterparts in the subordinate commands. In order to rectify this situation, the Director of OPRED initiated a staff planning conference program.²⁹ This action produced four one day conferences on 30 March, 5 May, 3 June and 17 June 1970, at Headquarters, AMC, with planners from headquarters of the commodity commands, the depots, and other activities that reported directly to AMC. This program produced two important results. The first was the publication of a new directory of plans action officers, so that planners at all levels could cooperate more easily. The second was the direct discussions at the

²⁸

AMCR 10-2, 1 Jul 66, subj: Hq. AMC, Mission, Organization and Functions Manual.

²⁹

Memo, OPRED to DCG for Logistics Support, AMCOR-PM, 12 Feb 70.

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conferences between OPRED planners and their counterparts, which established personal contacts that could improve the overall AMC staff planning effort.

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AMC Support of Civil Disturbance Operations

(U) Fiscal Year 1970, especially the months of April and May, saw a great increase in student disorders on college campuses. AMC received notification of some 20 incidents in the period 27 April through 5 May 1970. These incidents usually involved the burning of ROTC buildings and military equipment, but at Kent State University, Kent, Ohio, they resulted in the death of four students at the hands of Ohio National Guardsmen.

(U) AMC furnished support to federal and local policing operations in many of these disturbances. In the Yale University disturbances, for example, the AMC loaned 2,000 cots to Federal troops deployed at Westover AFB and a Motorola Systems Packet, with technician, to the Connecticut National Guard in New Haven. Other instances of AMC support included the loan of a Battalion L-E Packet and Motorola Systems Packet, with technicians, to the Illinois National Guard; the loan of six jeep-mounted Xenon searchlights, with an enlisted technician, to the Mississippi National Guard; and the loan of protective masks to civil police authorities in Asbury Park, New Jersey.

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Directory of Contingency, Emergency and Mobilization Plan
Action Officers, AMCOR-PC, 22 May 70.

(U) AMC also began to prepare for future disturbances. The most important step in this preparation involved AMC participation in a DA Civil Disturbance Study Group, created by a Chief of Staff, Army, Memorandum. ³¹ AMC contributed two members to the group. At study group meetings these two representatives assisted in the areas of materiel development, loans of equipment to civil agencies, Explosive Ordnance Disposal (EOD), management of prepositioned civil disturbance stocks that a DA operational project contained, and supply priorities for National Guard units and of the need for authorization media in order to identify special requirements for civil disturbance operations. One significant product of the group's work was the initiation of preparations for the development and the publication of a Common Table of Allowances to be entitled "Materiel ³² for Civil Disturbance Operations."

Stationing of TOE Units at USAMC Installations.

(U) AMC moved in Fiscal Year 1970 to increase significantly the number of TOE troop units that were to be housed at its installations. Upper echelon AMC personnel had believed for a long time that the AMC could, and should, increase its TOE troop unit strength, in order for the Army to utilize the vast on-the-job and unit training possibilities offered by AMC. Such units at AMC in the past had consisted chiefly of those that USCONARC had seen fit to offer. AMC leaders wanted to change this situation, to train their own units

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CSM 70-186, Army, 1 Jun 70, subj: Civil Disturbance 1970-1980.

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OPRED Historical Summary, FY 1970, pp. 29-30.

and to develop a good training base for general support, supply and maintenance units.

(U) Strategic events provided an impetus for these AMC wishes in Fiscal Year 1970. Prior to Fiscal Year 1970, these units stationed at AMC installations had been activated, trained and deployed largely for SEA. Even though gradual withdrawal of US forces from Vietnam, and the growth of the Vietnamization program; the importance of T-Day planning increased. As a consequence, AMC requested CONARC to station specific units at AMC installations.

(U) The immediate result of the AMC request was a strong disagreement between AMC and CONARC, concerning the troop stationing. CONARC replied to the request with an offer of six additional TOE units; AMC countered with another request for 12 more units and with the comment that it would accept all of the CONARC units that it could accommodate. ³³ CONARC did not reply to that AMC request; although it did issue a revised stationing plan which apparently comprised by providing for three more units at AMC installations.

(U) AMC was not willing to accept this decision. The Commanding General, AMC, personally concerned himself and decided to fight for the TOE units. With this stimulus, OPRED prepared and provided a draft letter to the Director of Personnel and training which both emphasized the need of an optimum training

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Msg, AMCOR-FM 61135, 15 Jun 69, to CONARC, subj: T-Day Planning - Stationing of CONARC TOE units at USAMC Installations.

base for general support, supply and maintenance units. The letter also recommended that DA select, identify by unit identification code, and assign to AMC, the maximum of AMC training and housing capability, 18 TOE units for a listing of 34 type TOE units. The Director revised this letter, and sent out a final reply to ACSFOR on 17 October 1969, bearing the signature of LTG Miley, DCG, AMC. This letter reiterated the interest of AMC in TOE units, and attempted to justify this interest by the argument that the personnel augmentation that this addition of TOE units would entail was necessary, not acquisitive. Thus the AMC held that these troops would be utilized for backlog reduction and to do work which AMC currently had no one to do, and it recommended that ACSFOR survey, with AMC help, installations in order to determine the requirements for TOE.

(U) No actions occurred in Fiscal Year 1970 to resolve this TOE unit problem. AMC, however, received indications that their position was under consideration. LTG Collins, ACSFOR, did acknowledge that AMC had a unique capability in the training of TOE units in wholesale logistics, but he also advised AMC that the primary objective in the stationing of units was the reduction of overall space requirements and not the augmentation of current staffing. Further higher echelon comments upon this matter included a Chief of Staff, Army Memorandum and a DA letter, both of which sought to implement a DA program for surveying the need for TOE

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Ltr, AMCPT-SU, LTG H. A. Miley, Jr. to LTG A. S. Collins, Jr., 17 Oct 69.

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"Gallant Lift," 9 January 1970, which provided for the use of US Army Forces to assist in the conduct of a relief operation in Nigeria (Biafra), AMC prepared and released both an alert message and an implementing OPLAN.³⁹ The AMC plan was thorough, detailing the concept of operation, responsibilities, fiscal guidance and an updating of the Army Force in order to provide for the additional logistical support that DA had recommended.

(C) A second Biafran alert promptly succeeded this first one. In response to CINCSTRIKE/CINCMEAFSA USJTF OPLAN 7062, "Gallant Support," 14 January 1970, which called for the provision of one to five logistic support packages and a base support package for use in sustaining one to five additional eight-man, non-US, observer teams to Nigeria, the AMC prepared and dispatched an implementing OPLAN.⁴⁰ The most important feature of this plan for the AMC was the nominal encumbrance of the US Ambassador to Nigeria with the responsibility for all logistical support. The AMC however, in view of the complex Army materiel concerned, was to handle requisitions. CINCSTRIKE soon rendered this duty void by its suspension of the plan.

(C) The third plan concerned Trinidad-Tabago. On 21 April 1970, AMC received a telephone alert about the possible implementation of CINCLANT OPLAN 1271, the country plan for Trinidad-Tabago. OPRED

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(1) AMC Msg, 13 Jan 70, subj: "Operation Gallant Lift."
(2) AMC Msg, 16 Jan 70, subj: AMC OPLAN 7062, Gallant Lift.

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AMC Msg, 18 Jan 70, subj: AMC OPLAN 7062, Gallant Support.

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promptly notified the USAMC Command Group. The implementation,
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however, did not occur.

(C) Although the situation meliorated, AMC nevertheless participated in a Trinidad effort. DCSLOG sent two notices to AMC, the first requested information about the availability of elected weapons and ammunition and where and when these items could be airlifted; the second ordered AMC to prepare those items for shipment. AMC complied, and ordered WECOM and MUCOM to ship the selected list of items to a designated air terminal in order for the US Air Force
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to fly them to Trinidad.

41

FLASH REPORT, OPRED to USAMC Command Group, 21 Apr 70.

42

OPRED, Historical Summary, FY 1970, p. 39.

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CHAPTER IV

~~(C)~~ PROJECT MANAGEMENT

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(U) General Survey

On 1 August 1962, under the leadership of General Frank S. Besson, the AMC established 28 Project Management Offices. By the end of Fiscal Year 1963, nine new projects had been established and two, the AN/USD-5 Drone and Forward Area Ballistic Missile Defense System (FABMDS) projects had been terminated, leaving a total of 35 active projects. During Fiscal Year 1964 four projects, Main Battle Tank; Vulcan Chaparral; Redeye; and Flattop were established, while the Davy Crockett, M14 Rifle, and BZ Weapon System projects were terminated. In Fiscal Year 1965, seven were added, while only the NBC Project was terminated.

By the end of Fiscal Year 1966 seven more new projects had been added, while only the Mauler (guided missile) and AN/USD-2 (drone) projects had been terminated, leaving a total of 47 projects management offices. At the end of Fiscal Year 1967 the total number of project managers reached 56, although the CV7 Caribou Aircraft and the ETA (European Troposphere Alpha) communications system were terminated. There were 57 active projects at the close of Fiscal Year 1968, although the Nike-X, Petroleum Distribution, and Combat Vehicles projects were terminated.

The total number of AMC project/product managers peaked at 68 on 31 March 1969 with the establishment of the Teletypewriters Product

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Manager's Office. By the end of Fiscal Year 1969, there was a total of 66 project/product managers, although the three following projects were terminated during that fiscal year: ADSAF (Automatic Computer Systems, Army Field); M113 Personnel Carrier, Italy Co-Production; and the Special Warfare office. The termination of the M113 project manager's office on 2 June 1969 was the first project terminated after the initiation of Lt. Gen. Ferdinand J. Chesarek's review of project management.

In conjunction with his overall review of management, General Chesarek, on 5 April 1969 made the first of a number of specific moves to improve project management.¹ On 8 April 1969, he directed the Army Management Engineering Training Agency (AMETA) to make an in-depth study of project management.² On 28 April, he announced the review of the project management system to all project/product managers.³

Early in May 1969, the AMC Special Assistant for Project Management requested the project managers for Special Warfare and Special Mission operations to submit a proposed merger plan.⁴ The physical move of integrating these two projects was accomplished on May 26 and 27, 1969.

1

Memo, CG, AMC, 5 Apr 69, subj: Review of Project Management.

2

Ltr, CG, AMC to AMETA, 8 Apr 69, subj: Review of Project Management.

3

Memo, AMC, Special Asst for Project Management, to all Project/Product Managers, 28 Apr 69, subj: Review of Project Management.

4

DF, 12 May 69, Project Manager SMO to AMC Special Asst for Proj. Mgmt.

As a result of an in-depth review of Project Management, directed by General Chesarek, the AMC terminated 23 project management offices during Fiscal Year 1970. No new offices were established during that year. At the close of the year, a total of 43 project management offices remained. This number was expected to be further reduced in Fiscal Year 1971. This large-scale reduction led to appreciable savings in manpower spaces and was expected to result in more efficient management of the remaining project management offices.

During Fiscal Year 1970, the Command substantially upgraded the qualifications for its project managers. The Deputy Chief of Staff for Personnel, Department of the Army, agreed to nominate only the best qualified officers for these positions. Worthy of note was the requirement that all new project managers have a Master's Degree and be recent graduates of a Senior Service School. By mid-July 1970, the AMC had selected 12 project managers using these criteria and had upgraded the Cheyenne (helicopter) project manager's position to a Brigadier General.

Tenure of project managers was set at a minimum of three years. Managers were not to be reassigned without the concurrence of the AMC Command Group. Future project managers reassignments were to be tied in with significant milestones so that the transition would come at an appropriate program juncture.

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Chronological History of Project Manager Establishments/Terminations, Aug 1972, by Office of Assistant for Project Management, HQ, AMC. This chronological history contains a list of the 43 projects that were terminated in Fiscal Year 1970.

Training of project managers received considerable attention through mandatory attendance of courses sponsored by the Army Logistics Management Center (ALMC), the Army Management Engineering Training Agency (AMETA), and the Defense Weapons Systems Management Center (DWSMC). New courses in Risk Analysis, Cost Estimating, and Cost Schedule Control System Criteria, were implemented. Existing courses such as the Procurement Seminar were mandatory for all project managers and their deputies. Senior general officers assisted in the courses as guest speakers at ALMC, DWSMC, the Industrial College of the Armed Forces, and the Ordnance School. In addition, the AMC assisted a DDRE Panel in revamping the training for project managers in the Defense Systems Management School.

During this fiscal year, the AMC relocated several projects to the site of their technical bases. In the past, 23 managers had been located in the Washington, D. C. area and reported to the Commanding General, AMC. Consequently, they were over-identified with the program and funding aspects of their projects. By the end of Fiscal Year 1970, in order to balance these factors with the technical aspects, all project managers had been moved, or were in the process of moving, to the physical site of their technical base. After the Mobile Electric Power Project Manager's Office was collocated with the Mobility Equipment Research and Development Center at Fort Belvoir, Virginia, only two projects, Main Battle Tank and Chaparral/Vulcan, were away from their technical bases.

In the past, many project managers had reported directly to the Commanding General, AMC. Under the new arrangement, in Fiscal Year

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1970, only eight project managers having joint, international, or multi-command relationships, reported to the AMC Command Group. These were: Main Battle Tank; Mallard, Mobile Electric Power; SATCOM; Special Mission Operations; SEA NITEOPS; STARCOM; and Chaparral/Vulcan. The other project managers reported through their commodity commanders. This stratification implemented the decentralization as expressed by Deputy Secretary of Defense David Packard, and stratified the projects according to importance. This management system also gave the commodity commander an overview of the projects within his commodity area and assured a mutual sharing of knowledge in solutions to problems.

Advanced Aerial Weapons Systems

Organization and Staffing

(U) Col. Robert J. Dillard was assigned as Project Manager for Advanced Aerial Weapons Systems on 15 July 1969. During Fiscal Year 1970, the Cheyenne Helicopter Project Manager's Office assumed management responsibilities for the AH-1G Cobra and for life-cycle management and integration of all Department of the Army aircraft armament systems at the commodity command level. During this year, the Advanced Aerial Weapons Systems Project Manager's Office was moved from Headquarters,

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(1) Ltr, F. J. Chesarek, CG, AMC to AVSCOM, ECOM, MICOM, MECOM, MUCOM, TACOM, WECOM, 27 Aug 69, subj: AMC Project Management Guidance. (2) Ltr, Paul A. Feyereisen, D/CG for Acquisition, HQ, AMC, to Maj Subord, Cnds, and Proj Mgrs--Deseret Test Center, Chaparral/Vulcan, Mallard, MBT-70, Mobile Electric Power, SATCOM, SEA NITEOPS, SMO, STARCOM, 25 Sep 69, subj: AMC Project Management Guidance. (3) Memo, Lt Col Robert L. Berquist, SAPM, for DCG for Materiel Acquisition, HQ, AMC, 17 July 70, subj: Significant Accomplishments in Project Management - Fiscal Year 1970.

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AMC, to Headquarters, Aviation Systems Command (AVSCOM), St. Louis, Missouri.

(U) During July 1969, the Commanding General of AVSCOM recommended that management responsibilities for the Cheyenne and Cobra aircraft be combined. At that time the Cobra was being managed by the Utility Aircraft Project Manager. This combination would permit maximum use of limited technical manpower resources. Actual transfer of all Cobra missions, functions and files to the Cheyenne Project Manager's Office was completed on 24 November 1969.

(U) On 5 November 1969, AMC outlined plans for returning intensive management of aircraft armament to commodity commands, where the programs would be under overall direction of aircraft project managers. On 24 December 1969, the Department of the Army approved a support office within AVSCOM for aircraft weapons. Most of the existing aircraft armament systems could be associated with the Cheyenne and Cobra aircraft. The Advanced Aerial Weapons Systems Project Manager played a major role in the aircraft armament field. The Weaponization Project Management Office was attached to that organization for operating control and administrative supervision. The attached office as of 30 June 1970 was staffed with 16 civilian personnel.

7
(1) Ltr, AMSAV-G(GL), 8 Jul 69, Subj: Relocation of the AAFSS Project Manager to AVSCOM. (2) Ltr, AMCSA-PM, 22 Aug 69, Subj: Relocation of AAFSS Project Manager to AVSCOM. (3) Ltr, AMSAV-GO (AMCPM-AFS), 21 Aug 69, Subj: Transfer of Project Management Responsibility for the AH-1G Cobra.

8
AMC GO 234, 31 Dec 69.

9
AVSCOM GO 23, 17 Feb 70.

(U) The Cheyenne Project Manager's Office, later designated Advanced Aerial Weapons Systems Project Manager's Office, operated during Fiscal Year 1970 under the Cheyenne TDA. Cheyenne's authorized strength, as of 15 July 1969, included 115 civilian and 16 military spaces. The Cheyenne manning level was reduced to 59 spaces when AMC transferred the office to AVSCOM on 3 October 1969. On 2 January 1970, the Secretary of the Army approved the Advanced Aerial Weapons Systems (AAWS) charter to include responsibility for the Cheyenne and Cobra aircraft. As of 30 June 1970 the AAWS Project Management Office manning level was 62 civilian spaces.

(U) The AAWS office was formally transferred from HQ, AMC to AVSCOM, St. Louis, Missouri, on 23 April 1970. At the close of Fiscal Year 1970, the project manager was processing a proposed new TDA, with authorization for 115 civilian and 16 military spaces.

Procurement and Production

(FOUO) On 19 May 1969 the contract with Lockheed Aircraft Corporation for production of the AH-56A Cheyenne Helicopter was terminated for default. As a result, Lockheed appealed to the Armed Services Board of Contract Appeals (ASBCA). In September 1969, Lockheed requested ASBCA to rule that the termination of the contract was in error, and also requested that the termination for default be converted to a termination for the convenience of the Government. In the following months all pertinent matters were fully discussed and, in March 1970, AMC conducted an extensive survey of Lockheed's residual

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AMC GO 88, 23 Apr 70.

11

AAWS Project Manager Historical Summary, FY 1970, pp 1-4.

~~FOUO~~

production inventory to establish its value for use in possible future production aircraft. Lockheed's questions had not been answered by the end of this fiscal year nor had the company's complaints been heard before the ASBCA. However, attempts to achieve a total package settlement, involving pending litigation on the production contract, and a restructuring of the research and development contract, with a view toward eventual production, appeared to be near realization.

(FOUO) After the termination of the production contract, Major General William Bunker, Deputy Commanding General, AMC, reviewed the status of the development contract with Lockheed Aircraft Corporation representatives. As a result, Lockheed proceeded at a reduced level on the testing, development and Army training programs. However, during negotiations, Lockheed's requirement for a significant increase in funding rendered their proposals unacceptable. A current defined base of unaccomplished contract requirements had to be established and a schedule consistent with Lockheed's ability to perform had to be identified. Negotiations completed in February 1970 resulted in a proposed contract modification, which had not been issued by the end of Fiscal Year 1970. It called for continued air vehicle and weapon system development and testing. Throughout the year, Lockheed continued contract performance at a minimal level, and chose to ignore the requirements of the contract modification effective 6 November 1969.

(FOUO) In March 1970, Lockheed requested \$641 million financial assistance from DOD and maintained that pending disputes on the Cheyenne aircraft and other items, if not promptly settled, would make it financially impossible for them to complete performance on these

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programs. DOD and contractor officials met repeatedly in an attempt to work out a solution to Lockheed's financial problems. Ten checks totaling approximately \$9.15 million were delivered to Lockheed on 27 March 1970. Subsequent advance progress payments were made as work progressed on certain items. On 15 June 1970 AVSCOM and the AAWS Project Manager presented a draft memorandum of agreement which would permit the Army to restructure the development contract as a cost-type contract and settle the termination for default of the production contract. At the end of this fiscal year there was no indication as to whether the Army or Lockheed would accept the AVSCOM settlement proposal which was based on Secretary of Army Resor's guidance.

(FOUO) Work on the TOW and Night Vision System (NVS) for Cheyenne continued throughout the year on a restricted basis. Initial TOW and NVS negotiations were completed on 12 March 1970. In April AMC ascertained from Lockheed's records the estimated cost of completing the restructured program and a statement of prior costs on the development contract.

(FOUO) During this year a letter contract was awarded to Bell Helicopter Company for 170 AH-1G helicopters. Deliveries were to begin during July 1971. Thirty-eight AH-1G Navy paybacks were delivered on another contract during Fiscal Year 1970.¹²

Technical Development and Engineering

(C) Cheyenne helicopter armament consisted of the following five weapon subsystems: the XM-51, 40mm gun; the XM-52, 30mm gun;

¹²

Ibid., pp. 5-11.

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the XM-53, 7.62 mm gun; the TOW Antitank Missile; and the 2.75mm rocket. High-explosive 40mm ammunition ground and air firings were conducted during this fiscal year, in which very reliable laser and Doppler radar operations were achieved. A total of over 41,000 rounds were fired from the XM-51 system from test stands, ground vehicles, and air vehicles, and almost 30,000 rounds were fired from the XM-52 system. By 29 June 1970, over 285,000 rounds had been fired from the XM-53 system.

(C) The first air launch of a high explosive warhead TOW missile at a target tank was conducted on 15 May 1970. At a range of 1,500 meters, the launching aircraft flew at a speed of 100 knots at an altitude of 400 feet. The missile impacted 4.5 inches from the center of the stationary target tank.

(U) Demonstration flights of the Night Vision System were conducted for Deputy Secretary of Defense Packard and Director of Defense Research and Engineering Foster at Yuma Proving Ground on 1 April 1970. Three aircraft were used during these flights, with one aircraft firing 30mm and 40mm guns, one firing 2.75 inch rockets, and one firing a TOW missile. One aircraft demonstrated hover flight, sideward flight, and take-off with and without pusher propeller thrust.

(U) The Cheyenne avionics subsystem contributed much to the target tracking, gun firing, and TOW missile firing at Yuma Proving Ground. Engine component improvement continued under a tri-service effort. Two Cheyennes were returned to flying status in June 1969 for rotor control system testing during Fiscal Year 1970. Considerably testing was conducted on the transmission and general testing was in

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progress to restructure the AH56A Cheyenne development program.

(U) In October 1969, AMC personnel briefed the DA Staff on the technical feasibility, cost and schedule for improved armament for the Cobra, including the TOW or Shillelagh, 30mm gun, and night vision. A follow-on program, including XM-120 gun firings, was in progress at the end of this fiscal year.

(U) Throughout Fiscal Year 1970, configuration management efforts were directed toward the restructuring of the AH-54A Cheyenne development contract. There were numerous change proposals under consideration, including an engine fire detection system and a crashworthy fuel system.
13

Funding

(U) The Fiscal Year 1970 Cheyenne (AH-56A) funding program totaled \$1 million. Unobligated Fiscal Year 1968 and 1969 funds were also utilized to maintain a level of effort between a minimum sustaining and a production level of the TOW and night vision systems.

(U) The AH-1G PEMA funding program for Fiscal Year 1970 totaled \$50,175,000 for procurement of 170 aircraft, plus support equipment. These aircraft were procured by a letter contract with a tentative price of \$44.2 million, of which \$38.7 million was obligated. Final negotiation was scheduled for 1 December 1970.
14

Other AH-1G Helicopter Highlights

(U) During Fiscal Year 1970 the number of Army AH-1G Helicopters increased from 626 to 677. Deployment of the AH-1G began in October

13

Ibid. pp 11-26.

14

Ibid. pp 11-27.

1967, when 6 were deployed to Vietnam. By the end of Fiscal Year 1970 there were 440 of these helicopters in Vietnam.

(U) Spain, Australia, and China were prospective international logistics customers for AH-1G helicopters. The US government had furnished planning data and cost estimates, including initial support, for each program. A previous military sales program to provide six AH-1G helicopters to Germany was deleted. However, twelve such helicopters were provided for USAREUR during the last quarter of Fiscal Year 1970.

(U) An integrated technical data system contract (DA-49-186-324 (X)) supported the Advanced Aerial Weapons Systems Project Manager during Fiscal Year 1970, but with a much reduced scope. A funding limit of \$1,000,000 was imposed. This contract was expected to continue on the Cheyenne until some better system was developed, but it was not to be extended to any other projects except the Cheyenne.

(U) In May 1970, a survey and investigation staff from the House of Representatives visited the Advanced Aerial Weapons Systems Project Manager's Washington Field Office. The investigators were interested in the history of the contract, systems testing, the reasons why the system had not been bought in-house, the history of the TRW (Thompson, Rams, Wooldridge) contract, and future plans for the integrated technical data system.

(U) The Project Manager informed the AMC that he did not have personnel available to support all requirements for this program as projected. The continuation of the contract until 31 December 1970 would cost approximately \$500,000 and would support the Litigation

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Task Force. Limited support of the Cheyenne project was included. Required funds were to be divided equally between research and development, and operations and maintenance. On 30 June 1970, the Department of the Army approved the TRW contract until the end of August 1970.

(C) Chaparral/Vulcan Air Defense System

Mission and Organization

(U) The Chaparral/Vulcan Project Manager had the responsibility for defining, developing, fielding and support of this air defense system including the principal weaponry for the Divisional Composite Air Defense Battalion and other air defense applications. This weapons systems consisted primarily of the self-propelled Chaparral surface-to-air guided missile system, the self-propelled and towed versions of the comparison Vulcan gun, and the Forward Area Alerting Radar.

Personnel

(U) An Assistant Project Manager's Office for Chaparral was located at MICOM, Huntsville, Alabama. A similar office for the Forward Area Alerting Radar (FAAR) was located at WECOM, Rock Island, Illinois. Col. William J. Arnold, Jr. became Project Manager for Chaparral/Vulcan on 1 November 1969. At the beginning of Fiscal Year 1970, the total manpower authorization for this office was six

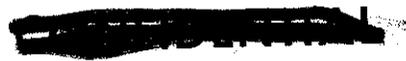
15

(1) AMCRD-FA Memo for DCG for Acquisition, AMC, 17 Mar 70, subj: Cheyenne ITDS. (2) AMCDA Memo for Dir of Mgt Info Systems, AMC, 21 Mar 70, Subj: Cheyenne ITDS. (3) AMCPM-AAWS Memo for CG, AVSCOM, 21 May 70, Subj: Integrated Technical Data System Support. (4) AAWS Project Manager Historical Summary, FY 1970. pp 29-34.

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military and 36 civilian spaces. Two civilian spaces were added for cost analysis functions during the second quarter of this fiscal year. At the end of this year, the MICOM Office was authorized two military and 56 civilian personnel. The WECOM Office had had an authorization of 12 military and 43 civilian personnel at that time.

(U) In March 1970 the Chaparral/Vulcan Office was reduced by 29 spaces, effective as of 11 December 1970, as a part of the overall Headquarters, AMC, personnel reductions. On 12 June 1970, the civilian personnel authorization was revised as follows to be effective on 11 December 1970: the Headquarters AMC Project Manager's Office, 29 civilians; the MICOM Office, 42 civilians; and the WECOM Office 25 civilians, for a total of 96. Further review of manpower authorizations was to be made in December 1970, with a view toward disestablishing this office by 30 June 1971.

System Progress

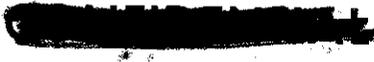
(C) In June 1970, ACSFOR set forth the complete Chaparral/Vulcan activation and deployment schedule for planning purposes. The schedule called for activation of 19 Headquarters and Headquarter Detachment batteries, 27 Vulcan Self Propelled batteries, 17 Vulcan Towed batteries and 31 Chaparral batteries.

(C) Vulcan Air Defense Systems. During this fiscal year, the Vulcan Evaluation Committee made the following findings: the accuracy equation offered by the Army Materiel Systems Analysis Agency (AMSAA) at Aberdeen, Maryland, was found to be incorrect; ammunition support

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AMSAA-PM Ltr, 12 Jun 70, Subj: Review of Chaparral/Vulcan Project Status.

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equipment for test sets might be unavailable for first deployment; range-only radar systems test sets needed engineering changes to interface with both towed and self-propelled radar antennas and maintenance sets; and personnel in the vicinity of firing weapons might need ear plugs to protect the ears.

(C) The Department of the Army approved a 20mm cartridge as Standard A and it was certified worldwide for use with the Vulcan system. The deployment of the 1st Battalion, 59th Artillery, and three subsequent deployments continued on schedule. A pilot line was established to rebuild Vulcan Air Defense Systems at Red River Army Depot. Eight-eight self-propelled systems were delivered in Fiscal Year 1970, making a cumulative total of 305 SP Vulcans and 15 trainers delivered to date. Eighty-seven towed Vulcans were delivered, making a total delivery of 187 such systems. RDT&E funds released for the Vulcan Program from 1964 to 30 June 1970 totaled \$25.762 million, while PEMA funds amounted to \$140.562 million.

(C) Chaparral Air Defense System. During Fiscal Year 1970, a letter contract for \$4.2 million was let to Aeronautic Division of Philco-Ford for 124 fire units and 15 test sets. Components for 3,000 Chaparral missiles were procured from the Navy during Fiscal Year 1970. There were 1,181 missiles delivered during this year, making a cumulative total of 2,266 missiles. The success rate of Chaparral firing was 81.7 percent based on 496 shots. Chaparral program funds released by 30 June 1970 totaled \$58.291 million RDT&E, and \$244.413 million for the PEMA program.

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(C) Forward Area Alerting Radar (FAAR). Efforts to reinstate the FAAR production program dominated the first part of Fiscal Year 1970. The primary concern was the contractor's inability to deliver acceptable hardware on schedule. Following DCS, AMC approval, two contracts were signed with Sanders Association, by MICOM, in April 1970, for FAAR pilot production engineering services. Sanders provided data on the additional costs for extending the FAAR production contract for 90 radars. As a result of time slippage and increase of costs, the AMC proposed that the program be redirected, with performance requirements and due dates specifically stated. On 10 June 1970, MICOM advised that it had no pressure points for pushing Sanders, as suggested by General Miley, Commanding General, AMC. Chaparral/Vulcan Project Manager was scheduled to present a plan for competitive procurement to Headquarters AMC and/or Department of the Army in August 1970. As of 30 June 1970, the funds released for the FAAR Program totaled \$7.677 million for RDT&E and \$39.1 million for procurement of missiles and equipment.

Problems

(C) Vulcan System Effectiveness. The combined Chaparral/Vulcan review of 15-16 September 1969 resulted in a determination that the Vulcan Air Defense System was suitable for issue. However, the system failed to meet Qualitative Materiel Requirements (QMR) for accuracy. The Combat Developments Command (CDC) nonconcurred in proposed changes in accuracy requirements, but indicated that it would concur in waivers. A decision was made on 1 May 1970 that the Project Manager would initiate and manage a Gun Air Defense

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Effectiveness Study, employing Vulcan as the data source. A meeting in June resulted in an agreement to contract with General Electric, the prime contractor for Vulcan, to develop a master plan for the effectiveness study. Approximately \$127,000 was programed for this effort and General Electric was told to proceed with the study on 30 June 1970.

(C) Chaparral System Effectiveness. Chaparral system effectiveness, calculated from service test firing data by TECOM, did not meet the approved QMR minimum requirements. The Combat Developments Command nonconcurred with AMC recommendations to change the requirements, and the DA agreed with CDC. The AMC position on systems effectiveness, published 25 June 1970, was to recommend Chaparral for Standard A type classification, with a request for waiver of the effectiveness requirements.

(U) Deseret Test Center-Deseret Project Manager

Background

Deseret Test Center (DTC) was established at Fort Douglas, Utah, on 9 May 1962, as a Class II activity of the Chief Chemical Officer of the Army. On 1 August 1966, the DA discontinued the Office of the Chief Chemical Officer, and Deseret Test Center was assigned to the AMC. On 31 July 1962, the Commanding General of DTC was designated as Project Manager of Project Deseret. On 1 July 1968, the organization was merged with Dugway Proving Ground (DPG), Utah, and the merged

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The Vulcan/Chaparral Historical Summary, FY 1972.

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DAGO 25, 9 May 62.

19

DAGO 46, 1 Aug 66

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organization continued under the designation of Deseret Test Center
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under jurisdiction of the Commanding General, AMC. Under action
taken in 1970, the DTC and DPG became a joint activity reporting to
the Joint Chiefs of Staff through the Army Chief of Staff.

The first Commander, Brig. Gen. Lloyd E. Fellenz, was assigned
on 15 June 1962 and served to 5 November 1963 when he was replaced by
Brig. Gen. James A. Hebbeler. General Hebbeler was succeeded by
Brig. Gen. John Hayes, who was followed by Brig. Gen. (then Colonel)
John G. Appel on 18 November 1966. General Appel served until
23 June 1969 when he was succeeded by Col. Robert Muldrow, United
States Air Force. All previous commanders were from the United States
Army. The Commanding General of DTC served as Project Manager of
Project Deseret.

Organization, Mission and Personnel

The Deseret Test Center, with headquarters at Fort Douglas, Utah,
developed and analyzed DOD chemical and biological (CB) test require-
ments; conducted or supported approved tests; evaluated and distributed
reports for service evaluation; and performed tests for other services
when requested. On 1 July 1968, chemical-biological field test
activities at Dugway Proving Ground, Utah, were combined with the
Deseret Test Center located in Salt Lake City, under the jurisdiction
21
of the CG, AMC. At that time the Joint Service Planning Group
concluded that all DOD chemical-biological field testing should be

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DAGO 31, 1968.

21
(1) DAGO 31, 28 Jun 68. (2) Project Deseret Historical Summary,
1 July 67-30 Jun 68.

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consolidated under single management within the Department of the Army. The chief functions of the Center were to collect, develop and correlate CB testing requirements submitted by the military services and unified commands. It planned, coordinated and conducted CB tests. It also evaluated test data, distributed test reports, engaged in research, development, laboratory and field tests; selected environmental test sites; collated CB field test data; and published and maintained a joint CB technical data source book.

Manpower allocations for the Center for Fiscal Year 1970 were as follows: officers 110; enlisted men 360; and civilian personnel 1,099, which totaled 1,569 personnel. Overtime worked during Fiscal Year 1970 totaled 203.8 months at a cost of \$191,958. In addition, holiday man-months worked totaled 27.3 at a cost of slightly over \$18,000.

Funding

Funding for DTC mission activities and other requirements was provided from Test and Evaluation Command (TECOM) appropriations. Additional funding was provided for miscellaneous chemical-biological testing requirements as directed by TECOM, AMC, DA, and DOD organizations. Fiscal Year 1970 funds for DTC totaled \$32,858,000, while total costs were only \$25,268,000, leaving a carryover of \$7,590,000.

Although great emphasis was placed on the cost reduction program, the goals assigned by higher headquarters were not met. At the end of this fiscal year, DTC had reported \$23,800 in verified cost reduction

22

Deseret Test Center Historical Summary, FY 1970, pp 8-9.

23

Deseret Test Center Historical Report, FY 1970, pp 1-7.

savings, which was only 10.3 percent of the established goal of
24
\$230,800.

Medical Activities

Cooperation between the medical organization of DTC and the Army Hospital at Dugway led to prompt cholinesterase baseline determinations
25
necessary for issuing security badges for access to critical areas. Blood specimens were to be taken at Fort Douglas and sent by courier to the Army Hospital Laboratory, thereby eliminating the need for transporting individuals with the attendant inconvenience and loss of manhours. Among the other medical activities were the following: immunization of all active duty military personnel against influenza; rabies surveillance and prevention were intensified as a result of rabies virus being isolated from a bull at nearby Terra, Utah; and technical support was provided for disposal operations at DPG
26
and Blueberry Lake in Alaska.

Ecology and Epidemiology (E&E) Activities

Joint operations of the E&E field and laboratory efforts necessarily supported an epidemiological safety story. This story could only be derived from natural infection chains with their transmission links as they related to the spread and conditions of transfer of infections within pertinent geographic and ecologic climates. Thus, the role of the E&E operation was seen as safety insurance against

24

Ibid., pp 11-13

25

Cholinesterase is a tissue enzyme which hydrolyzes chlorine esters.

26

DTC Historical Report, FY 1970, p 14.

epidemiological incidents which might be prejudicial to the military image.

DTC assumed a veterinary liaison role related to surveillance of livestock on ranches adjacent to Dugway Proving Ground borders. This effort required special background knowledge available only through training. Personnel in charge of the ecological veterinary liaison function maintained a working liaison with approximately 100 ranchers in west central Utah.

Normal field operations of the ecology and epidemiology mission required studies of livestock, wildlife, and disease vectors such as mosquitos and ticks. During this fiscal year, plans were made for wildlife collections and intensive study in the hunt for arthropod-borne viruses in the East Hickman Canyon in the Stansbury Mountains. The summer and fall mosquito collection was also concentrated in this canyon.

Among the other important activities at DTC were the following: scientist participation in a technical writing training course; modification work for the separation of the experimental side of the E&E Arbovirus Laboratory from the virus isolating side; the utilization of a virological technician who also was trained in ranch and livestock management; the conclusion of the contract for field studies by the Smithsonian Institution on 30 June 1970; wildlife studies by University of Oklahoma ecologists throughout this year; University of Utah studies of zoonosis in Western Utah; and the awarding of a contract to Eco-Dynamics, Inc., of Salt Lake City, for

extensive field studies on the dynamics and fluctuations of wildlife
27
populations.

Logistics Activities

During this year, plans were completed, but placed in deferred status, for space allocations and building modifications in the event that Deseret Test Center activities located at Fort Douglas were relocated to Dugway Proving Ground. Such relocation would tend to provide gainful employment in light of toxic test mission curtailment and budget reductions. DTC personnel visited the Alaska Liaison Office and Fort Greely, and the Army Arctic Test Center in May 1970 to coordinate the phasing out of the Alaska Liaison Office and distribution of property. Some of the property was shipped to Dugway.

Sixteen line items on the Fiscal Year 1970 support capital equipment list were funded with a total value of \$12,155. The Logistics Directorate supported the Instrumentation Master Plan through supply and procurement actions for 61 line items totaling \$1,301,475. The Army Aviation Division flew 1,113 accident free flying hours. This included two medical evacuations--one from Monticell, Utah and the other from Elko, Nevada.

Communications projects included such items as extension of aerial and buried cable, and a study concerning conversion of the Stromberg-Carlson central office equipment to accommodate rotary selector hunting service, under which considerable savings would be realized. DTC Communications Center personnel attained zero defects for the first four months of 1970 in the operation of the AUTODIN System.

In the maintenance area, approximately ninety vehicles were placed in administrative storage during January 1970 because of low utilization and a need to reduce operation and maintenance costs. Thirty of these vehicles were later disposed of as excess. The backlog in motor maintenance was considerably reduced during the year.

The Michael Army Airfield improvement project, including runway extension, was completed in March 1970 at a cost of \$1,223,707. Among the other facility projects were the additions to animal holding buildings, including chutes, fences and feeders. A study on conversion from fuel oil to natural gas revealed that it was not feasible to undertake this project. The cost of installing the required pipeline was estimated at \$1,000,000.

The family housing maintenance contract was extended for a second year with United Service Corporation. Of the 542 family housing units, seven were vacant on 1 January 1970 and 66 were vacant on the following 30 June. A Corps of Engineers survey of rental property resulted in substantial increases in rental charges for Wherry and Capehart units at Dugway Proving Ground, but a 60-day moratorium was placed on the increases pending the outcome of a rental rate evaluation.

Chemical Technology

The purpose of this program was to continually evaluate sampling equipment and analytical methods of testing chemical stimulants,

agents, and munitions. Under the Program, vigorous research and technology studies were pursued. The purpose was to improve the Army's posture in chemical warfare.

Among the significant studies in this program were those for monitoring local water supplies for the presence of anticholinesterase materials; studies on development of agent recovery techniques for vegetation and soils; studies on agent disposal operations; and those on toxicity and residues in vegetation and soil. For some time parakeets had been used as nerve agent vapor detectors in the laboratory. Their effectiveness for this purpose was not known.²⁹ This program was designed to determine their effectiveness.

Biological Technology

Among the most important objectives of this biological technology program was the provision of sustaining evaluation techniques, methods, and equipment for biological aerosols and tracers; to develop simulants for biological agents to permit acquisition of data pertaining to the behavior of these agents for defensive purposes under totally safe conditions; and to define the hazards to man and animal life from biologically contaminated land, plants and buildings.

Among the most significant studies made during this fiscal year were the following: a plan for the demilitarization of bulk agents; microthread technology, which concerned a novel approach for testing environment effects on pollutants and other microorganisms; a complete document for demilitarization of bulk agents; and a technology study

29

Ibid., pp 35-40.

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of the toxicological effects of oxalates from plants on sheep and laboratory animals.

Other Programs

During this fiscal year DTC made an effort to develop a specific meteorological technology to support its mission. This involved field tests and evaluations to determine the effects of combinations of meteorology, terrain, and vegetation on the atmospheric diffusion and transport of vapor and aerosol. Project Safest involved a series of studies taken from 28 recommendations contained in the Stewart Committee Report. Among those recommended were subjects involving environmental research toxicological research, community relations and land acquisition.

In the defense studies and systems evaluation area, DTC directed attention operations research of CB weapons and military defense systems as well as data retrieval. The Center established a project to develop, evaluate, and maintain CB weapons simulation models in support of research studies. Among the other important DTC studies were those concerning the feasibility of utilizing an empirical means of estimating the biological decay rate of pathogens by utilizing non-pathogen decay data; aerosol studies in a marine environment; and a study of the feasibility of using RADAR/LIDAR for CB detection.

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All material from this section is based on the DTC Annual Historical Report for FY 1970 unless otherwise stated.

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(C) Main Battle Tank (MBT)

Organization and Personnel

(U) Brig. Gen. B. R. Luczak, US Program/Project Manager for the MBT-70 retired from military service on 31 July 1969. On 1 August 1969, he assumed the same duties in a civilian capacity.

(C) As directed by the Commanding General, AMC, planning began in March 1970 to move the MBT Project Manager's Office from Headquarters, AMC to the Detroit area. This involved the development of a new organization, combining functions of the MBT Washington office with those of the MBT Engineering Agency already located in the Detroit area. A small field office remained in Washington. As of 16 March 1970, the MBT authorized personnel strength totaled 67 for the Washington office, 90 for Detroit and 17 for the Bonn, Germany office. The total personnel required after the move to Detroit was 10 for Washington, 159 for Detroit, and 5 for Bonn, making an overall total of 174 personnel.

High Level Reviews of the Program

(U) When the Military Authorization Bill for Fiscal Year 1970 was under consideration, the MBT Program came under severe attack by both House and Senate Committees. The Project Manager was called to testify as to whether the MBT was an essential weapons system and whether there was merit to the Joint Program of the US and the Federal Republic of Germany (FRG). Detailed questions on production and cost of the vehicle were raised. On 8 August 1969, the MBT-70 was debated on the floor of the Senate. At issue was a proposal to withhold all funds for six months during which GAO would conduct a

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detailed audit of the program. A compromise was reached and it was agreed that GAO would audit the program and report to Congress by 2 September 1969. This was done, but no recommendation was made by GAO, although six alternative courses of action were outlined which ranged from continuation of the existing program to outright termination of all efforts. On 30 August 1969, Secretary of Defense Laird, in a letter to Senator Stennis, outlined his plans for the MBT-70 and requested the restorations of funds for the program. As approved, the Authorization Bill carried a total of \$54.5 million for the MBT.

(U) Deputy Secretary of Defense Packard was greatly concerned with the estimated production cost of the MBT-70. A study by Battele Memorial Institute showed that production of the R&D version of the tank would cost approximately \$850,000. Secretary Packard directed that this cost be reduced and an austere version of the tank was developed. The Senior Officer Materiel Review Board, appointed to review all Army weapons systems programs, recommended acceptance of this modified version and continuation of the Program. Following a presentation to Secretary Packard, he directed that the MBT Project Manager negotiate with the Federal Republic of Germany to secure unilateral freedom in technical decisions, and an end to joint funding of the program. He ordered the Project Manager to seek further cost reduction and, on 15 January 1970, forwarded the results of the reviews of the program to the Senate. The revised configuration of the tank was designated MBT-70/XM803.

(C) The CG, AMC directed his staff to thoroughly review the program, including such factors as the staff needed to manage it;

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a proposed production site, technical status, contracting plans, and cost and cost analysis. Five task groups were formed and reports were to be submitted to the Commanding General by 4 March 1970. Task Group I reported on organization, the results of which are discussed above in this chapter. Task Group II, after making a thorough review of the technical status, recommended that engineering and service tests be delayed for six months. The planned production date remained unchanged. The group recommended Detroit Arsenal as the location for production. The Commanding General, AMC, agreed and directed that a summary sheet be forwarded to DA for approval of this location. Task Group III on contracting made a number of recommendations for future contracts, many of which were in process of adoption at the end of Fiscal Year 1970. Task Group IV, on cost and analysis called for a study to validate life cycle costs of the XM803 tank. The final report was scheduled for July 1970. Task Group V, Management Information Systems, recommended that a formal management information system be instituted for all future contracts.

(U) In response to Secretary Packard's directive to consider further possibilities for cost reduction of the XM803 tank, a great number of possibilities were studied. It appeared that additional reductions could be made. These possibilities included a comprehensive design review and a review of the Request for Quotation to be issued to General Motors Corporation. This review was to be presented to the Assistant Secretary of the Army (R&D) on 1 July 1970.

International Activities

(U) Negotiations were initiated in the fall of 1969 with the

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FRG Program Manager to restructure the Program in accordance with Secretary Packard's instructions. These negotiations terminated in a Memorandum of Understanding which was signed by representatives of both countries on 17 January 1970. This agreement cancelled the request by the FRG for repayment of \$15 million with which Germany had pre-financed work performed in the United States. However, the United States was to give Germany a credit of \$3 million, the use of which was restricted to the added value of common components.

(U) In view of the changed program, a new bilateral organization was required. This new organization was developed by the staffs of the Program Managers and accepted by both countries on 27 May 1970. At the same time, the managers cancelled all previous Program Management Board Agreements, except those pertinent to the restructured program.

Technical and Testing Accomplishments

(C) During this fiscal year, 10 cannon of the 152mm weapon system were retrofitted with bore scavenger systems and over 250 rounds were fired at Aberdeen Proving Ground in engineering design tests of this system. Initial test data indicated that this design provided much improved metal parts security at extreme temperatures.

(U) The 1250 horsepower Teletyne Continental Motors engine was selected for the advanced production engineering pilot models. This air-cooled engine replaced the German Daimler-Benz engine previously selected for the pilot models. The Teletyne Continental Motors engine was to be coupled with an Allison hydromechanical transmission which had been selected to replace the German Renk

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transmission then being used in research and development pilot models.

(FOUO) Other technical and testing accomplishments pertained to the fire control system, engineering design tests, and qualitative materiel requirements. The R&D fire control system, tested at Aberdeen Proving Ground, was successful in shoot-on-the-move tests at speeds in excess of 20 miles per hour over rough terrain. Engineer design tests continued on six pilot vehicles. Two MBT pilot models were at APG for the component test program. A coordinated test plan had been formulated.

Production Planning and Procurement

(C) During this year, plans were initiated to produce 2,394 tanks, beginning in 1976, at an ultimate rate of 30 tanks per month. The CG, AMC had recommended that the XM803 tank be produced at Detroit Arsenal. This recommendation was forwarded to the Department of the Army for approval and was expected to be sent ultimately to DOD for final approval.

(U) On 21 January 1970 the Assistant Secretary of the Army (R&D) approved \$34,707,000 for the MBT Research and Development Program. On 22 April 1970 Assistant Secretary Fox (I&L) approved \$155,032,100 for the Advanced Production Engineering (APE) Program.

(U) Two major procurement contracts were negotiated with the Allison Division of General Motors during Fiscal Year 1970, which covered lead-time items to support the APE Program. The second major contract was negotiated with AVCO Lycoming Division on 1 August 1969 for continuing of design, development and testing of the

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AGT-1500 gas turbine engine. The APE Program proceeded at a low level because of uncertainties concerning the future direction of the program.

Special Studies and Projects

(U) A Producibility/Cost reduction study was conducted from May 1968 to November 1969. Its purpose was to investigate ways of reducing production costs without unduly degrading the tank's combat effectiveness. The study accomplished its basic purpose through extensive combat effectiveness and life cycle cost analyses of approximately 40 design change alternatives to the R&D pilot vehicles. The final report submitted by Battelle Memorial Institute consisted of over 20 volumes of detailed data.

Heavy Equipment Transporter (HET)

(U) During this year, the results were received of HET tests conducted on Tennessee highways by the Bureau of Public Roads. The study revealed that it would be difficult to predict live road resisting moment distributions generally on highway bridges for specific loads due to many variables influencing such distributions. However, the maximum dynamic amplifications were quite moderate compared to the allowance for impact in the design.

(U) The first 200 semi-trailers, XM747, were delivered on 29 August 1969. Results of testing as well as of the trailers for issue were expected by the first quarter of Fiscal Year 1971.

(U) As a result of eight engine failures, a major change was made in the HET engine. The 12V71T engine, produced by Detroit Diesel, a division of General Motors Corporation, was derated from 700 to 600 HP and new production cross head pistons were incorporated.

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A successful 400-hour NATO cycle test of this engine was completed on 18 August 1969.

(U) The CG, AMC conducted an in-depth review of the HET Program in September 1969. This covered the background, current overall status, reliability, maintainability, financial status, and technical schedules.

(FOUO) The first of two APE tractors was accepted by the Army in December 1969 and shipped to the Nevada Automotive Test Center for inspection testing. Because of frame cracks in the R&D prototype, inspection testing was stopped in order to perform strain gage testing on this APE at Aberdeen Proving Ground. On 22 May 1970, it was recommended that the two APE tractors, with some improvements, be given a 20,000 mile check test. This recommendation was approved and plans were initiated for the tests.

(U) In January 1970, the joint aspects of the HET-70 development and engineering programs were terminated. The intent was to maintain the capability for each country's tractor to use the other's trailer in a non-steerable mode. Common components were to be retained when advantageous to both parties. This allowed each joint program with no restrictions and permitted redesign of former jointly controlled areas for meeting divergent operational requirements.

(U) Mobile Electric Power

Introduction

Fiscal Year 1970 was the second full year of operation for the DOD Project Manager for Mobile Electric Power. The mission was to manage and standardize mobile electric power generating sources within DOD to meet military needs. The goal was greater reliability and maintainability of generator sets throughout the defense establishment.

In the latter part of 1965, the Deputy Secretary of Defense had requested an in-depth study of problems that had been experienced in development, acquisition, and logistic support of electric power engine generators. The study, completed by a DOD group in January 1967, contained data on the characteristics of approximately, 2,000 makes and models of generators in 283 sizes, types and ratings. The report recommended that a DOD project manager be appointed. The Project Manager's office for Mobile Electric Power was established on 1 July 1967.

The initial table of distribution for the project managers' office authorized 104 manpower spaces, but when the project was activated 83 spaces were authorized, 2 military and 81 civilians. This was accomplished by phasing out the Mobile Electric Power (MEP) Field Office in St. Louis, Missouri (formerly the Project Managers' Office for Engine Generators) and transferring its key management functions to the MEP office in the Washington, D. C. area and its operational functions to the Mobility Equipment Command in St. Louis. By the end of Fiscal Year 1970, the manpower authorization for the

MEP Project Managers' Office had been reduced to 77. On June 22, 1970 the office was relocated from the Dwyer Building in Alexandria, Virginia to Building T-7, Gravelly Point, Virginia.

In August 1967, when the first generation of the DOD Standard Family of Mobile Electric Power Generating Sources was established, there were 66 existing types of generator sets. In November 1967, a total of 69 such sets were adopted as interim standard. During Fiscal Year 1970 the Project Manager revised the Standard Family and reduced the number of authorized items to 43. Thirty-five interim sets were identified, which could be substituted until DOD sets were available. Also, four gas turbine engine driven generator sets were designated as interim second generation standard family items.

The second priority task was to determine the operational requirements for a DOD standard family of gas turbine engine driven generator sets, and/or other power sources. A tri-service group, formed for this purpose, recommended 100 and below kw-sets be turbo-alternators and that the state-of-the-art be further examined for those of over 100 kw. Based on Air Force experience, the priority for fielding these sets was 10 kw, 100 kw, and 200 kw for tactical sets and 500 kw, 750 kw, and 2000 kw for prime sets. As the result of a supplementary study limited to ratings of 200 kw and below, the proposed family was reduced to 10, 30, 60, 100, and 200 kw members.

Technical Management

The existing standard family of generator sets consisted of the following types: fifteen .5 to 10 kw gasoline engine driven items; four 5 to 10 kw diesel engine driven items; sixteen 15 to 200 kw

diesel engine driven items; and eight 60 kw, 150 kw, and 200 kw diesel engine driven utility generator sets.

During Fiscal Year 1970, the Mobile Electric Project Manager coordinated with the Department of the Army on proposed Qualitative Materiel Requirements (QMR) for second generation electric power plants. This QMR primarily concerned gas turbine engine driven generator sets. Those characteristics agreed upon were believed to be attainable without a huge research and development investment. A major exception to this was the development of the 10 kw turbo-alternator. A gas turbine engine of this size was not available and an engine development effort was necessary.

The final definition of future mobile electric power generating sources was to be accomplished through the Tri-Service Joint Panel on Research and Development of Mobile Electric Power Generating Sources. The Project Manager established this panel in order to accomplish the objectives of Army, Navy and Air Force joint operating procedures.

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A Joint Operating Procedure for Configuration Control was developed, negotiated with the military services, and published in March 1970. Included was a tight control of cost growth. Two inter-service control boards were established for generator sets. The Project Managers' decisions for approval or disapproval were based upon recommendations of the board members.

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AR 700-101, Management and Standardization of Mobile Electric Power Generating Sources, 15 Apr 68.

Product Assurance and Test Analysis

The Mobile Electric Power Project Manager's Office participated in numerous pre-award surveys of contractors selected for possible awards for generator sets. Quality program requirements were established for this equipment. Also, the first coordinated test program for mobile electric power equipment was initiated by the US Army Mobility Equipment Research and Development Center (USAMERDC) under the direction of the Project Manager.

During this fiscal year, Chrysler Outboard Corporation completed its first military standard engines. Ten engines were shipped to USAMERDC for initial production testing. Chrysler also initiated production testing.

Procurement and Production

A five-year procurement plan was developed during this fiscal year and was to be published on 1 July 1970. This plan was to be used to fulfill the requirements of all of the services for mobile electric power generating sources. The plan included guidance for industrial mobilization plans for all military services.

Procurement of DOD standard mobile electric power 15-200 kw family sets was in process. In June 1970 a contract was placed with Consolidated Diesel Electric Company for 100 and 200 kw sets. Prototype deliveries were expected to begin in March 1971.

The total value of contract awards for mobile electric power during Fiscal Year 1970 exceeded \$48.5 million. Surveillance was maintained over more than 50 contracts for mobile electric power requirements.

Close monitoring of contracts resulted in early identification and resolution of problems.

Long range procurements estimates for DOD mobile electric power were published in the Commerce Business Daily. Monthly production progress reports submitted to the Mobile Electric Power Project Manager enabled him to be currently informed on the production status of each line item under contract on a timely basis.

Supply and Maintenance

The armed services unprogramed requirements were consolidated, to the maximum extent possible, into a single multi-year contract in order to avoid additional procurement and contract administration costs. Additional savings resulted from improvement in theater standardization of generators in Vietnam. The Army Mobility Equipment Command was asked to revise the technical bulletin on standards for overseas shipment and domestic issue of generator sets. Generator standardization was expected to result in an overall reduction in the number of parts to be procured and stocked in the DOD supply system.

The Mobile Electric Power Project Manager coordinated with the Army, Air Force, and Marine Corps on packaging specifications for generators. This permitted the deletion of various specifications that were designed for the individual services.

At the request of the Project Manager, MECOM awarded a contract to the Allen Electric and Equipment Company to study the feasibility of adopting a diagnostic instrument to diagnose malfunctions in engine generator sets. The study concluded that it was feasible to adopt an instrument developed under the auspices of TACOM to generator sets.

MECOM initiated a follow-up program for participation in this effort with TACOM.

Among the studies during this fiscal year in the Mobile Electric Power area were the following: a study on the possibility of using spectographic/spectrometric oil analysis techniques to determine the internal condition of engines used in mobile electric power generating sources; maintenance expenditure limits for military standard engines; and concepts and feedback data for gas turbine engine driven generator sets.

The Project Manager established a new policy toward parts management which followed DOD basic guidance. Initial job operating procedures were published in August 1969. All of the services were invited to participate in the joint provisioning of several categories of gas turbine engine driven generators. At the end of this fiscal year, proposed joint operating procedures were being coordinated with the military services and the Defense Supply Agency.

Program Management

During Fiscal Year 1970, a new project work breakdown structure was prepared to reflect the responsibilities of all DOD services in the execution of the mobile electric power mission. The Program Management Office identified essential contractor and government milestones for evaluating progress on the mobile electric power mission. The office also developed a cost data tank for the generator contracts of all services. Since inception of the office, the Project Manager had been assigned separate Army management responsibilities for certain research and development projects and tasks concerning certain

reciprocating and turbine driven generator sets. On 1 July 1970, the Project Manager was to assume all Management responsibilities for all efforts and related tanks in this area, excluding batteries, and power sources rated less than one-half kilowatt. This new responsibility encompassed certain silent power sources.

In October 1969, the Deputy Secretary of Defense provided an outline of the Army's plans for improving the materiel acquisition processes, which were approved with minor exceptions. AMC forwarded its initial implementing plan for PROMAP-70, to the major subordinate commands and Project Managers, during that month. ³² Eight areas were identified as being applicable to this project, and milestone-type plans were developed.

In an effort to improve management of the acquisition and support of the Army's major weapon and equipment systems, the Army Management Engineering Training Agency (AMETA) prepared a study to be used as the basis for developing an improved Project Management Information System (PROMIS). Reporting under this system was limited to 46 items of first generation DOD Standard Family of Mobile Electric Power. ³³

As a result of multi-year procurement of the DOD standard family 60 kw generator sets, a cost reduction of \$1,017,500 was realized in Fiscal Year 1970. This cost reduction was validated by the US Army Audit Agency.

³²
Ltr, AMC Dir Materiel Acquisition to Maj. Subord. Cmds. and Proj. Mgrs., 28 Oct 69, subj: Improvement in Weapon Systems Acquisition.

³³
Ltr, AMC Dir Materiel Acquisition to Maj. Subord. Cmds. and Proj. Mgrs., 8 Jan 70, to Major Subordinate Commands and Project Managers, subj: Project Management Information System.

Other Significant Accomplishments

In July 1969, the AMC completed a special in-process review to classify, or reclassify Army engine Generator sets. This action, which was approved by ACSFOR, covered 544 individual lines or types of sets in the Army logistics system. An item reduction study of generator sets in all of the armed services was completed on 11 January 1970. This study identified all generator sets as procurable and nonprocurable as follows:

	<u>No. of Sets</u>	
Code 1 (Standard)	43	procurable
Code 2 (Limited Standard)	70	procurable by approval
Code 3 (Non-standard)	<u>657</u>	non-procurable
Subtotal	770	
Drop Outs	<u>640</u>	non-procurable
Total	1,410	

Government owned production equipment and tooling for 10 and 20 horsepower engines had been utilized for several years. Only sufficient items to make one set were in suitable condition for layaway. These machine tools were to be utilized by Hercules Engine Company and upon completion of the contract they were to be returned to the Defense Industrial Plant Equipment Center (DIPEC) storage or to GSA for disposal.

There were several other important activities in the field of mobile electric power during the fiscal year. Components produced by Chrysler Corporation for 1½, 3 and 6 hp engines met government qualification standards. All overseas shipments of these engines, after March 1970, were made in reusable plywood containers. To reduce the cost MERDC placed a contract for development of a sample production

of polystyrene returnable containers, and nylon fuel tanks developed by Allied Chemical Company for MERDC were approved for use.

At the end of this fiscal year, economical procurement quantities for mobile electric power were under study. An agreement had been reached with the Defense Supply Agency to initiate a contract for refinishing cylinder sleeves for large generators in Southeast Asia. An investigation had revealed that used cylinder sleeves could be rebuilt and chromed at less than one-half the cost of new sleeves. 34

(U) Satellite Communications Agency

Background

The US Army Satellite Communications (SATCOM) Agency, as Army Project Manager for satellite communications, was responsible for providing the ground environment for all Department of Defense satellite communications systems. The SATCOM Project Manager also acted as the Army's agent for all international military satellite communications systems and represented the Army in special Department of Defense satellite projects not specifically communications. In addition, the SATCOM Project Manager exercised complete life-cycle responsibility for the military satellite communications programs, all of which were tri-service and some of which had international implications.

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The material on mobile electric power was taken from the FY 1970 Historical Summary submitted by the Mobile Electric Power Project Manager's Office, unless otherwise indicated.

The Agency was an integrated facility for engineering, including testing activities; research and development; testing and evaluation, and systems operations. From its headquarters at Fort Monmouth, New Jersey, the Agency directed the operations of a field station at Lakehurst (New Jersey) Naval Air Station which was used as the staging and testing area for tactical satellite communications for SATCOM's global commitments.

The Agency, through government-leased, contractor-operated depot facilities, directed the logistical support of 27 terminals of the Defense Satellite Communications Program deployed worldwide and operated by the three services. Through its contractor-operated, government-leased depot, the Agency logistically supported 20 super high frequency ground and airborne terminals for the Army, Navy, Marine Corps and Air Force.

During Fiscal Year 1970, the SATCOM Agency demonstrated the unlimited potential of satellites for flexible, versatile, dependable communications in Apollo 11 and 12 recovery operations, in bringing live television coverage of the Apollo 11 mission to Alaska, in providing communications for President Nixon in Asia, and in global satellite communications. Looking to the future, the Agency progressed in Phase II of the Defense Satellite Communications Systems (DSCS) and awarded a contract for the design and fabrication of two transportable ground terminals.

In emphasizing the extent of the Agency's role in the Apollo 11 moon landing, the first lunar landing by man, Major General David M. Jones, Department of Defense manager for Manned Space Flight Support

Operations, Patrick Air Force Base, Florida, said: "Your individual contributions to the success of this historic mission were highly significant and have brought great honor to the uniformed services of our country. To all of you who served unselfishly and tirelessly to help bring about this first lunar landing by man, and the safe return of our astronauts, I offer the thanks of the Department of Defense and a cheering nation."

Operation in Fiscal Year 1970

The ultra high frequency (UHF) Tactical SATCOM (TACSATCOM) system was the primary communications circuit during Apollo 11 recovery operations. Operating in the network was the TACSAT 1 satellite and UHF terminals aboard the aircraft carriers USS Hornet, the prime recovery ship, aboard the Apollo Range Instrumentation Aircraft, and on land at Wheeler Air Force Base in Hawaii, Scott Air Force Base in Illinois, and Alternate Mission Control at Cape Kennedy. Operators were drawn from the Lakehurst Field Station, the Marine Corps, and STRICOM.

In addition to operation and control of the Hawaii terminals, the SATCOM Agency played a prominent role in other functions. The TACSATCOM Joint Service Test Directorate provided operational satellite time. The Satellite Communications Test Operations Center at Agency headquarters coordinated the satellite time. Army monitoring facilities, TRICOM 75 at Lakehurst, conducted power level and technical interface adjustments to insure network quality. The Army was the lead service for the joint operational tests.

Full time TACSATCOM support of Apollo 11 began with the sailing of the USS Hornet from Pearl Harbor on 12 July, four days before the launching, and continued until splashdown and recovery were completed on 24 July 1969. During the course of the mission, two SATCOM terminals--the AN/TSC-54 in Alaska and the Lincoln Experimental Terminal 1 at the Agency's Engineering Test Facility broadcasted live television from the Apollo 11 to Alaska via the TACSAT 1 satellite. The television signals traveled from the National Aeronautics and Space Agency Center to commercial television facilities, were "picked off the air" at the SATCOM Agency, and then were transmitted through the satellite to Anchorage, where they were picked up by commercial television facilities. Official television transmissions began with the launching of Apollo 11 on 16 July 1969, and ended after the recovery of the spacecraft on 24 July 1969.

Repeating its earlier success, TACSATCOM played an important role in the Apollo program by providing primary communications during recovery of the Apollo 12 spacecraft. TACSATCOM furnished the primary command and control circuits between the aircraft carrier USS Hornet, the primary recovery ship, and Mission Control in Houston. Operating in UHF network through the TACSAT 1 satellite were terminals aboard the Apollo Range Instrumented Aircraft, on board the Hornet, and at Wheeler Air Force Base in Hawaii.

The versatility of satellite communications, was demonstrated by the SATCOM Agency's communications support for President Nixon's trip to Asia. At the request of the Joint Chiefs of Staff, three AN/TSC-54 terminals were airlifted from their regular locations in

Oklahoma, Maryland, and Thailand to Djakarta, Indonesia; New Delhi, India; and Lahore, Pakistan. A SATCOM Agency technical assistance team carrying test equipment and spare parts then was dispatched to the terminal sites to support the operating crews.

While the efficiency of satellite communications was being demonstrated in the far corners of the world and in outer space, progress was being made at the SATCOM Agency in Phase II of the Defense Department's Defense Satellite Communications Program with the awarding of a contract for two transportable ground terminals. Phase II was divided into two stages. During Stage 1, existing SATCOM terminals and equipment were to be modified, using Army, Navy and Air Force procurement funds. Concurrently, the development of new SATCOM terminals and equipment was to be undertaken for Stage 2 using Army research and development and test and evaluation funds. Approval of the Phase II plan was given in May 1970.

On 10 June 1970, a contract for \$7.9 million was awarded to Philco-Ford Corporation, Western Development Laboratories, Palo Alto, California, for the designing and building of one heavy and one medium air transportable ground terminal. The heavy terminal was to have a 60-foot diameter parabolic antenna and the medium one a cloverleaf antenna. The antennas were for sending and receiving a multitude of military communications through the Phase II Defense Satellite Communications System satellites which were to be in synchronous equatorial orbit.

The SATCOM Agency continued its vigorous program of logistical support to tri-service terminals throughout the world. Among its

major actions, the Agency completed the rehabilitation of all AN/MSC-46 terminals except those at Brandywine, Maryland, and Fort Monmouth, New Jersey, and initiated a wear-out study projecting 1970-1975 and 1975-1980 cycles. In-plant maintenance management and on-call engineering services were performed by Hughes Aircraft Company, and Radiation, Incorporated.

Agency representatives attended a symposium on integrated logistic support, sponsored by Army Materiel Command and industry. Agency efforts in the program continued throughout the year in order to implement instrument landing systems directives from Department of the Army and the Army Materiel Command.

During this year, requirements for SATCOM terminal test measurement and diagnostic equipment were submitted to the Army Metrology and Calibration Center at the Army Missile Command. These requirements were continually updated to provide worldwide support by Army, Navy and Air Force calibration facilities.

Agency representatives met with officials of the Office of the Chief of Research and Development and the Defense Communications Agency in December 1969 to assess the impact of severe research and development funding reductions on Phase II of the Defense Satellite Communications System. Funds were to be reduced from \$9.5 million to \$5.5 million in Fiscal Year 1970, and from \$10.1 million to \$6.85 million in Fiscal Year 1971.

The completion of the Terminal Equipment Test Facility marked another major advance in the Agency's research and development and test and evaluation efforts. The facility was composed of various

multiplexers, converters, coders, and test equipment. There was also a computerized data acquisition facility.

The Agency continued investigations into weather propagation in satellite communications. A contractor study to determine propagation conditions (attenuation and sky temperature) and to make short-and long-term predictions of their magnitude was completed. Much valuable meteorological information was obtained from the study.

During this year, members of the North Atlantic Treaty Organization (NATO) signed a memorandum of understanding sponsoring the extension of the NATO research and development program in TACSAT. The participants were Belgium, Canada, Federal Republic of Germany, Italy, The Netherlands, Norway, the United Kingdoms, the United States, and the Technical Centre of Supreme Headquarters Allied Powers Europe. The SATCOM Agency continued as the Army's field agent in this latest phase of a cooperative test program using the synchronous Lincoln Experimental Satellite-6 and a network of small, tactical terminals build and operated by the program participants.

SATCOM Agency representatives took a UHF teampack terminal to Brussels where they participated in a demonstration of NATO TACSATCOM equipment. The demonstration, using the LES-6 satellite, was timed to coincide with a meeting of the NATO Communications-Electronics Board. TACSAT terminals also were demonstrated at the Army Electromagnetic Environmental Test Facility at Gila Bend, Arizona; Fort Knox, Kentucky; Fort Sill, Oklahoma; Fort Huachuca, Arizona; Fort Bliss, Texas; and Fort Benning, Georgia.

Another significant milestone was reached in TACSAT communications with the delivery of the first in a series of flying satellite Communications terminals installed in a UH-1D helicopter. Then undergoing tests, the terminal was designed for communication by satellite with other airborne terminals and with small, portable ground terminals.

Designated the AN/ARC-146, the airborne terminal could receive and transmit both voice and teletype while in flight. This terminal could be installed in other types of military aircraft. The electronics of the system which were in the ultra-high frequency band were packaged in a compact console mounted inside the aircraft. Only one operator was required.

A feature of the helicopter installation was the mounting of the antenna above the helicopter rotor to avoid the "chopping effect" on communication signals caused by the whirling rotor blades. The antenna, a crossed dipole, was used for operation with satellites at high elevation angles. A second antenna, a single verticle monopole, was mounted on the helicopter fuselage for use when the satellite was near the horizon.

The AN/ARC-146 airborne terminal was developed as part of the TACSATCOM program, a cooperative research and development venture of the Army, Navy, Air Force and Marine Corps. This airborne terminal was one of five TACSATCOM configurations developed for the Agency under an Air Force Electronics Systems Division contract with Collins Radio Company, Cedar Rapids, Iowa. Other versions were teampack, jeep mounted, shelter installation, and a broadcast warning receiver.

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During this past fiscal year the Agency took positive action toward providing better product assurance management, according to the findings and recommendations of the 1969 National Security Industrial Association study, for all equipment developed and supported throughout its life cycle. The Reliability Division which performed the product assurance functions, was the nucleus of the Product Assurance Office and reported directly to the Project Manager.

Extensive field data obtained on a continuous basis provided the Agency with a measure of the operational effectiveness of the thirteen AN/MSC-46 terminals and the eleven AN/TSC-54 terminals deployed throughout the world and operated by the three services. This data presented material for "lessons learned" in areas of design, support and adequacy of training. Agency reports showing tabulation and analysis of the field data were distributed to the three services and the Army Signal School.

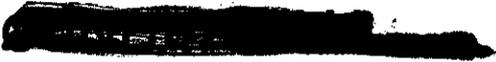
In response to guidance provided through AMC studies and SATCOM field experience, more emphasis was placed on testing of new equipment prior to acceptance and deployment in the field. Product assurance was planned early in the procurement cycle and reliability and maintainability acceptance tests were required in specifications and contracts. These quantitative values established restraints on all Agency programs.

After December 1969, the operation of the Agency was directed by Col Leland D. Wamsted who assumed command when Col George E. Rippey who was reassigned to the US Army Strategic Communications Command, Fort Huachuca, Arizona. Colonel Wamsted joined the Agency in August 1967 and became Deputy Commander in April 1968. He also

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was Army Project Manager for Satellite Communications with responsibility for providing the ground environment for all Department of Defense satellite communications systems.

As the fiscal year ended, the 10th anniversary of the SATCOM Agency was slightly more than two months away. Many SATCOM Agency personnel were pioneers in space research and development, having participated in early experiments such as SCORE in 1958, the world's first weather satellite; and Courier, an advanced communications satellite. The past 10 years had seen unprecedented breakthroughs in communications technology--from SCORE, which carried the first human voice from space, to the calm acceptance of this statement "LIVE VIA SATELLITE" flashed across the home television screen.

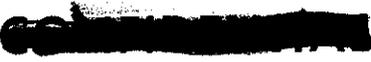
With such achievements behind them, SATCOM Agency personnel then centered their efforts on Phase II of the Defense Satellite Communications System and on further refinements in tactical satellite communications which were to involve new technological advances based on the results of previous operational experience.

(C) SEA NITEOPS

Overall Survey

The Project Manager for Southeast Asia Night Operations (SEA NITEOPS) continued to provide an integrated plan to relate current technology to current needs in Vietnam. It was an accelerated research and development program designed to provide a night combat capability to the Armed Forces in Southeast Asia. In Vietnam, the enemy used small scale hit and run tactics while operating from widely

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scattered bases. They were conducted largely at night. Successful counterinsurgency therefore depended on small scale air mobile operations, ranging over wide areas, conducted with a rapid tempo to keep the insurgents on the run and off balance. Thus, the primary objective of SEA NITEOPS was to increase the night combat effectiveness of US forces in Vietnam.

The secondary goals were to determine the doctrine concept of tactical employment of Night Vision equipment under combat conditions and to outline Army needs so that a basis of issue for night equipment could be determined on a worldwide plan. The objectives had been accomplished in varying degrees by accelerating the development of certain night vision systems, by conducting operational tests in the US, and by evaluating the equipment under combat conditions in Vietnam.

The need for a Night Operation Capability had existed for as long as the Army had been in existence. However, it was not until 1963 that the Army formally addressed the problem. In 1963 and 1964 the Army conducted a study on Night Operations entitled NITEOPS. These studies served as a basis for much of the research and development effort in the SEA NITEOPS Program. Many changes made it necessary to update the earlier studies. The SEA NITEOPS study of 1966 included the effects of increased technology in image intensification, increased use of air mobile operations, and increased problems in Southeast Asia.

During Fiscal Year 1970, the Project continued under the leadership of LTC Charles R. Lehner as Project Manager. Technical problems were encountered in every system to some degree.

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The SEA NITEOPS Operational Evaluation Plan was changed in January 1970 by canceling the RVN combat evaluation (STANO III) which was to have been conducted on a system basis. Instead, selected systems were to be sent to Project MASSTER for CONUS testing. A combat evaluation was to be conducted by the Army Concept Team in Vietnam (ACTIV). These evaluations were to be performed on selected systems which passed predeployment tests.

Major Developments

Surveillance System Night Vision AN/ASQ-127. The purpose of this system was to enable aerial observers to detect ground targets using eight amplification sensors, to designate targets to ground and airborne troops with a laser designator, and to relate target information to a forward area controller.

This system consisted of a stabilized passive/active direct view light amplification system installed in a UH-1D helicopter. Recognized targets could be designated by a visible ruby laser, or from information provided by forward area controllers by radio.

The system was plagued with problems because of its complexity and cost growth. The system did not offer greatly improved surveillance capabilities. Faced with these problems, the Army's Office, Chief of Research and Development had directed termination of all further development.

Night Vision Sight, Tripod Mounted AN/TSS-7. This sight provided an improved long-range, man-portable ground surveillance system which would enable a ground observer to detect ground targets and to designate them to ground and airborne troops. This could be done with a

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laser designator. This system was to be man-transportable in three 40-pound packs. Vehicular targets could be detected at 2,500 meters in daylight at 1,500 meters in moonlight, and 1,000 meters distance in starlight.

The major problems in this system were connected with the closed cycle illuminator/cooler system. Action had been taken to solve these problems by use of a sound absorbing blanket and by development of open cycle coolers. Testing of the closed cycle system was no longer scheduled and cancellation of deployment of these systems had been recommended. Development of the open-cycle systems continued.

Surveillance Set, Infrared AN/VAS-1 (Far Infrared Target Indicator). This was a vehicle-mounted thermal detection and imaging device to detect and recognize vehicular targets. This stabilized far infrared system was mounted on an M48A3 tank. The infrared scanner sensor collected battlefield-emitted radiation and converted the information to remote real-time crew display, including azimuth and evaluation indications. Advances in the state-of-the-art resulted in new design requirements.

The most significant problem was in obtaining high quality infrared detectors for the system. This was the major factor effecting system deliveries and performance. Santa Barbara Research had been solicited to supplement Texas Instrument in procuring these detectors. This development was still under way at the end of this fiscal year.

Searchlight Infrared AN/VSS-3 Supplementary Vehicle Searchlight (SVS). The objective of this project was to provide a visible/invisible vehicle-borne illuminator, operating on the vehicles power

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supply, to illuminate a battlefield target at several times moonlight level in order to extend the effective range of vehicles equipped with light-amplification sensors. A variable-focus xenon source producing 50 million or more peak-beam candlepower was mounted on an M113 Personnel Carrier. When operated in the infrared mode, vehicle targets could be detected at 1,000 meters. When operating in the visible mode, vehicles could be detected at 1,500 meters using the M119 telescope. The major problem was that the interface of the SVS with the M113 personnel carrier was inadequate. A redesign of the system mount and M113 gun shield was under development. The SVS was not scheduled for deployment within the next year because of this problem.

Night Vision Drivers Periscope AN/VV-2(NVP). This periscope was designed to provide for use by an armored vehicle driver, during closed hatch operations, for general surveillance without supplementary illumination. The periscope was required only if night goggles could not be used. Battery-powered light amplification sensors were mounted on an M-13 personnel carrier test bed vehicle. Vision was remote by use of prisms. Vehicular targets could be detected at 300 meters without supplementary light.

The major problems of this test bed item concerned the systems weight and final design. Modifications had been started to reduce the weight. Military potential tests had been conducted and this test bed item, even with its problems, were being strongly considered for further development.

Binoculars, Electronics SU-50 (Night Vision Goggles). The design objective was to provide a multi-purpose, head-mounted image

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intensification viewer designed to allow freedom of both hands. With these goggles, personnel targets could be detected at 50 meters in starlight or 100 meters in moonlight, in a field of view of 60 degrees. The system could be focused for viewing short, intermediate, or long range targets.

The two most perplexing problems were tubes to meet specifications, and extending tube life to prevent slippage in delivery schedules. Extensive research had begun at the Night Vision Laboratories on the tube problem. As a result of delivery slippage only a limited number of substandard systems had been tested.

Viewer, Infrared AN/PAS-7 (Handheld Thermal Viewer). The design objective of this project was to provide a hand-held thermal detection and imaging device to detect and recognize personnel targets at short ranges. This hand-held viewer used a belt-mounted power supply. An infrared scanner sensor collected battlefield radiation and indicated the relative azimuth and elevation of objects.

The only significant problems with this system were acoustical noise from the scanner mirror and electromagnetic emission interference. These problems were remedied by the addition of cushioning stops on the mirror and shielding to reduce noise. The system proved to be a highly successful device, and those deployed for ACTIV evaluation were retained in Vietnam for combat use.

Night Vision Sight, Stabilized AN/USQ-45 (Stabilized Night Sight). This stabilized night sight provided a multi-purpose image intensification viewer with a modular design to be used for surveillance from moving vehicles, or employed as a weapon sight. Mounted

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is a basic viewer assembly, this sight was capable of operating with a 200mm objective lens module, and a solid state light source. Viewing could be direct or remote. Various mounting bracket kits permitted the use of this sight on the AH-1G Helicopter, the M48A3 tank turret, and the M113 personnel carrier. Vehicular targets could be detected at a slant of 1,200 meters without supplemental light.

The chief problems encountered with this sight were poor reliability of the laser illuminator and the low laser power. Target detection and capability were marginal. These problems resulted in a great slippage in the delivery schedule. A more powerful laser was under procurement for the Cobra helicopter application. The M113 and M48A3 application were terminated.

Man Packed Surveillance Radar AN/PPS-9. This was a small, very light weight, ground surveillance radar for use in forward battle areas where other radar sets were too large and heavy. It provided aural and visual target identification and had a range of 3,000 meters for a moving vehicle and 1,500 yards for a walking man. The major problem was spurious electronic noise resulting from poor impedance matched with the power supply. The system was updated to eliminate the noise problem and was evaluated by the Army Concept Team in Vietnam.

Fire Control System, Infrared AN/AAQ-5 (Forward Looking Infrared). This infrared surveillance and fire control system, by Aerojet General Corporation, enabled the crew of rotary wing aircraft to detect ground targets, and accurately direct the 2.75 inch rockets. System performance, reliability and maintainability were poor in the early systems.

Significant improvements were made at company expense, but some problems

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remained in overall system performance. Early problems caused slippage-
in delivery schedules. However, the modified system was selected over
the Hughes Aircraft Company's like system to satisfy requirements on
the basis of availability and performance.

Night Vision System, Passive Infrared AN/AAS-29 (Forward Looking Infrared). The purpose of this night vision system, under development by Hughes Tool Company, was to enable the crew of a rotary-wing aircraft to detect ground targets and direct the fire of the M-21 and 2.75 inch rocket armament subsystems. A second mission was aircraft navigation. The system was mounted in the gimbals on a UH-1C helicopter. While flying at 3,000 feet elevation, vehicles could be recognized at 2,400 meters.

Problems were encountered with the forward looking infrared system assembly, power supply, and electronic processing. Most of the problems had been corrected by the end of Fiscal Year 1970. There was approximately a three-month slippage in TECOM testing due to these problems.

Airborne Searchlight AN/ASS-2. The objective of this project was to provide an infrared airborne illuminator, palletized for quick installation in rotary-wing aircraft, to illuminate a large battlefield area at several times moonlight level. This self-contained illumination system used a profocused xenon source to provide 1.5 million lumens at a power input of 30 kw for continuous operation up to two and one-half hours duration. The beam spread projector illuminated an eleven million square foot area, at approximately eight times moonlight, while flying at an altitude of 6,000 feet.

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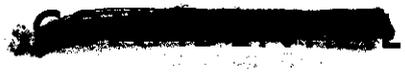
Operations were interrupted by frequent electrical malfunctions. Poor manuals and spare parts deliveries also impeded effective support. The system had not met all specifications. The contractor had taken steps toward solving these problems.

Iroquois Night Fighter and Tracker, AN/ASQ-132. The design objective was to provide an improved integrated target acquisition and fire control system which would enable the crew of a rotary wing aircraft to detect ground targets and direct the fire of on-board weapons. This night fighter and tracker consisted of a low light level TV sensor and display, a direct view image intensifier sensor, and covert searchlights.

In the course of development, several changes were incorporated to improve operability, reliability and maintainability. There were some problems, such as excessive backlash from the gearbox, and minor circuitry problems. These caused some slippage in the delivery schedule. All mechanical problems were corrected and desired improvement changes were made.

Airborne Laser Equipment Real Time Surveillance (ALERTS). The purpose of the ALERTS system was to provide a surveillance system with which observers could recognize ground targets. An argon scanner illuminated an area in front of the rotary wing aircraft. The ALERTS system contract was awarded to the Perkin-Elmer Corporation on 5 January 1968. This was a test bed item for demonstration purposes only. During Fiscal Year 1969, the ALERTS program encountered significant technical problems, and as a result was deleted from the SEA NITEOPS Program.

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Programing and Funding

The funds provided for the SEA NITEOPS Program totaled \$99,921,000. Funding for the five largest programs, (in the thousands of dollars), was as follows: Omni-Directional Mortar Locator Radar AN/TPO-28--\$17,500; Surveillance System, Night Vision AN/ASQ-127--\$13,616; Image Intensifier System, Night Vision AN/ASQ-132--\$12,634; Night Vision Sight, Stabilized AN/VSQ-45--\$8,193; and Fire Control System, Infrared AN/ASQ-5--\$8,093.

Funds for the five smallest programs, (in the thousands of dollars), were as follows: Night Vision Periscope--\$393; Searchlight, Infrared AN/USS-3..\$394; Man-Packed Surveillance Radar AN/PPS-9--\$1,268; Airborne Searchlight AN/ASS-2--\$2,709, and Viewer, Infrared AN/PAS-7--\$3,859.

The remaining programs were funded as follows (thousands of dollars): Night Vision Sight, Tripod Mounted AN/TSS-7--\$4,789; Surveillance Set, Infrared AN/VAS-1--\$5,682; Night Vision System, Passive Infrared AN/AAS-29--\$6,227; Southeast Asia Mohawk Revision--\$7,000; and Binoculars, Electronic SU-5--\$7,463.

Investigations Conducted by SEA NITEOPS

Among the most important specific investigations, or studies, made of SEA NITEOPS items were the following: A study on a family of passive electromagnetic sensors by John Hopkins University Applied Physic Laboratory under the code name of Black Crow; an investigation of dim tracers; and a study on night formation flying lights. Black Crow tests revealed that the normal vehicle activity and other

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electronic equipment in the vicinity of the tests precluded getting useful ranges in the very high frequency band.

Efforts to adjust machinegun system fire using the AN/ASQ-132 (INFANT), system showed that the normal bright tracer was too bright for use on that low level system. The Project Manager arranged for TECOM to test three experimental lots of dim tracer ammunition. The best lot was chosen.

Reports on night formation flying lights indicated that the lights were adequate but that greater visibility was desirable. Consequently, ECOM built and tested an improved set of lights using larger electroluminescent panels. ECOM furnished eight kits of those improved lights which were to be installed on INFANT helicopters.

Mine Detection Plan

While mine detectors were highly effective, there were still some mines that were difficult to detect reliably. With the advent of thermal imaging systems under the SEA NITEOPS program, it became possible to detect small temperature differences at the surface of the ground. Tests in the fall of 1969 demonstrated that the Viewer Infrared AN/PAS-7 could image the temperature difference between the soil directly over the mine and the adjacent soil surface.

In January 1970, the Department of the Army directed AMC to investigate the use of airborne infrared systems in the mine detection role. Tests were started by using infrared systems available from SEA NITEOPS with full cooperation of the ECOM Night Vision Laboratory. The sum of \$2,795,000 was released to AMC in June 1970 for the mine detection program.

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Transition Plan

The SEA NITEOPS charter, approved by the Army on 15 October 1968, called for disestablishment of the Project Manager's Office upon completion of its mission. Meetings were held in August 1969 to set up an orderly method of transferring control of SEA NITEOPS system to other agencies. Early transition plans indicated that these functions would be assumed by the Night Vision Project Manager's Office. The Project Manager submitted two plans for the transition on 30 June 1970. Major General Paul Feyereisen called a meeting in his office and established the following criteria for the transition. Effective 1 July 1970 SEA NITEOPS was to be placed under operational control of the Night Vision Project Manager. After the transfer a large portion of the functions were to remain under the Night Vision Office. Management of other items, including the lightweight radar, AN/PPS-9, were to be transferred to the Electronics Command, and some to the Aviation Systems Command, while other programs were considered inactive. All related actions in disestablishing the SEA NITEOPS Project Management Office were scheduled to be completed by
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30 September 1970.

(U) Special Mission Operations

The Project Manager's Office for Special Mission Operations (SMO), a Joint Chiefs of Staff (JCS) creation, had as its mission the implementation of the Army's portion of a project that the Secretary

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For more detailed information on this subject see SEA NITEOPS Project Manager's Office Historical Summary, FY 1970 (RCS-CHIS-6(R2)).

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of Defense had begun and that required the support of all of the
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military departments. SMO was monitored by the JCS and directed and
coordinated by the Defense Communications Planning Group (DCPG). The
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project had a high national priority.

The SMO Office concentrated its efforts on the development and
fielding of several important classified items and systems for the
DCPG. This office spent large sums of money on special and psycho-
logical warfare and on civil affairs.

On 11 June 1969, SMO absorbed the mission and functions of the
Special Warfare Project Manager's Office. Col David U. Armstrong
became project manager of the merged project on that date and the office
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became fully operational on 7 July 1969. The Department of the Army
approved the requested personnel strength of 35 spaces on 23 December
1969. In keeping with the goal of reducing the number of project
managers reporting directly to the CG, AMC, and in moving them close to
their supporting laboratories, the SMO Project Manager began reporting to
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the Commanding General of the Electronics Command on 5 January 1970.

The next step, which seemed to be inevitable, was a merger of
SMO with the Project Management Office for Sensors. The latter office
was physically located at the Electronics Command (ECOM). The ECOM
Commanding General orally requested the SMO Project Manager to submit

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JCS msg 2343/907, 15 Sep 66.

37

National Security Action Memorandum 358, 13 Jan 67.

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(1) Ltr, Spec Asst for Proj Mgmt to CG, AMC, 10 Jun 69, subj:
Review of Project Management. (2) Msg, CG AMCSA-PM 60489, 19 Jun 69,
subj: Designation of Project Manager, Special Mission Operations.

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AMC GO 26, 27 Jan 70.

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a merger plan by 31 January 1970. This plan was submitted in late January and later updated. Firm planning for the merger began in July 1970, to be effective about 1 October 1970.

A new charter for the merged project was completed on 24 July 1970⁴⁰ and forwarded to the Department of the Army. Colonel Armstrong, who was the current SMO Project Manager was designated as manager of the successor organization, effective 1 October 1970.

As a result of a comprehensive staff study and discussions, and Colonel Armstrong's personal review of SMO operations and functions, in October 1969, deprojectization of the Special Warfare activity of the SMO office occurred in November 1969.⁴¹ The phase-over plan called for the transfer of the Special Warfare functions to appropriate directorates. AMC completed the phase-over of Special Warfare functions on 5 January 1970 as planned. Along with the phase-over came the necessity of transferring of personnel and the abolishment of positions.⁴² This was carried out concurrently with the reduction in force completed in June 1970.

Mission and Functions

The SMO Project Manager exercised full responsibility for Army tasks associated with a classified DOD Project in Southeast Asia,

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Msg, AMCSA-EM, DTG 281923Z, July 1970, subj: Merger of EM, Sensors and EM, Special Mission Operations.

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Ltr, SMO Project Manager to CG, AMC, 18 Nov 69, subj: Deprojectizing Special Warfare Activity, 18 Nov 69.

42

DF, Cmt 1, Special Assistant for PM to CG, AMC, 26 Nov 69, subj: Disestablishment of the Special Warfare Portion of Special Mission Operations.

including application of project assets in various environments. He assured that assigned tasks were performed by the proper AMC subordinate command or agency and that efforts were coordinated in the production of complex joint weapons systems. His task included overseeing AMC efforts in providing components to weapons subsystems as required. He coordinated all missions with other Army agencies, and with counterpart systems managers in the Navy and Air Force. In his monitoring role, he responded to expanded requirements by appropriate production and operational planning and development of multiple use systems, capable of meeting a wide range of military needs in many environments. Broad subsystems had to be compatible with existing service roles and missions, and had to complement existing capabilities of air, land, and sea forces.

New Items/Systems Development

During Fiscal Year 1970, significant progress continued in the state-of-the-art of new found technology. Not only were new items and systems developed and fielded but also, there was expanded use of them. While range, flexibility, speed and useful life were increased, size, weight, and malfunctions were decreased. Security restrictions in force precluded a detailed discussion of numbers, specific applications, and operational characteristics of items and systems. The Army, and specifically the AMC, performed a gigantic task in support of DOD with items from this new found technology. The response was timely, coordinated, quantitatively and qualitatively sufficient. Continued demands for new and better items and systems were expected

during Fiscal Year 1971, along with demands for acceleration of research, development, production and fielding of usable hardware as in the past.

Army Assumption of Items Systems

It has been assumed that the DCPG would be deactivated as soon as it fulfilled Secretary of Defense requirements. To determine at what point that DCPG efforts should be turned over to the respective armed services, the Deputy Secretary of Defense appointed a retired Navy admiral to make such an evaluation.⁴³ The Senior Evaluation Committee, which was given two months to complete its work, submitted its report on 15 October 1969.⁴⁴ In general, the committee commended DCPG for its effort; criticized DOD for its failure to use existing agencies for managing this system; and recommended that the DCPG be dissolved as soon as possible after the transfer of functions to the armed services. The Director of Defense Research and Engineering, however, decided to retain the DCPG as constituted at least through Fiscal Year 1972. As a result the armed services were allowed to assume little managerial responsibility.

Beginning in March 1970, the DCPG did begin to disassociate itself with certain items, called "Dear Items," in which it had no further interest. By the end of June the DCPG had terminated 51 Army items or tasks, 49 of which were handled directly within the AMC

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Memo, DOD to JCS, subj: DCPG Senior Evaluation Committee, 6 Aug 69.

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Report of Senior Evaluation Committee, AMCTS 222-68, 19 Nov 69.

complex. The SMO Project Manager had the total responsibility of insuring a smooth transfer of management responsibility of Army developed items and systems from the DCPG.⁴⁵ The funding for the Army portion of the DCPG effort for the Fiscal Year 1967-1971 period was as follows: RDT&E funds \$92 million; PEEMA funds \$635 million; and O&MA funds \$32 million, making a total of approximately \$760 million.

(U) Vehicle Rapid-Fire Weapon System

The Project Manager's Office for the Vehicle Rapid-Fire Weapon System was officially established in May, 1967.⁴⁶ This office had been initially organized at the Army Weapons Command on 1 December 1966 with Lt Col Patrick H. Lynch as Project Manager.⁴⁷ On 16 October 1969, Lt Col Thomas H. Brian replaced Colonel Lynch as the Project Manager. On 30 June 1970, this project had an authorized strength of 40 personnel spaces, four military and 36 civilians. At that time the actual strength was three military and 30 civilians. The Project Manager was given full line authority of the Commanding General, AMC, for research, development, procurement, production, distribution, logistical support, personnel training, operational testing, and deployment.

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Msg, AMCDMA, DTG 241430Z, Apr 1970, subj: Transfer of Management Responsibilities from DCPG to the Military Services.

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AMCGO 34, 4 May 67.

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WECOM SO 102, 13 Dec 66.

This project management office was established for the development and acquisition of the Interim Rapid-Fire Weapon System and a successor system, commonly known as Bushmaster. The interim system requirement was fulfilled by adapting the existing Hispano Suiza HS820 20mm cannon as the M139 gun. This system was mounted on the M114A1E1 Carrier Command and Reconnaissance Vehicle.

During Fiscal Year 1970, the Project Manager continued development of the interim weapon system by testing to determine the suitability of the end item for release to the user. The Bauer Ordnance Company of Warren, Michigan, the Chrysler Corporation of Detroit, and the Kaiser Aerospace and Electronics Corporation, Glendale, California, continued work on target acquisition improvement. Work continued on modifying the M114A1E1 Vehicle to incorporate the 20mm M139 Gun System at the US Army Maintenance Plant in Boeblingen, Germany.

On 6 October 1969, the Army Test and Evaluation Command pronounced the gun system suitable for issue to troops, pending a revision of the parts replacement schedule. On 10 November 1969, the AMC Material Readiness Directorate notified the Project Manager of the full release for the M114A1E1 Carrier and the Vehicle Rapid-Fire Weapon System on an interim basis.

The shipping of retrofitted M114A1E1's to the US Army, Europe (USAREUR) was delayed because of slippage in furnishing hardware for

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TT 1015357Z, AMCMR to AMCEM-VRF, 10 Nov 69, subj: Approval for Release of M114A1E1 Carrier, Command and Reconnaissance, Armored.

rework by the contractor, and subsequent contractor delays in delivering reworked hydraulic components to the Pueblo Army Depot. USAREUR requested authority from the Assistant Chief of Staff for Force Development to use theater reserve stocks to maintain an economical retrofit level at the US Army Boeblingen Maintenance Plant in Germany. After completion of the tests to determine the suitability for release of the M114A1E1 Carrier and the M139 gun to the user, authority was granted 49 to use the theater reserve stocks to maintain this economical level.

Because of the problem of converting German technical data packages to American production standards, and increased requirements for training ammunition, the Project Manager recommended offshore procurement of a minimum of 1.1 million rounds of ammunition for this weapon system. A reexamination of training ammunition consumption rates confirmed the need for additional ammunition to satisfy a licensed agreement between the government and the Rheinmetall Corporation concerning the quantity and the price. The Assistant Secretary of the Army for Installations and Logistics granted authority to 50 procure an additional quantity of ammunition. All parties concerned reached an agreement in Frankfurt, Germany, in January 1970, and the contract was expected to be signed the following September.

During a program review of the successor system, the Bushmaster, in November 1969, the announcement was made that the interim M139

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TT 221757Z, ACSFOR to USAREUR, Dec 1969, subj: USAREUR M114A1E1 Retrofit Program.

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Ltr, ASA (I&L) to AMC, 2 Dec 69, subj: Potential Ammunition Storage.

weapon system would be deprojectized on 31 March 1970. The Project Manager and the Army Weapons Command (WECOM) outlined the phase-down plan based on internal impact statements from WECOM. In December 1969, this phase-down plan was submitted to AMC for approval. The Project Manager conducted a deprojectization conference in his office on 11-12 March 1970.

On 9 March 1970, the AMC suspended the deprojectization of the M139 project, which had been scheduled for completion on 31 March 1970. The delay was directed on the assumption that the M139 could be selected for application to the Mechanized Infantry Combat Vehicle (MICV), and the Armored Reconnaissance Scout Vehicle (ARSV), instead of the Bushmaster as had been planned.

In September 1969, the Office of the Secretary of Defense (OSD)

signed a development concept paper authorizing a contract definition effort, followed by engineering development with options for production of the Bushmaster. Based on this direction, a Request for Proposal (RFP) was developed for Bushmaster, to be issued in February 1970.

During February 1970, the issuance of the RFP was delayed until the Department of the Army evaluated the ARSV program. Subsequent

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MFR, Proj. Mgr. VR-FWS, 16 Dec 69, subj: Deprojectization of Interim System, 20mm, M139.

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Ltr, Proj. Mgr., VR-FWS, to AMC et al, 22 Dec 72, subj: Deprojectization of Interim System, 20mm, M139.

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AMCTT 091726Z, 9 Mar 70, subj: Deprojectization Interim System, M139.

evaluation of ARSV/MICV priorities, political environment, and OSD cost analysis and expenditure forecasts caused a complete review of the requirements for these armored systems. As of 30 June 1970, no decision had been received. The Department of the Army decision meeting was forecast for mid or late summer.

During this fiscal year, the Project Managers' Office completed the Phase 2 study of the pilot Improved Cost Estimate (ICE). AMC initiated this program in December 1969. This study was intended to serve as a research and training vehicle to improve cost estimating capability within Army Weapons Command organizational elements. It was also designed to provide a valid life-cycle cost estimate for the Bushmaster Weapon System, and for use as a tool in the Army's decision-making process.

In addition, the pilot ICE study was intended to improve reporting procedures and computer techniques for the Bushmaster. The computerized Bushmaster life-cycle cost model was originally developed for use in the Bushmaster Request for Proposal to provide contractors a common structure for use with cost data requirements. The Pilot Improved Cost Estimate Phase 2 (V) Bushmaster, produced by the WECOM Cost Analysis Office, contained details of the computer model and costs.

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The above material on the Vehicle Rapid-Fire Weapon System is based on the Project Managers FY 1970 Annual Historical Summary unless otherwise indicated.

CHAPTER V

RESEARCH AND DEVELOPMENT

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(U) Management

The AMC Research, Development and Engineering (RD&E) Program consisted of the formulation, development, fabrication and evaluation of the best possible items of equipment and weapons for use by the US Army. As constituted, therefore, RD&E assumed a diverse character, for its two basic ingredients, ideas and hardware, often conflicted in the input of their individualistic stimuli to the program as a whole. The former ingredient, for example, brought RD&E into the realm of conceptual progresses, while the latter led to practical, useful items. The result was the incorporation of two strong, and often conflicting, motives into the RD&E fabric.

However, despite these diverse forces, the AMC RD&E program was able to function effectively. This was due to the imposition of a management structure upon the program--a structure complete with the organization, mission and goals necessary for success. The primary role of this structure was to serve as a program coordinator for the RD&E effort, directing it towards objectives. In this role, outside pressures came to bear upon the management, aiding in its decisions concerning goals.

Outside pressures upon the RD&E program tended to orient it towards output, and, of this output, the greatest emphasis was placed on products. This effect had two probable major causes: one was

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the immediate demands of the Army in the field for feasible and efficient weapons and equipment, demands greatly intensified by the pressures of the conflict in Vietnam; the other was the traditional reliance of Americans upon the practical, rather than upon the philosophical, a reliance that found expression in both military and civilian worlds in an abundance of gadgetry. Hence RD&E management did not have to make the momentous decision regarding the outcome of its work and could, instead, channel the vast energies of its structure towards the evolution of the forms and kinds of products that it created.

The channeling operation that resulted involved RD&E management in a host of complicated problems. Management had, for example, to deal with varied demands for different types and quantities of weapons and equipment; with rapid changes in technology that constantly rendered modern weapons and equipment archaic; with the research and development efforts in weapons and equipment that private and foreign interests conducted; and finally, with the monitorship of the varied agencies that participated in RD&E work. This latter endeavor involved many agency reorganizations, with several studies and investigations, procurement and production and all of the other management responsibilities.

Not only was the maintenance of current operational status for the RD&E complex a difficult task for management, it was also confronted during Fiscal Year 1970 with two major problems that continued from previous fiscal years. One was the need for the modernization of the Army, and the other was the effect of the Vietnam War upon

US weapons and equipment. Furthermore, both of these problems required simultaneous solutions, because the war not only depleted current reserves, but also produced demands for new items.

These two reasons for the strong logistical demands emanating from the Vietnam War found their roots in the strange nature of the war itself. First, the Vietnam War introduced the American Army to a type of warfare with which it was unfamiliar; a war which, with its ideological considerations, assumed the nature of a conflict so strange that the US termed its activities in this war as a counter-insurgency operation. Second, the geography of Vietnam itself presented a mixture of several natural physical conditions, such as vast distances, a tropical climate and excessive variations in terrain. Finally, the political and military situations of the successive Vietnamese governments were chaotic and inefficient, expressing themselves in military terms in a weak army that was poorly supported by an almost non-existent transportation system. Moreover, all three of these factors together tended to put a severe strain on the RD&E operation, entailing immediate support with current stocks and the rapid development and fielding of many new types and kinds of weapons and equipment.

There were many examples of this type of strain. A standard Army inventory item only shortly before the Vietnam War; the helicopter rapidly became a key tool in that conflict, performing a host of vital missions, such as fire support and carrying troops. The many uses of the helicopter resulted in the production of large numbers and types of these aircraft, which in turn increased Army

supply and maintenance problems.

Besides complex items like the helicopter, fuel cells and plastic armor, the AMC had to develop and supply more ordinary articles, such as long-range patrol packets and jungle boots. In order to accomplish all of these tasks, the AMC had to do far more than place contracts with private industry; it had to place special emphasis on planning. This was because industry often did not produce and deliver items as programmed; and more importantly, because the Army could not stockpile either item for a yet non-existent emergency or items that might not yet be developed for some particular future need. Most significantly, however, the AMC had to plan and to manage because the Army accepted no excuses for late deliveries of critical items; and hardly tolerated any delays in the receipt of large quantities of those ordinary items that it had urgently requisitioned.

As a consequence, the upper-echelon of the AMC RD&E management structure bore great responsibilities, for it was this structure upon which the AMC depended to meet Army demands. Management had to be not only informed about the total RD&E program, it also had to understand the capabilities of that program, how it could make it achieve, and how to direct the energies of RD&E personnel towards new goals. In addition, management also fulfilled a supervisory role by the use of plans, regulations, organization and continual review.

¹
(1) AR 705-5, 15 Oct 64, subj: Research and Development of Materiel, Army Research and Development. (2) AR 705-5, C1, 6 Oct 65, subj: Research and Development of Materiel, Army Research and Development. (3) AR 705-5, C2, 1 Jun 66, subj: Research and Development of Materiel, Army Research and Development.

(U) Army Program Planning

General

At the head of USAMC's portion of Army program planning and management was the Director of RD&E. He continued those responsibilities given him in Fiscal Year 1969, including that for Headquarters, AMC management and staff supervision of all engineering programs of major subordinate commands. Of particular importance in his execution of this responsibility was the constant improvements directed toward the acquisition process of the Army materiel life cycle, improvements that eased the transition from development to production.

These improvements covered several facets of activities. They included tests, revisions of regulations, cooperation and interchange with other developers and agencies, new programs, reviews, research and budgeting. One of the most important changes involved the Coordinated Test Program (CTP) as required in the revision of AR 70-10, published in mid-Fiscal Year 1969.² The CTP as constituted in the implementation, represented the largest single change in test management systems and procedures in Fiscal Year 1970. It served as a planning vehicle for the testing program which was to support the development and deployment of any new piece of Army materiel. Basically, the CTP involved a review of all major developers by the Test and Evaluation Division of the RD&E Directorate, using a prescribed format as a basis for standardization and regulation of all such activities. By

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AR 70-10, 25 Dec 68, RDT&E During Research of Materiel.

means of this format and regular CTP submissions, the Directorate hoped to improve test management systems and procedures.

Besides the CTP, there were other noteworthy RD&E management changes in Fiscal Year 1970. These included a February 1970 revision of AMCR 700-38 to improve equipment performance reports that USATECOM used to evaluate materiel undergoing tests. A total of 168 Data Exchange Program agreements were continued and seven more initiated. Other management activities during this year included the following: the review of 25 Draft Proposed Qualitative Materiel Development Objectives and Qualitative Materiel Development Objectives within AMC; the maintenance of the current status of the Army Long-Range Technological Forecast, with four new changes in Fiscal Year 1970; the participation in several studies, such as the provision of comments in the study entitled "CONUS DEFENSE" by the US Army Combat Developments Command Institute of Advanced Studies; and the review of many projects and programs such as a regularly scheduled series of reviews of process oriented projects initiated in Fiscal Year 1970, including reviews of USAMUCOM production engineering support contracts and monthly reviews of selected MUCOM process oriented projects. Most of these changes occurred in response to higher level requirements, usually typified in new regulations.

Programs and Funding

Whatever accomplishments RD&E management wrought in Fiscal Year 1970 occurred despite comparative austerity in budgeting and

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AMCR 700-38, 11 Feb 70, Logistics, Test and Evaluation of Materiel Correction of Defects Found During Materiel Life Cycle.

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personnel. The Fiscal Year RD&E program, for example, consisted of \$886.897 million; which represented a substantial decrease from the \$992.5 million released for Fiscal Year expenditures and a lower figure than the Fiscal Year 1970 Research, Development, Test and Evaluation (RDTE) program guidance of \$958.1 million given by the Chief of Research and Development. Of the Fiscal Year 1970 allotments, \$30.853 million, or 3.48 percent, went to exploratory development. The remainder, or most of the funds, went to such categories as advanced development, engineering development, management and support, and operational developments.

Tasks and the RD&E Customer Program

Reductions in funds indicated a reduction in work undertaken and achieved. A prominent example of lessened accomplishments lay in the RD&E Customer Program. In Fiscal Year 1969 this program processed 1,584 separate actions on non-AMC RD&E Customer Orders for a total of \$99.6 million; in Fiscal Year 1970, 1,523 separate actions for such customers totaling \$97.3 million underwent processing. The Fiscal Year 1970 drop represented a decrease in DOD orders consistent with overall AMC RD&E program reductions. The work was done throughout USAMC's major subordinate commands and laboratories where orders from the Advanced Research Projects Agency (ARPA), National Aeronautics and Space Administration (NASA), Defense Atomic Support Agency (DASA), Atomic Energy Commission (AEC), US Air Force, Navy, Marine Corps, and other government agencies met program requirements in accordance with their respective missions.

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In an effort to increase output despite funding reductions, AMC made several investigations of its expenditures. One study conducted as part of a task that judged test/evaluation effectiveness, for example, showed that about 40 percent of the total RD&E budget went to the support and conduct of testing. USATECOM alone managed 16 projects in this area that cost \$136.265 million in Fiscal Year 1970. The results suggested that perhaps more funds might be channeled into the initiation of projects and that better management procedures could reduce test and evaluation costs.

(C) SEA Requirements

(U) Perhaps the greatest impetus towards the improvement of management efforts was the continuation of large-scale US involvement in Vietnam. Vietnam produced great logistical demands and, as these demands were often of an urgent nature, created a need for special logistical efforts. One such effort that remained prominent in Fiscal Year 1970 was the Expedited Nonstandard Urgent Requirements for Equipment (ENSURE), a creation of a 1968 regulation. ⁴

(C) ENSURE assigned responsibility for the rapid delivery of nonstandard and development items to support Army combat operations. As all of these items were not obtainable in the Army's supply channels, under ENSURE's standard procedures, AMC often became involved in the procurement of Army items never before requested. AMC therefore

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AMCR 525-2, 7 Feb 68, subj: Expediting Nonstandard Urgent Requirements for Equipment.

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provided for a Standard A classification for those ENSURE items that proved especially useful. One example of such an item was the Flame Weapon System, a hand-held, shoulder- or hip-fired four-barreled rocket launcher, containing four 66mm rockets whose warheads held a new pyrophoric flame anent, triethy lamine. As of 30 June 1968, 1,028 launchers, with 40 rounds per launcher, had been shipped to US Army, Japan for operational evaluation.

(U) Another major SEA support category concerned Surveillance, Target Acquisition and Night Operation (STANO) items. A direct result of the Vietnam counterinsurgency operations, STANO items represented a major effort to locate a stealthy and often almost invisible foe in a rugged environment. Quite a number of STANO programs were underway during Fiscal Year 1970 in support of SEA, including: A Night Vision System, Passive Infrared (FLIR) AN/AAQ-5; an Image Intensifier System, Night Vision AN/ASQ-123; a Loser Target Designation System; an AN/TPQ-28 Omnidirectional Counter Mortar Radar; an Airborne Searchlight AN/ASA-2; a Binocular, Electronic, SU-50 and Light, Arming, Infrared AN/PAS-8; and a Night Vision Light, tripod Mounted AN/TSS-7.

(C) The remaining SEA support picture similarly focused almost entirely upon outputs. These items covered a broad spectrum of types and were very numerous. Some of these included: (1) a personnel marking and identification system consisting of a helicopter mounted herbicide sprayer; (2) suspension of zinc sulphide in mineral oil marking materiel and an XM3 Ultraviolet Electric Lantern to find those personnel who brushed against the vegetation containing the spray; (3) rocket control display system for on-board installation in the

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AH-1G aircrafts control panel, permitting the identification and selection of 275-inch FFAR's with varying combinations of warheads and fuzes for various targets; (4) AH-1G Night Sight (CONFICS), which was a fire control system for providing the AH-1G Hueycobra aircraft with the capability of airborne active and passive detection and for the recognition of, and placing fire upon, targets obscured either by darkness or by other conditions; (5) XM-99 Rocket; (6) 275-inch rocket with a CS cluster type warhead which, utilizing the airburst fuze of the flechette warhead, provided Army aircraft with a standoff capability for dispersing CD agent and; (7) an intricate system called the SEA Multisensor Armament System Hueycobra, which incorporated three multi-sensor surveillance systems, one the FLIR, for target acquisition, another, the Sighting System Passive Infrared, for fire control capability, and a third, the moving target indicator radar for long-range detection and tracking, with the XM-28 armament subsystem and either the XM-35 (20mm) armament subsystem or the 2.75-inch FFAR Rocket Launcher.

(U) Exploratory Development

After priority efforts in support of SEA, the AMC RD&E program was able to turn to the more fundamental aspects of the RD&E process, basic research and exploratory development. There were several varied advances in these areas in Fiscal Year 1970. Among the most important projects were the following: the completion of concept formulation for a family of military engineer construction equipment; the completion of a parametric analysis of military cargo and materiels handling

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systems to permit technical forecasts in the 1970-1990 time frame; the virtual completion of initial development of an integrated on-line tactical automatic data processing system known as the Tactical Fire Direction System (TACFIRE) with computer centers at the field artillery battalion and division artillery levels to help field artillery compute and fire faster with automatic data processing; the initiation of efforts to use a system of unattended ground sensors to establish a remotely monitored battlefield surveillance system; the initiation of a development program to produce a new Army propellant, Hydrosy-Terminated Polybutadiene, to increase the performance and preserve the motor of the Meteorological Rocket (Metrocket); and initiation, with February 1970 DA approval, of a program to produce by 1974 a night sight for the TOW Missile System which was to be a combination of an active and a passive night vision device and which would permit target acquisition and observance without interference from the missile beacon and flash.

Besides these directly item-related advances, the AMC was busy with more basic research. This research often took the forms of studies and publications. The following were examples of such research: a five-year study underway at Deseret Test Center for research on the effects of atmospheric transport and diffusion on meteorology; a completed study on the military significant properties of southern German waterways, and their relevance to tactical off-road capabilities of future ground vehicles; and the completion of eight new handbooks on such diverse topics as liquid-filled projectile design and fuzes. More formal research occurred in the physical

sciences and mathematics. In mathematics, efforts produced a mathematical model to describe the response of an orthotropic cylindrical shell to dynamic loads; an improved method to determine the pressure of a jet charge at the explosive metal interface; and demonstration of the use of confidence intervals for the construction of statistical tests of hypotheses concerning systems reliability.

Results in the physical sciences were more diverse. Physics and chemistry were especially important fields of endeavor. In chemistry and materials, researchers studied liquid propellants for cavity penetration times and muzzle velocities, modified the chemiluminescent compounds to provide different visible light colors, controlled the pore permeability in plastics and developed laser protective materials for vision devices. In physics, research performed theoretical and digital computation research studies to advance physical understanding of nuclear electromagnetic pulse (EMP) phenomenology; to provide nuclear EMP environmental criteria for use in Army system EMP vulnerability evaluation and hardening studies; investigated the effects of thermal radiation on Army vehicle optical equipment; and conducted an extensive program in nuclear physics to gain basic knowledge about the effects of nuclear weapons, measurement of these effects and protection of personnel and materiel from them.

(U) Advanced Development

In the next phase beyond basic and exploratory areas, advanced development, the AMC RD&E Program concerned itself with many items that had reached sophisticated forms within their respective systems/

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management cycles. These items generally fell within the broad categories of development, creative design, engineering design, and product improvement. They also normally include either those products that were not ready for testing, or those products that were not available or not standard in the Army inventory. Finally, as in basic and exploratory areas, AMC worked on several items of note in the advanced development phase in Fiscal Year 1970.

(C) Air Mobility Support

(U) The major emphasis for improved air mobility support in Fiscal Year 1970 continued to be the Vietnam war. Attempts to furnish this support involved several groups within AMC. Of particular interest to these groups was aircraft weaponization, repair, and refurbishment of electronic equipment.

Aircraft Weaponization

(U) Several aircraft weaponization efforts were underway in Fiscal Year 1970. For example, engineering and service tests were completed on the 30mm Gun XM 140 for the AH-56A helicopter and tests continued on a lighter aluminum cased cartridge for the 30mm round for this gun. Other armament developments included the completion of tests on the XM28 and XM28E1 Armament Subsystems for the AH-1G Light Observation Helicopter; and on the XM129 Grenade Launcher for the AH-1G and AH-56A helicopters. Work on the design of a laser target designation system for the AH-56A included the completion of an initial design of a breadboard neodymium laser range finder,

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incorporating a silicone diode detector to improve target information gathering.

Aircraft Observation Equipment

(C) The chief item in aircraft observation equipment for Fiscal Year 1970 was the Night Observation Device, Long-Range (Thermal) AN/TAS-2. This was a tripod or vehicular mounted, high resolution, passive, infrared image system that used mechanical scan techniques with infrared detector elements to produce real-time visible images of background scenes and target objects. During Fiscal Year 1970 engineering and service test workers finished feasibility tests on this equipment and AMC awarded a contract to the Hughes Aircraft Corporation for two models in November 1969.

(C) Surveillance

(C) Surveillance items under development at AMC reflected a need to find the enemy in Vietnam-type conditions. A great amount of effort, therefore, focused upon night vision devices. Examples of such devices included: a Night Vision Sight, Individual Served Weapons AN/PVS-4, ready for engineering and service model production in Fiscal Year 1970 and intended as a small, lightweight, passive image intensifier viewer for use as a handheld viewer or as night vision sight for individually served weapons, battlefield surveillance and laying fire; Target Locator (POINTER), Infrared AN/PAS-9, awaiting a Fiscal Year 1971 IPR after successful engineering and service tests. This was meant to be a handheld, low resolution, passive infrared system for use with an image intensifier device to form a night

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vision binocular for battlefield surveillance; and a Searchlight, Handheld, 280W, available for model tests early in Fiscal Year 1971 and intended for use by tank commanders for surveillance. This was a five-pound, 1 million candlepower portable searchlight. Many other surveillance items were also under development, including infrared searchlight, surveillance radar sets, a night vision aerial surveillance system and an infrared surveillance set.

(C) Communications and Electronics

Background

(U) Under the impact of the SEA buildup, funding for communications and electronics increased 96 percent from 1962 to 1968.⁵ Lack of adequate communications facilities during that period created both operations and logistics problems. Under the fluid situation existing in Vietnam, the design and installation of communications networks was a complex and difficult task. Many aircraft supplied early in the Vietnam war were equipped with outdated electronics equipment. This situation required that much new equipment be shipped to Vietnam, later to be used in an avionics retrofit program.

(U) Overall logistics support requirements for combat surveillance and target acquisition equipment presented a challenge to AMC. Extensive coordination was required with laboratories, national inventory control points, depot maintenance activities, and manufacturers. A concentrated effort by the Electronics Command, with the help of industry, resulted in the development and life-

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Historical Summary, AMCMR, 17 Dec 68, p. 1.

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cycle management of new generations of tactical and strategic communications and surveillance equipment as well as novel adaptations of electronics to support the Army's intelligence and aviation missions. Electronics warfare required a great variety of equipment for various purposes, such as target identification, self-protection, direction finding, fire control, predetonating projectiles, and jamming communications. At the same time, the AMC strived to develop new techniques which would result in reduced size, increased reliability, ease of operation, and lower cost for electronics equipment.

New Electronic Fuze Systems

(U) Extensive work on electronic fuze systems continued during this fiscal year and involved the following tasks: feasibility studies on new electronic fuzing concepts; quantification of the effectiveness of fuzing concepts applied to given weapon systems; determination of parameters, circuits, and components critical to feasibility and effectiveness; and fabrication and testing of prototype models to demonstrate feasibility, effectiveness, and representative hardware configurations.

(C) The tasks undertaken ranged from motor fuzes to nuclear missile fuzes, and from ground targets to high speed airborne targets. Electronics timers and mine fuzes were also considered. One task concerned the achievement of precise ranging systems to meet stringent environment, weight, space and cost requirements of gun fired projectiles. A special VHF-UHF pulsed oscillator design was developed using the charge-storage properties of transistors.

A configuration suitable for mortar weapons was designed and tested.

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(U) Investigations of optical fuzing and target locating techniques, employing visible light and infrared sensors, were made. With the availability of high power, low cost, laser diodes, an intensive effort with fuzes using these devices was believed to be warranted. This program included considerable attention to the investigation of air defense fuzing under adverse weather conditions and to the feasibility of slant range fuze for dispersal weapons.

Supporting Research in
Electronic Counter Measures

(C) The purpose of this work was to insure maximum effectiveness of proximity fuzes in battlefield electromagnetic environment, including both active and passive counter measures. Special attention was given to analyzing intelligence to anticipate enemy counter measure capabilities, to the development of counter measure techniques, and the development of criteria for comparative studies. For example, studies were made on FM-CW fuze response to passive counter measures and to the susceptibility of proximity fuzed missile systems, of the Lance family, to chaff. Also, a new approach to enhancing electronic counter-measure (ECCM) performance of low-cost doppler fuzes was investigated.

(C) During this year, a system to minimize interference was evaluated. It was believed that a system adapted in both space and frequency was important to missile systems where ground based jammers were used. The work on ECCM susceptibility of doppler fuzes, then being developed at higher carrier frequencies, with all solid state components, was completed during this year.

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RD&E Historical Summary, FY 72, pp. IV-26-27.

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(C) Cooperative Efforts

(U) During this fiscal year, AMC personnel participated in numerous cooperative research and development projects with foreign countries and international organizations. The cooperative program provided for joint project effort directed toward meeting common defense requirements with the sharing of supporting resources at a saving in team effort. For example, the United States-Canada development sharing program provided for Canada to share in funding a contract effort in Canada to meet a US requirement. The US developing agency had the responsibility for technical direction of the effort and the US acquired the rights to production data. An example of such a project was the XM-571 Articulated Utility Carrier.

(U) In implementing the International Professional Exchange Program the DOD approved bilateral arrangements with the German Ministry of Defense and the Japanese Defense Agency. There was a reciprocal exchange of professional personnel. Under the International Scientific Cooperation Program excellent relations existed for information interchange on very low frequency work being done in England, South Africa, Canada, and the State of Singapore. All of the projects under the American-Britain-Canada-Australia (ABCA) Standardization Program in which AMC participated, were examples of cooperative efforts among the scientists and technicians of member countries. This cooperation was extended to the NATO committees on Radar Masking and Radar Clutter.

(U) Army personnel participated with Navy, Air Force and NASA personnel on advanced propulsion techniques for missiles. They

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also initiated, with the USAF, a flight test program to demonstrate the use of a laser guided bomb technology on an artillery missile-- an optical terminal homing missile. AMC representative served as committee members on the DOD/NASA Chartered Joint Army, Navy, NASA, Air Force (JANNAF) Group. This included the solid and liquid propulsion subgroups of the Technical Steering Committee.

(C) The Army, Navy, Air Force and NASA maintained class liaison on missile propulsion technology through the Joint Army, Navy, NASA, Air Force (JANNAF) Interagency Rocket Propulsion Committee. The Army Missile Command served as chairman of the JANNAF solid propulsion Subcommittee. JANNAF exchanged technical information with Australia, Canada and the United Kingdom.

(U) All of the military services participated in the DOD program for developing a secure system for positive identification of friendly aircraft. This program encompassed the development of ground interrogators for the air defense systems and airborne transponders for all service aircraft. Deliveries of airborne transponders for retrofit installation in aircraft production lines were initiated during Fiscal Year 1970.

(U) Among other important cooperative efforts was the Army Scientific Advisory Panel Meeting on "Who's Who of the US Scientific Community" at Aberdeen, Maryland, in May 1970. Other such efforts were as follows: Data exchange programs involving AMC and the technical community of foreign countries; Canadian-American collaboration on riot control research and development; the nuclear session of the NATO NBC defense panel at Brussels, Belgium; the activities of the Joint

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Technical Coordinating Group for Effectiveness, including target vulnerability, wound data and battle damage effectiveness; cooperation of the Army with the weather services centennial (1870-1970); operations of the Joint Laser Safety Team; the expanded use of computer technology; the configuration management course to be presented by AMETA in 1971; and a study to compare combat effectiveness costs of mechanized infantry combat vehicles (MICV) designed to meet qualitative materiel requirements with a specified group of existing infantry combat vehicles.

(G) Atomic Weaponry

(G) Various methods were investigated during this year for extension of the range of atomic projectiles fired from conventional weapons systems. Development of the XM50 Firing System slipped during the year because of reduced RDT&E funds. The requirement that the XM94 Firing Device connect to the demolition munitions was deleted.

(C) The joint Army/AEC atomic demolization study effort culminated during this fiscal year. The Department of the Army requested DOD to authorize the development of a new atomic demolition device.

(U) In order to permit more orderly effective research in nuclear weapons effects, DA initiated an effort to bring into focus the existing state of the art, the requirements and past accomplishments which would highlight the gaps in our knowledge of weapons effects. Each effect was examined in detail--blast, initial radiation,

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RDE Historical Summary, FY 70, pp. III-1-15.

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X-ray, electro-magnetic pulse, ionization, shielding, and the transient radiation effects on electronics. Specific and detailed proposals were made for research and testing in each of the above environments.

(C) Several projects continued for the purpose of providing the necessary data for development of nuclear projectiles; especially the 155mm projectile. Current efforts also focused on a new 8-inch nuclear projectile. One project provided the necessary data bank for investigating new concepts and determining feasibility for the concepts applicable to nuclear projectiles. A considerable effort was given for support of a new nuclear rocket assisted projectile to match the conventional high explosive round. Reliability and safety had more significance in this effort than that required for conventional HE projectiles.

(FOUO) Other Significant Activities

(FOUO) Several chemical-biological (CB) projects were noteworthy during this fiscal year. For instance, in response to a DA requirement, 750 Grenades, Hand, CS, XM47 were furnished to CONARC. The CONARC evaluation concluded that this grenade was suitable for Army use. Also, a liquid riot control agent projector was developed in response to CONARC requirements. In April 1970, CONARC submitted a request for a 12-gauge anti-riot round. Such a round, named FERRET, manufactured by Aircraft Armament Incorporated, was evaluated by CONARC. Further evaluation was considered necessary prior to release of this round.

(U) During this period, there was considerable interest in chemical and biological areas by the President, Congress, the National Security

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Council, and the press. The President's announcement on 25 November 1969 on chemical and biological warfare and action by the Congress on Fiscal Year 1970 military authorizations, provided new CB guidance. This guidance reaffirmed the renunciation of the first use of lethal chemical weapons and extended this to the first use of incapacitating chemicals but did not include riot control agents or herbicides in this category. DOD had been asked to make recommendations for the disposal of the stock of existing bacteriological agents and weapons. The President's announcement stated that the US "shall renounce the use of lethal biological agents and weapons and all other methods of biological warfare." Semiannual reports had to be submitted to Congress fully explaining all expenditures. In transporting lethal chemical and biological agents the Secretary of Defense had to coordinate with the Secretary of Health, Education and Welfare (HEW). Any open air testing of CB agents in the US had to be done with the advice of HEW.

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(C) The former Chemical and Biological Warfare Program was divided into three following programs: Chemical Warfare Program, Biological Research Program, and Combat Support Materiel (Chemical) Program. As a result of the President's announcement on the ban of biological weapons, functions at Fort Detrick, Maryland, were transferred from administrative jurisdiction of MUCOM and placed directly under AMC.

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RD&E Historical Summary, FY 1970, pp. V-2 to V-4.

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DAGO 49, 24 Feb 70

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(U) On 13 June 1970 Deputy Secretary of Defense David Packard made the decision that the Army Biological research program be limited to an annual expenditure of about \$10 million and that the facilities of the Biological Research Center at Fort Detrick be transferred to the Department of Health, Education and Welfare. The Department of the Army would prepare for the transfer of the Biological Defense Research Center facilities to other Army locations. This would be done without major military construction. Consequently, on 18 June 1970, OCRD directed that the transfer of these Fort Detrick facilities be accomplished by about 1 July 1971. The Army Biological detection and warning programs, physical defense efforts, and chemical vegetation control programs would be transferred to Edgewood Arsenal, Maryland, while the General Biological Investigations and Vulnerability Analysis programs would go to Dugway Proving Ground, Utah.

(U) From November 1969 to April 1970 a member of the Research Division served as AMC representative and consultant to the Secretary of Defense's Blue Ribbon Panel, specifically on the working group pertaining to the materiel acquisition process. As a full-time member of the panel, the R&D member prepared three case histories utilizing division capabilities. Detailed studies were made on the M16 rifle, the M76 tank program, and the 30mm XM140 aircraft. In addition, small scale special studies were conducted as required.

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RD&E Historical Summary, FY 1970, p. V-5.

11

Ibid., p. V-10.

(U) On 9 December 1969, the Joint Technical Coordinating Group for Munitions Effectiveness posed some areas of significant technological deficiencies in weapons effectiveness knowledge to the Joint AMC/NMC/AFLC/AFSC Commanders Meeting. Subsequent briefings to the AMC/NMC/AFSC Directors of Laboratories (DOL's) on these deficiencies led to a general agreement that these problems should be approached on a tri-service basis, to improve the services ability; to design improved weapons; and to evaluate the effectiveness of existing weapons. The DOL's would review and implement such programs. Task forces would define the critical areas, determine their relative priorities,¹² and designate the commands that would conduct the studies.

¹²

Ibid., p. V-11

CHAPTER VI

(C) REQUIREMENTS AND PROCUREMENT

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(U) Reorganization

As part of the implementation of Phase IV of the reorganization of Headquarters, AMC by General F. J. Chesarek, the Directorate of Procurement and Production and the Directorate of Materiel Requirements were combined, provisionally, on 4 November 1969, to form the Directorate of Requirements and Procurement. The reorganization became effective on 1 July 1970.

The coordinating divisions of the former directorates passed into the new directorate virtually unchanged. However, in order to respond to a directed reduction of manpower, the coordinating divisions were reduced to two, Procurement Policy Division and the Plans and Program Division, and one commodity division was eliminated. Under Major General P. A. Feyereisen's new concept of intensive life cycle commodity program management, 16 commodity divisions were formed.

These divisions were responsible for the Requirements and Procurement of their assigned materiel, and for assuring proper interface with other AMC elements. Although they contributed to the establishment of policy, their main function was staff supervision over the development and execution of assigned programs.

Certain new divisions became the successors to elements of the former directorates. The former Ammunition Division of AMCMR and AMCPP became the Special Ammunition Division and the Conventional Ammunition Division. Two divisions, the Surface-to-Air and Surface-

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to-Surface Division, were formed from the old Guided Missile Division. Also, the Mobility Equipment Division was split into the Construction and Power Equipment Division and the Mechanical Support Equipment Division. The July 1970 reorganization created the Plans and Program Division as a coordinating arm for the Directorate in the areas of requirements and budgetary programs. This entailed the absorption of functions performed by the old Program and Resources Division; the merger of Logistics Systems and Materiel Plans Branches; and the transfer of the Industrial Preparedness Branch to a newly created office of Special Assistant for Industrial Preparedness. The Individual and Crew-Served Weapons Division resulted from its assumption of the functions and responsibilities formerly assigned to the Weapons and Fire Control Branch, Mobility and Weapons Division of the Directorate of Procurement and Production; the Weapons Division, Directorate of Materiel Requirements; and the requirements, procurement, and rebuild functions formerly assigned to the Office of Project Management for Aircraft Weaponization which was abolished during the Phase IV reorganization.

The overall structuring of these commodity divisions was based on the Army Materiel Category Structure of AR 735-63. Each action officer within a division was specifically assigned as his personal responsibility a certain equipment to follow during its life cycle. To eliminate a layer through which the action officer must pass information, branches were not authorized; the division chief was the sole supervisor in each division.

(U) Procurement

Procurement Volume and Trends

During Fiscal Year 1970, the total dollars awarded in contracts by AMC amounted to \$6.12 billion. This represented a decline of \$2.6 billion from the Fiscal Year 1969 total of \$8.8 billion. Thus continued the trend of general decline in funding from the high of \$9.9 billion in Fiscal Year 1968, but remained substantially above the level of \$4 billion expended in Fiscal Year 1964 and Fiscal Year 1965. It was, however, a reduction of 38.2 percent in three program years due to reduced FEMA funding and lessened military activity levels. Further evidence of this decline was the number of total procurement actions from 784,000 in Fiscal Year 1969 to 636,135 in Fiscal Year 1970. Of these, actions of a value of \$10,000 or more decline from 31,000 in Fiscal Year 1969 to 25,538 during this period.

AMC awards accounted for 62 percent of the total Army dollars awarded in Fiscal Year 1970. This is the lowest percentage of total Army procurements since the 1964-65 period.

Significant improvement during Fiscal Year 1970 was attained in increased competitive circumstances, particularly the use of Formal Advertising, up from 8.9 percent of all dollars awarded in Fiscal Year 1969 to 16.9 percent in Fiscal Year 1970. Procurement performance improved during Fiscal Year 1970 despite the substantial decline in both dollars and number of action. Among these performances were reductions in delinquent deliveries, reduced use of letter contracts, and reductions in undefinitized change orders.

Competitive Procurement. Despite the \$2.6 billion decline in total awards, competitive procurement rose to 38.5 percent of all dollars awarded during Fiscal Year 1970, up from 2.5 percent in Fiscal Year 1969, and reaching a total of \$2.355 billion by the end of the year. This reversed a three year down trend, and reflected improved capability on the part of procuring activities to both obtain and effectively utilize lead periods before required delivery dates. Other factors were the lessened use of "follow on" awards in procurements, and generally enlarged competition available in the economy. Competitive procurements of weapons and ammunition contributed most to the overall rise in percent of competition (20.7 percent) even though the operation of government-owned, contractor operated munitions plants utilizing CPFF contracts impacted negatively. Improvement in competitive procurement in all commodity areas, except in electronics and communications equipment, was attained as shown in the following summary:

<u>Commodity</u>	<u>Fiscal Year 1970</u>		<u>Fiscal Year 1969</u>	
	<u>\$Compet</u>	<u>Percent</u>	<u>\$Compet</u>	<u>Percent</u>
Aircraft and Spares	\$ 72.6	8.9	\$ 61.4	4.8
Missiles	62.9	11.9	70.0	9.5
Weapons	124.7	56.5	95.5	23.1
Ammunition	806.0	36.3	688.3	19.4
Electronics	230.7	30.9	363.6	33.1
Combat Vehicles	228.6	57.4	192.7	43.7
Non-Combat Vehicles	485.3	88.5	380.9	76.2

Summary of competitive performance in Fiscal Year 1969 and Fiscal Year 1970 as follows:

	<u>Total Dollars Awarded (\$ Mil)</u>	<u>Total Dollars Compet (\$ Mil)</u>	<u>Percent Compet</u>
FY 1970	\$6,121.7	\$2,355.5	38.5
FY 1969	8,805.9	2,209.0	25.1
FY 1970 Change	-2,684.2	/ 146.5	/13.4

Formal Advertising (FA). During Fiscal Year 1970 procurement dollars placed by formal advertising contracts amounted to \$1.035 billion or 16 percent of all procurement volume. In Fiscal Year 1969, \$780 million or 8.9 percent of procurement dollars were in formal advertising contracts. Thus, the extent of formal advertising use nearly doubled in ratio and increased in total volume by \$254 million. This expansion in formal advertising occurred despite the \$2.6 billion decline in overall AMC procurement for Fiscal Year 1970 and reflected a continuous command-wide effort to attain competitive acquisition of materiel. Significant gains in this area were achieved in munitions procurements (\$64 million to 105 million) and in combat and non-combat vehicles (\$229 million to \$625 million). A summary of FA performance follows:

	<u>Total Dollars Placed Under Contracts (\$ Mil)</u>	<u>Total FA Dollars (Mil)</u>	<u>Percent FA</u>
FY 1970 (12 mos)	\$6,121.7	\$1,034.7	16.9
FY 1969 (12 mos)	8,805.9	780.7	8.9
FY 1970 Change	-2,684.2	/ 254.0	/8.0

Cost Plus Fixed Fee. CPFF contracts totaled \$894 million in Fiscal Year 1970 or 15.2 percent of procurement volume, contrasted to 13.9 percent (\$1.182 billion) during Fiscal Year 1969. The rise was attributable to the extensive use of CPFF in the operations of government-owned, contractor-operated munitions plants which used 65 percent (\$582 million) of the total \$894 million CPFF actions. Funding of GOCO plants required flexibility during production phases which precluded accurate prediction of contract quantities and functions sufficiently in advance to the degree that other procurement arrangements were feasible.

Incentive Contracts. Procurement dollars placed in Fiscal Year 1970 under incentive contracts amounted to \$786.4 million. The number of incentive contracts (new and continuations) numbered 90, down from 135 in Fiscal Year 1969 and 182 in Fiscal Year 1968. The above \$786.4 million represented 12.8 percent of the total procurements in Fiscal Year 1970, compared to 15.6 percent in Fiscal Year 1969 and 17.8 percent in Fiscal Year 1968.

Multi-Year Procurements (MYP). During Fiscal Year 1970, 91 MYP contracts with a value of \$751.4 million of procurement funds were utilized compared to \$562.3 million in Fiscal Year 1969 and \$496.6 million in Fiscal Year 1968. This rise occurred despite a continuing reduction in volume of procurements in Fiscal Year 1970 (6.1 billion), the lowest level since Fiscal Year 1965 (3.9 billion). However, fewer new MYP contracts were awarded during Fiscal Year 1970 than in any of the last five years, attributable to cutbacks in quantities and uncertainties of requirements for succeeding program years.

During this fiscal year, nine new MYP contracts obligated 181.4 million for the first year's quantities. Of the total MYP procurements, the major portion represented procurements of 2½-ton, M44 series of trucks (\$118 million) and multi-fuel engines (\$37 million) for the trucks which had been procured under earlier MYP contracts. An additional \$570 million was awarded in Fiscal Year 1970 under existing MYP contracts (82) for requirements subsequent to the initial first year's quantities procured.

~~TOP SECRET~~
(C) Aircrafts and Avionics

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Release of CH-47C, CHINOOK

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(U) On 28 August 1969, CHINOOK Project Manager requested approval of the conditional release of CHINOOK, CH-47C (an upgraded version of CH-47B) for RVN and CONUS training. This request was approved on 19 September 1969 by the Deputy Director, DMR,² subject to correction of the deficiencies cited by USATECOM who after testing three (3) aircraft for approximately 273 hours (of a total of 7800 programmed for service test) stated that the test results did not preclude conditional release. The USATECOM position was given with the provision that ECP 643 was incorporated as an interim fix for the NI control³ system problem.

AH-1G Procurement

(U-FOUO) A letter contract valued at \$46.4 million was awarded on 30 January 1970 to the Bell Helicopter Company for 170 each AH-1G Cobra helicopters. The Army will provide the T53-13 turbine engines and avionics as Government furnished equipment and is valued at \$35.1 million.⁴

1
AMCEM-CH-T Ltr, 28 Aug 69, Subj: Request for Authority to Issue Satisfactory Material (Helicopter, Cargo, Transport: CH-47 C:FSN 1520-871-7308).

2
AMCR 1st Ind, 19 Sep 69, Subj: Request for Authority to Issue Satisfactory Materiel (Helicopter, Cargo, Transport: CH-47 C:FSN 1520-871-7308).

3
USATECOM msg 2215002 Aug 69, Subj: Conditional Release of End Item for Issue, CH-47 C/T55-L-11.

4
DA letter, file LOG/PLB, 6 Jan 70, Subj: FY 1970 PEMA Procurement Program to USAMC.

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Aircraft BP 2300XO/KO Depot/Maintenance Program

(U) In accordance with the reorganization, effective 15 September 1969, of Headquarters, AMC, depot maintenance responsibilities were divided between the Director of Materiel Requirements, and the Director of Maintenance. A memorandum of understanding was signed on 23 October 1969 by the Directors of Materiel Requirements, Maintenance, Distribution and Transportation, and Personnel and Training. To further delineate responsibilities for development and control of the depot maintenance program, a document titled "Depot Maintenance Program Responsibilities" was published 7 January 1970. Under it the Director of Requirements and Procurement was made responsible for the development, consolidation, review, approval and publication of requirements and publication of the Army Materiel Plan, Part II; while the Director of Maintenance directed the accomplishment of the approved BP 2300 Program.

(U) Funding guidance and instruction for development of Fiscal Years 1971-74 depot maintenance program was forwarded on 27 February 1970, by the DRP. The aircraft program was presented on 18 May 1970 to the Army Depot Maintenance Review Board.

(C) The finalized BP 2300XO program totaled \$281.258 million for

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DF AMCRP-00, 7 Jan 70, subj: Depot Maintenance Program Responsibilities.

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Message, 261700Z Feb 1970, subj: FY 1972 Depot Maintenance Programming OX/KO Programs.

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AMP II Worksheets, Aeronautical Depot Maintenance Program, FE732207, May 1970.

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Fiscal Year 1971 and \$235.534 million for Fiscal Year 1972.

Procurement of RU-21E and U-21A Aircrafts

(U) A contract for sixteen (16) U-21E type aircraft valued at \$12,327,434 was awarded on 17 April 1970 to Beech Aircraft Corporation (sole source). The aircrafts were to be modified to house an extensive avionics package. The requirement was established by the Army Security Agency⁸ and approved on 10 September 1969 by the Assistant Security of the Army (I&L)⁹.

(U) Also, ASA (I&L)¹⁰ approved on 8 October 1969, an AMC request for procurement authority for 22 each U-21A aircraft. Beech Aircraft Corporation was solicited as a sole source supplier and awarded a contract on 1 June 1970, valued at \$6,862,000.¹¹

Avionics

(U-FOUO) Standard Lightweight Avionics Equipment (SLAE) with concurrent support capability was initially introduced in RVN in June 1969. It was accepted on a conditional basis pending completion of type classification action. The SLAE system was highly reliable, simple to maintain, and smaller in size and weight compared to the equipment in use. SLAE was an improvement in the state-of-the-art and will be used by the US Army for years to come.

⁸

AVSCOM Advance Procurement Plan, 14 Jul 69.

⁹

2d Ind MA-A to CGUSAMC, subj: Advance Procurement Plan, RU-21E.

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Ltr to CGUSAMC, 8 Oct 70, signed G. R. Fox, ASA (I&L).

¹¹

RCS AMCPP-122 from AVSCOM to CGUSAMC, 26 May 70.

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(C) Missiles

Surface to Air Missile PEMA Program

(C) The Surface to Air Missile PEMA Program apportionment for Fiscal Year 1970 totaled \$253.8 million. Cancellations and adjustments reduced this figure to \$213.7 million, of which \$167.4 million was released to MICOM and \$46.3 million remained in a deferred status.

(C) At the end of Fiscal Year 1970 the total Army and customer approved programs was \$294.0 million, which included \$209.1 million for missile systems; \$1.2 million for transportation; \$57.1 million for missile repair parts; and \$26.6 million production base. Included in the total program figure is a carry-over program of \$48.4 million Army and customer.

(C) CHAPARRAL. A Fiscal Year 1970 PEMA program of \$74.9 million was released in July to MICOM and \$5.5 million was deferred by DA. Subsequent release to MICOM increased the total program to \$80.0 million which included program authority for FAAR.

(U) The Project Manager conducted on 23-24 August 1969 a pre-in-process review at the Aberdeen Proving Ground regarding planned deployment; the in-process review was held on 17-18 September 1969 at Fort Bliss, Texas. During this period conditional releases of equipment were made and planned DA deployment was accomplished.

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(1) 1st Indorsement to Basic Letter, 8 Aug 69, subj: Request for Authority to Issue Satisfactory Materiel, CHAPARRAL Air Defense System Equipment for Unit Activation and Training. (2) 1st Indorsement to Basic Letter, 1 Oct 69, subj: Request for Authority to Issue Satisfactory Materiel, CHAPARRAL Air Defense Weapon System (AMCR 700-34). (3) 1st Indorsement to Basic Letter, 27 Jan 70, subj: Request for Authority to Issue Satisfactory Materiel, CHAPARRAL Air Defense Weapon System.

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(C) Improved Hawk Program. To allow further test prior to Standard "A" and full production, the Army contracted on 29 June 1969 for a reduced buy of 100 missiles and 11 sets of ground equipment for test and training only. In October 1969, after a command review by CG, AMC, a revised schedule was sent by General Chesarek to the Chief of Staff, Army, recommending a reduced rate of production for Fiscal Year 1970 and Fiscal Year 1971 (prior to Standard "A" type classification).

(U) The Project Manager suspended firing tests in December 1969 and CG MICOM appointed a design review committee of experts from MICOM, NASA, APL/JHH, AMC and DA to review the design and make recommendations for future tests. The committee concluded that the design was sound and Improved Hawk should be significantly better than Basic Hawk. Also, it recommended to resume testing. The committee further recommended six "Core" objectives for the firing program which would exercise evenly the missile and prove its capability against targets where Basic Hawk had an inadequate or no capability.

(C) In December 1969, the Army requested the Raytheon Company to propose on a multi-year (Fiscal Year 1970-71) buy, 660 missiles and 26 sets of ground equipment. A "Should Cost" team's findings resulted as of 30 April 1970 in a proposed contract which reduced the original Raytheon proposal by 17 percent.

(U) The Project Manager conducted in April 1970 a risk assessment which was presented on 7-8 May 1970 to an In-Process Review at MICOM with recommendation that Improved Hawk be considered for type classification, urgent limited production, after completion of the "Core

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firings". The "Core firings" were not completed by the end of the fiscal year.

(U) Nike Hercules. The uncertainties of tactical requirements necessitated that all Nike Hercules Basic Integrated Fire Control (IFC) assets be retained in the Army inventory. This was in addition to the retention of all Nike Hercules Improved IFC sets. ¹³

(U) To finance the Fiscal Year Nike Hercules modification program, DA released on 3 July 1970 a total of \$18.4 million. On 11 July 1969 DA deferred \$7.8 million of that amount. AMP supporting data for Fiscal Year 1971 PEMA budget, dated September 1969, indicated that the modification program could be supported with \$11.6 million and that amount became the final approved program.

(C) Two other significant actions occurred during this fiscal year: the total worldwide force was reduced from 130 to 107 firing batteries; ¹⁴ and the Project management for Nike Hercules system was terminating on 27 April 1970. ¹⁵

(U) Redeye Weapon System. A lightweight, shoulder-fired surface-to-air guided missile, Redeye, was designed to give combat troops a capability to destroy low-flying enemy aircraft. Type classification of the trainer as Standard "A" in late June 1970 made the Redeye a 100 percent Standard "A" missile system. The final purchase of this system for the Army was made during Fiscal Year 1970. However, Redeye systems were still being offered for sale to foreign countries.

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DA ltr ACSFOR, 18 Jul 69, subj: Stock Status of Nike Hercules Equipment.

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PCD 2/9/105, 14 Oct 69

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DA ltr signed by Sec of Army, 27 Apr 70, subj: Termination of Project Management for Redeye and Nike Hercules.

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Forward Area Alerting Radar (FAAR)

(U) Production and requirement problems such as elevation coverage, weight, and power necessitated a stop work order (SWO) against the Fiscal Year 1969 FAAR production contract. The action was taken to assure that the Government would receive hardware in accordance with the Qualitative Materiel Requirement (QMR). A test demonstration was held in November 1969 to elevate one of the APE prototypes developed under the Advance Production Engineering Contract. The tests were judged to be successful. Consequently, two engineering service contracts were awarded to Sanders Associates, system prime contractor, to incorporate the outstanding Engineering Change Orders and Test/Demonstration recommendations into the technical data package. At the close of Fiscal Year 1970, several proposals from the contractor were being elevated with the anticipation of modifying the current production contract in accordance with Performance Specification 1930, updated to remove the SWO and resume FAAR production.

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Missile Repair Parts

(C) Of the total Army program request of \$35.0 million, OSD deferred \$15.2 million provisioning because of deferral of major item programs. An additional \$7.0 million replenishment was deferred because OSD questioned the computation of peacetime operating stocks. However, reapportionment requests were submitted to DA on 17 September

16

Memo for Record, AMCPM - CVADS, 25 Jul 70, subj: Production Stop Work Order to Sanders Associates for Forward Area Alerting Radar.

17

Memo for Record, AMCPM - CVADS, 6 Nov 69, subj: FAAR Briefing for DCG, AMC.



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1969 and the final program approved was \$38.0 million. This was for both Surface-to-Air and Surface-to-Surface missile systems.

Surface-to-Surface Missiles

(C) Shillelagh Missile System Program. In July 1969, the US Army Combat Development Command (CDC) reported to the Chief of Research and Development, Department of the Army (OCRD) on an analysis made at the direction of OCRD to define the effectiveness of the Shillelagh Missile System, and establish priorities for a product improvement program for the correction of system limitations considered necessary and appropriate.¹⁸ The CDC report placed the problem areas into three general groups as follows: (1) limitations which were considered to degrade the system below acceptable standards; (2) limitations considered to degrade the system below desirable levels; and (3) limitations not considered to effect the capabilities of the system. Also, the report assigned priorities for correction of these limitations. AMC recommended on 7 November 1969 that product improvement programs for correction of high priority critical limitations be initiated in Fiscal Year 1970.¹⁹ DA approved and funded this effort which was nearing a successful completion at a total cost of \$4.6 million (\$2.2 million - Fiscal Year 1969 and \$2.4 million - Fiscal Year 1970). Less critical product improvement programs were deferred until a firm

¹⁸ Shillelagh Missile System, GAO Rpt., 3 Nov 1969
¹⁹ AMC ltr, AMCRD-MS, 7 Nov 69, subj: Shillelagh.

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decision was made concerning the production of the Main Battle Tank

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(MBT-70).

(C) The Shillelagh program current in Fiscal Year 1970 was for 89,211 missiles (including 951 R & D missiles) at a total development and procurement cost of \$495.8 million. A three-year multi-year fixed price contract provided for the production of 52,700 missiles through June 1972 at a basic hardware unit cost of \$1913. The contract contained a provision for maintaining the favorable contract option prices for the following three years. This contract was funded for the first two years of production. Under the contract, 15 August 1970 was the funding date for the third year of production. The contract provided for a cancellation penalty of \$2.5 million, if the third year was not funded.

(C) The Army (DA) submitted on 7 August 1969 a program change request (PCR) to the Office of the Secretary of Defense redefining the Army's requirement for Shillelagh. This PCR requested approval of an interim Authorized Acquisition Objective (AAO) of 65,618 plus 18,572 missiles for training and test for a total of 84,190 to support the M551 Sheridan only. Also, it requested approval of the Fiscal Year 1970 buy of 17,000 Shillelagh missiles at a cost of \$47.7 million, and a recommended deferral of a decision to buy the Shillelagh missile

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MFR, AMCRP-H, 1 Jun 70, subj: AMC FY 1972 Product Improvement Program.

21

Selected Acquisition Report (SAR) RCSDD - COMP (Q) 823 Program: Shillelagh Missile, 30 Jun 70.

22

Aeroneutronics Division, Philco-Ford Corporation Contract, DA-AHOI-69-C-0059, 29 Jul 68.

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beyond Fiscal Year 1970 until the problems with M60A1E2 tank were resolved. On 4 September 1969, the Assistant Secretary of Defense approved the PCR, thereby approving the Fiscal Year 1970 procurement but cancelling the planned Fiscal Year 1971 procurement. The program change decision (PCD) stated that \$8.9 million of Fiscal Year 1971 funding would be retained in the program for cancellation change, resulting in a net reduction of \$41.6 million,²³ to the Fiscal Year 1971 program.

(C) The Shillelagh Project Manager submitted on 12 March 1970 a plan for the phaseout of the Shillelagh Production Programs and Facilities. This plan was based on the lack of approved future requirements for the production equipment for Shillelagh Missile of Guidance and Control Equipment (G & C) in use at the government-owned, contractor-operated (GOCO) plant at Lawndale, California, after the completion of production already funded. The proposal was approved on 22 April 1970, contingent to a congressional decision to produce the Shillelagh for Heavy Anti-Tank Weapon (HAW) or Airborne requirement,²⁴ in lieu of the TOW Missile System.

(C) Aeronutronic Division, the Shillelagh prime contractor, submitted an unsolicited proposal to adept Shillelagh to the HAW ground mount role requirement, for which the Army developed the TOW missile system. AMC evaluated the Aeronutronic proposal, and in response to Congressional interest, submitted data developed in this

²³ PCR and Decision (PCD) for Shillelagh, A-9-005, 4 Sep 69.

²⁴ AMC msg, AMCRP-H, 221920, Apr 1970, subj: Plan for Phaseout of Shillelagh Production Programs and Facilities.

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evaluation to Congressional Committees. This evaluation determined the following: (1) conversion of Shillelagh to perform the TOW mission would require considerable development work; (2) no savings would be realized by developing the Shillelagh missile for the ground mount role; (3) a four-year delay would be incurred by the Army if it were forced to await delivery of the Shillelagh missile in the ground mount role; and (4) there would be no guarantee that a converted Shillelagh would perform as well as TOW.

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(C) At the conclusion of the Army presentation on TOW/ Shillelagh, the House Armed Services Committee (HASC) approved a motion to withhold authority to expend Fiscal Year 1971 funds for a Heavy Anti-Tank Weapon (HAW) until completion of an eight-month feasibility demonstration of Shillelagh. At that time both contractors were to submit firm-fixed-price (FFP) bids for all remaining HAW missiles and launchers required by the Army. The feasibility demonstration program will cost approximately \$5.0 million. If the full Congressional Committee approves the HASC report, the Shillelagh HAW will begin its development program on or about 15 March 1971, and the system would not be available for troops until January 1975.

(C) Based on conclusions reached in its analysis and evaluation, the US Army Materiel Command recommended the continued procurement

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DA MFR, SACIL, 9 Apr 1970, subj: Resume of Congressional Hearings.

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OCRD, Memo BUS (2/91) - CM-30, 13 Apr 70, subj: TOW/Shillelagh.

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of TOW for the HAW mission. This recommendation was supported by
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OCD and the Chief of Staff presentation to the HASC. The Secretary
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of the Army, also, has given strong support to this recommendation.

(C) Concurrent with the Shillelagh/HAW study, AMC conducted an evaluation of Shillelagh and TOW in the helicopter role. The study determined that the TOW system in the helicopter role was operationally superior to the Shillelagh, and that TOW could be fielded earlier than the Shillelagh. It was estimated that the TOW system would cost about \$30 million less than the Shillelagh system for both the Cobra and Cheyenne configuration. This data was prepared for presentation in briefings to Department of the Army Staff and the Army Secretariat
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for response to Congressional interest in airborne missile systems. Based on the results of this evaluation, AMC recommended the continued
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use of TOW for the airborne anti-tank missile role.

(C) TOW Missile System. The TOW Fiscal Year 1970 PEMA program was reduced by DA from \$156.0 million to \$142.0 million, and deleted from the budget on 25 September 1961 by the House Armed Services Committee. On 4 November 1969 the Joint House and Senate Committee reinstated the program at \$100.0 million.

27
Chief of Staff's Statement to the HASC re: TOW/Shillelagh,
8 Apr 70.

28
Secretary of the Army ltr to Chairman, Senate Armed Services
Committee, 6 May 1970, re: HASC Report.

29
DA msg, CRDAM, 16014Z, Jun 1970, subj: Congressional Briefing
on Antitank Missile System for Helicopters.

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AMC ltr, AMCRD-Q, 9 Jun 70, subj: Airborne Missile Systems.

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(C) A development acceptance in-processing review of the TOW missile system was held on 13-14 August 1969 to extend limited production type classification. On 27 September 1969 the extension was granted by AMC. An AMC Command Review determined on 12 November 1970 that the program was on schedule, and had no significant problems. In a letter dated 4 March 1970 the Army Chief of Staff acknowledged the satisfactory progression of the TOW program and directed that an Initial Procurement Objective (IPO) be established to initially equip certain high-priority units only. This IPO was established at 111,539 missiles and 735 launchers.

(C) Two hundred and eighty-six (286) production missiles were fired at moving and fixed targets located between 65 and 3000 meters. A reliability of 93.6 percent and an accuracy of 95.1 percent was achieved.

(C) At a production validation pre-in-process review held on 23-24 June 1970 at AMC, substantiating data presented showed that the TOW system conforms adequately to the QMR. Also, the review revealed that the Initial Production Testing (IPT) provided the system reliability and accuracy to permit reclassification of the missile and launcher from LP to Type Classification Standard "A", and to extend LP through May 1972 on the ancillary items of equipment until their testing was completed.

(U) Land Combat Support System (LCSS). The LCSS product charter was signed on 16 December 1968, and LTC Frank A. Matthews was designated product manager. As of 30 June 1970 the LCSS program history was as follows:

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<u>Fiscal Year</u>	<u>Quantity</u>	<u>Value (in millions)</u>			
		<u>PEMA</u>	<u>R&D</u>	<u>Total</u>	<u>PEMA Repair Parts</u>
1967/Prior	10	13.6	27.3	40.9	0
1968	5	10.0	3.9	13.9	0
1969	7	15.3	7.8	23.1	9.3
1970	16	29.4	6.8	36.2	11.5
1971(Estimate)	<u>14*</u>	<u>27.9</u>	<u>2.0</u>	<u>29.9</u>	<u>9.4</u>
Subtotal	52	96.2	47.8	144.0	30.2

(U) The initial Army Authorized Objective of 84 was reduced to 64. During Fiscal Year 1970 this number was further reduced to 52, with a buyout of 14 LCSS contemplated for 1971.

(U) Unlike missile systems which had to overcome normal problems due to changes in their own process and configuration, LCSS had to adept to encompass all changes in the systems supported, Shillelagh, TOW, Lance, and Dragon.

(C) Ammunition

PEMA Program

(U) The total Fiscal Year 1970 PEMA program for the Munitions Command was \$3214.8 million, with a carryover of \$256.7 million. Ammunition item awards accounted for \$2,662.3 million and Production Base Support awards were for \$295.8 million. The awards accomplished totaled \$2958.1 million or 92 percent of the released MUCOM program. A 32 percent reduction in procurement awards is shown when the Fiscal Year 1969 awards (\$4,350 million) are contrasted with the Fiscal Year 1970 awards (\$2,958 million). This reflected the reduced ammunition requirements for Southeast Asia.

Modernization of Explosive Facilities

(U) The Fiscal Year 1970 program provided \$138 million for a plan to modernize the government-owned, contractor-operated explosive

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facilities. The funds provided for continuous explosive manufacturing lines and supporting acid facilities.

(U) Most of the facilities that were to be replaced were obsolete. Built in the early 1940's, the plants were considered inefficient. The modernization will reduce drastically the air and water pollution they once emitted.

Ammunition Production Base Program

(U) In a review of the Management of the AMC Production Base Support (PBS) program recommended certain improvements in the PBS management procedures and policies. As a result AMC intensified its liaison with the Corps of Engineers to effect firm cost estimates for design criteria and thus avoid cost growth in PBS facilities projects. To further implement the study's recommendations, early projects submissions by installations, and timely staffing through higher headquarters (DCSLOG and ASA [I & L]) was initiated.

(U) The fiscal year PEMA Ammunition Production Base Program totaled \$326.5 million. At the close of the fiscal year, \$295.8 million had been awarded, thus leaving a \$30.7 million carryover to Fiscal Year 1971.

Conventional Ammunition

(C) Cartridge, 152-mm, HE-T, XM657E2. Due to an in-flight premature experienced during testing in June 1968, the XM657E2 was unavailable for initial Sheridan SEA deployment in January 1969. The problem was resolved subsequently and TECOM issued a troop suitability statement in May 1969. Based on TECOM's statement, on 26 May 1969 DMR forwarded a message to CINCUSARPAC in accordance

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with provisions of AMCR 700-34 outlining the usage restrictions imposed on the XM657E2 and requesting theater acceptance prior to approving release.

(C) USARV on 13 June 1969 expressed reservations relative to fuze safety and recommended that the XM657E2 not be sent to SEA until hazards were resolved. On 9 July 1969, the Deputy CG, AMC, provided additional information as to the safety of the XM657E2 and recommended that as a minimum, a theater evaluation be conducted. USARV agreed and 2,000 rounds were shipped in July 1969. The evaluation was initiated in September 1969, and the theater evaluation report was ready by April 1970. It concluded that the XM657E2 cartridge was suitable for use in the Sheridan vehicle in SEA. Also, the report recommended that the cartridge be included in the Sheridan basic load. Consequently, on 26 June 1970, AMC obtained DA limited procurement to load 60,000 additional XM657E2 cartridges and thus complete the Fiscal Year 1968 program.

(C) Ballistically Matched Family of Artillery Projectiles. Due to the development and introduction of many new types of projectiles into the artillery family and the tendency to complicate and proliferate firing tables, establishment of the feasibility and identification of an optimum ballistically matched family of artillery projectiles was warranted.

(C) Picatinny Arsenal, the US Army Materiel Systems Analysis Agency, and the Ballistic Research Laboratories conducted a study to determine the feasibility of a matched family of ammunition, and define the "best" matched family for the 155-mm Howitzer (to be

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followed by studies for 8-inch and 105-mm Howitzer). Upon completion of the study, the findings were presented at a conference at Fort Sill, Oklahoma.

(C) At the meeting AMC maintained that the ballistic match study did not provide support for the immediate selection of any one round or family of ammunition upon which to base ballistic match in various calibers. Further, the AMC maintained that the results of this study should be confirmed by an advanced or exploratory development program to establish hardware feasibility; and that CDC should conduct a detailed time-cost study of ammunition assets and calculate the cost of replacing these assets with a new family of ammunition. The CDC study should clearly identify the requirement for and the advantages (other than effectiveness) to be gained through development and fielding of a ballistically matched family of ammunition.

(C) It was determined that the development of a ballistically matched family of ammunition would require establishment of practical objectives that have a reasonable chance of being accomplished within the state-of-the-art. Finally, the development of new ammunition to families would require development of ten to fifteen separate type rounds within each caliber. These rounds would have to be tested and type classified for each howitzer within the artillery inventory. This would entail large costs for the production and testing of ET/ST quantities. Further, TECOM test capacities are limited. ET/ST of these rounds would require 15 to 18 months per caliber providing top

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priority were given and a considerably longer period of time under normal testing priorities.

Special Ammunition

(U) In November 1969, Congress enacted The Military Procurement Authorization Act of 1970, Public Law 91-121. Provisions of Section 409 of that law restricted movement of lethal chemical, biological agents, and prohibited open air testing without approved procedures. Also, the deployment of any lethal agents or delivery systems outside of the United States was prohibited without prior notification of the country involved. On 25 November 1969, the President further clarified the position of the United States on chemical and biological warfare.

(U) The President stated that in a conflict, the United States would not be the first to use lethal chemical weapons or incapacitating chemicals. He further emphasized that (1) the United States renounced all forms of biological warfare; (2) the United States' biological efforts would be confined to defensive measures; and (3) the Department of Defense would dispose of existing stocks of biological weapons.

(U) Vehicles

Combat Vehicles

Some of the Fiscal Year 1970 accomplishments within the combat vehicles mission are narrated in the paragraphs below.

The plan for partial dieselization of M113 (gasoline powered) APC fleets at USAREUR and USARPAC initiated in Fiscal Year 1969, met with more delay this fiscal year. The replacement program was deferred with

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60 percent of the Eighth US Army (EUSA) and 8.5 percent of USAREUR fleet scheduled for replacement during Fiscal Year 1970. Shipment of vehicles to the EUSA was delayed initially pending receipt of 90 percent of required repair parts by that command. Subsequently, the Department of the Army Distribution/Allocation Committee considered a possible reduction of US Forces in Korea which resulted in further delay. By the end of this fiscal year, 43.2 percent of the USAREUR fleet had been replaced.

In February 1970 AMC waived the release requirements of AMCR 700-34 and approved the release of the XM706/E1/E2 armored car. Production of these vehicles was completed in April 1970 with no production planned in Fiscal Year 1971. Twenty-five (25) XM706E1's were issued to Military Police units at Fort Meade and Fort Bragg. Also, on 10 November 1970 AMC approved full release of the M114A1E1 carrier. A total of 2213 M11 series carriers were to receive the retrofit (installation of the VRFWS) during vehicle overhaul. At the end of this fiscal year, 408 carriers were completed.

During Fiscal Year 1970 the Expediting Nonstandard Urgent Requirements for Equipment (ENSURE) program was advanced by numerous accomplishments. In March 1970 kits for modification of 2143 M113A1's were shipped to USARV. Another 946 of these modification kits were furnished to ARVN in June 1970. Headquarters, Department of the Army requested AMC to prepare plans to refurbish, modify, and re-distribute 913 belly armor kits to USAREUR as they became available from USARV redeployment. Another ENSURE requirement was accomplished on 1 June 1970. At that time AMC approved the release of 140 automatic

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fire suppression kits of M113A1 armored personnel carrier. Engineering tests of the kit performed at Aberdeen Proving Ground had demonstrated that the kit was capable of extinguishing a diesel fuel fire in the crew compartment of the APC. Also, 28 ENSURE 56 recovery kits for M113/M113A1 APC's were installed on vehicles in CONUS and shipped during June-July 1970. In July 1970, 12 kits were shipped to Japan for installation during 1971 vehicle overhaul program.

Tactical Vehicles

Project RECOUP, the XM809 series truck, and GOER vehicles were the major concern within the tactical vehicle area.

Project RECOUP (Rebuild components - Underbuy new procurement) was an OASD, Comptroller for Internal Audit sponsored project and as such had the attention of the highest levels of the Department of Defense. Based on the Comptroller's audit, which was performed to determine the possibility of using rebuilt axles in the production of new trucks, the Comptroller determined that the Army could reduce procurement costs of 2½ and 5-ton trucks in the first year by some \$7.2 million (\$2.2 million for 2½-ton trucks and \$5 million for 5-ton trucks). This review was based on the reported 15,669 axles excess to establish requisitioning objectives at the time. On 8 October 1969 AMC informed DCSLOG that if Project RECOUP was to be implemented it should be started with the next multi-year contract (Fiscal Year 1972 for the 2½-ton truck and Fiscal Year 1973 for the 5-ton truck). It was noted that the large quantities of unserviceable assemblies required to support the current fleet remained unfunded for rebuild and that repair programs should be started to support requirements for

stock and as Government furnished equipment (GFE). On 3 April 1970 DCSLOG/MED advised that Project RECOUP had been approved in concept.

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Also, the message authorized the cannibalization of Code "H" end items, and requested that the AMC Support Plan be provided to DCSLOG by 1 June 1970. On 13 June 1970 DCSLOG provided general policy guidance relative to Project RECOUP and expanded the concept to all commodities.

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On 10 March 1969 a four year multi-year contract for 13,066 5-ton, 6x6, XM809 series trucks (with Cummins model NHC-250 engine) was awarded to the Kaiser-Jeep Corporation in the amount of \$212.4 million. The contract was to be funded incrementally over the four year period (Fiscal Year 1969 - Fiscal Year 1972). Nine XM809 vehicles were received in March 1970 for initial production tests (IPT). During the ET/ST of the XM809, 60 deficiencies and 129 shortcomings were reported. Corrective modifications were being applied with success. A conditional release of XM809 assets was granted on 14 July 1970 based on test/production/retrofit data presented to the AMC Command Group. Initial issues were planned for August 1970 at 500 per month rate.

An advance procurement plan was submitted on 21 May 1970 to OASA (I & L) for approval of a two step, four year multi-year procurement of 1300 GOER vehicles. The Fiscal Year 1970 portion of the

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DA TT 022248Z, Apr 1970, Project RECOUP.

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LOG-SD-PIDB ltr, 13 Jun 1970, No. 17849, subj: Project RECOUP.

program for \$10.4 million was released to TACOM for procurement of 100 vehicles during the first year. An additional 1200 vehicles were programed for delivery during fiscal years 1972-1974. The body types of these 1300 trucks were as follows: 812 Truck, Cargo, M520; 371 Truck, Tanker, M559; and 117 Truck, Wrecker, M553.

(U) Communication

The varied communications systems, programs and agencies controlled by AMC continued to be implemented with masked progress and success. A good example of this was the introduction of a mechanized system into Direct Support and General Support Units (DSU/GSU) in the Army worldwide.
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The Computer System (NCR 500) utilized by the Army was **centrally** programed by ADFSC and monitored by DA/CDC/AMC. Improvements over the manual system which had been replaced were quickly observed. These results included the processing of requisitions within 24 hours after receipt at DSU/GSU level; effective determination of excesses; better utilization of substitutes; better management control by replacing approximately seven related forms with one magnetic ledger card; purification of Authorized Stockage List (ASL); maintenance of minimum on-hand balance of stock; effective capture of demand history; and early "Grass-Root" training in ADP techniques.

Scheduled to replace the manual system in field Artillery organizations was the Tactical Fire Direction System (TACFIRE). That

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DA ltr AGAM-P(M), 18 May 1967, subj: Mechanization of DSU/GSU Supply Operations Worldwide.

system was the result of continuing studies beginning in 1957 and culmination in a Total Package Procurement (TPP) contract award to Lutton Industries in December 1967. It was anticipated that the RDAT would be completed during the 2d and 3d Quarters of Fiscal Year 1971 and that production release would follow completion of ET/ST during the 2d and 3d Quarters Fiscal Year 1972.

In May 1970 the Department of the Army was tasked with the responsibility for procurement and life cycle management of new microwave radios for use throughout the Defense Communication System. The radios to be procured initially were envisioned as being essentially commercially available - off the shelf radios. Milestone chart as of 14 July 1970 forecasted award of the contract in the first quarter of Fiscal Year 1972.

(U) Mobility Equipment

Mobile Electric Power

The mission of the Project Manager for Mobile Electric Power was to effect management and standardization of mobile electric generating sources within DOD to meet military needs.

In July 1969 after consultation with the Military Services, the Project Manager revised the DOD Standard Family of Mobile Electric Power Generating Sources (MEPGS) by reducing the number of ratings from 66 to 43 items. During Fiscal Year 1970, a project was initiated to prepare MIL-STD-633C to identify the 43 items in the revised Standard Family; to list 35 interim items from MIL-STD-633B, which could be substituted until the DOD sets were available; and to add

four items of gas turbine engine driven generator sets as interim second generation Standard Family items.

A contract was placed for Engineering Design Test models of the 10KW Turbo-alternator. Turbo-alternator coupled the gas turbine engine and the high-speed alternator on a single shaft and gave promise of a major advance in providing simple, lightweight, reliable, and versatile power generating sources. Other contracts were awarded for the production of the first generation diesel members of the DOD Standard Family of generators.

Development of a Commercial Construction Equipment System

On 18 June 1969 AMC directed MECOM to develop a suitable commercial construction system for equipment provided construction elements of the Army. Command guidance given MECOM on 18 September 1969 provided for multi-year procurement; open end contracts with the manufacturers for repair parts; life cycle costs of competing machines to be derived from real life costs as experienced by civilian construction environment as opposed to testing against military characteristics by a military test agency. On 5 February 1970 MECOM presented its commercial construction equipment (CCE) system plan to CG, AMC, who forwarded it to DA/DOD for approval. Final implementation of the new policy was expected to improve mobilization readiness, improve deadline rates due to better parts availability to provide significant dollar savings.

Rail, Marine and Amphibian Equipment

A complete survey was initiated in Fiscal Year 1970 of the supply

status of worldwide fleet of Army rail, Marine, and Amphibian items. Examination was made of all known requirements and of the location and utilization of all assets of unneeded items as well as those which could no longer be supported. The results were to be a usable fleet, adequate for known needs, consisting of the most modern equipment commensurate with budget utilization.

(U) Industrial Preparedness

PEQUA

Personnel of the US Army Production Equipment Agency (PEQUA) continued to provide engineering and technical assistance to Headquarters, AMC, and the major subordinate commands concerned in the management of the production base support program projects, modernization and layaway of industrial plant equipment programs, and streamlining the manufacturing methods and technology program throughout the AMC complex.

The most important preoccupation of PEQUA for Fiscal Year 1970 was the validation of the economic analysis for Provision of Industrial Facilities Projects. In each case this entailed in-depth study of the justification for the project; the problems involved; the alternatives; the economic advantages that were to be derived; the economic risks involved; the feasibility of the proposal; and other considerations. Despite the heavy demand this program placed on the Agency, personnel was able to complete modernization studies on shops at Pine Bluff Arsenal, Granite City Army Depot, and Harry Diamond Laboratories.

Under a continuing program, records on General Reserve equipment were screened to identify and locate suitable equipment for ASOD packages. Nine items with an acquisition cost of \$186,846 were accepted by the Major Subordinate Commands for replacement of loaned items, and 146 items with an acquisition cost of \$2,656,487 were accepted to replace equipment requiring repairs costing 10 percent to 65 percent of acquisition cost of equipment.

The Agency was also involved in many manufacturing method and technology projects such as new techniques for precision forging of complex gear shapes; new high-speed method of manufacturing small arms ammunition; and a machine developed to build sections of helicopter rotor blades with complex lifting surfaces. These projects were advancing the art of producing complex items for the Army.

Production Base Support Program

On 30 June 1970 the total program released to subordinate commands was \$440.5 million. The AMC 87 percent obligation performance, for Fiscal Year 1970, was higher than any prior year except Fiscal Year 1968, which saw the peak of the Production Base effort to support Southeast Asia.

The preponderance of the Fiscal Year 1970 program involved the provision of industrial facilities for \$26.6 million, including annual support and modernization. Modernization was limited to the ammunition production base, and this effort represented the first major increment against a program of \$2.3 billion approved for this purpose by the Congress.

The Fiscal Year 1970 layaway program (all activities) amounted to \$21 million, and a total of \$67 million was programmed for production Engineering Measures.

Defense Materials System (DMS)

The lowering tempo of combat activities in Southeast Asia was reflected in marked decline in Fiscal Year 1970 of allocations of authorized controlled materials by AMC to Defense contractors. Although controlled materials comprised over 80 sub-classifications, comparison figures for the four major groupings illustrate the decline as follows: Steel allocations decreased to 1,541,554 tons from the previous year's 2,163,693 tons; copper allocations dropped to 231,565,050 pounds from 374,747,283 pounds; aluminum allocations decreased to 189,985,076 pounds from 249,825,336 pounds; and nickle alloy (defined in Mil-Hdbk-223) allocations declined to 139,077 pounds from 242,104 pounds. This downward trend was evident in other aspects of the program.

Requests for special priorities assistance received from major subordinate commands and other agencies and favorably acted upon by Headquarters, AMC, declined from 423 in Fiscal Year 1969 to 185 in Fiscal Year 1970. The dollar value of items for which priorities assistance was requested totaled \$9,565,571 as compared to \$63,440,044 the previous year. Fourteen requests were for assistance in obtaining basic materials, 27 for production equipment, and 144 for various components of end items.

Twenty-six end items for Army programs were approved for inclusion in the DOD Master Urgency List for Fiscal Year 1970. Of

these, the President approved five for the BRICK-BAT (highest national priority) category; the remainder were in the CUE-CAP (highest DOD) category. In Fiscal Year 1971 AMC nominated two end items for the BRICK-BAT category, and 32 for CUE-CAP.

Preliminary analysis of findings resulting from a series of compliance reviews at AMC major subordinate commands, procurement agencies, and depots indicated two principal problem areas in maintaining an effective DMS. In one area the procurement personnel at certain installations did not aggressively implement the rules and remedies of DMS to enhance on-time production nor were prime and subcontractors adequately advised of their responsibilities. The second problem area concerned some management officials who did not recognize the mobilization role of DMS and thus failed to maintain a trained cadre of DMS personnel which could be rapidly expanded in the event the US economy would be placed under general war controls.

(U) Plans and Programs

Problem Hardware Items

In May 1969 commodity commanders made known their concern about hardware items being accepted by DSA (DCAS) which created problems after issuance to the field. AMC decided to maintain full visibility over items ready for issue. To provide a method of control of problem hardware items, AMCR 700-34 was revised and issued on 12 September 1969. In October 1969 a survey of problem items was developed which consisted of 165 major end and secondary items with a value of \$222.2 million.

By June 1970 ECOM, MECOM, TACOM and WECOM only had problem hardware items. Since the start of the program, over \$200 million worth of equipment had been released. A central control of an item was maintained in the Plans and Programs Division, Requirements and Procurements Directorate.

Release of End Items

To insure orderly and prompt release of end items of proven quality for field use, the AMC program covered all PEMA funded military design items/systems and commercial items including their critical components and major assemblages; major end items that had undergone significant alterations; all new major end items which had been produced for first-time issue into the supply system by a new producer or by a former producer after a lapse of two or more years. During Fiscal Year 1970 full release was made for 79 items and a conditional release was approved for 53 items. Release actions approved were as follows: aviation 2; missile 16; electronics 15; mobility equipment 33; vehicles 16; weapons 12; and munitions 38.

Recoupment of Prior Year PEMA Funds

Efforts of all levels to review and reduce the uncommitted/unobligated/unliquidated PEMA program balances were continued at an intensified rate. This was in consonance with the Fiscal Year 1970 Appropriation Act for "No Year Procurement Funds for the Department of Defense which prescribed: Amounts, as determined by the Secretary of Defense and approved by the Director of the Bureau of the Budget, of any appropriations of the DOD available for procurement (PEMA) which will remain unobligated as of the close of any fiscal year for

which estimates are submitted, and which have been available for obligations for three or more fiscal years (execution plus two) shall be proposed for rescission."

The three year limitation was to apply beginning with Fiscal Year 1972. Continuous follow-up and close coordination were maintained with the major subordinate commands and DA staff in order to accomplish the objective of the Congress for the "No Year" PEMA funds.

PEMA Program Decrease

This fiscal year marked the beginning of the decline in the planned Direct Army PEMA program. The AMC portion of that program was reduced by nearly \$2.1 billion or 33 percent from the Fiscal Year 1969 program. Part of the reductions was accounted for by the OSD imposed "703" list which reduced the AMC obligational program in order to cause a reduction in Fiscal Year 1970 expenditures.

A comparison of the Fiscal Year 1969 and Fiscal Year 1970 Direct Army PEMA Program follows:

<u>ACTIVITY</u>	<u>\$MILLION</u>	
	<u>FY 69</u>	<u>FY 70</u>
Aircraft	638.1	366.7
		(2.9)
Aircraft Spares	152.0	77.0
Missiles	849.5	755.5
(SAFEGUARD)	(330.6)	(359.6)
Missile Spares	45.0	38.9
		(0.9)
Weapons & Combat Vehicles	512.7	301.9
Tactical & Support Vehicles	890.2	425.2
		(0.2)
Communications & Electronics	584.3	358.7
(STARCOM - ASA)	(1.3)	(48.3)
Other Support Equipment	432.0	288.1
	(36.3)	(25.3)
Ammunition	2913.1	1729.4
	(3.1)	(6.0)

Production Base Support	157.7	319.3
	(3.9)	(6.8)
Total	6674.6	4660.7
Non-AMC	(375.2)	(450.0)
AMC	6299.4	4210.7

Programming Authorizations

By a TAG letter dated 30 January 1970, DA (DCSLOG) withdrew from AMC reprogramming authorizations for all purposes other than for increases in the price of the hardware contracts. A message dated 17 February 1970 from Headquarters, AMC, imposed this limitation on the major subordinate commands and project managers.

Secondary Items

The Army Stock Fund program continued to show trends that existed in earlier fiscal year programs such as the following: demands declined, reflecting reduction in consumer funding; obligational authority was reduced to the lowest value in four years; and a slight increase in total inventory. In spite of these circumstances, outstanding backorders in all age categories were eliminated to the extent that both numbers and total value of backorders reached the lowest total in four years. At the end of this fiscal year backorders for the seven wholesale materiel numbered 168.5 thousand, valued at \$139.3 million. This represents a reduction of 109,500 requisition lines and \$68.7 million for Fiscal Year 1970. As of 31 December 1965 backorders totalled 425,000 valued at \$242.6 million. The dollar reduction is even more significant when compared to the dues out peak of \$410 million recorded on 31 August 1969. The reduction during

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CS GLD-1115, Army Stock Fund Management Report and DD-I&L-M-782 MILSTEP Format II, Supply Availability and Workload Analysis.

Fiscal Year 1970 is the culmination of a broad spectrum intensive management effort of several years duration.

Cost and Economic Information Office (CEIO)

On 5 September 1969 CEIO was removed from the Directorate of Procurement and Production and placed directly under the Deputy Commanding General for Material Acquisition. At that time CEIO was expanded and reorganized into two divisions. The selected Acquisition Reports (SAR) Division was created to accommodate the increasing burden that these reports had placed on CEIO. The Contractor Cost and Performance Division became responsible for all other CEIO activities not pertaining to SAR. Concurrently, the office's authorized strength was increased from 11 to 24.

By January 1970 all of the commodity commands were involved in the application of Cost/Schedule Control Systems Criteria (C/SCSC). C/SCSC prescribed the cost and schedule requirements that the contractor's own management system was to meet. Representatives of this office participated with representatives of the Air Force and Navy as a tri-service group in the development of uniform policies and implementations involving the application of C/SCSC and related activities. The Cost Performance Report was approved in February 1970 by the Bureau of the Budget and OSD as the means for obtaining contractor cost and performance data.

SAR was the key vehicle by which the Department of Defense reported to the appropriate committees and members of Congress on the progress of selected major weapon systems. Because of the sensitive nature of SAR, the format and guidance was subjected to frequent change. This

situation appeared to be improving but had not been completely resolved.

CHAPTER VII

~~(S)~~ DISTRIBUTION AND TRANSPORTATION

UNCLASSIFIED

(U) During Fiscal Year 1970 the Department of the Army established the Logistics Offensive Program to provide better and more economical logistics support to our worldwide Armed Forces and Free World Forces. This comprehensive Army-wide program included the renovation of logistics principles and techniques and the upgrading of the logistics system. The key factor in the Logistics Offensive Program was "Inventory in Motion", a management concept, which integrated supply, maintenance and transportation. Its ultimate goal was non-stop supply support, direct from Continental United States to the direct support level. This was to provide better support at less expense by reducing stocks of supplies on the ground and related storage costs through greater asset visibility and control. The program capitalized on improving technology in communications, automation, transportation and distribution, and helped to offset some of the funding problems.

(U) Plans and Control

Receiving and Shipping Forecasts and Performance

For the previous two years, Headquarters, AMC had provided data on the forecasts compared to the actual depot shipping and receiving performance to the National Inventory Control Points and Army Class Manager Activities. Some improvement in performance was noted, but better performance was desired. As part of the covering letter to the

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1st quarter, Fiscal Year 1970 data, the AMC requested that significant deviations be analyzed and the results returned to Headquarters. The replies fell into the following general categories: (1) Receipts of retrograde materiel was difficult to predict; (2) Returns from customers failed to materialize; (3) Lack or cutback of funds affected procurement, maintenance and set assembly or disassembly programs; (4) Unprogramed requirements such as special projects or replacement of ammunition when a storage dump was blown up; and (5) Lack of uniformity by storage activities in counting line items.

The AMC instructed the Depot Data Center to provide all the commodity commands and support centers with complete copies of the quarterly Supply Depot Cost and Performance Reports from the first quarter of Fiscal Year 1970. These reports were utilized by the National Inventory Control Points and Army Class Manager Activities in evaluating their programs against actual depot performance.

Military Supply and Transportation
Evaluation Procedures (MILSTEP)

The final testing of MILSTEP was completed in July 1969. Simultaneously, report preparation and analysis were inaugurated. The NICP's rendered reports and analyses each month. Some of the data was not considered sufficiently valid for use in making management decisions. However, MILSTEP was improved throughout the year, and was used to measure the volume of invalid data and reasons for low performance.

During Fiscal Year 1970 certain policy changes were received from DOD through DSA. DOD required a report on Supply Support

Arrangements under the International Logistics Program and proposed a breakout of data to reflect performance on those demands that were available as well as those that were not available. DOD proposed that back orders and direct vendor deliveries be reported by the date of the requisition instead of the date received at the NICP. The AMC initiated a diagnostic report to identify details concerning late transportation holding time. The command also programed special MILSTEP reports for measuring workload and holding time at SEAVAN assembly points at Red River, Sharpe, and New Cumberland Army Depots.

Other Problems and Accomplishments

The Command Management Review and Analysis (CAMERA) system continued as the basic source of management indicators. Many topics were revised and several were added. Primarily, the additional subjects were those contained in the Command Supply Discipline Program.

Due to drastic cuts in manpower and dollar resources, the Deputy Commanding General for Logistics Support approved a plan that placed all supply operations at AMC depots on a single-shift, five-day work week. The DCG advised the National Inventory Control Points and Army Class Manager Activities of the reduced work schedule and requested them to assist the depots by providing an orderly flow of materiel release orders.

The pilot test which placed the Lexington-Blue Grass Army Depot under Army Industrial Funding (AIF) became effective 1 January 1970. Although maintenance operations at the depot had been under AIF for some time, many deviations to those procedures had to be made to accommodate supply depot operations. At the end of this fiscal year sufficient

evidence had been gathered to indicate that the system could be applied to supply operations though many details remained to be resolved.

(U) Projects and Programs

Readiness Improvement Programs

During this year, the Secretary of the Army directed that the following units be brought to their authorized level of organization (ALO): USAREUR units by 31 December 1969; prepositioning of materiel configured to unit sets (POMCUS), and operational projects by 30 June 1970; and certain war reserve stocks by 30 June 1970.

To achieve the above objectives, the Department of the Army directed AMC to maintain visibility over all European Improvement Program (EURIP) shortages, and expedite forecasted deliveries against these requirements. Consequently, records were established to monitor the program and develop data for biweekly briefings to the Deputy Assistant Secretary of the Army, Installations and Logistics (I&L). These actions entailed coordination with various offices such as the Deputy Chief of Staff for Logistics (DCSLOG), USAEUR, AMC Commodity Commands, depots and the USA Logistic Control Office, Atlanta. Also, all data prepared by National Inventory Control Points (NICPs) were reviewed and analyzed to assure that all available assets were being utilized. AMC's records of this program indicated that USAEUR Army units met their ALO by 31 December 1969; and sufficient materiel was shipped to bring POMCUS, war reserve, and operational project stock to their ALO by 30 June 1970.

The Eighth US Army readiness improvement program was established in August 1969 by DCSLOG. Its objective was to bring all units in Korea up to their ALO through intensive management actions by Headquarters, AMC. Full accomplishment of the program was set tentatively for 31 December 1970. The first report prepared in August 1969 by the Eighth Army in Korea covered 21 selected units which were below their ALO and listed those items, with requisitions, not available within the units. Subsequent reports added new units and deleted those that had met their ALO. A total of 76 units were reported.

To accomplish the objectives of the program, AMC maintained records to give visibility to the life history of all requisitions reported from Korea. This visibility covered all actions from receipt of the requisition at the NICP to time of shipment to the oversea area via air or surface. It was essential to the accomplishment of the program to secure the cooperation of the NICPs, depots and the USA Logistic Control Office, Pacific.

After November 1969, DA changed the reporting cycle from 30 to 60 days because of the difficulty in getting the data back to Korea before the next report was being prepared. This was due in part to the requirement to pass in each direction the report through HQ, US Army, Pacific for review. Meanwhile AMC provided feeder data for briefings by DA to the Assistant Vice Chief of Staff on the status of the program. As of 30 June 1970, 121 of the 135 units in Korea had reached their ALO.

Similar intensive management techniques were adopted to bring the 171st and the 172d Infantry Brigades in Alaska to their ALO.

Initiated by DCSLOG in November 1969, this program received a target date of 30 June 1970. The first report in November 1969 showed a shortage of 73 items in the two brigades. However, as of 1 June 1970 both brigades had reached their ALO. The program was expanded to include five smaller units stationed in Alaska which had not previously participated in the program.

CONUS High Priority STRAF Units

AMC was delegated the responsibilities in the DCSLOG area of attaining and maintaining the authorized readiness posture of certain US Strategic Army Forces (STRAF) units. It was a continuing intensive arrangement program of prime interest at the DA level including DCSLOG, DCSOPS, and DCSPER.

Pursuant to DCSLOG instructions, the readiness posture of the selected units was reported monthly. Those units whose equipment deployability readiness condition failed to equal its ALO were required to submit definitive data, which were to include major item shortages, components/ancillary equipment shortages, and repair parts contributing to deadline equipment status. To insure timely action and provide assistance as required, the Army Maintenance Board was directed to provide customer assistance contact with the selected units. Also, the Board was to have customer assistance representatives indicate slippages, improvements, and related situations.

The Plans and Control Office, Directorate of Distribution and Transportation, developed and provided facts to DCSLOG and anticipated deliveries, as well as problems surrounding nonavailability of items which adversely affected materiel readiness. This information served

as the basis for briefing the Deputy Assistant Secretary of the Army (I&L). The AMC initiated actions to improve delivery of shortages and obtain suitable substitutes, as well as related actions. As a result of these actions which substantially improved the materiel readiness conditions of these units, DCSLOG and DCSOPS in conjunction with CONARC added 10 additional supporting units to the CONUS intensive management program. At the end of this fiscal year, 31 of the 35 selected units had reached their ALO.

Project MASSTER

In September 1969 DA established the Mobile Army Sensor System Test Evaluation and Review (MASSTER) project, and AMC was directed to monitor all of its logistical support. Project MASSTER was a program for the concurrent and integrated development and testing of Surveillance, Target Acquisition, and Night Observation (STANO) concepts doctrines, materiel and training requirements.

MASSTER was intensively managed in coordination/conjunction with the NICPs, and supply status reports were furnished bi-monthly to the Director, Distribution and Transportation and the MASSTER project officer. The first reports were submitted on 9 January 1970 covering 240 authorized items with 90 percent of supply actions completed as compared to the report of 6 July 1970 covering 1,459 authorized items with 95 percent of supply actions completed.

(U) Stock Management

Policy Change

A line item number control program was established to assure

compatibility among the Selection Board, the Army Master Data File, and the Army Authorization Document System (TAADS). This was accomplished on 5 May 1970 by a revision of the Army regulation which prescribed the responsibilities, procedures, and formats for the assignment of line item number.¹ Also, during Fiscal Year 1970, action was taken to change AR 525-10 for the purpose of limiting asset reporting to those Army units that had registered property accounts, and eliminating the need for the United States Army Item Data Agency to receive negative status reports from units not having property accounts.

Logistics Improvements Program

Through the publication of DA Circular 700-18, 28 November 1969, the Department of the Army introduced certain "Logistics Improvements". The purpose of the circular was to create an immediate and long range improvement of support to the troops, and promote better economy. The Command developed the Army Materiel Command Logistics Support Plan, which consisted of the following:

a. Reduction of Stockage Lists. Maximum stockage goals were established for Theater Authorized List/Authorized Stockage List, and stockage and deletion criteria thereto. The drastic reduction in the number of items contained in theater and installation stockage lists was intended to result in a significant dollar savings.

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AR 700-55, Army Adopted/Other Selected Items and List of Reportable Items (SB 700-20) and Line Item Numbering System, 1 Jul 70.

b. Inventory in Motion. Action was taken to increase air shipments to full extent of availability of C141 aircraft. To increase air shipments, plans and procedures were undertaken for a C5A aircraft program. Also, criteria was developed for designation of air eligible items, and interim listings were coded into NICP and depot records.

c. Logistics Intelligence File. This file was established at Logistics Control Office, Pacific, and served to provide visibility and flexibility for control of materiel in the pipeline.

d. Continental United States Theater Oriented Depot Complex. This test was developed in conjunction with the Directed Supply Support Test. It involved the direct delivery of containerized shipments from TODC in continental United States to the Direct Support Unit in the theater of operations.

e. Reconciliation. The Directorate for Distribution and Transportation, AMC, implemented a test of monthly reconciliation of requisitions with United States Army, Europe.

Reconciliation of Asset and Authorization
Data with US Army, Vietnam for Major End Items

The Commanding General, US Army, Vietnam, requested temporary duty assistance from Department of the Army (DA) to reconcile assets and authorization data, particularly for the VRC-12 radio and M16/M14 rifles. The Department established a team consisting of policy/procedures type personnel from Office of Deputy Chief of Staff for Logistics, Assistant Chief of Staff for Communications - Electronics, Army Materiel Command and commodity type personnel from Electronics Command and Weapons Command. In December 1969, the team visited

US Army, Pacific, and Vietnam. Its findings indicated that US Army, Vietnam, expressed a need for previously unreported items and quantities in their possession. The team recommended that additional needs be authorized as a distribution requirement. It suggested that the excess of items on hand be reported by unit commanders and retained on a 180-day loan basis in recognition of their need for mission accomplishment. Furthermore, it was agreed that the Major Item Distribution Plan would be the basic document for all future actions, and that the US Army Major Item Data Agency would keep the list of DA approved distribution requirements.

Projects, Studies and Programs

Equipment Distribution Capability Study. In March 1970, the DA required AMC and MIDA (Major Item Data Agency) to develop and prepare a capability study to determine the Army's capability to meet troop list equipment requirements for the Fiscal Year 1971 force. The study was to include the provision of equipment to the Army National Guard and Army Reserve Units and was to be completed in the first week of June 1970.

Major Item Distribution Plan (MIDP). A task force consisting of personnel from the Directorate of Management Information Systems, Directorate of Requirements and Procurement, and Directorate of Distribution and Transportation reviewed the MIDP. Task force representatives of MIDA, and the Deputy Chief of Staff for Logistics revealed the following problems: a. Few minor problems existed in the basic Automatic Data Processing programs used in preparing MIDP. b. The newly established Standard Study Number system contained several

errors related to the distribution procedures. c. Instructions relative to commodity manager input data prepared by MIDA were primarily mechanical and did not explain the relationship of the various elements. d. Differences in loss quantities shown in the AMC and MIDP would continue until MIDA developed programs to establish a "loss generator". e. Prescribed requirements for utilizing separate pipeline factors (air and sea) for subordinate claimants would require changes in automatic data processing programs.

The Command began corrective actions on these problems during this fiscal year.

Air Eligible Items. On 10 December 1969 DA directed that a list of air eligible secondary items be developed with a view to lifting these items routinely by air. This was prompted by the entry into service of the Lockheed C141A Starlifter, with a lift capacity of 35 short tons, and the prospect of the Lockheed C5A, with a lift capacity of 110 short tons, entering the service in October 1970.

In selecting items for inclusion in an air eligible list, many factors had to be considered which covered all aspects of surface and air supply systems. Because of the complexity of the problem, the task of developing a series of formulae to test would-be air eligible items was placed with the Research Analysis Corporation (RAC). The air eligible list was not expected to be published before 1 July 1971.

In view of the length of time needed for developing the list, AMC authorized the Logistics Systems Support Agency (LSSA) to create an interim list of items for air shipment. LSSA completed the list, which included 387,000 air eligible items, on 30 June 1970. On 15 June

1970 DA directed that from the interim list a supplementary list be developed consisting of items with a unit cost of \$3,000 or more and with an annual demand of 10 or more. From this supplementary list, items were selected for possible immediate air lifting with a goal of achieving significant savings with a small number of items.

The practical problems of large scale support by air were examined in a 90 day test from 1 April - 1 July 1970, by shipping by air all Electronics Command (ECOM) items requisitioned by the Eighth Army, Korea. These shipments were restricted to items whose weight and size were below 44,000 pounds and 5,484 cubic feet, respectively. The final report of the test would be completed after the pipeline cleared at the end of July 1970.

Requisition Reconciliation - USAREUR Test. In November 1969, the Department of the Army published guidelines for reconciling and validating open requisitions on a monthly basis.² Consequently, Headquarters, AMC, undertook to revise the back order reconciliation system. Conferences with personnel from major oversea commands, Continental Army Command, and the National Inventory points resulted in the identification of problems within the existing system. The most outstanding problems were: limited automatic data processing equipment support; customer failure to post the latest supply status; lack of definitive standard procedures; the limited number of requisitions subject to reconciliation; the widely distributed receipt of reconciliation cards at the customer level; and the slow and cumbersome card system.

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DA Circular 700-18, 28 Nov 70, subj: Logistics Improvements.

Participating personnel presented new ideas at these conferences. Of particular significance were the following suggestions: to the maximum extent possible, use tape-to-tape for reconciliation between NICP's and major customers in lieu of punched cards; reconcile on a monthly basis rather than on a quarterly basis; reconcile all open requisitions regardless of supply status rather than just back orders; have theater inventory control points and CONUS installations validate open requisitions/requests down to the unit level just prior to reconciliation with the NICP's and have theater inventory control points and CONUS installation submit reconciliation requests to NICP's for all average open requisitions, rather than have NICP's initiate the reconciliation request.

On the above basis participants decided to conduct a 120-day test with AMC, USAREUR, and Continental United States NICP's. The first cycle of the test was conducted during the period of 8-20 March 1970. It began with the United States Army Materiel Command, Europe, preparing a tape indicating all open requisitions on the command's records that were 75 days old or older. The tapes were then hand carried to Headquarters, AMC, picked up by couriers and hand carried to NICP's for processing. After processing by the NICP's the response, tapes were returned to Europe for reconciling with the Materiel Command records. The second and third cycles of the test were conducted during the periods of 10-20 May and 14-26 June 1970, respectively. During the latter two cycles all open requisitions 30 days old and older were reconciled in lieu of requisitions that were 75 days old or older.

The test proved to be highly successful since there were many cancellations for materiel. Results of this test became the basis for Army Materiel Command recommendations to a military standard requisitioning, and issue program change that was being staffed through the various services at the end of this fiscal year.

(U) Storage and Transportation

Storage Modernization

During Fiscal Year 1970 contracts totaling \$5 million were awarded for the installation of automatic storage retrieval systems in the maintenance operations at the Army Aeronautical Depot Maintenance Center (ARADMAC), Anniston, Red River, and Tobyhanna Army Depots. Additionally, contracts totaling \$1.92 million were awarded for storage modernization projects at nine Army depots in the areas of shipping, receiving, bin issue, and bulk storage. Also, \$842,000 was made available to procure various items of labor saving equipment at seven depots. Studies had been completed and procurement packages were being finalized to procure an automatic bin storage retrieval system for the New Cumberland Army Depot. Installation of major materiel handling systems was being completed at Tooele and Red River Army Depots. These investments were expected to result in major cost reductions principally through personnel savings.

Change in Status of AMC Activities

Studies made in 1970 indicated a justification for closing or placing in reserve status four installations. Consequently, on 6 March 1970 the Secretary of Defense announced the closing of the

Granite City Army Depot, effective 30 June 1971. He also placed in reserve status the following activities: Rio Vista Storage Activity, Rio Vista, California, by January 1971; Navajo Army Depot, Flagstaff, Arizona, by March 1971; and Fort Wingate Army Depot, Gallup, New Mexico, by July 1972.

On 2 February 1970, the AMC Chief of Staff approved the consolidation of AMC Packaging and Storage Center and Joint Container Control Agency which were located at Tobyhanna Army Depot and reported to the depot commander. The Agency, with a staff of seven personnel, exercised administrative control over the military container fleet, worldwide, and operational control in CONUS for the Army and Air Force. The Center, with a staff of 93 personnel, performed technical functions related to packaging, blocking, bracing, unitizing, and containerization within AMC and provided technical support worldwide as required.

Test of Container Shipments for Ammunition (Project TOCSA)

During this year, the Assistant Secretary of Defense (I&L) directed the Department of the Army to conduct a test to determine the impact of containerized movements on port capabilities, various points in the distribution system, and the pipeline. The Department of the Army delegated that task to AMC.

The test involved 226 containers, each 8 feet x 8½ feet x 35 feet, made by Sea Land Service, Inc., which were loaded with ammunition, blocked and braced at five inland CONUS points. These starting points included the Indiana Army Ammunition Plant, Louisiana Army Ammunition Plant, the Iowa Army Ammunition Plant, and the Sierra Army Depot. The containers were moved by highway to the Naval Weapons Station Concord,

Port Chicago, California, where they were loaded aboard the SS AZALEA CITY on 22 December 1969.

On 18 January 1970 the containers were discharged from the vessel at Cam Ranh Bay, placed on chasis and dispatched. Of the 226 containers, 179 were delivered to Cam Ranh Bay Ammunition Supply Depot (ASD); three were shipped by convoy to Ban Ma Thout; and 44 were transhipped to Qui Nhon, Vietnam in roll-on/roll-off service. From Qui Nhon, the containers of ammunition were moved in convoy to Qui Nhon Ammunition Supply Depot and the forward ammunition supply points at An Khi Pleiku and Landing Zone English.

Project TOCSA proved the operational effectiveness and potential economy that could be achieved through reduced handling, improved condition of delivery, reduced pipeline time, increased port productivity (from 6 to 8 times greater than breakbulk) which increased the port's capability and turned vessels around faster. Consequently, Assistant Secretary of the Army (I&L) directed the Department Army to develop a plan and concept of operation for a total system technique of moving all ammunition in containers from CONUS plants and depots to forward ammunition supply points. The task was delegated to AMC.

Haines-Fairbanks Petroleum
Pipeline Utilization Study

A utilization study of the US Army Haines-Fairbanks Pipeline System, Alaska was conducted during the period of January - May 1970 at the request of the Department of the Army. A detailed study was made of the fuel tankage requirements for military activities located north of the Alaskan range; of the capabilities of the Alaska Railroad

and the commercial trucking industry; of the current condition of the pipeline and the high cost (\$28 million) to repair it to meet acceptable standards; the concern of the Canadian Government with the possibility of pollution of its environment from spillage; and the possibility of the construction of a refinery in the Fairbanks area.

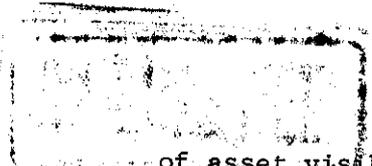
It was determined that the military fuel requirements could be satisfied without the pipeline if additional tankage was constructed at Eielson Air Force Base and if a commercial refinery capable of producing military fuels were constructed and operational in 1974. Furthermore, the study recommended that the additional tankage be constructed, after which, the pipeline should be disposed of and military fuel requirements delivered by rail and/or highway until the refinery was completed.

Before forwarding the completed study to DOD/DA it was coordinated with the Department of State, Headquarters, US Air Force, the Alaska Command, the Corps of Engineers, and the Alaska Railroad.

(U) Logistics Systems

During Fiscal Year 1970, DA directed the phase out, effective 30 June 1970, of Project OASIS (Ownership and Accountability of Selected Secondary Items Stock in Oversea Theater Depots), CAVAMP-V (Central Asset Visibility and Management Program in Vietnam) and the implementation of the Selected Item Management System (SIMS).

The concepts and technique of OASIS and CAVAMP-V were approved by DA on 22 August 1967 and 8 March 1969, respectively. The ownership of stocks in the oversea commands under the OASIS program and the concept

 of asset visibility under the CAVAMP program tested a logistic system concept of ownership and visibility, level computation, and push-type requisitioning which was unparalleled in the Army supply system. Both programs applied a similar technique of highly intensive management to a selected group of 2000 high dollar value secondary items which justified consideration for future logistics concepts throughout the Army system.

In April 1969, a DA evaluation team was established to evaluate the concept/test of Project OASIS and submit the findings to the Vice Chief of Staff. The team concluded that OASIS was responsive to the requirements of Congress and the Secretary of Defense. However, the team believed that its effectiveness had been reduced by the lack of complete automation, non-standard systems, and procedural deficiencies. The team recommended that the OASIS concept be continued after procedural changes had been made and program assistance given to oversea commands. Also, they recommended that a study be initiated to extend CONUS command and control over fixed logistical basis overseas.

At the conclusion of a formal AMC progress evaluation covering activities through 1969, DCSLOG directed the Logistics Doctrine Systems and Readiness Agency (LDSRA) to develop an alternate logistic concept embracing the best features of OASIS and CAVAMP-V for secondary item visibility and control. Concomitant with the development of the alternate logistic concept, SIMS, the Department of the Army announced the termination of Project OASIS and CAVAMP-V, effective 30 June 1970.

The basic objectives of Project OASIS were accomplished as planned, with the requirements and assets of high cost items included in the

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secondary item budget on a worldwide basis, and subject to control of CONUS NICPs. During Fiscal Year 1970, benefits derived from the program included documented dollar savings in excess of \$120 million through the reduction of oversea pipelines, distribution, and referral of stocks, and deferment of procurement; reduction of zero balances in oversea commands in excess of 50 percent; reduction of assets intransit by \$11 million; and accomplishment of an OASIS item depot maintenance program with an approximate catalog of \$955 million.

The implementation of SIMS began on 1 July 1970. This system required the NICP to extend their asset knowledge and control over selected items to supply and operate echelons beyond their wholesale distribution activities. Phase I of the program, was to provide item visibility to the NICP through receipt of a monthly availability balance file and a demand history file from oversea commands and automated CONUS Class I and Class II installations. In addition, quarterly asset and demand data were to be furnished from automated oversea Direct Support Units (DSU) and General Support Units (GSU). Other CONUS installations and oversea DSU/GSUs were to be placed into SIMS as ADP capability permitted. Implementation of SIMS Phase II was scheduled for 31 December 1971.

(C) Pacific Asia Special Projects

(C) In May 1970, Post-Hostilities Logistics Operations Office was redesignated Pacific Asia Special Projects Office. That action, also, increased the scope of the mission of the office from logistics planning involving the Republic of Vietnam to the planning of Pacific-

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Taiwan Materiel Agency (TMA)

(U) AMC assumed operational control of the Taiwan Materiel Agency (TMA) effective 15 January 1970, and thereby inherited the unfinished Fiscal Year 1969 and Fiscal Year 1970 maintenance programs from USARPAC. These programs required completion before negotiation of new contracts with the Government of the Republic of China. With this set-back, TMA had to increase production as well as enhance overall depot management operations. This required a series of actions such as the acquisition of 97 employees (75 percent US with GS ratings) and more capital equipment for an additional production line, establishment of production schedules, acquisition of repairable assets and repair parts, and the publishing of an AMC letter of instruction. Operational control of this Taiwan Agency further required the following: development of a TDA acting as a focal point for all commands assigned to AMC; promulgating advance payment agreements, foreign source procurement determinations and other government-to-government agreements; supervising all directed actions of the Assistant Deputy for Logistic Support; implementing DA guidance and requirements for cost data and asset reporting; and formulating AMC policy for disposition of repairable equipment generated in USARPAC.

CHAPTER VIII

(U) MAINTENANCE

Vehicles and Equipment

Depot Maintenance

In order to establish central management of depot maintenance, worldwide, AMC was directed on 1 July 1968¹ to assign personnel to depot maintenance management elements within USAEUR and USARPAC to act as liaison representatives of AMC, Headquarters, and the Commodity Commands in central management of depot maintenance programs, through coordination with appropriate theater personnel. Consequently, two persons were assigned to the USA LMO in Zweibrucken, Germany to carry out that mission. They found that program status reporting from USAEUR maintenance activities was being accomplished in accordance with established formats. Emphasis and improvement, however, were needed in the timeliness of Progress Report (P cards) submissions and in the reporting of all DA approved BP 2300 programs. The liaison representatives undertook to resolve the problem by meeting with the USAEUR maintenance personnel.

On 15 January 1970, AMC assumed responsibility for the Taiwan Materiel Agency. This Agency was essentially a contractor operation engaged in the repair/overhaul/rebuild of tactical, combat and construction vehicles; electrical communication equipment; and

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TAG ltr, AGAM-P(M) (27 Jun 68) LOG/MCD, 1 Jul 68, Subj: AMC Central Management of Depot Maintenance Worldwide.

general equipment for the US Army and Free World Military Forces. Its operation extends back to 1967 when a capability survey was conducted, and it was decided to run pilot rebuild programs on selected items of US equipment which included the 2½-ton truck, 6,000 and 10,000-pound rough terrain forklifts, and the D7E tractor. Beginning with Fiscal Year 1969, contracts were consummated with the Republic of China for the overhaul of certain combat and tactical wheel vehicles. Major troop withdrawals from Vietnam resulted in large quantities of major end items becoming available for distribution if they could be economically repaired or overhauled. In contrast, two maintenance activities in the United States were scheduled for close-out or phase-out.

The Secretary of Defense announced on 6 March 1970, the closing of the Granite City Army Depot (GCAD) maintenance mission. GCAD was a prime overhaul depot for Mobility Equipment Command type equipment, such as construction equipment, generators, quartermaster equipment, and generator sets. Also, it was the sole source of repair for topographic and land surveying equipment. As a result of a review of maintenance programs by AMC, MIDA, MECOM and GCAD personnel, approximately 30 percent of the programs were either cancelled or transferred to other depots. Follow-on reviews were held in April and June 1970 to review production trend. It was determined that there was sufficient workload at GCAD to assure production output through the work stoppage date of 31 March 1971.

After several studies in 1969 and April 1970, it was decided to phase-out the maintenance activity at Charleston Army Depot (CHAD).

Following the latter review it was determined that the CHAD AIF rate increased because AMC was unable to provide sufficient workload. The unacceptable rates of overhaul costs to operating costs resulted in the recommendation that manpower resources be reduced commensurate with the decreased workload. On 19 May 1970 the Commanding Officer, Charleston Army Depot was directed to terminate the AIF overhaul during the 1st and 2d quarters, Fiscal Year 1971. This action was based upon the lack of workload in the Marine commodity and the high AIF cost that precluded cost effective operation of the small (37 direct man-years) workforce. A further review was conducted and the Director of Maintenance recommended on 2 June 1970 that AMC continue with the planned reduction of the 37 AIF maintenance personnel.

Maintenance Policy

In September 1969, AMC initiated action to determine the implications of placing the ½-ton truck under the same maintenance standards as other tactical wheeled vehicles.

TACOM set up a pilot overhaul program at Pueblo Army Depot to obtain details necessary to establish depot work requirements and necessary spare parts. The Technical Data Package was being compiled at the end of the fiscal year. This revision of maintenance policy was caused by pressure from GAO and the Army Audit Agency coupled with the increasing difficulty of maintaining operational readiness of units because of a shortage of end items.

Previous to this change, the M151 series vehicles were maintained only to DS/GS (direct support/general support) standards

which did not allow for machining operations. When the initial float of engines was used up, the next vehicle requiring engine replacement would cause an end item in the poorest over-all condition to be cannibalized for parts.

Also, a revision of the maintenance concept for electronic components of future missile systems and support equipment was underway. Electronic assemblies had developed to the point where they were largely made up of integrated circuit boards. These boards consisted mostly of micro-miniaturized solid-state parts, assembled into printed circuits and protected by a covering of plastic or other hard material. Because of the increased skill level and more stringent quality control requirements, repair of this type of equipment was to be performed at the depot level. Field maintenance was to be limited to adjustment, calibration, and replacement of defective assemblies.

Use of Retreaded Tires

In a message to all commands, the Department of the Army re-emphasized in December 1969 the policy of retreading tires to the maximum extent possible. This was followed by the US Army Aviation Systems Command issuing on 13 March 1970 a Supply Letter which gave guidance to CONUS and overseas activities on the return of low speed, low pressure tires to the Red River Army Depot for retreading. Technical Bulletin 55-2620-202-15, dated 23 March 1970 outlined the criteria for the selection of Army aircraft tires for retreading.

Voting at an In-Process Review (IPR)

On 3 November 1969 the Chief, R&D, Department of the Army issued

a message which added Category VII, paragraph 1-6, AR870-5, to voting participation at an in-process review (IPR) when the developer is not the support activity responsible for providing logistic support.

This change in procedure was requested in a letter of 8 September 1969 by the Deputy Commanding General, AMC to the Chief, R&D, DA. In it he cited an incident at an in-process review (IPR) on Medical Unit, Self-contained, Transportable (MUST) and chaired by a representative of the Surgeon General where the AMC representative was not permitted to act as voting member. Since decisions resulting from the IPR could have a serious impact on the life cycle support, AMC had prepared an official position on each item of the agenda, yet could not participate in the final decision vote.

Integrated Logistics Support

Maintenance Support Positive (MST) Program

In order to bridge the widening gap between hardware complexity and available skills, the Department of the Army established the Maintenance Support Positive (MST) program by a letter of 12 June 1969. Included in the program was an in-depth examination of the maintenance allocation, concepts, policies, and procedures.

As part of the MST program, DA(DCSLOG/MED) assigned AMC the task of making a comparative analysis of the current Army maintenance concept. The proposed concept envisioned moving the allocation of maintenance tasks to where they could be accomplished most efficiently and economically. Also, AMC commodity commands were requested to include a "type" Preliminary Maintenance Allocation Chart (PMAC)

for one of their items in the system. The PMAC was to depict maintenance allocation for the same item under both the proposed and current concepts. This was accomplished and forwarded on 27 November 1969 to the Department of the Army.

The AMC overview was presented on 17 December 1969 to Major General Hayes, Assistant Deputy Chief of Staff for Logistics (Supply and Maintenance). Through this briefing and other joint DA/AMC staff reviews on the same date, the AMC overview was accepted. However, it was recognized early that maintenance and many aspects of supply were involved and that total involvement of AMC, CDC, CONARC, major overseas commands, and the DA General Staff was necessary to make the MST program work. Accordingly, Circular 750, Maintenance Support Positive (MST), Army Maintenance for the Seventies and other documents were being prepared to provide DA guidance for the development of the maintenance support positive concept of maintenance.

To develop and implement MST, a DA LOG/MED letter of 15 June 1970 directed AMC to accomplish certain tasks. AMC assigned the commodity commands the responsibility of revising maintenance allocation charts for selected items which included the following: Tank, M60A1; Helicopter, AH-IG; VULCAN, gun ADA, SP, 20mm; Truck, 2½ ton, M35 A2; Generator, 10 KN; Radio set, AN/GRC-106 and Shillelagh. The commodity commands were to review equipment repair parts and special lists for selected items and initiate necessary revisions to incorporate Maintenance Allocation Chart (MAC) changes resulting from above and insure that modules and/or piece-parts authorized for stockage were required to perform authorized maintenance. Further,

they were assigned to determine and evaluate depot workload impact resulting from MAC revisions of selected items.

The Director of Research, Development and Engineering was tasked to develop in appropriate terms and available for general inclusion in QMR's and SDR's, the requirement to exploit modular design. The US Army Maintenance Board was given the overall responsibility for a cost effective study on the items selected for test to quantify the cost impact of changing from the current concept of maintenance to MST. The analysis of the study was expected to provide an indication of the cost of supporting the Army in the field today with the cost (initial and sustaining) of MST.

Coding Systems

The existing essentiality coding system was not adequate for use in making decisions for materiel requirements, budgeting and procurement.

Consequently, the AMC Inventory Research Office (IRO) made a study and proposed a system for ranking repair parts in four essentiality groups. The current procedure classified repair parts as either "combat" or "not combat essential." The US Army Maintenance Board (USAMB) with the commodity commands evaluated the study and determined that the study's objectives were not achieved and decided to nonconcur with the recommendations.

In the meantime the USAMB had been tasked to create an alternate essentiality coding plan. The Board established a three code system which was staffed within AMC and transmitted on 10 April 1970

to Headquarters, Department of the Army. The Department of the Army approved the plan on 19 April 1970. The Army in the development of a common system of source, maintenance, and recoverability codes for multi-service application was represented by AMC.

A panel composed of personnel from AMC/NMC/AFLC/AFSC and the Marine Corps developed a common source, maintenance and recoverability coding structure and defined it in a draft joint service regulation. The regulation was staffed with all the services. Additionally, the panel prepared a proposed revision of DOD Instruction 3232.5 which directed the use of the uniform source, maintenance and recoverability codes.

PROMAP - Provisioning

In January 1970, General Chesarek directed that the AMC provisioning procedures be reviewed and included as a part of PROMAP-70 (Program for the Refinement of the Materiel Acquisition Process). The objective was to reduce range of repair parts selected during initial provisioning of equipment items.

Conceptual time-phased guidelines were developed and approved on 3 March 1970. The US Army Maintenance Board and the AMC commodity commands were required to develop data and procedures to improve range selection. This was accomplished and coordinated on 20 March 1970. The plans supported the overall AMC program concerning provisioning called for by Element I-7, Integrated Logistic Support (ILS), AMC PROMAP-70. Element I-7 was designed to generate data which was to be used as a basis for regulations or changes to existing regulations prescribing policies and procedures for improving range

selection.

End items were selected as test vehicles by each of the AMC commodity commands, and data was being collected for a comparative analysis of the Initial Provisioning List, Initial Support List and demand or usage data for each selected item. The completion date of the analysis was 10 September 1970.

PROMAP-70

The Integrated Logistic Support task of AMC's program for the refinement of the materiel acquisition process was rapidly progressing toward the objective of reducing requirements for logistic support resources and system changes. This was being accomplished by integrating the elements of logistic support into all phases of system acquisition.

Of a total objective of 11 AMC policy and procedural documents for ILS, nine were completed. These included AMCR 750-15, Integrated Logistic Support; AMC Supplement 1 to AR 705-50, Army Materiel Reliability and Maintainability; AMC Supplement 1 to AR 750-2, National Maintenance Points; AMCR 750-42, AMC Maintenance Engineering Activity; TM 38-703, ILS Management Guide; TM 38-703-1, ILS Support Integration; TM 38-703-2, ILS Procedural Guide; TM 38-703-3, Maintenance Engineering Analysis Data System; and TM 38-703-4, Contractual Techniques. The Major subordinate commands completed eight policy and procedural documents to implement AMCR 750-15.

To implement and improve the AMC decision making process, one support modeling pamphlet and four support models were completed as follows: Integrated Logistic Support; Support Modeling; Army

Organizational Maintenance Support Simulation; Army Depot Transportation Simulation Model; Army Depot Repair and Overhaul Model; and Operational Readiness Float Model. General ledger cost accounts and basic fact codes were established and distributed covering ILS contractual costs within the RDT&E budget.

Equipment Publications Program

At the beginning of this fiscal year the program to consolidate specifications and contractual documents called for the preparation of 14 limited coordinated military specifications to replace the remaining 21 former technical service documents. By consolidating requirements the total program was adjusted during the fiscal year from 14 to 10 specifications. Of these, six specifications were completed and published. The remaining four were in the final stages of coordination at the end of this fiscal year.

Progress continued toward the review and revision of Repair Parts and Special Tools Lists - Technical Manuals (RPSTL-TM) under the requirements of AR 700-18. A command objective called for the revision and conversion of all the remaining library pages (i.e., 156,532 pages) to the new AR 700-18 requirements by the end of Fiscal Year 1972.

In affiliation with the National Security Industrial Association, AMC held on 24-26 June 1970 an Equipment Manuals Symposium in Washington, D.C. The objective was to bring into focus the significant role of equipment manuals in the emerging integrated logistics support environment. The program developed for the symposium was designed to place proper emphasis on the importance of providing current

essential maintenance data in the most effective manner to the soldiers in the field.

CHAPTER IX

INTERNATIONAL LOGISTICS

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(U) General

During Fiscal Year 1970 the organization and functions of the Directorate of International Logistics remained essentially unchanged except for the transfer of the international development function to the Directorate of Research, Development and Engineering on 21 March 1970.¹ The International Logistics Field Offices, Europe and Far East were disestablished 21 October 1969 and their functions transferred to the Logistics Assistance Office, Europe and Pacific,² respectively. The International Logistics Field Office, South was disestablished, effective 31 March 1970.³

The International Logistics Directorate was manned by an acting Director during most of Fiscal Year 1970. Major General Robert C. Forbes served from 1 July to 11 August 1969 and Brigadier General Michael E. Leeper was in charge from 13 October 1969 to 17 March 1970.

¹
Ltr, AMCPT, 11 Mar 70, subj: Organizational Realignment of Headquarters, AMC.

²
Msg 212049Z, Oct 69, AMCIL, subj: Customer Assistance Under International Logistics Programs.

³
AMC GO 26, 27, Jan 70.

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(U-FOUO) Management Improvement

Management Improvement Study of International Logistics

(U-FOUO) In accordance with a directive from the Chief of Staff,
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USAMC, the Directorate chaired during 1970 a study group composed of representatives from the following AMC directorates: Distribution and Transportation; Personnel and Training; Operational Readiness; Management Systems and the International Logistics Center. It examined in depth the management of international logistics functions within AMC and its interface with the Department of the Army to determine whether the existing system was producing the desired management. The study dealt with supply performance, financing, manpower, organization, and systems. It recommended a complete revamping of the international logistics management function which effected the International Logistics Center, and ALMSA. Incorporated in this study were the findings resulting from a study by the Automated Logistics Management Systems Agency (ALMSA) and the Directorate of International Logistics to determine the most effective organization, mission and automatic data processing (ADP) system for accomplishing international logistics processes within the AMC complex.

Review and Evaluation of ILC Reporting Workload

(U) The Reports Review Board, composed of representatives of the Directorate and ILC, completed a review and evaluation of the ILC reporting workload. Its objective was to identify causes of the apparent excessive reporting workload; identify and eliminate

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Memo, AMCIL, 7 May 70, subj: Management Improvement Study of International Logistics Procedures, signed by Chief of Staff, AMC.

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duplication and reduce distribution requirements; identify reports not authorized by RCS/Exemption; and challenge reports which appeared to be of marginal value or had outlived their usefulness. These objectives were achieved and action was underway to refine reports and revise or develop regulatory media as required.

Annual Delivery of Ammunition to Latin America

(U) Shipments of ammunition to Central and South American countries were normally held and consolidated to fill one ship on a yearly basis. The shipload included ammunition for both Grant Aid or Foreign Military Sales of Army, Navy and Air Force. The USNS MIRFAK departed on 5 June 1970 from the Naval Ammunition Depot for the following countries: Venezuela, Brazil, Uruguay, Argentina, Chile, Ecuador and Guatemala. The ship was due to return to New York on or about 29 August 1970.

(C) Production Projects

(U) As a result of the disestablishment of the M113 Italy Co-Production Project, the office was redesignated the Co-Production Management Office. ⁵ The Chief retained the title of Project Manager in order to deal with his Italian counterpart in the M113 Italy Co-Production Project. Action was initiated to change AMCR 10-2 to

⁵
Cmt 1, AMCIL, 10 Sep 69, subj: Co-Production Management Offices.

reflect the redesignation and emphasis on AMC co-production⁶
coordination and monitoring responsibilities.

(U) During the fourth quarter of Fiscal Year 1970 the Italian Army accepted the last of the 3,000 vehicles originally planned under the M113 Italy Co-Production Project. Of these, 2292 were M113's, 175 were M577 Command Post Vehicles, and 533 were M106 Mortar Carriers.

(U) Contract negotiations between the Italian Government and OTO-Melard, the prime contractor, were still in process at the end of this fiscal year for the additional 600 vehicles (M113A1 diesel version) to be co-produced. The Italian Army was furnished the M113A1 engineering change orders to the technical data package which determined the configuration of the add-on production.

(U) The Italian Army purchased five M548 Cargo Carriers via Foreign Military Sales procedures for evaluation as cargo carriers and as missile launching platforms. The Italians had plans to co-produce up to 400 M548 vehicles after the 600 block of M113A1 APC's was completed.

(U) The T130 Track for the M113 APC as produced by FIAT, one of the Italian co-producers, had significantly longer wear life than the track being produced in the United States at that time. AMC initiated a program for increasing the wear life of the US-made track for the M113 series vehicles which was under way at the start of Fiscal Year 1970. The program included incorporation in procurement contracts requirements for utilizing better quality steel and manufacturing

⁶
Comment 1, AMCIL-P, 17 Sep 69, subj: Request for Change to
AMCR 10-2 to Reflect Revised Mission.

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the track to more stringent quality assurance provisions. Testing of a set of contractor-produced, track manufactured to the revised requirements was completed in July 1969 at Aberdeen Proving Ground (APG) with satisfactory results. The test was conducted after 4,291 miles had been completed over terrain which was considerably more severe than the normal confirmatory test.

(U) The Test and Evaluation Command (TECOM) conducted tests of improved design, heavier section T130 Track at APG in 1969 and 1970. Two M113A1 vehicles running simultaneously covered 5,012 miles per vehicle and the performance of the improved track was considered to be very satisfactory. The objective of the test was to achieve a track test life of 5,000 miles. Also, TECOM conducted tests of the improved design, heavier section T130 Track at Yuma Proving Ground (YPG) on two M113A1 vehicles. As of 30 June 1967, one vehicle had accumulated more than 5,000 miles and the second APC had passed the 3,000 miles mark. The tests at both APG and YPG indicated that improvements in the rubber bushings used on the track were needed to make the bushing life commensurate with the increased track shoe life. Experimental bushings for future track tests were under development by the Army Tank-Automotive Command.

(C) Under the Hawk-Barter Project, Italy, in exchange for one Hawk battalion of equipment was producing items worth \$23 million (in lira) which were being shipped to Turkey as US Grant Aid. All 105-mm HE howitzer ammunition and 1½ ton Superjolly trucks were shipped prior to Fiscal Year 1970. Final shipments of tank radios on contract were made in August, and the final M113's were awaiting shipment to

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June. Production of 106-mm HEAT ammunition was completed by April. The final lot was awaiting availability of an ammunition ship.

(C) The Department of Defense authorized CINCEUR to procure AN/GRC-106 radios and installation equipment from Italian industry with the balance of \$23 million on deposit.⁷ The closing date for Request for Proposal was extended to July 1970, at Italian contractor request, due to difficulty encountered in subcontracting for US manufactured parts and components. When the final price of a Hawk Battalion set of equipment produced in Europe became known and additional lire were placed on deposit, further contractual action with Italian industry took place.

(U) Under the M113 Italy Co-Production Project agreement with the Italian co-producers, FMC Corporation charged \$1,240 know-how fee for each Italian produced vehicle delivered to the Italian Government. FMC claimed a similar fee for those M113's produced in Italy for the Hawk-Barter project. After lengthy negotiations, AMC and FMC reached an agreement on a flat \$300,000 settlement for the 481 Hawk Barter⁸ vehicles.

(C) A memorandum of Understanding between the Governments of the United States and the Republic of China was signed on 13 August 1969 for the assembly and co-production of the UH-1H Helicopter. It

⁷
SECDEF msg DEF 9956 DTG 161535Z, Sep 1969, subj: Hawk-Barter Account.

⁸
DA msg DCSLOG-GA-EMEAB DTG 112210, Jul 1969, subj: FMC know-how Fee on Hawk-Barter M113 APS's manufactured in Italy.

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increased the number of AMC co-production projects during Fiscal Year 1970. AMC designated the Army Aviation System Command (AVSCOM) as the implementing agency. The Project Manager for Utility Aircraft was named as the United States Republic of China Co-production Manager responsible to monitor progress and to coordinate the program.

(C) The US concurred in a Norway request to maintain the NATO-LAW Technical Arrangements in force. This enabled Norway to continue production of the Rocket, HE 66MM AT, M72 (LAW) for sales to other NATO and allied countries. Launchers and warhead metal parts were furnished on a direct US contractor to Norwegian contractor arrangement. The US furnished technical assistance on a reimbursable basis. Technical control of US Government participation in this continued production identified as Phase 3 of the M72 (LAW) Cooperative Logistics Program, was assigned to the Army Munitions Command. The US M72 Liaison Officer at Picatinny Arsenal for Phases 1 and 2 continued to serve for Phase 3.

(C) Manufacture of major items under the NATO-Hawk Weapons Production Program was completed in 1966. The General Manager of the NATO-Hawk Management Office visited the United States during March 1970

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Ltr, AGSC LOG-MS-SB3, 21 Oct 69, subj: Implementation of Memorandum of Understanding Between the Government of the Republic of China and the Government of the United States, Relating to the UH-1H Helicopter Assembly and Co-Production Program.

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Ltr, AMCIL-P, 12 Nov 69, subj: Memorandum of Understanding Between the Government of the Republic of China and the Government of the United States, relating to the UH-1H Helicopter Assembly and Co-Production Program.

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Ltr, AMCIL-P, 17 Mar 70, subj: Rocket, HE 66MM AT, M72 (LAW) Cooperative Logistics with Norway.

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for preliminary discussions with Department of Defense personnel on close-out of US interests in the program. The subject was still open for further discussion at the end of this fiscal year.

(C) Discussions among the US Government, Colt Industries and South Korea on establishing an in-country production capability for M16 rifles and associated ammunition were stalemated most of the year. The Koreans wanted to implement the US Army study for M16 co-production under a government-to-government agreement and have the US Government negotiate and pay Colt the license and royalty fees, while the US preferred to have South Korea contract directly with Colt. An AMC-recommended co-production program was submitted to Department of the Army (DA).¹² DA recognized the recommendation to be a sound approach to accomplishing the program, but advised that DA would not be involved in initiating further actions pending a decision and instructions from the Department of Defense.¹³ Subsequently, top level personnel from Colt Industries briefed Secretary Packard and presented a proposal for establishing a partial rifle manufacturing plant in Korea. The US Army Weapons Command analysis that the proposal was generally non-responsive¹⁴ was forwarded through DA to the International Security Agency. The Executive Vice-President of GMC met with Secretary Packard and

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Ltr, AMCIL-P, 8 Sep 69, subj: Co-Production of the M16 Rifle in Korea.

¹³

Ltr, LOG-MS-SB3-9096, 18 Sep 69, subj: Co-Production of the M16 Rifle in Korea.

¹⁴

Ltr, AMCPP-W, 26 Sep 69, subj: Analysis of Colt's Proposal for Production of M16 Rifle in Korea.

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discussed establishing facilities in South Korea. However, GMC later declined to participate in the program.

(C) In the meantime, Korea expressed interest in the Armalite Company AR-18 Rifle and the Cadillac-Gage Company Stoner Weapons System. The US Army performed a comparative evaluation of the relative merits of these systems and the Colt M16 Rifle. It was determined that when all factors were weighed, the Colt M16 offered significant advantages. Colt then prepared a revised proposal offering to assist Korea in establishing a complete rifle manufacturing facility. In view of the evaluation and the new proposal, Secretary Packard recommended to Korea that the M16 Rifle be selected, and indicated that the US Government was prepared to offer the Government of South Korea foreign military sales credit for use in establishing the plant.

(C) The Governments of Italy, Germany, Norway and the Netherlands continued their interest in acquiring the TOW Missile system, possibly through co-production, dependent on production costs and capabilities. Demonstration firings were conducted for Italy and Germany, and scheduled for the Netherlands. Norway was following development of competitive systems and was to make a decision when the overall picture was clear. AMC furnished a proposed memorandum of understanding to DCSLOG which covered the responsibilities should co-production be elected.

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DEPSECDEF ltr to Minister of Defense of the Republic of Korea, 28 May 70.

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same date, Iran and the United States signed a Memorandum of Understanding in support of this tank modernization program. This project was not considered to be a part of the Co-Production Program because of the direct contractor to government arrangement. However, AMC was to assist the contractor when requested by DA.

(C) Italy had been considering M47 and M60 tanks as well as the German Leopard tank to meet an additional 800-900 tank requirement for their modernization program. AMC recommended to DA that the Italians be offered a "quid pro quo" arrangement involving conversion of the US M113 fleet in USAEUR as an incentive for Italy to select the M60A1 tank.¹⁸ AMC later advised DA of Italy's pending decision on the M60A1 vs the Leopard and recommended items for a possible "quid pro quo" arrangement as further inducement to select the M60A1.¹⁹ The October 1964 Memorandum of Understanding between the US and Italy provided for purchase from the US of 100 M60A1's, co-production of 200 M60A1's, and extension of the co-production program to cover increased quantities. However, in January 1970 the Italian Government chose to buy 200 Leopard tanks from the Federal Republic of Germany and co-produce a quantity of 600 in Italy. At the end of this year the two countries had not reached agreement on the Leopard co-production in Italy.

¹⁸

Ltr, AMCIL-P, 24 Apr 69, subj: Italian Tank Modernization Program.

¹⁹

Ltr, AMCIL-P, 22 Dec 69, subj: Italian Tank Modernization Program - M60A1 vs. German Leopard.

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(U) The CG, AMC enunciated the outside continental United States (OCONUS) Customer Assistance Offices' responsibilities which included exercising operational and administrative control, except technical responsibility, of all AMC personnel assigned or attached to a Customer Assistance Office responsible area. ²⁰ The Co-Production Management Office obtained an exception to those provisions with respect to Co-Production Liaison Officers serving in foreign countries, since they worked directly for the respective project support of the co-production ²¹ program, and had no overseas command support mission.

(U) The Co-Production Management Office at AMC remained the only formalized organization within DA concerned solely with co-production. During this fiscal year, the office managed the M113 Italy Co-Production Program, and coordinated and monitored sixteen other co-production programs covered by agreements with six foreign countries and NATO, involving six commodity commands and sixteen different defense items. These programs had a foreign country value of \$1.4 billion, of which an estimated \$554 million on reverse gold flow to the US was anticipated.

(C) Free World Support

Progress on Project MZK

(U) Project MZK was designed to improve the communications systems used by the Imperial Iranian Gendarmerie (IIG) in maintaining law,

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CG AMC msg 172251, Oct 1969 subj: OCONUS Customer Assistance Offices Responsibilities.

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Ltr, AMCIL-P, 30 Oct 69 subj: Customer Assistance Offices Responsibilities. 234

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order and internal security in the Iranian rural and border areas. Small detachments were deployed throughout an area in excess of 600,000 square miles. Existing communications were limited to CW radio and messenger.

(U) A bilateral Iran - US agreement authorized the US Army Military Mission (GENMISH) with the IIG. Staffed with 12 officers and 12 enlisted men, GENMISH was commanded by a US Army Colonel who was a member of the US Country Team which reported to STRIKE. GENMISH was not subordinate to any other US military organization in Iran. GENMISH, however, had an IIG MAP responsibility. This program was processed through and was to become a part of the MAAG program.

(U) At the request of Iran, a survey of the IIG communications system was completed by the DOD Advanced Research Projects Agency (ARPA) in April 1966. ARPA concluded that the system was inadequate and made recommendations for improvement. A three-phase program to improve IIG communications was recommended. Phase I consisted of a quick fix of existing equipment which was completed in 1966 by US technicians. Phases II and III proposed that priority attention be given to inter-regional voice and teletype, border guard communications, and emergency 24 hour-per-day command and control facilities.

(U) IIG requested that a civilian contractor accomplish the entire project. The contractor was to provide and install commercial equipment, excluding GFE, furnish maintenance support for one year, and train IIG personnel in operation and maintenance. Follow-on spaces were to be procured by Iran through commercial channels.

(U) OSD approved the ARPA recommendations and Iran agreed to pay a part of the total cost of the improvements which was priced at \$10.4 million. Iran was to furnish \$5.2 million. The Iranians deposited \$3,756,339 and spent \$243,660 for teletype equipment in Germany. Melpar Inc., Falls Church, Virginia was awarded the contract on 30 May 1969 to furnish and install all commercial equipment. No GFE was involved. STRATCOM was overall manager with AMC furnishing logistic support.

(U) The first increment of equipment for the project was received in Iran on 15 August 1969 and installation began on schedule on 1 September. A school to train Iranians in operation and maintenance was established and staffed in October 1969. The completion date for this project was forecasted for January 1971.

(U) In May 1970, STRATCOM decided that the installation of equipment by Melpar in Iran was unsatisfactory. Consequently, Melpar was given notice to default for the installation portion amounting to approximately \$800,000. Melpar, however, was to continue to supply equipment. Installation was scheduled to be completed in May 1971 by STRATCOM troop labor.

Revised Secondary Item Support System for RVNAF

(U) The revised Secondary Item Support System for RVNAF as set forth in Annex F, Logistics Supply Support System, became effective on 1 July 1970. This changed the flow of repair parts and secondary item requisitions from MACV.

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(U) Beginning with the Fiscal Year 1971 program, requisitions for repair parts and secondary items for the Vietnam Army were to be submitted by Military Assistance Command, Vietnam (MACV) to the 2d Logistics Command in Okinawa. If the requisitions could not be filled from theater assets, 2d Log was to forward them to the CONUS supplying agency. In Fiscal Year 1971, requisitions for repair parts and secondary items for ARVN were not to go to the International Logistical Center (ILC). However, Fiscal Year 1970 and prior year requisitions for these items were to continue to be managed by ILC until completion.

(U) Program control for dollar lines, except for ammunition and concurrent spare parts, was maintained by 2d Log. ILC retained responsibility for defined items, concurrent parts, and ammunition. Also, ILC was responsible for all reporting of MAP formats.

Re-Establishment of Grant Aid Programs

(U) Grant-Aid programs for Afghanistan and Lebanon were re-established with shipment of one language laboratory, valued at \$10,000, to Afghanistan. Four such laboratories were shipped to Lebanon, plus dollar value authority for training aids and devices, valued at \$9,800. The last previous programs for Lebanon and Afghanistan had been before Fiscal Year 1963 and during Fiscal Year 1965.

Fiscal Year 1966 and Prior Grant Aid Programs

(U) An undelivered value of \$86.7 million of materiel on Fiscal Year 1966 and prior Grant Aid programs existed at the beginning of Fiscal Year 1970. This figure was reduced to \$28.6 million by the end of the fiscal year.

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The \$28.6 million balance is comprised of the following:

	<u>Suspended by</u> DOD or Country	<u>Delivered After</u> 30 June 70	<u>Total Barter</u>	
Greece	\$10.0	----	----	\$10.0
Other	1.0	----	----	1.0
India a	----	----	----	3.8
Turkey (Hawk-Barter)	----	1.8 b	5.3	7.1
Philippines	----	2.5 c	----	2.5
Undelivered Balance d	----	----	----	4.2

- a Long range Fiscal Year 1966 - Fiscal Year 1982 East West Highway Program.
- b M113 vehicles manufactured in Italy - Shipments held up due to strike.
- c Communications project due to be completed during Fiscal Year 1971.
- d Department of Army Distribution/Allocation Committees Items and Secondary Items currently in short supply.

Combat Vehicle Crewman's (CVC) Helmets - Jordan Grant Aid

(U) AMC was taking action to replace 974 CVC helmets which were not compatible with radios in-country. ²² Ten of the modified helmets were tested successfully in-country on 19 March 1970 by an AMC technical assistance team. A cumulative total of 803 had been airlifted from CONUS by 15 July 1970. The remaining 771 were shipped on 31 July 1970 for MAC channel airlift to Jordan.

Military Assistance Program - Cambodia

(C) Military Assistance to Cambodia was re-established on 22 June 1970 by Presidential Determination. The initial Army portion of the \$7.9 million program was valued at \$6.3 million which was increased during July 1970 to \$7.3 million.

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DA Confidential msg 261715Z, Jan 1970, subj: Continuing problem of Helmets for Tank Crewmen.

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b. Delays were encountered at every point (eight) where these shipments were transferred from one carrier to another. Rush shipments should be routed to eliminate as many changes of carriers as possible, e.g., through-truck movement in lieu of piggy-back rail movement.

c. A delay and shortage was encountered in the transfer from the carrier to the freight forwarder. In instances where shipments were not to an Army terminal, an Army representative was to be present to assure a smooth and more rapid transfer of cargo from the carrier to the freight forwarder.

Suspension of Deliveries

(U) Materiel deliveries to El Salvador and Honduras were suspended as of 24 July 1969. ²⁴ MAP deliveries resumed, effective 15 July 1970, with the exception of weapons, weapons spare parts, and ammunition lines, which were being deleted from both country programs. ²⁵ Funds were to be recouped.

(U-FOUO) Materiel deliveries to Bolivia were suspended on 26 September 1969. Deliveries were resumed on 20 March 1970 with the exception of training ammunition. The suspension on this ammunition was lifted on 18 May 1970 by DA.

24

DA NOFORN msg 4077, 24 Jul 70, subj: Grant Aid and FMS Suspension.

25

DA Confidential msg, 152125Z, Jul, 1970, subj: Resumption of delivery of Grant Aid and FMS Materiel.

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(C) Foreign Military Sales

M113A1 Armored Personnel Carrier - Argentina

(C) On 9 April 1970 at the request of DA, ²⁶ AMC Headquarters prepared a Foreign Military Sales Offer for 39 each M113A1 Carriers valued at \$1.6 million. The offer was accepted on 17 April 1970 by the Argentine Embassy and materiel was diverted from Army assets for shipment to the Government of Argentina. Shipments were released during the period 7-8 May 1970 to the freight forwarder.

Suspension of FMS and Grant Aid

(C) On 29 September 1969, DA ²⁷ directed temporary suspension of all Grant Aid and Foreign Military Sales (FMS) shipments to Bolivia with instructions to frustrate all cargo enroute and suspend all FMS negotiations in process. This suspension was lifted on ²⁸ 20 March 1970 for all shipments except training ammunition. This ²⁹ suspension was lifted on 9 May 1970.

(C) In July 1969, DA directed a temporary suspension of all ³⁰ Grant Aid and FMS to El Savador and Honduras; that all cargo enroute be frustrated and returned to US installations; and that all FMS negotiations in process be suspended. In December 1969,

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- ²⁶ DA msg 092018Z, Apr 1970.
 - ²⁷ DA msg 291855Z, Sep 1969.
 - ²⁸ DA msg DTG 201545Z, Mar 1970.
 - ²⁹ Msg AMCIL-GE 182015Z, May 1970.
 - ³⁰ DA msg 917417, 24 Jul 1969.

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DA directed that all unshipped, suspended items be cancelled and all open cases be closed and refund be made to the Government of El Salvador. 31

(C NOFORN) On 22 April 1970, DA confirmed that an informal "hold" had been imposed on FMS requests received after 20 February 1970 from Ecuador and Peru. All requests for "Letters of Offer" received subsequent to that date were to be forwarded to DCSLOG regardless of dollar value.

FRG Pershing 1A SWAP Program

(U) In January 1969, the Federal Republic of Germany (FRG) purchased Pershing 1A equipment and repair parts required to update the German Pershing 1 systems to Pershing 1A configuration. The total value of this purchase was \$126 million. To insure an orderly and economical conversion of the German Pershing I to the 1A configuration, and to promote the FRG Pershing 1A SWAP (Exchange) program, the following actions were agreed upon during December 1969:

- a. Establishment of Joint US/FRG SWAP Control Offices at Martin Marietta marshalling site, Cape Kennedy, Florida and at German Air Force Headquarters, Proz-Wahn, Germany.
- b. That receiving, assembly, testings and packaging equipment for shipment be stationed at Cape Kennedy.
- c. Shipment of materiel from Cape Kennedy to three exchange sites in Germany.

31
DA Ltr, LOG-MS/SB3, 18 Dec 69.

32
DA Ltr, 22 Apr 70.

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d. Completion of interface modification as required for mating Pershing 1A equipment with Pershing 1 items and with German trucks and trailers.

e. Conducting major item serviceability tests and demonstrations at German exchange site prior to final release of equipment to German Air Force units.

(C) Deliveries were to be accomplished during November 1970 through October 1971.

Grant Aid and Foreign Military Sales to Jordan

(C) Procedures established in June 1968 which provided for inspection at Red River Depot of all grant aid and foreign military sales materiel to Jordan was rescinded on 27 March 1970. Major equipments on the 1969 Jordan Army Package were delivered prior to 31 March 1970. This package was valued at approximately \$28 million.

(C) At DA request, the AMC prepared sales offers to Jordan for M76 grenade launchers, bayonet knives, bayonet scabbards, and 7.62-mm ammunition which were accepted on 30 April 1970 by customer. This materiel was scheduled to be shipped via MAC Channel Airlift on a weekly basis. The first aircraft arrived in Jordan on 22 May 1970. However, as a result of the current situation in Jordan between the Government and the guerrilla forces, the airlift of ammunition was postponed temporarily.

33

Msg AMCIL-MS/4 271955Z, Mar 1970.

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(C) In compliance with a DA message in May 1970, AMC prepared on a "crash basis" sales offers valued at \$24 million for certain weapons and electronic items.³⁴ Sales offers were to be negotiated by DA with appropriate Jordanian representatives.

Military Sales to Saudi-Arabia

(U) A Survey Report outlining a program with a potential value in excess of \$60 million was translated into Arabic and forwarded in January 1970 to Jidda, Saudi-Arabia, for presentation to Prince Sultan, Minister of Defense and Aviation, by the US Ambassador. Negotiations were still continuing at the end of Fiscal Year 1970.

(U) During the Fourth Quarter Fiscal Year 1970, the Saudi-Arabian Government was provided letters of offer for artillery, small arms, ammunition and communications equipment valued at \$17.9 million. This was in addition to the Saudi Arabian Mobility Program (SAMP) requirements. Acceptance was anticipated during Saudi-Arabia's new budget year which began in September 1970.

Redeye Equipment to Sweden

(C) Sweden agreed in 1967 to purchase 1,080 Redeye missiles and related items. The delivery commitment date for the materiel was 30 September 1969. However,³⁵ in March 1969 DA suspended delivery to Sweden.

34

DA msg 272108, 27 May 70 (S). Message is not releasable and is retained in the records of AMCIL.

35

DA msg 857238, 27 Mar 69 (S). Message is not releasable and is retained in the records of AMCIL.

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(C) In August 1969, DA authorized the first shipment of training equipment to be released with the balance of the materiel to be delivered by February 1970.³⁶ In February 1970, DA authorized the release of the tactical items previously suspended.³⁷ This materiel was released in three stages as follows: the shipment of 10 missiles and related items to Sweden for a training exercise; the shipment of 10 missiles to General Dynamics' Pomona Division for use in development of a maintenance program; and the final shipment of 1,060 missiles on 25 June 1970 by two special mission aircraft to separate destination in Sweden. The shipment of this materiel completed the first delivery of Redeye Missiles to a European country.

Emergency Shipment to Trinidad

(C) A Presidential Determination resulted in an emergency air shipment of equipment to Trinidad on 22 April 1970. This equipment was comprised of 81-mm mortars, 7.62-mm machine guns, and related ammunition valued at approximately \$100,000.

Annual Service Practice - Japan

(U) At a meeting on 23 March 1970, American and Japanese representatives discussed US Army services and support of the Annual Service Practice (ASP) firings of Hawk Hercules missiles. Fourteen Foreign Military Sales cases were offered to Japan at a cost of \$1.1 million. Japan accepted all offers.

36

DA msg 92135, 24 Aug 69 (S). Message is not releasable and is retained in the records of AMCIL.

37

DA msg 1119062, 11 Feb 70, (S). Message is not releasable and is retained in the records of AMCIL.

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Scope of the Foreign Military Sales Program

(U) The Army Worldwide Foreign Military Sales Program from date of inception to the end of Fiscal Year 1970 totaled \$4.894 billion. The active Fiscal Year 1970 program totaled \$3.007 billion of which \$323 million represented new sales made during this year. Countries making major purchases were:

	<u>(Million)</u>
Canada	39.0
Republic of China	18.8
Federal Republic of Germany	44.2
Iran	20.2
Italy	24.3
Jordan	30.3

Major equipment included in these sales were helicopters, personnel carriers, combat vehicles, 155-mm howitzers, $\frac{1}{2}$ -ton trucks, miscellaneous trucks, ammunition, communication equipment and repair parts. Deliveries against the Foreign Military Sales program totaled \$299.5 million for Fiscal Year 1969.

Foreign Military Sales Credit Arrangements

(U) During fiscal years 1969 and 1970 the Department of Defense signed credit arrangements with Foreign Military Sales customers amounting to \$64.4 million for the purchase of defense materiel from the US Army. Arrangements for long-term loans were approved as follows:

Argentina	\$ 2.7 million
Chile	10.7 million

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This data was extracted from the DDISA (Q) 1032 Report as authorized by AR 795-24.

Greece	6.6 million
Guatemala	.4 million
Jordan	14.0 million
China	32.0 million
Morocco	3.5 million

Specific details of their desired purchases were furnished by these countries and contracts were negotiated or were in the process of negotiation by the US Army at the end of this fiscal year.

CY 1969 FMS Case Close-out Program

(U) The CY 1969 Foreign Military Sales Case Close-out Program, which addressed 1946 FMS cases for Fiscal Year 1967 and prior years, was terminated on 30 June 1970. Since the inception of the program, 58 cases were exempted from the close-out program for such reasons as price redetermination, the committed delivery date was extended beyond the close-out completion date, delivery could not be effected due to suspension of the country's program, and deliveries were delayed at the customer's request. Of the remaining 1888 cases, 1585 were closed leaving a balance of 303 open cases which were targeted for closure during the 1st quarter of Fiscal Year 1971.

Foreign Military Sales Management Reviews, Fiscal Year 1970

(U) The FMS Management Review was an in-depth review of the customer's total program, and provided an overall analysis of both the supply and financial status of the program. Dependent upon the desires of the customer, the analysis was furnished to the customer's representatives for individual review, or a joint review (with US Army and country representatives) was conducted. Joint reviews were held either in-country or with CONUS. A total of 39 country programs were

scheduled for review during Fiscal Year 1970 of which 34 reviews were completed, four cancelled, and one was in DA pending final approval. In-country reviews were held for Denmark, Italy, Spain, Norway, and Japan.

Agreement with NAMSA

(U) Based on an agreement with the NATO Maintenance and Supply Agency (NAMSA), in discrepancy reports of \$100 or less, the US allowed a discount of one-half of one percent ($\frac{1}{2}\%$) on the standard price of stock fund materiel purchased by NAMSA from the Department of the Army. In consideration of the discount, NAMSA forewent its right to process discrepancy reports of \$100 or less for credit on line item purchases of stock fund materiel. Discrepancies involving duplicate billing and erroneous prices, or those applicable to non-stock fund materiel were not included in this agreement. The agreement became effective on 1 October 1969.

(U) Secondary Items Support

The Secondary Items Support Office had the responsibility for the management of Supply Support Arrangements with friendly foreign governments. It was the staff coordination point and staff activity for intensive management of all international logistics program secondary items and repair parts. Under Supply Support Arrangements friendly foreign countries could invest in the US Army pipeline and receive secondary items and repair parts support of equipment common to the US, in the same manner, priorities, and procedures as US Army users.

39

Ltr AGSC-C COMPT-FAO, 22 Aug 69.

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This program had grown from one country (Germany) in 1962 with a value of \$13.3 million, to 17 countries participating during Fiscal Year 1970 with a value of approximately \$250 million. Sales during Fiscal Year 1970 totaled approximately \$33 million.

Significant Events and
Actions in Fiscal Year 1970

During Fiscal Year 1970 the Army renegotiated Supply Support Arrangements with the Australian Army and the Austrian Ministry of Defense. The dollar value of the Foreign Military Sales Orders (FMSO's) in effect with Australia was approximately \$5.8 million. The repair parts support for 63 major equipment items of US design for Austria was valued at \$2.6 million.

At the end of Fiscal Year 1970 the Supply Support Program with Belgium was valued at approximately \$2,300,000. No changes in end items took place during the period. Also, the repair parts support program with Canada continued and was valued at approximately \$8.7 million.

During Fiscal Year 1970 renegotiations were conducted in AMC Headquarters with representatives of the Republic of China Armed Forces (ROCAF) on three FMSO's for Fiscal Year 1971. The three new agreements increased end items supported under the SSA program from 26 to 84 with a total value of \$5,797,927 for Fiscal Year 1971.

Since its inception in 1962, the SSA program with the Federal Republic of Germany (FRG) expanded each year to a total dollar value of approximately \$120 million. During April 1970 the semi-annual US/FRG supply conference was held at Bonn, Germany with the Federal

Ministry of Defense acting as host. The United States was represented by DA, AMC, MICOM, CINCEUR, USAEUR, MATCOMEUR and (MAAG) in the Military Assistance Advisory Group in Germany, while Germany was represented by the Federal Ministry of Defense, and the General Staff of Army, Air Force and Navy. Presentations and discussions at the conference resulted in mutual agreement for resolution of actions and problem areas by the appropriate action agencies.

Under the renegotiated US/Iran supply support arrangements, it was estimated that materiel issues would be approximately \$1.5 million per quarter. Also, renegotiation of several Foreign Military Sales Order contracts were concluded during Fiscal Year 1970 with the Government of Israel. The dollar value of repair parts support for Israel during Fiscal Year 1970 was approximately \$3.9 million. Italy's contract provided for support of 1,000 M113 armored personnel carriers with a total value of approximately \$1.2 million.

Renegotiations of FMSO's No. 1, 2, and 3 were conducted during Fiscal Year 1970 with Mutual Defense Assistance Office Japan and Japan Self Defense Forces representatives. The three FMSO's each for the Air Staff Office and Ground Staff Office were approved and accepted by the respective staff offices. The total dollar value of the Supply Support Arrangement (SSA) program for Japan Fiscal Year 1970 was \$2,855,544.82 for the Air Staff Office, and \$2,379,218.61 for the Ground Staff Office. In this fiscal year, the US NATO Hawk Liaison Office and the NATO Hawk Production and Logistics Organization renegotiated FMSO's which were approved for CY 1970. The dollar value of the SSA program for CY 1969 totaled \$6,794,268.

Support for both the Royal Norwegian Air Force and Army continued through Fiscal Year 1970 under the existing contract. The program valued at \$6.1 million, supported 36 major equipment items common to those in use with the US Army. US/Saudi Arabia Supply Support Arrangements covered the repair parts support of approximately 4,000 transport and a relatively small number of combat vehicles purchased from the US Army. The value of the US depot pipeline in support of those vehicles was approximately \$2.8 million. It was estimated that approximately \$300,000 worth of materiel was issued against this program per quarter. Consideration was being given to the addition of many hundred more vehicle and weapon items for support under SSA which would increase this program substantially.

During Fiscal Year 1970, the Government of Spain accepted additional FMSO's for support of Spanish Army equipment for conventional items and the Spanish Hawk Missile System which covered the period of 1 April 1969 through 31 March 1970. The value of the two programs totaled \$1,883,333 for conventional items and \$1,590,228.32 for the Spanish Hawk Missile System. The United Kingdom continued to receive parts support of certain combat vehicles during Fiscal Year 1970. This support was valued at approximately \$1.8 million.

CHAPTER X

(U) QUALITY ASSURANCE

Introduction

The AMC made an organizational change in the Quality Assurance Directorate during Fiscal Year 1970, due to reduction in personnel. The Product Acquisition and Depot Quality divisions were consolidated and re-designated the Product Operations Division. In view of the cutback in personnel, the mission and functions of the Quality Assurance Field Office located at Lexington-Blue Grass Depot was re-evaluated and a revised mission developed. This field element base of operations was expanded to provide field coverage in areas other than those related to depot quality control operations.

The Quality Assurance Directorate developed criteria for restructuring the product assurance elements at the major subordinate commands and provided this input as a part of the standard commodity command structure. These criteria provided for the establishment of five divisions within the Product Assurance Directorate and centralization of all product assurance functions at each major subordinate command.

Quality Engineering

National Security Industrial Association (NSIA) Study

NSIA completed in 1969 an independent audit of the AMC quality

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The material in this chapter is based on the FY 1970 Historical Summary submitted by the Directorate for Quality Assurance, HQ AMC.

assurance system. The audit, requested by AMC, required sixteen months and updated a similar study made by NSIA in 1963. NSIA recommendations related to "user satisfaction" and economic considerations. The report emphasized the effect of life cycle costing on economical maintainability and administrative control.

Consequently, the AMC took the following actions in Fiscal Year 1970: Provided guidance to commodity commands and project managers on quality assurance; determined resources available and requirements for quality assurance activities; developed plans and schedules for review of reliability, maintainability, data analysis, quality control and inspection activities. Also, AMC planned for improvement of AMC/Defense Contract Administration Services quality assurance interface relationships; published product assurance plans then required by Army regulations; and developed a management information system to provide status visibility on programs and hardware.

PROMAP-70, Program Task, Increased Reliability of Systems

In the first quarter of Fiscal Year 1970, the Commanding General, AMC, announced PROMAP-70, an extensive program for the refinement of the materiel acquisition process. One of the tasks in PROMAP-70 was to increase reliability of systems in which actions by commodity commanders and project managers were aimed at effecting improvements in reliability and maintainability requirements.

Included in PROMAP-70 was the Reliability Improvement of Selected Equipment (RISE). Under the RISE program, AMC major subordinate commands reviewed materiel in the operational inventory;

identified reliability improvements resulting in cost-compensating benefits; and initiated approved product improvement progress. Selection of materiel for reliability improvement was based on analyses of all sources of reliability data including user experience and cost of logistic support. Reliability problems were ranked and improvements identified in order of optimum pay-off, such as increased reliability or safety or reduced logistic support cost. Improvements were recommended to Headquarters AMC as product improvement proposals.

Quality and Reliability Intern Program

The fourth Quality and Reliability Intern Program classroom training began on 14 July 1969 at the Army Management Engineering Training Agency (AMETA). Twenty-three interns completed training at AMETA and were assigned in the 3d Quarter, Fiscal Year 1970, to AMC installations for on-the-job training.

Orientation Course for OCRD

A reliability and maintainability orientation course was prepared by the Quality Assurance Directorate for OCRD project monitors. The reaction of the 75 persons who attended the course was favorable.

The objectives of the short course were to emphasize the importance of reliability and maintainability relative to other characteristics of concern during the development phase; to acquaint those attending with terms and basic means employed to track and assure achievement of specified reliability and maintainability characteristics; and to instill enough of an understanding to permit those personnel to challenge the adequacy of the reliability and

maintainability aspects of actions in which they became involved.

Product Operations

Implementation of Review of Body Armor Procurement

The Secretary of Defense directed on 14 July 1969 that the Department of the Army take certain actions to improve the specifications for body armor. These actions included the acceleration of investigations and studies, already underway, to develop appropriate nondestructive testing requirements and criteria for assessing X-ray results; re-examination of current ballistic testing techniques; and establishment of a reporting procedure by which operational data would be made available for body armor improvement.

The Defense Supply Agency and the Department of the Army were to develop jointly appropriate procedures and criteria for evaluating unused body armor currently recalled from SEA. In the meantime DCSLOG agreed to provide for the establishment of the required reporting procedure.

Periodic progress reports were furnished the Deputy Chief of Staff for Logistics, DA, on 6 August, 8 September, 24 October and 9 December 1969. AMC forwarded on 24 December 1969 a final close-out report to DCSLOG. The overall report included the following: State-of-the-Art Survey on Ceramic Armor Materials Technology, Part One; State-of-the-Art Survey on Ceramic Lightweight Armor Materials Technology, Part Two; A study of the Carborundum Company Lot 4 Ground Troop Body Armor, Type 1, Contract No. DSA 100-69-C-0548; Limited Production Purchase Description for Body Armor, Small Arms Protective Aircrewman, dated 19 November 1969; and a Program

for the Development of Engineering Support Data for Ceramic Composite Body Armor, 9 December 1969.

Implementation of the Army Materiel and Mechanics Research Center's Program for the Development of Engineering Support Data for Ceramic Composite Body Armor required additional funding which was furnished in March 1970 by the Department of the Army. This effort was scheduled for completion early in 1971. It would provide technical data for the preparation of a new improved general specification for ceramic body armor.

Depot Operations

The repair and rehabilitation operations at AMC depots performing work for the Agency for International Development (AID) were provided for by the AID-Army-GSA Memorandum of Understanding, dated 19 August 1965. Difficulties and confusion were caused by the vague assignment of responsibilities and the lack of procedures relating to selection of unserviceable assets. Further difficulties arose in determining work requirements, the scope of repairs to be accomplished, and the work. Consequently, a revised agreement to correct the shortcomings was developed and forwarded to AID for formal approval.

In order to up-date procedures for formulating changing concepts and techniques, a major revision was made to AMCR 702-7, Depot Quality Control and Inspection System. The regulation prescribed policies and procedures for establishing and maintenance and supply operations. Functions not considered absolutely essential were deleted because of current resource and funding limitations.

Army Metrology and Calibration System

Calibration Performance Analysis. In Fiscal Year 1970 vigorous efforts were undertaken to assure that calibration intervals, which directly affected the calibration workload, were valid and directly related to the instrumentation reliability as revealed by calibration performance data. Considerable success was achieved in increasing calibration intervals with the full knowledge that test equipment of appropriate computer programs would permit the Army Metrology and Calibration Center (USAMCC) to automate its calibration performance analysis system. As a part of the program, USAMCC provided the commodity commands with information on the top 15 unreliable items so that appropriate product improvements could be achieved.

Calibration Interservicing. Under the impetus of the Joint Technical Coordinating Group for Metrology and Calibration (Joint Commanders Panel) approximately 100 interservice calibration agreements were active during Fiscal Year 1970. In addition, 47 potential agreements were being explored. While the Army provided calibration support to other services on 28 agreements, it received support under 71 agreements.

Management Indicator System. A detailed calibration program reporting system was developed and published as Change 1 to AMCR 700-9. The data was to be assessed and portrayed in a review and analysis report for use at all levels of AMC calibration program management in evaluating the efficiency and effectiveness of the calibration program. This effort contained the potential for an Army-wide review and analysis system.

Feasibility Study Concerning Calibration Mission Realignment.

This study was completed by USAMCC and was being evaluated at Headquarters, AMC, level. The aim of the study was to determine whether it would be cost-effective to operate from less than the several area support calibration depots, without degrading AMC customer support. Also, the study was to determine the cost-effectiveness and practicability of stationing Army calibration teams at selected CONARC sites of high workload density. According to the study, the teams would remain under AMC control.

Metric System Study

The President signed, on 9 August 1968, PL 90-472 which authorized a study to determine the impact of the increasing worldwide use of the metric system on the United States. The Air Force was designated as the lead service in providing DOD input and AMC was named the principal Army representative. The Quality Assurance Directorate provided the Army member of the DOD Metric Study Steering Committee. Army Management Engineering Training Agency (AMETA) was assigned the task of conducting the study to determine the impact of metrication (The act of converting to the metric system) in the Department of the Army.

Major Army commands and CONUS areas were notified that the Army Metric Study was underway and that their full cooperation and participation was required. A handbook entitled "Guidance for Army Metrication Study" was prepared and published by AMETA and was distributed to all participating Army activities.

Initial reports received from practically all participating

Army activities showed that the overall impact of metrication by the Army would not be serious. However, the anticipated impact on individual activities varied from slight to serious. It was anticipated that preparation and staffing of the Army study report would be completed by 15 October 1970.

Congress was to assess the advantages and disadvantages of retaining the existing measurement system or adopting the metric system based on the National and DOD metrication impact projected by the Department of Commerce consolidated report.

Value Engineering

Command objectives for the Fiscal Year 1970 Value Engineering mission were provided on 25 July 1969 to the major subordinate commands, depots, and other participating activities in the Product Assurance and Value Engineering 5-year program (Fiscal Years 1970-1974). Objectives for contractor Value Engineering Change Proposals (VECPs) and for the origination of in-house VECPs were exceeded by 3 percent and 25 percent, respectively. AMC fell short of the 51 percent ratio established for VECP processing time by 9 percent. This shortfall was due in part to increased pressure by AMC Headquarters for a more thorough and objective evaluation of VECPs by the technical agencies. Over 60 percent of those VECPs in process were in the Munitions Command. Year end results and goals for the Value Engineering Program for 1970 were as follows:

	<u>GOAL</u>	<u>ACTUAL</u>
Receipts of contractor VECPs (cumulative).....	775	800
In-house VECPs (cumulative).....	850	1063
Ratio of total VECPs on hand to those on hand over 60 days.....	51%	60%

A shortfall of \$17.4 million was experienced in the Value Engineering goals assigned to AMC under the Army Cost Reduction Program. This was attributed to a curtailment of procurement programs, plus the issuance during the 3d quarter of the fiscal year of an increase of \$19 million in the goal originally assigned. The \$61 million goal initially assigned was exceeded by \$1.6 million, for a total accomplishment in excess of \$62.6 million.

(U) CHAPTER XI

CONCLUSION

"The immense size of modern armies entails more complicated systems of supply, and requires a broader basis of industrial support at home, as well as the application of all the most modern implements of transportation, both for the mobility of the AMC itself, and for its maintenance in the field."

The above quotation is from the Annual Report of the Secretary of War in 1919, but it may well apply to the Army Materiel Command's support of the war in Vietnam in 1970. The AMC continually pushed the state-of-the-art in its qualitative materiel requirements to improve firepower, mobility, communications, and protection. The command also sought to produce equipment that was reliable and easily maintainable. It was a design requirement that these two characteristics be built into each item of Army equipment and these characteristics were validated during operational tests. Quality and reliability were the result of a carefully planned and implemented program.

During this century, the nature of warfare changed dramatically. In World War I, there was a linear front with the infantry supported by artillery. The air threat was to come at a later date, in spite of the stories of the achievements of the World War I flying aces. In World War II, airpower forced a substantial dispersion of infantry and artillery. With this came new artillery techniques with some mass firing and utilization of aerial observation posts. In Korea this process was refined to a considerable degree with artillery playing a dominant role. In Vietnam where there was no front line,

firing bases were positioned to provide 360 degree coverage. The tactical concept was based on the utilization of firepower as the principle means of ground denial, and on reconnaissance, defense, and assault.

Meanwhile, the volume of fire delivery grew in great proportions, and the increased cost per round of ammunition demanded close attention. The basic problem was to find the enemy with sufficient precision so as to use effectively, and at minimum cost, the tremendous firepower available to our Armed Forces. In 1965, the difficulty in Southeast Asia was in finding the enemy at night. But by mid-1968, a senior commander in Vietnam said that we ambushed the enemy more than they ambushed us, and that we then fought as much at night as during the day.

During Fiscal Year 1970, the AMC emphasized improvement in sensor devices, infrared, night vision devices, and other intelligence techniques. The Army realized the necessity for integration of surveillance, target acquisition, and night observation activities. This led to the establishment of a systems manager to integrate the total Army effort in this area. The test organization to support this effort, known as Project MASSTER (Mobile Army Sensor Systems Test, Evaluation, and Review), was expected to have great impact on Army tactics and doctrine.

During this fiscal year, the cost aspect was dominant as more concern was placed on national priorities. The consensus of opinion was that much time should be given to a searching analysis for new and imaginative ways of using existing systems.

Meanwhile an initial step in streamlining AMC's organization and improving its effective support of the Army was taken in May 1969 with a realignment of the Command's Headquarters. This involved the appointment of a Deputy Commanding General for Materiel Acquisition, who would center his attention on the industrial base, and a Deputy Commanding General for Logistics Support, who would focus his attention on supporting the Army in the field. These deputies were in addition to the principal Deputy Commanding General, who was the Commanding General's chief assistant and resources manager, and the Deputy for Laboratories. Simultaneously the total of 67 project managers was reduced to 49 by eliminating 10, whose functions were assigned to major subordinate commanders, and by combining eight with other project manager offices.

Under these realignments, the AMC Commander's immediate span of control was reduced by approximately 60 percent. Instead of the 190 commands, agencies, or individuals reporting directly to the Command Group, there were only 78.

The command took many specific actions during this year to support the US combat forces in Vietnam and to increase the overall readiness of the Army in the field. These actions ranged from advances in support techniques to the development and introduction of new and improved weapons and equipment.

The following are examples of new and improved equipment furnished to the troops: armored reconnaissance/airborne assault vehicles, bridge and bridging equipment, armored personnel carriers, air defense weapon systems, lightweight water purification units, new helicopter

armament, heavy lift helicopters, surveillance aircraft, a large-capacity airdrop system and improved mechanical time fuzes for artillery ammunition.

The US/Federal Republic of Germany Main Battle Tank Program utilized six research and development pilot models in testing new components. A program of rebuilding M48A1 tanks to improve configuration for use in Vietnam was completed in the previous fiscal year. Assembly-line output of a new 5-ton truck to support the Pershing Missile system was underway. A mobile assault bridge/ferry had been tested in the Ohio River and was being tested in Europe by Seventh Army troops. AMC played an important part in the procurement of electric power generator sets for the Department of Defense. The Command was managing 16 co-production projects with six foreign countries and NATO. Through these projects, which covered 15 different items of hardware, approximately \$500 million was to be spent by the United States.

As the decade of the 1970's approached, major shifts in national and international trends bore directly on military policies and on the operations of the Army Materiel Command. It was imperative that the Command adjust its thinking, planning and procedures to the dominant trends of the times. As a consequence, the defense budget was under sharp and penetrating analysis. This encompassed force structure, deployment, personnel, materiel, and operating expenses. Reduction of US involvement in Vietnam was the national policy that impacted on strategic, tactical and support operations, organization, utilization of funds, personnel policies, and the scientific community.

The effects of these national trends caused the defense establishment to examine its plans, policies, organization and procedures more closely in order to meet the current challenges. This led to the adoption of a healthy attitude of skepticism toward stated requirements. In its in-depth reviews, the AMC paid particular attention to costs, schedules, and overhead.

During this year efforts were underway to obtain suitable office space to consolidate the AMC headquarters at a single site in Northern Virginia within a 10-mile radius of the Pentagon. At that time, the headquarters' elements were scattered in five government-owned facilities and four commercial office buildings. The target date for the move to the new headquarters was the Fall of 1971.



U.S. ARMY MATERIEL COMMAND

COMMANDING GENERAL GENERAL F J CHESAREK (OX 59154)
DEPUTY COMMANDING GENERAL LTG H A MILEY, Jr (OX 59006)
DEPUTY FOR LABORATORIES DR R B DILLAWAY (OX 53596)
DEPUTY CG FOR LOGISTICS SUPPORT MG W N REDLING (OX 54892)
DEPUTY CG FOR MATERIEL ACQUISITION MG P A FEYERISEN (OX 55217)
CHIEF OF STAFF MG L B JONES (OX 59105)
DEP CHIEF OF STAFF & SECY OF THE GEN STAFF (VACANCY) (OX 59526)
COMMAND SERGEANT MAJOR CSM R M GARRITY (OX 76764)

Table with 8 columns and 4 rows detailing various departments and their functions, including Directorate of Research, Development and Engineering, Directorate of Personnel and Training, and Directorate of Quality Assurance.

Table with 8 columns and 1 row detailing major subordinate commands such as U.S. Army Aviation Systems Command, U.S. Army Missile Command, U.S. Army Electronics Command, U.S. Army Tank Automotive Command, U.S. Army Mobility Equipment Command, U.S. Army Munitions Command, U.S. Army Test & Evaluation Command, U.S. Army Weapons Command, and U.S. Army Safeguard Logistics Command.

Table with 8 columns and 1 row detailing installations and activities for each of the major subordinate commands, listing specific locations and facilities.

Table with 8 columns and 1 row detailing other installations and activities, including project/product managers, separate installations under headquarters, and major AMC procurement activities.

GLOSSARY

AAWS	Advanced Aerial Weapons Systems
ACTIV	Army Concept in Vietnam
ADP	Automatic Data Processing
AEC	Atomic Energy Commission
AFLC	Air Force Logistics Command
AFSC	Air Force Systems Command
AID	Agency for International Development
AIF	Army Industrial Fund
ALMC	Army Logistics Management Center
ALMSA	Automated Logistics Management Systems Agency
ALO	Air Liaison Officer
ALPHA	AMC Logistics Program Hardcore-Automatic
AMC	Army Material Command
AMCOC	AMC Operations Center
AMETA	Army Management Engineering Training Agency
AMP	Army Materiel Plan
AMSAA	Army Materiel Systems Analysis Agency
AOB	Approved Operating Budget
APC	Armored Personnel Carries
APE	Advanced Production Engineering
APG	Aberdeen Proving Ground
ARACOM	Army Air Defense Command
ARPA	Advanced Research Projects Agency
ARSV	Armored Reconnaissance Scout Vehicle
ASBCA	Armed Services Board of Contract Appeals
ASL	Authorized Stockage List
ASP	Annual Service Practice
AVSCOM	Aviation Systems Command
BMY	Bower-McLaughlin-York
CAVAMP-V	Central Asset Visibility and Management Program in Vietnam
CB	Chemical and Biological
CCE	Commercial Construction Equipment
CCMIS	Commodity Command Management Information Systems
CDC	Combat Development Command
CEIO	Cost and Economic Information Office
CHAD	Charleston Army Depot
CONARC	United States Continental Army Command
CONUS	Continental United States
CPFF	Cost-Plus Fixed-Fee
C/SCSC	Cost/Schedule Control Systems Criteria
CTP	Coordinated Test Program

DASA	Defense Atomic Support Agency
DCEPG	Defense Communications Planning Group
DIPEC	Defense Industrial Plant Equipment Center
DMR	Date Material Required
DMS	Defense Materials System
DOL'S	Directors of Laboratories
DPG	Dugway Proving Ground
DSCS	Defense Satellite Communications Systems
DSU	Direct Support Unit
DTC	Deseret Test Center
DWSMC	Defense Weapons Systems Management Center
ECCM	Electronic Counter-Measure
E&E	Ecology and Epidemiology
EMP	Electromagnetic Pulse
ENSURE	Expediting Non-Standard Urgent Requirement for Equipment
EOD	Explosive Ordnance Disposal
ETA	European Troposphere Alpha
ET/ST	Engineering Test/Service Test
EURIP	European Improvement Program
FA	Formal Advertising
FAAR	Forward Area Alerting Radar
FABMDS	Forward Area Ballistic Missile Defense System
FHMA	Family Housing Management Account
FLIR	Forward Looking Infrared
FMS	Foreign Military Sales
FRG	Federal Republic of Germany
GAO	General Accounting Office
GCAD	Granite City Army Depot
GFE	Government Furnished Equipment
GOCO	Government-Owned, Contractor-Operated
GOER	A Family of high Mobility Tactical Vehicles
GSU	General Support Unit
HASC	Housed Armed Services Committee
HET	Heavy Equipment Transporter
ICE	Improved Cost Estimate
IFC	Integrated Fire Control
IIG	Imperial Iranian Gendarmerie
ILC	International Logistics Center
ILS	Integrated Logistic Support
IPO	Initial Procurement Objective

IPR	In-Process Review
IPT	Initial Productions Testing
IRO	Inventory Research Office
JLRB	Joint Logistics Review Board
LAO	Logistic Assistance Office
LCSS	Land Combat Support System
LDSRA	Logistics Doctrine Systems and Readiness Agency
LP	Limited Production
LSSA	Logistics Systems Support Agency
MAC	Maintenance Allocation Chart
MACV	Military Assistance Command, Vietnam
MAP	Military Assistance Program
MASSTER	Mobile Army Sensor System Test Evaluation and Review
MBT	Main Battle Tank
MECOM	US Army Mobility Equipment Command
MEP	Mobile Electric Power
MEPGS	Mobile Electric Power Generating Sources
MHM	Military Housing Management
MICV	Mechanized Infantry Combat Vehicles
MIDA	Major Item Data Agency
MIDP	Major Item Distribution Plan
MILSTEP	Military Supply and Transportation Evaluation Procedures
MST	Military Science Training
MUST	Medical Unit, Self-contained, Transportable
MYP	Multi-Year Procurements
NICP	National Inventory Control Point
NSIA	National Security Industrial Association Study
NVS	Night Vision System
OASIS	Ownership and Accountability of Selected Secondary Items Stock in Oversea Theater Depots
OCRD	Office, Chief of Research and Development
OPRED	Operational Readiness Office
PACO	Plan and Analysis Coordinating Office
PBS	Production Base Support
PCD	Program Change Decision
PCR	Program Change Request
PEMA	Procurement of Equipment and Missiles, Army

PEQUA	Production Equipment Agency
PMAC	Preliminary Maintenance Allocation Chart
POMCUS	Prepositioning of Materiel Configured to Unit Sets
PPB-MIS	Planning, Programing and Budgeting and Management Information Systems
PROMAP-70	Program for the Refinement of the Materiel Acquisition Process
PROMIS	Project Management Information System
QMR	Qualitative Material Requirement
RFP	Request for Proposal
R&D	Research & Development
RDT&E	Research, Development, Test and Evaluation
RISE	Reliability Improvement of Selected Equipment
ROCAF	Republic of China Armed Forces
RVNAF	Republic of Vietnam Air Force
SAMP	Saudi Arabian Mobility Program
SAR	Selected Acquisition Reports
SDR	Small Development Requirements
SEA	Southeast Asia
SEANITEOPS	Southeast Asia Night Operations
SIMS	Selected Item Management System
SLAE	Standard Lightweight Avionics Equipment
SMC	Supply & Maintenance Command
SMO	Special Mission Operations
STANO	Surveillance, Target Acquisition and Night Observation
SWO	Stop Work Order
SVS	Supplementary Vehicle Searchlight
TAADS	The Army Authorization Document System
TACOM	US Army Tank-Automotive Command
TECOM	Test and Evaluation Command
TDA	Table of Distribution and Allowance
TMA	Taiwan Materiel Agency
TOA	Total Obligational Authority
TOE	Table of Organization and Equipment
TPP	Total Package Procurement
TRW Contract	Thompson, Rams, Wooldridge Contract
USAMB	US Army Maintenance Board
USAMCC	US Army Metrology and Calibration Center
USAMERDC	US Army Mobility Equipment Research and Development Center

USARPAC

United States Army, Pacific

VECP

Value Engineering Change Proposals

VLCO

Vietnamization Liaison and Coordination Office

VRFW

Vehicle Rapid Fire Weapon System

YPG

Yuma Proving Ground

DISTRIBUTION LIST

Headquarters AMC

Aviation Office	1
Chaplain	2
Comptroller	2
DCG for Logistics Support	1
DCG for Materiel Acquisition	1
Depot Management Office	1
Deputy for Labs	1
Equal Employment Opportunity Office	1
General Counsel	1
Historical Office	12
Information Office	1
Inspector General	1
Installations & Services	1
International Logistics	2
Logistic Assistance	1
Management Information Systems	1
Marine Corps Liaison Office	1
Personnel, Training, & Force Development	5
Plans & Analysis	1
Quality Assurance	1
Requirements & Procurement	6
Research, Development & Engineering	1
Safety Office	1
Secretary of General Staff	1
Security Office	1
SA for Chemical & Biological Affairs	1
SA for Nuclear Affairs	1
Supply	1
Surgeon	1
Surveillance, Target Acquisition & Night Observation Systems (DCS) (Army) (SCS)	1

Project Management

Management Office	3
Advanced Attack Helicopter	1
Chaparral/Vulcan	1
Containers Systems (DCS) (Army) (SCS)	2
Mobile Electric Power	1

Project Management (Continued)

SAM-D	1
Satellite Communications	1
UTTAS	1
XM815 (XM1)	1

Major Subordinate Commands

Aviation Systems Command	2
Electronics Command	2
Missile Command	2
Mobility Equipment Command	2
Munitions Command	5
Safeguard Logistics Command	2
Tank-Automotive Command	2
Test & Evaluation Command	2
Weapons Command	2

Separate Installations & Activities

Aberdeen Research & Development Center	1
Advanced Materiel Concepts Agency	1
Army Maintenance Board	1
Army Materiel Systems Analysis Agency	1
Army Materials & Mechanics Research Center	1
Army War College	1
Automated Logistics Management Systems Agency	1
Equipment Authorizations Review Center	1
Field Office, HQ AFSC	1
Field Support Activity Ft Hood - MASSTER	1
Foreign Science & Technology Center	1
Harry Diamond Labs	1
International Logistics Center	1

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Separate Installations &
Activities

Joint Military Packaging Training Center	1
Logistics Management Center	1
Logistics Systems Support Agency	1
Major Item Data Agency	1
Management Engineering Training Agency	1
Natick Labs	1
Small Arms Systems Agency	1

Other

Office, Chief of Military History	2
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