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US ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND

ANNUAL HISTORICAL REVIEW

FISCAL YEAR 1978

US ARMY DARCOM

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ALEXANDRIA, VA 22333

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U.S. ARMY MATERIEL DEVELOPMENT
AND READINESS COMMAND

ANNUAL HISTORICAL REVIEW

FISCAL YEAR 1978
(RCS-CSHIS-6 (R3))

Prepared by

Historical Office

Headquarters, U.S. Army Materiel Development and
Readiness Command

1 November 1980

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PREFACE

This Annual Historical Review, prepared in accordance with the provisions of AR 870-5, covers the sixteenth year of life of the US Army Materiel Development and Readiness Command (US Army Materiel Command prior to 26 January 1976). The history was prepared in part from submissions compiled by historical officers of headquarter's staff elements and project manager offices discussed in the text, and in part from sources referenced in footnotes assembled through various research programs. The Review serves as the official history of the Command and is used not only as a tool for orienting personnel newly assigned to the Command but also for the provision of historical precedent upon which to base current and future operations. It is also a valuable reference work used for the preparation of more comprehensive Command and Army histories. Detailed histories of DARCOM major subordinate commands and other installations or activities are among the holdings of the Headquarters DARCOM Historical Office archives.

FY 1978 was another year of change and challenge for DARCOM. The AMARC realignments were completed with the organization on 1 January 1978 of two new research and development commands (ERADCOM and CORADCOM) and one new readiness command (CERCOM) from former ECOM elements. As in FY 1977, total Army logistics readiness continued as a major concern for DARCOM in FY 1978. Findings of DARCOM studies conducted near the end of the year were not good. They indicated a continuing erosion of the wholesale logistics base and a loss of technical expertise in both DARCOM and industry. It was another year of declining monetary and personnel resources and increasing workloads, a condition impacting adversely on logistics and Army readiness. DARCOM's efforts to meet the challenge of doing more with less are discussed in the text.

The preparation of the history was a team effort. The project team leader was Myles G. Marken, Sr. who also prepared Chapters I - Command Management, II - Resources Management, III - Materiel Development, VI - Materiel Readiness, and the Overview portion of Chapter VII - Highlights and Trends. Captain Michael J. Cassity, a reserve officer on active duty from the University of Georgia, prepared the remainder, a major portion, of Chapter VII. Mr. Andrew A. Putignano prepared Chapters IV and V on Project Management.

The manuscript was typed, edited, and proofed by Mrs. Betty J. Thomas and Mrs. Guyanne Parker. Mrs. Thomas and Mrs. Parker also arranged for the graphics and prepared the glossary. The cover was designed by Ms. Sally Thornburg of the Headquarters DARCOM Graphics Facility.

MYLES G. MARKEN, SR.
Senior Historian
Project Team Leader

DALE BIRDSELL
Chief Historian

General J. R. Guthrie
Commander, DARCOM
May 1977-

LTG R.J. Baer
Deputy Commanding General
for Materiel Development
September 1977-June 1980

LTG E.J. D'Ambrosio
Deputy Commanding General
for Materiel Readiness
January 1976-May 1979

MG R.L. Berquist
Deputy Commanding General
for Resource Management
March 1978-

MG H.E. Gibson, Jr.
Chief of Staff
October 1976-October 1977

MG R.L. Moore
Chief of Staff
February 1978-July 1980

CSM H.W. Shedd
Command Sergeant Major
August 1975-August 1980

MG R.J. Lunn
Director of Development
and Engineering
July 1977-May 1979

MG I.A. Hunt, Jr.
Director of Battlefield
Systems Integration
August 1975-February 1978

Mr. J. C. Gilbert
Director of Management
Information Systems

COL G.T. Feilke
Director of Plans and Analysis
August 1976-February 1979

COL E.G. Wolfe
Director of Installations
and Services
August 1974-August 1979

Mr. S. J. Lorber
Director of Quality Assurance

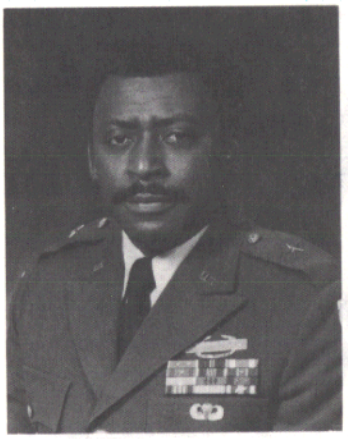
MG T.H. Brain
Director of International Logistics
October 1976-March 1979

BG E.A. Vuley, Jr.
Director of Materiel Management
September 1977-December 1978

MG E.L. Konopnicki
Director of Readiness
July 1977-September 1978

MG J.W. Sharp
Director of Procurement and Production
May 1977-June 1980

BG R.L. Forney, Jr.
Director of Personnel, Training and Force Development
October 1977-November 1977



BG A.J. Cade
Comptroller
December 1977-December 1978

COL R.J. Cuthbertson
Director of International
Research and Development
July 1975-August 1979

COL H.S. Christensen
Director of Communications-
Electronics
June 1977-June 1979

COL L.M. Eek, Jr.
Chief, Office of Project
Management
June 1974-June 1980

U.S. ARMY MATERIEL DEVELOPMENT
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CHAPTER I

COMMAND MANAGEMENT

Declining Resources and Army/DARCOM Readiness Posture

(U) Throughout Fiscal Year 1978, the DARCOM Commander, General John R. Guthrie, in command since May 1977, struggled with the frustrating conditions that had become a way of life for managers at the huge materiel agency since its organization in 1962, the necessity for maintaining total Army logistics readiness during periods of increasing workloads and declining resources. This was again a major challenge facing DARCOM as the command entered Fiscal Year 1978, the matching of reduced resources with expanding demands levied against them. To DARCOM managers it was becoming increasingly apparent that the DARCOM workload was not being reduced in proportion to the total Army strength nor in respect to the total Army budget. Practicing austerity rigidly and continuously since the close of the Vietnam War, DARCOM programmers concluded in 1978 that DARCOM had just about reached the limit of its abilities to absorb additional tasks relative to reduced resources.

(U) This was most critical in the area of depot supply and maintenance operations where significant mission increases had occurred and many depots had been closed. From a myriad of new tasks levied upon his logistics system during the year, when asked, GEN Guthrie indicated that the two most demanding new DARCOM tasks were the naming of DARCOM as the Army's executive agent for security assistance and the charging of DARCOM with the mission of executing the Secretary of the Army's responsibilities as the single manager for conventional ammunition.[1] Other burdensome mission add-ons included support of projects such as the USAREUR Air Line of Communications (ALOC) and the supply of Defense Logistics Agency items from Army (DARCOM) depots. These and other workloads had been absorbed over the recent five years, a period when the DARCOM depots had been reduced by 10,000 manpower spaces.

(U) General Guthrie's immediate predecessor, LTG George R. Sammet, Jr. who commanded DARCOM from January to May in 1977 for an interim period after GEN John R. Deane retired and before GEN Guthrie returned from Korea to take command, had also been very concerned about the gap between resource requirements and availability. He was most concerned about the situation which he believed it was imperative to correct to avoid further deterious impact upon backlog and materiel readiness. General Sammet was certain that current and projected levels of DARCOM resources

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[1] The Pentagram News, 7 Sep 78, Interview with GEN Guthrie, John R. Pp. 8,19.

could and would not provide DARCOM the capability to sustain potential Army combat operations once basic loads had become exhausted.[2]

(U) This subject was also the primary message of the so-called George and Gene Show, the vastness and complexity of the DARCOM resources, which was given at HQDA and other places during the winter and spring of 1977. "George" referred to General Sammet and "Gene" referred to LTG D'Ambrosio who was the DARCOM Deputy Commanding General for Materiel Readiness. The thrust of the "George and Gene" talks was to convince higher levels and anyone who would listen that there were gaping deficiencies in the logistics system that mitigated against adequate logistical support of the total Army beyond the initial stages of combat. They pointed to the deterioration of the industrial base, the strain that would be placed upon a dangerously reduced depot supply system, an inadequate ammunition procurement plant system, gaps in the logistical support system especially overseas, and other weak points in the logistics system that were frustrating DARCOM desires for achieving DARCOM and total Army readiness.[3] In the view of DARCOM commanders and managers, the security threat was not declining, DARCOM's responsibilities in the logistical area were not declining; however, resources (money, people, and property) to logistically support the total Army had been declining for years.

(U) Addressing the DAIG during the entrance briefing for the FY 1978 Inspector General survey of HQ DARCOM in October 1977, General Guthrie spoke about the continuous decline of DARCOM manpower resources since 1962 citing that in 1977, DARCOM military manpower was 53.6 percent below that of 1962. This compared with a total Army decline of only 17.9 percent, the DARCOM commander told the DAIG. He also pointed out that civilian strength decline stood at 37.3 percent below 1962. By way of contrast, the total civilian Army work force had actually risen by 8.4 percent over the same period according to figures cited to the DAIG by General Guthrie. During this decline of manpower, in addition to the add-ons mentioned above, DARCOM had also picked up increased workloads in Foreign military sales, logistics support to Europe and increased internal support and management of more numerous and more complex weapons systems. Overall trends, at least since 1975, were that procurement appropriations were far outstripping OMA (Operations, Maintenance, Army) appropriations used for manpower pay.[4]

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2 HQDA, DARCOM Cdr's Statement to PARR (Program Analysis Resources Review), LTG George S. Sammet,Jr., USA Commanding, 25 Feb 77.

3 DARCOM Briefing to DA Staff, 20 Mar 77, LTG's Sammet and D'Ambrosio, Transcript of Tape in DARCOM Historical Office.

4 GEN Guthrie's speech on the occasion of DAIG Entrance Briefing with attached memo from LTC Moraski, R.K., 21 Oct 77, Pp 13-14. (In Archive of the HQ DARCOM Historical Office).

(U) This growing imbalance between PAA (Procurement Appropriation, Army) on the one hand and the OMA funding on the other presented a paradox. Not only were workloads growing, they were becoming more complex. The procurement operation was becoming infinitely more complex with the passage of more cumbersome and often contradictory legislation regarding sponsorship of social programs having to do with such things as the environment, safety, the quality of life, energy conservation, contracting out and fostering small business. In other words, DARCOM was being asked to handle more and more complex procurements with less procurement officers and with procurement officers who were overworked, allowing less time for on-the-job training. Similar paradoxes existed in RDTE areas as well. DARCOM, in FY 1978 was faced with the future fielding of at least 47 major complex and sophisticated weapons systems over the immediate 5 year period. These were not replacement systems but new systems that would require support. Manpower trends in the RDTE area were, that since the early years of the Vietnam War, they had been downhill though funding in constant dollars had been increasing since 1975.[5] So in all major areas of the logistics picture, in 1978, DARCOM was facing bleak prospects and General Guthrie and his staff were seeking ways to manage the system and overcome the very severe problems confronting total Army readiness.

(U) FY 1978 was also the year that DARCOM completed the AMARC realignment with the organization on 1 January 1978 two new research and development commands (ERADCOM and CORADCOM) and one new readiness command (CERCOM) from former ECOM elements.[6] (See Charts 1 and 2 for current status of the AMARC realignments). Structurally, the AMARC realignments had split the former DARCOM commodity commands, each of whom had life cycle responsibilities over certain commodities, into separate research/development and readiness commands for purposes of giving adequate emphasis to each function. This split which had created eight new R/D commands caused manpower problems in many areas but in the procurement area such problems were felt more acutely since a procurement capability was required in both the R/D and the readiness commands.

(U) General Guthrie's efforts to alleviate and solve the mismatch of DARCOM's tasks versus personnel strength had two primary thrusts. He sought to achieve efficiencies through more effective management, and he sought to make his resource requirements better known at higher levels. The DARCOM commander believed that he and his managers at DARCOM Headquarters had to become more knowledgeable regarding the

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5 For a detailed analysis see The DARCOM Manpower Baseline Requirement, Aug 78, compiled in DARCOM under the direction of MG R.L. Bergquist, DARCOM Deputy Commander for Resources Management.

6 For more complete details of the AMARC realignments see previous HQ, DARCOM Annual Histories (1974-77) and CH II, DARCOM AHR 78.

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DARCOM MAJOR SUBORDINATE COMMANDS
(1 Jan 78)

COMMAND	SUCCEEDING	ESTABLISHED	ORDER, DATE
US Army Armament Materiel Readiness Command (ARRCOM), Rock Island, IL	US Army Armament Command (ARMCOM), Rock Island, IL	31 Jan 77	DARCOM PO 25-1 30 Sep 76
US Army Armament Research & Development Command (ARRADCOM), Dover, NJ	*	31 Jan 77	DARCOM PO 25-1 30 Sep 76
US Army Troop Support and Aviation Materiel Readiness Command (TSARCOM), St. Louis, MO	US Army Aviation Systems Command (AVSCOM), St. Louis, MO and US Army Troop Support Command (TROSCOM), St. Louis, MO	1 Jul 77	DARCOM PO 50-1 16 Jun 77
US Army Aviation Research & Development Command (AVRADCOM), St. Louis, MO	*	1 Jul 77	DARCOM PO 50-1 16 Jun 77
US Army Electronics Research & Development Command (ERADCOM), Adelphi, MD	*	1 Jan 78	DARCOM PO 102-1 27 Dec 77
US Army Communications Research & Development Command (CORADCOM), Fort Monmouth, NJ	*	1 Jan 78	DARCOM PO 102-1 27 Dec 77
US Army Communications-Electronics Materiel Readiness Command (CERCOM), Fort Monmouth, NJ	US Army Electronics Command (ECOM), Fort Monmouth, NJ. (Existing until 1st Qt FY 78)	1 Jan 78	DARCOM PO 102-1 27 Dec 77
US Army Test and Evaluation Command (TECOM)	Remaining	1 Aug 62	AMC GO 4 23 May 62

Chart 1

(UNCLASSIFIED)

Chart 1--Continued

COMMAND	SUCCEEDING	ESTABLISHED	ORDER, DATE
US Army International Logistics Command (ILCOM), New Cumberland, PA	IL Center & D/IL, HQ AMC	1 Nov 75	AMC GO 171 23 Oct 75
US Army Mobility Equipment Research & Development Command (MERADCOM), Fort Belvoir, VA	*	23 Jan 76	DARCOM GO 12 26 Jan 76
US Army Natick Research & Development Command (NARADCOM), Natick, MA	*	23 Jan 76	DARCOM GO 12 26 Jan 76
US Army Tank-Automotive Materiel Readiness Command (TARCOM), Warren, MI	US Army Tank-Automotive Command (TACOM)	1 Jul 76	DARCOM GO 91 8 Jun 76
US Army Tank-Automotive Research & Development Command (TARADCOM), Warren, MI	*	1 Jul 76	DARCOM GO 91 8 Jun 76
US Army Depot Systems Command (DESCOM), Chambersburg, PA	MIDA	1 Sep 76	DARCOM PO 17-2 30 Aug 76
US Army Missile Materiel Readiness Command (MIRCOM), Redstone Arsenal, AL	US Army Missile Command (MICOM), Redstone Arsenal, AL	31 Jan 77	DARCOM PO 4-1 19 Jan 77
US Army Missile Research & Development Command (MIRADCOM), Redstone Arsenal, AL	*	31 Jan 77	DARCOM PO 4-1 19 Jan 77

*Research and Development Commands organized from research and development elements of previous commodity commands (and sometimes other elements).

U.S. ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND

DARCOM HQ. ☆ ALEXANDRIA, VA

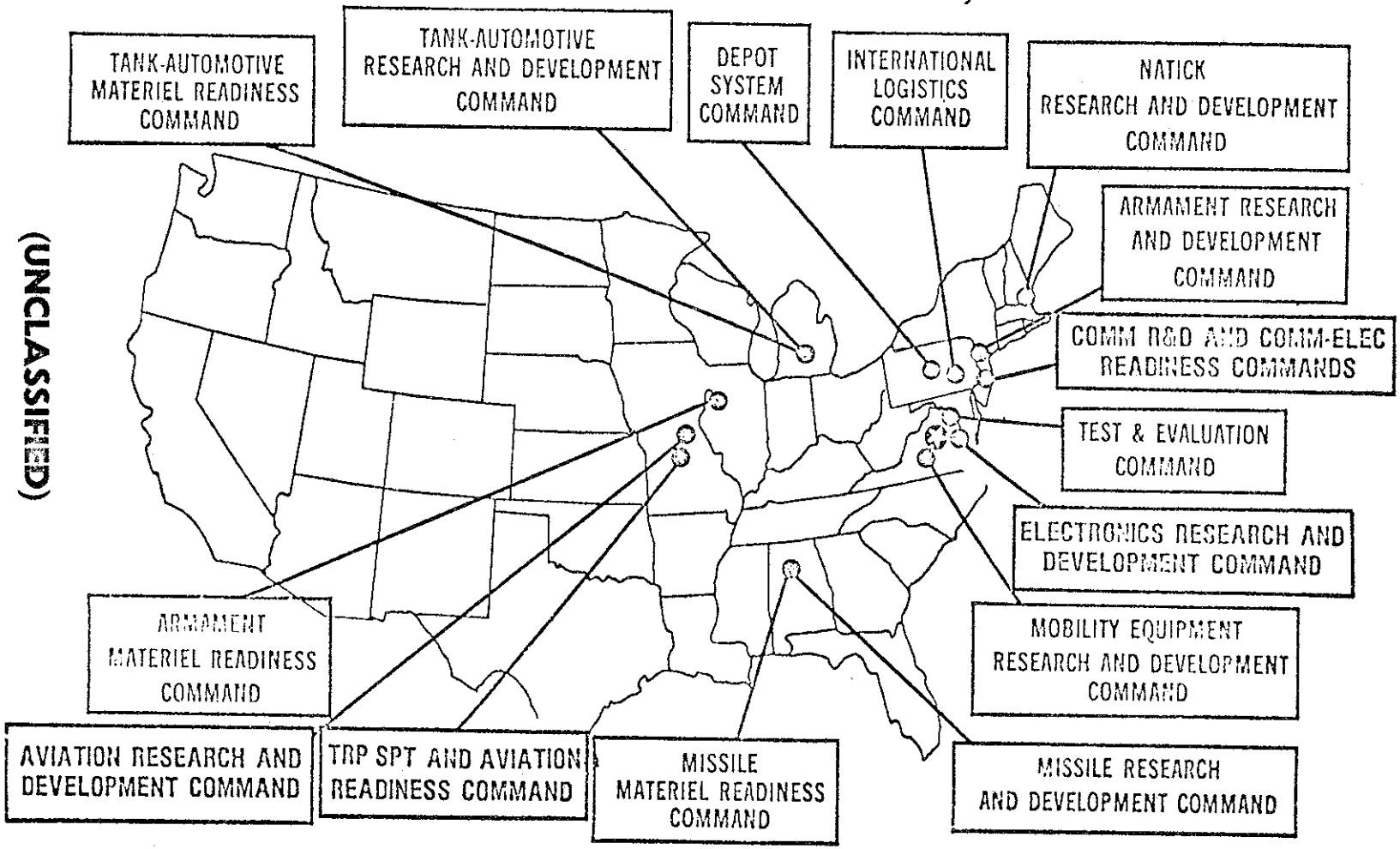

Chart 2

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problems of the command in order to uncover solutions. He also believed that DARCOM and its missions needed to be sold where it counted so that resources required for mission accomplishment could be obtained. To secure more effective management, General Guthrie established the Command Performance Indicator Review (CPIR) System in HQ, DARCOM. To uncover and make DARCOM's requirements known at higher levels, he set up the DARCOM Manpower Baseline Requirement Study group.

Command Performance Indicator Review (CPIR)

(U) Shortly after taking command of DARCOM in the Spring of 1977, General Guthrie tasked his comptroller to devise a management system which would afford more efficient and effective command and control of his huge command. The CPIR (Command Performance Indicator Review) System took shape when the first performance review which was conducted in August called together each of the headquarters directors and staff office chiefs for the exchange of management information and the presentation of performance reviews pertaining to the mission, goals, and tasks of some 33 HQ DARCOM mission elements. The objective of the CPIR was to provide the commander with data regarding the status of DARCOM mission performance, how well the DARCOM mission was being accomplished and how well the DARCOM HQ staff and field commanders were managing their functions. What was different about the CPIR system over most previous staff review systems was that in General Guthrie's system, all headquarters elements took part simultaneously; all directors and staff office chiefs heard and commented upon or questioned each other's performance reviews. Through this system General Guthrie rightly believed that all headquarters staff managers would be woven into a smoother operating headquarters by learning about and helping solve each other's mission problems, sharing and participating in each other's accomplishments. All Headquarters segments became a visable part of the entire team.

(U) During FY 1978, CPIR's were held in February, May, and August. Each time, the presentations became a bit more meaningful, and by August it was felt that a sound management system was emerging. In the reviews, each director or office chief would use indicators to track performance in areas pertaining to his mission goals and tasks. The solving of problem areas was emphasized. In other words, in areas where things were going well, these items would be tracked but low keyed to the presentations. Problem areas were highlighted. By having all headquarters elements familiar with each other's problems, General Guthrie again rightly believed this wide dissemination of the problems could then call upon the numerous talents to help solve problems. Each mission manager would have the problems of other mission areas in mind when planning or conducting operations.

(U) As articulated by MG Elton J.DeLaune, who replaced General Cade in December 1978, and who directs the CPIR system in DARCOM headquarters, the CPIR performs five different functions. "It provides the framework for resource relationships. It relates workload, resources, management

actions, and methods to output. This framework encompasses those factors which might aid or inhibit performance, such as laws, statutes, regulations, policies, directives, goals, objectives, or targets. Identification of problems and success areas - the CPIR reveals both favorable and unfavorable trends, imbalances, and good and bad practices. This helps us capitalize on success and eliminate problems. We stress the long-term and the "why" of the long-term, not just "snapshots" of performance. Forum for information exchange. The CPIR serves as a forum for the staff to exchange information on mission performance and ideas on management improvement, thus creating greater cohesion among programs. Here each participant can see how his or her effort contributes to the whole and how and where they are interdependent. Vehicle to transmit guidance and direction. The CPIR serves as a vehicle for the commander to transmit guidance and direction directly to his staff and subordinate elements. Based on the CPIR information, he can also initiate specific requests and inquiries to higher and lateral organizations so that he can better mesh DARCOM's activities with other DA and DOD elements. Means for performance evaluation. The CPIR provides a means for evaluating staff officers and overall command performance."[7]

DARCOM Manpower Baseline Study

(U) The DARCOM Manpower Baseline Requirement study effort that was conducted in HQ DARCOM throughout the latter part of FY 1978 sought to determine the DARCOM strength requirement relative to the structural changes that had taken place within DARCOM since 1974 and the new missions and tasks that had been added on the command since that time. An analysis was sought of the manpower DARCOM required to support the recognized peacetime workload and also requirements to accommodate the demands of surge mobilization. The study task force was headed by General Bergquist who had conducted a somewhat similar analysis at DESCOM when he was its commander just before becoming the HQ DARCOM Deputy Commanding General for Resources Management. The study group verified what was already known, that when measured by strength reductions of the total Army, in August 1978 the command should have had some 122,000 personnel assigned instead of the approximately 107,000 that were assigned, which was some 12.3 percent below required strength. Realizing that comparative strength provided only a clue to and not justification for increased strength requirements, the DARCOM Manpower Baseline Requirement study group developed a second method for measuring the requirement called Intensity of Operational Employment (IOE) which also verified the DARCOM manpower shortfall. The IOE methodology considered the size of the Army materiel inventory and related that inventory to its use in the field and thus established a relationship between the inventory, its use, and the DARCOM workload. When measured in this manner, the finding of the study group was that DARCOM had a

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[7] MG Elton J. DeLaune, Jr., "Managing DARCOM," Army Logistician, May-June 1980, p. 5.

validated peacetime requirement for 143,053 personnel which would include 112,110 for the materiel readiness mission and 29,108 for the materiel acquisition mission including research, development, test and evaluation. The remainder, 1,835, would be required to staff the DARCOM headquarters. Accordingly, DARCOM was short some 25,853 personnel. For DARCOM to be fully ready for wartime operations, having 95 percent of its required allotment on-board, the DARCOM strength would need to be 185,982 people.[8] The DARCOM commander and his subordinate commanders were concerned that these people, trained to perform the numerous technical skills required in DARCOM, would not be available when needed. Also, the shortage was impacting on DARCOM's ability to perform its total mission.[9]

(U) When General Guthrie, accompanied by General Bergquist, presented the findings of the DARCOM Manpower Baseline Requirement to the Army Staff and to the Deputy Secretary of Defense in late FY 1978, they were making determined efforts to avoid additional manpower reductions. Though they presented a compelling case for increased resources, they realistically judged that increases would not be readily forthcoming and the DARCOM commander asked that the command be allowed at least short term stability and long term growth. He wished his command, which had been through continuous consolidation, reductions, reorganization, and realighment with numerous base closures since 1962, to be allowed time to settle down. He also wished the Defense Department to back the Army logistics requirements realistically. He especially wanted resources to overcome a huge DARCOM depot maintenance backlog.[10]

(U) During the meetings with the higher staffs, it was frequently suggested that DARCOM review functions that could be terminated or contracted out to provide relief from the pressures caused by the debilitating manpower cuts or by the increased workloads. One area upon which the DARCOM leaders jumped immediately following the review was manpower surveys. General Bergquist estimated that at least 155 man years of effort could be saved by DARCOM field personnel if relieved from the many tasks associated with preparing for, conducting and

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8 The DARCOM Manpower Baseline Requirements, HQ DARCOM, August 1978, Pp. 22-24.

9 Charles B. Einstein, "DARCOM Determines Manpower Requirements," Army Logististician, May-June 1979, p 33.

10 Ltr, DRCDRM, GEN John R. Guthrie to GEN Frederick J. Kroesen, VCS, USA (John to Fritz), 24 Oct 78 (2) Memo, DRCDRM, Thru ASA, IL&FM, for ASD (M, RA&L), from GEN John R. Guthrie, 6 Oct 78, Subj: DARCOM Baseline Study (3) Memo DRCDRM, Thru ASA (IL&FM), for ASD (M,RA & L) from GEN John R. Guthrie, 3 Nov 78, subj: DARCOM Baseline Study.

responding to manpower surveys. General Bergquist had found recent surveys particularly bothersome especially so since they did little more than confirm that DARCOM was below strength, a fact long and well known. In November 1978, General Bergquist informed General Yerks, the Army Deputy Chief of Staff, Personnel, that until the manpower situation was relieved, and though manpower surveys would be available to commanders who requested them, that henceforth HQ DARCOM people customarily engaged in survey activities would be gainfully employed doing other jobs requiring attention. General Bergquist granted that manpower surveys often had other spinoff benefits but that the costs far exceeded such benefits.[11]

Contracting Out

(U) The question of contracting out was addressed also during the presentations of the DARCOM Manpower Baseline Requirement study findings, in written exchanges and during other personal conversations between General Guthrie and/or his staff with the Army Staff and higher levels. When writing to the Army Vice Chief of Staff on 29 October 1978 regarding contracting out as a method for alleviating the ravages of manpower shortages General Guthrie frankly admitted that he thought DARCOM could do more in contracting out base operations functions but that he was not sanguine regarding the results of doing so. The DARCOM commander pointed to past problems regarding contract performance and out-of-house costs which caused a certain "reluctance to sign up for new initiatives without a better understanding of the total approach and its ramifications."[12]

(U) However, regardless of the possible or probable pitfalls, General Guthrie assured the Vice Chief of Staff, Army that DARCOM would not lessen its continuing efforts to place on contract those functions lending themselves to performance by the private sector. Though DARCOM had had greater experience for contracting for goods and services than any other Army command, General Guthrie realized that much homework would need to be done before the DA staff could be apprised regarding a clear case of what further was possible and would also be in the best interests of the Army, and he so informed the Army Staff. Along these lines General Guthrie again tasked his DCGRM, General Bergquist, to head a study group to address themselves to an analysis of items lending themselves to near term contracting out and/or to items which should remain in house. The DARCOM commander wished to have General Bergquist "nail down an analytical, persuasive, defensible case that will remove the subjectivity and reduce the anxiety that attaches to this somewhat murky issue today."[13]

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11 Letter, DRCDRM, R. L. Bergquist, MG, USA to LTG R. C. Yerks, DCSPER, 22 Nov 78.

12 Op Cit.; Guthrie to Kroesen, 24 Oct 78.

13 Ibid.

Stock Availability

(U) As a consequence of the case made to DA for increased manpower resources and the Army Staff recognition of the DARCOM manpower deficit, the Army Staff in its FY 1980 budget proposal submitted in the Fall of 1978, proposed to grant DARCOM an increase of 2,126 manpower spaces (compared with 30 September 1978 actual strength). Though this increase would not cover the total DARCOM requirement, General Guthrie believed that this was a step in the right direction and was prepared to live with it; however, the Office Secretary of Defense budget analysts were proposing to make cuts in the DARCOM manpower allotment that would not only negate the DA increase for FY 1980 but reduce the command FY 1979 strength as well. This presented a gloomy picture for General Guthrie at the start of FY 1979, and he made his concern known to the Army Chief of Staff. In December he wrote to General Rogers that these cuts were placing DARCOM in a position in which the command would be less able to perform its assigned missions in the future than it had been in FY 1978 when all of DARCOM's well documented performance curves were going the wrong way. In his letter, General Guthrie again pointed to the deteriorating situation regarding procurement and depot maintenance as being particularly distressing. He wrote, "The sum of the degradation in our procurement and depot maintenance programs is sure to result in decreases in stock availability, increases in customer back orders, and reduced requisition processing performance by our NICP/depot supply people. These undesirable, but reliably predictable happenings will impact readiness. We are already seeing readiness impacts. Weapons systems that have been in a state of satisfactory readiness for several years are now being graded as marginal or unsatisfactory." General Guthrie urged General Rogers' support in reversing the Office Secretary of Defense budget cuts which were eroding the capabilities of the Army's wholesale logistics base.[14]

(U) The condition regarding stock availability and back orders was of particular concern to General Guthrie. Unfavorable trends had persisted throughout FY 1978 despite multiple intensive management efforts that had been instituted commencing in December 1977 to reverse them. Frustrated with efforts to secure needed manpower resources, the DARCOM commander determined that a reexamination of the DARCOM management philosophy would have to be undertaken to see if any new or additional techniques needed to be instituted to improve the situation. As a first step, he arranged to have four HQ DARCOM procurement and supply management experts visit each of the five DARCOM materiel readiness commands in January 1979 to discuss possible improvement alternatives. He also placed stock availability and back orders on the agenda for the forthcoming Spring Commanders' Conference and he alerted his materiel readiness commanders that their suggestions for improvements would be called for at the conference.[15]

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14 Ltr, DRCCP, GEN Guthrie to GEN B. W. Rogers, C/S USA, 9 Dec 78.

15 Ltr, DRCMM-E, GEN Guthrie to CDRs: TARCOM, MIRCOM, CERCOM, TROSCOM, ARRCOM, 14 Jan 79, Subj: Stock Availability and Back Orders.

Status of War Reserves

(U) Still another major problem of concern to General Guthrie during FY 1978 had to do with the state of Army War Reserves, prepositioned stocks of ammunition and other materiel in strategic areas in Europe and the Pacific including Korea and the United States. Theater stocks were to be used in the event of war by Army forces in the area of conflict when on-hand stocks had become depleted. They were to fill requirements for materiel in theater until home resupply could be instituted. The DARCOM commander was apprehensive because European War Reserves had reached a dangerously low level as a result of funding shortages. Korean stocks were believed to be satisfactory but those in the United States were becoming less than adequate. Also, DARCOM's perceived inability to quickly expand ammunition production quickly because of the deteriorating condition of many of DARCOM's inactive ammunition plants caused by inadequate maintenance funding was another perplexing concern for General Guthrie and his staff. General Guthrie estimated that it would take six months to get some of the plants into production. In addition, General Guthrie also had reservations about the capability of the DARCOM depots to respond rapidly to increased wartime workloads and about the ability of the DARCOM wide computer system to handle a wartime volume of requisitions.[16]

(U) To partially remedy the situation, a plant modernization was launched, which was aimed to assure the timely activation of ammunition facilities in the event of war and a new DARCOM Readiness Evaluation System (DRES) was implemented to assist DARCOM in assessing its own readiness posture. The DRES procedures were expected to fill a void in the readiness chain that accurately depicted the readiness of Army TOE units but failed to assess the capability of DARCOM to perform its wartime mission of keeping the logistics pipeline full following the initial stages of conflict. The aim of DRES was to uncover DARCOM readiness shortfalls and to make provision for correcting them. General Guthrie and his staff believed that the readiness of TOE units was not enough but that, in addition, theater readiness was vital and DARCOM needed to have the capability to maintain deployed forces and assure that United States industry was ready to support the total Army materiel requirements.[17]

(U) During FY 1978, the DARCOM commanding general was continuing efforts aimed at the reduction of weapons systems development and fielding time. To this end he was exploring the possibility of eliminating some of the testing of what he termed low unit cost and low risk items.

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16 John R. Guthrie, GEN USA, CG, US Army Materiel Development and Readiness Command, "No Weak Links in the Readiness Chain", "Army, Oct 77, p. 61.

17 Op. Cit., Guthrie to DAIG, 21 Oct 77, p. 27.

General Guthrie visualized that once an item was selected for low risk treatment, DARCOM could forego the formal Development Test (DT) and Operational Test (OT) with the true operational test then coming during the initial fielding and type classification coming after observed field usage and an in-process review. It was believed that much valuable time would be saved at little or no risk by instituting the system. Not only time but resources would be saved and to General Guthrie it was essential to save both especially when both were in such short supply.[18]

Rationalization, Standardization, Interoperability (RSI), US/GE Army Staff Talks

(U) In consort with reducing development time, in FY 1978, General Guthrie also gave enthusiastic support to RSI (Rationalization, Standardization, Interoperability), a system for having NATO weapons and equipment compatible with each other. The concept of RSI was as old as NATO itself or even older; however, Amendments (Culver-Nunn) to the 1976 and 1977 Defense Authorization Acts formally declared a policy that equipment produced for US Armed Forces personnel stationed in Europe should be standardized or at least interoperable with equipment of other NATO members. General Guthrie had been designing and directing DARCOM's role in RSI ever since he took command in May 1977 to integrate its provisions within the daily routines. He wished to see it implemented solidly within each phase of DARCOM activity. General Guthrie wished to give it emphasis, guidance and direction which he believed should be embedded throughout the defense establishment. Within DARCOM HQ, Standardization and Interoperability (S&I) had been assigned to the Assistant Deputy for International Research and Development. In September 1977, the S&I program began receiving increased emphasis at high levels when the Vice Chief of Staff, DA informed General Guthrie that developers and users of equipment would in the future be required to present a thorough analysis of the S&I aspects in their respective presentations to the ASARC and DSARC. General Guthrie was in full agreement with the announced policy which was to require the user representative to address doctrinal and requirements aspects of S&I and the developer to address cooperative development, co-production and logistic interoperability of other nations potential candidate systems as appropriate. General Guthrie expected to obtain a maximum effort by all involved in the materiel acquisition process. However, General Guthrie was very aware of the numerous problems in the way of S&I (later (RSI)) progress. For example, there was the conflict between "Buy American" laws and interoperability directives and principles (also written in law). Other problems flying in the face of the cooperative development implicit with any RSI program involved the

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18 Letter, DRCDE-DG, GEN Guthrie (Jack) to LTG W. W. Vaughan (Woodie), Director, Defense Logistics Agency, 19 Jun 1978.

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restrictive US laws having to do with safety and the environment. Further complications regarding configuration management also proved extremely frustrating. General Guthrie expressed an urgent need for enabling legislation to strengthen the RSI program and especially to permit such things as host nation support from DARCOM. There was great support for the aims of RSI; however, there were many obstacles to overcome regarding implementation of the program. These obstacles were very frustrating to the DARCOM commander and to his staff managers and subordinate commanders.[19]

(U) Closely allied to RSI efforts were the United States/German (US/GE) Bi-Lateral Army Staff Talks which began in 1975. These talks, which were held every six months, were undertaken resulting from a desire of each nation to configure American and German armies so as to maximize their fighting abilities and combat powers on the NATO Central Front. Greater command and control was desired. The purpose of the meeting was defined as follows: to develop joint tactical concepts; to achieve tactical interoperability; to derive mutual weapons system requirements; and to increase standardization of materiel. The US/GE Army Staff provided a formidable opportunity for accomplishing solid gains in RSI. For the United States, the CG, TRADOC serves as the executive agent of the Army Chief of Staff and heads the US delegation. He guides the overall US participation in the joint meetings. Initial concentration of the talks was upon harmonization of tactical concepts, a deliberate choice made so that a proper base could be established to support cooperative development of materiel. DARCOM maintains permanent representation on both the steering committee, a committee set up to review concept papers and other documents while providing joint direction to the work of the program by preparing a formal agenda for the main Staff Talks, and the Staff Talks official delegation in order to carry out DARCOM responsibilities. RSI activities involving science and technology, development and engineering, testing and evaluation, security assistance, and international logistics support provide the basis for cooperative materiel development.

(U) Within DARCOM Headquarters, staffing is managed by Assistant Deputy for International Research and Development (AD/IRD), who reports to the Deputy Commanding General for Materiel Development. DARCOM representation on the Steering Committee and the Staff Talks is provided by the AD/IRD. Primary staff support is provided by the Office of International Research and Development (OIRD) which prepares the DARCOM

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19 (1) Letter, DACS-AB, Walter J. Kirwan, Jr., Gen. US Army VCS, to Commander, DARCOM, 19 Aug 77, Subject: Consideration of Standardization/Interoperability at ASARC/DSARC Briefings. (2) Letter, DRCPM, GEN John R. Guthrie, Commanding, DARCOM to DARCOM Subordinate Elements, 28 Sep 77, Subject: Same as above. (3) John R. Guthrie, "DARCOM and Rationalization, Standardization, Interoperability (RSI)", Army Research, Development and Acquisition, Mar-Apr 79, Pp. 4,30. (4) "What DARCOM is Doing About NATO Interoperability" Gvt. Ex., Mar 78.

position at all meetings and tasks other HQ, DARCOM staff elements, major subordinate commands, project managers, and other activities as required. Cooperation with TRADOC is maintained through the TRADOC International Army Staff Talks office.[20]

(U) By the end of FY 1978, 19 topics had been identified in joint concept papers and nine of the concept papers had been ratified by the respective armies and signed by the Chiefs of Staff. The concept papers dealt with such subjects as: threat, urban growth, anti-armor, airmobile operations, mobility/counter-mobility, reconnaissance-target acquisition-all source fusion, night operations, close air support, air defense, fire support, and military operations in built-up areas. The tactical concept phase was well established and candidates for additional concept papers were identified. Emphasis was shifting to other phases of cooperation while progress on tactical concepts continued. The talks had evolved to a point where materiel cooperation was the main subject of discussion, emphasis was placed upon Standardization and Interoperability and DARCOM's role in the Staff Talks was expanding rapidly.[21]

(U) Early in FY 1978, the DARCOM Commanding General called for increased participation by DARCOM in the US/GE Army Staff Talks. Making reference to DARCOM's expanding role in Europe, especially as pertaining to DARCOM's considerable involvement in the USAREUR support posture through the direct role at the Mainz and Ober-Ramstadt plants which provide overhaul and rebuild support for critical combat equipment, General Guthrie wrote to General Johansen (LTG Eivind H. Johansen) requesting the DCSLOG to support greater DARCOM participation in the US/GE talks. General Guthrie noted that the December 1977 talks dealt significantly with matters of direct interest to DARCOM and that the agenda for the May 1978 talks included some 10-16 topics directly relating to the DARCOM mission. He therefore informed General Johansen that it was "imperative and in the best interest of the Army and the entire defense establishment that we (DARCOM) be accorded the opportunity for more direct and meaningful participation in these talks. The DARCOM commander further stated that he firmly believed the talks presented "an extremely valuable opportunity for DARCOM to make a significant contribution to the logistics goals of both the FRG and US in support of the NATO alliance." DARCOM decried the fact that a review of the delegate list attending the December 1977 conference, which dealt significantly with materiel support, revealed that there

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20 US/GE Army Staff Talks "(An Orientation Document), Bilateral Staff Talks Division, Office International Research and Development, DARCOM, March 1979, Pp. 2-8.

21 Letter, DRCIRD, to all DARCOM Sub-Commands and Activities from Asst. Dep. IRD (Signed Bryant Dunetz), 29 March 1979, Subj: US/GE Materiel Cooperation.

was no single member of the delegation specifically dedicated to Army wholesale logistics or the wholesale-retail interface. General Guthrie and his staff worked throughout FY 1978 with considerable success in remedying the situation.[22] (See Chapter III, Materiel Development - Portion in IR&D).

Added Missions

(U) During FY 1978, HQ DARCOM completed the restructuring, begun in FY 1977, to implement the Army Materiel Acquisition Review Committee (AMARC) study by establishing a more compact type headquarters and concentrating on policy formulation, planning, resource allocation and evaluation functions, and transferring operational-type matters to DARCOM major subordinate commands and activities. This involved numerous organizational and personnel realignments. One major change occurred on 1 November 1977, when DA designated that the DARCOM Commanding General serve as the executive agent for security assistance in accordance with AR 12-2, and that the Director for International Logistics also be assigned the Director for Security Assistance responsibilities, to include the Foreign Military Sales programs, supply production, co-production and Grant Aid/Free World Forces.

(U) Further, on 15 March 1978, HQ DARCOM established a Deputy Commanding General for Resource Management (DCGRM) to assist the Commanding General and the Deputy Commanding Generals for Materiel Development and Materiel Readiness, respectively, in the establishment and management of command policies, systems and controls for financial, manpower and physical plant resources of DARCOM. MG R. L. Bergquist was named DCGRM, BG Robert L. Moore had assumed the duties of DARCOM Chief of Staff the month earlier. Concurrent with this action, the Comptroller and Directorates for Personnel, Training and Force Development, Plans and Analysis, and Installations and Services were reassigned from Chief of Staff, DARCOM to DCGRM.

(U) In addition to those discussed previously, the new or expanded functions which were received in HQ DARCOM during FY 1978, included Electronic Warfare/Signal Intelligence and Communications Security logistic matters; Joint Service participation in, and supervision of, the Maintenance Interservice Support Groups; Provision of the Chairman of the Joint Logistics Commanders' Joint Technical Coordinating Group for Metrology and Calibration; Administering a Product Engineering Service Office to improve life-cycle production management of Army weapon systems and equipment; directing and supervising Commercial-Industrial-Type Activities in the management and utilization of DARCOM physical plants; and providing administrative support for the US Army Federal Acquisition Regulation Working Group which, along with other DOD and non-DOD government agencies, were to revise all government side procurement regulations. Additional DARCOM resource requirements for manpower and funds to support Rationalization, Standardization, and Interoperability (RSI) responsibilities were being held in abeyance

22 Ltr, DRCPS-P from GEN J. R. Guthrie, CG, DARCOM to LTG E.H. Johansen, DCSLOG, 24 Jan 78.

pending a DA direction and decision. Then on 4 May 1978, the Vice Chief of Staff, Army disapproved the DA RSI management plan. A revised DA plan was to be formulated.[23]

(U) To make certain of his requirements, in June 1978, General Guthrie tasked AMETA to study the structure and manpower requirements of HQ DARCOM. Based upon the AMETA study results, an increase of 241 spaces was recommended. The later August baseline study discussed previously recommended that HQ DARCOM be increased 330 spaces so that the mission could be effectively accomplished.[24] By any study, DARCOM was in need of increased manpower resources.

(U) However, despite the many hardships resulting from resources limitations, FY 1978 proved to be a year of solid accomplishment in numerous areas. Very noteworthy was the execution of the direct procurement program. The Army Secretary wrote General Guthrie in October to inform him that the Army had not only met, but had exceeded, its direct procurement plan and thanked the DARCOM commander and subordinate commanders since "this outstanding performance would not have been possible without the strong and determined leadership exhibited by your command."[25] In passing the Secretary's compliments to his subordinate commanders, thanking them in turn for "positive leadership at all levels and tireless efforts of many dedicated men and women throughout the command", General Guthrie reminded them that he was working to secure the manpower and financial resources to accomplish outyear procurement programs "in an orderly, rigerous and disciplined manner." He added that he believed that "DARCOM's resource problems were well understood at least at the Department of the Army and the Department of Defense."[26]

Management by Goals and Objectives

(U) Management of the huge DARCOM logistics complex in FY 1978 continued following long practice, in accordance with the goals and objectives system. Management by goals and objectives had been based upon the axiom that without clear objectives, management would be hazardous and random with no group or individual being able to perform effectively. For a number of years, DARCOM, and previously AMC, had used goals and objectives as its basic philosophy of management. In 1978, at the DARCOM Spring Commanders' Conference, resulting from a request of the Army Chief of Staff during an earlier Army Commanders' Conference, the DARCOM goals were abolished and new ones established

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25 Letter, SEC/ARMY, Clifford L. Alexander to General John R. Guthrie, Commander, DARCOM, 17 Oct 78.

26 Letter, DRCDRM, General John R. Guthrie to all commanders, 21 Nov 78.

to reflect the philosophy of six Army goals approved in September 1977. The Army goals set forth the Army's broad aims dealing with readiness, human goals, materiel, strategic deployment, future development, and management. The DARCOM commander's adopting and reaffirmation of the Total Army Goals involved minor modifications to reflect more precisely DARCOM mission and functions. The goals established direction and parameters for day to day operations within the command, and the objectives would state what would need to be done within a specific year to progress toward the DARCOM goals within a participative management atmosphere. Each DARCOM subordinate commander was required to develop specific interlocking goals, objectives and tasks reflecting the intent of the DARCOM goals.[27]

(U) The announced Total Army Goals were:

The Readiness Goal

Provide the Total Army with highly effective and morally responsible military and civilian personnel capable of performing reliably in war; provide quality of life support for our soldiers and their families and require from them reciprocal dedication to service.

The Materiel Goal

Develop, field, and maintain a balanced warfighting and sustaining capability.

The Strategic Deployment Goal

Improve Army deployment capability to move forces as scheduled in order to increase early availability of combat power.

The Future Development Goal

Improve Army equipment and concepts to exploit new technology.

The Management Goal

Manage and utilize existing and programed resources more effectively. Strengthen the Army's resource justification process.

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27 (1) Letter, DRCPA-P from GEN John R. Guthrie, DARCOM to GEN Bernard W. Rogers, CS, 28 Jun 78; (2) DARCOM-R-11-4, VOL 2, 13 April 1979, Army Programs - DARCOM Resource Management System, Management by Goals and Objectives; (3) Letter, DRCPA-P, GEN John R. Guthrie to all DARCOM elements, 26 Jul 79, Subj: DARCOM Goals.

DARCOM Goals

The DARCOM Goals implementing the Total Army Goals were as follows:

The Readiness Goal

Prepare the Total Army for rapid transition to combat, fully capable of performing its wartime mission.

The Human Goal

Provide the Total Army with highly effective and morally responsible military and civilian personnel capable of performing reliably in war; insure equal opportunity for all members; provide quality of life support for our soldiers and their families and require from them reciprocal dedication to service.

The Materiel Goal

Develop, procure, store, issue, field, and maintain a balanced war-fighting and sustaining capability.

The Strategic Deployment Goal

Improve Army deployment capability to move forces as scheduled in order to increase early availability of combat power.

The Future Development Goal

Improve Army equipment and concepts to exploit new technology.

The Management Goal

Manage and utilize existing and programed resources more effectively. Strengthen the Army's resource justification process.

Managing Materiel Quality

(U) During this past year numerous and significant actions were taken to further improve and expand the DARCOM Product Assurance Program. Continued emphasis was given to assure and achieve user satisfaction. Specific accomplishments to achieve a responsive and viable DARCOM Product Assurance Program follow.

(U) Maintenance Information System - Quality (MIS-Q). The concept and ADP program development for MIS-Q was completed in FY 1977 with full implementation of the system initiated during the 1st quarter. MIS-Q extensively revised the existing SPEEDEX systems of DARCOM-R 702-7 and improved management of the maintenance quality program

through identification, tracking and pinpointing quality problems and costs. DARCOM Logistic Systems Support Activity (LSSA), DARCOM Quality Assurance Field Activity (QAFA) and the Depot System Command combined efforts to reduce the design to a successful working system and implement MIS-Q at all depots. The Army Logistics Management Center (ALMC) and QAFA prepared the depot training package and trained instructors for on-site training at depots. The data collection and analysis of the output reports provide depot quality managers with effective data to improve quality and take prompt and effective corrective action. In addition to the depot application, the MIS-Q system was designed to furnish quality trends, costs, and data to higher headquarters for support of the quarterly DRCQA-116 report.

(U) Care of Supplies in Storage (COSIS) Review. A review of the Army COSIS program was concluded during FY 1978. The purpose of the effort was to review the adequacy of the COSIS program and to identify those areas requiring improvement. Several significant recommendations/actions resulted from the review and were: Type 1 (non-extendible) shelf-like items eliminated from storage Serviceability Standard coverage; Priority 1C items with high issue activity eliminated from scheduled inspection; The Materiel Audit program was eliminated and replaced by an In-Storage Survey.

DA/DARCOM Steering Group.

(U) A DA/DARCOM Steering Group was established in December 1975 to review the depot maintenance quality program. As a follow on effort, the reconditioning programs for the following systems were reviewed by DARCOM/DESCOM during FY 1978: AM/PPS-S Radar - Sacramento Army Depot; M107/110 SP Howitzer - Letterkenny Army Depot; M113 Personnel Carrier-Red River Army Depot; and TOW Missile - Anneston Army Depot. The DA/DARCOM Steering Group planned to reconvene during the 1st Quarter of FY 1979 to assess the adequacy of the action taken by DARCOM in implementing the Steering Group recommendations.

AR 702-7, Reporting of Product Quality Deficiencies Across Component Lines.

(U) In November 1977, a DOD Ad Hoc Committee was formed to revise the joint regulation for reporting quality deficiencies across component lines; develop a management standardization program plan; and develop a standard DOD Quality Deficiency Reporting System. The joint regulation was initially revised and staffed to MACOM's and Army commodity commands in August 1978. A major change was the addition of a Product Quality Deficiency Management Information Report which would provide a summary of QDR's forwarded to participating components by Top Ten Contract Numbers and QDR's by Top Twenty Deficient NSN's.

The initial pilot program was conducted for 3rd quarter, FY 1978 with a second test, using 4th quarter, FY 1978, data scheduled later in the year. Two types of reports were recommended. Type "A" for QDR's forwarded for action, Type "B" for QDR's forwarded for support.

Quality Assurance Functional Coordination Group Chairman

(U) In October 1977, D/QA DARCOM tasked the Quality Assurance Field Activity (QAFA) to organize and operate a Functional Coordinating Group (FCG) for DARCOM QA projects to be developed for the Commodity Command Standard System. Six tasks were identified as areas requiring automation attention. The tasks were prioritized by the Logistics System Review Committee for the Automated Logistics Support Activity to consider in their five-year plan. The tasks in order of QA priority were: Reliability, Maintainability and System Effectiveness Assessment; Quality Deficiency/Equipment Reporting Analysis and Control; Calibration and Inspection Equipment Control; Procurement Quality Assurance; Development Quality Assurance; and Storage Serviceability Standard Data System.

(U) The first meeting of the Quality Assurance FCG was held in November 1977. Priority Task No. 1 was experiencing functional growth and was not ready for automated system development. Task number 2, Quality Deficiency/ Equipment Reporting Analysis and Control was the first task addressed by the FCG. The DFSR for the task was completed in October 1978.

Toxic Chemical Surveillance Program

(U) Due to the restrictions on firing toxic chemical filled ammunition, a new program for determining the reliability of these stocks has been developed. It consists of a combination of agent sampling and analysis, utilization of test data on explosive components common to non-toxic chemical ammunition, and simulant filled ammunition tests. The first cycle of agent sampling has resulted in a total of 224 lots sampled. Analysis was in progress. Initial results indicated agent purity was relatively stable in all agents.

US Army Metrology and Calibration System

(U) Fiscal Year 1978 saw new developments and continued improvement in the Army Metrology and Calibration Program. Significant areas are summarized below.

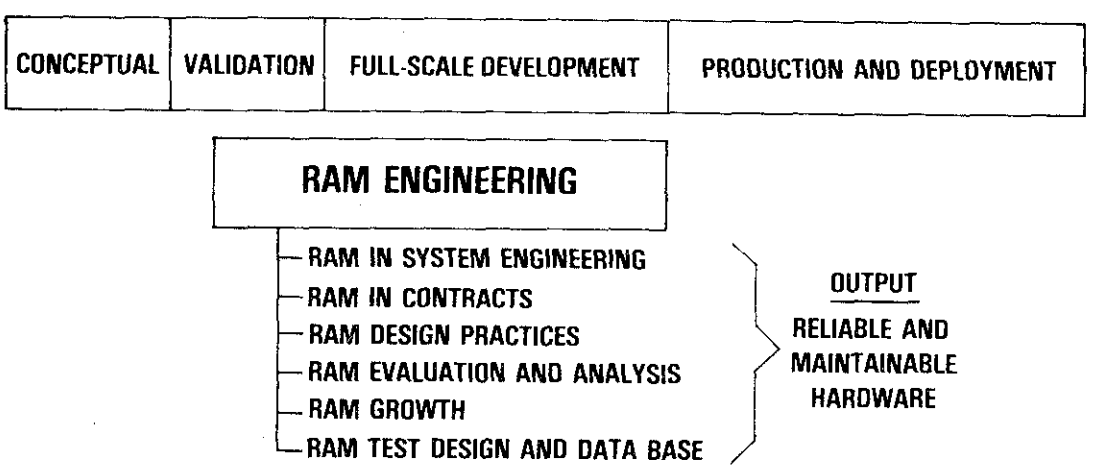
Improved Concept Study

(U) DARCOM was tasked by DA to review the current concept of Army TMDE calibration and repair support and to recommend improvements to

ensure program standardization, interservice compatibility, efficient and cost effective service, and wartime responsiveness. Of the alternatives analyzed during the study, the concept recommended provides consolidation benefits through the merger of levels A and C calibration and the combining of calibration and repair operations. The concept provided for the overall program to be managed/operated by DARCOM. The recommendations have been coordinated with MACOMS, and staffed with HQDA, with anticipated approval by the Vice Chief of Staff, Army, during first quarter FY 1979. In anticipation of DA approval of the recommended concept draft revisions of AR 750-25 and TB 750-25 were completed. These drafts were being coordinated with USAREUR and Eighth Army Korea where implementation was to be of most significance. These draft documents were to be used as guidance during the provisional/implementation phase of the improved program.

Reliability-Availability-Maintainability (RAM) Engineering Program

(U) The DARCOM RAM program was structured to insure that realistic and attainable requirements are developed during early program stages and the RAM engineering effort is driven by these requirements. It recognizes that the only way to achieve reliable and maintainable hardware is through impact on the design. The Chart shows that the RAM engineering effort is initiated during Advanced Development and continues throughout Engineering Development. The tasks include defining RAM requirements in system specifications and allocating resources, incorporating RAM requirements and program efforts in contracts, influencing and evaluating the design as system development progresses, planning for and achieving RAM growth as the design matures, and demonstrating the achieved RAM values through test. The RAM growth concept is illustrated below. RAM growth management has been formalized within the Army. All of the major Army development programs use RAM growth as a management tool but it is much more than just a management



OBJECTIVE: ACHIEVE RAM THROUGH DESIGN

RAM Engineering

tool. It is a design concept that provides the framework against which to conduct the DARCOM RAM effort. The Army objective of delivering systems that have good RAM characteristics is not accomplished simply by conducting a test at the end of the development cycle. The objective is attained by applying engineering and test resources to the RAM program. If either the requirements, the design, or the test provisions are inadequate, the program will fall.[28]

RISE Program

(U) RISE represents a disciplined management approach to the improvement of deployed equipment. The program consists of four distinct phases of action: Phase I - Identification; Phase II - Analysis; Phase III - Action; and Phase IV - Verification.

(U) In the first phase, assessments are conducted to identify candidates for system improvements. Here the output is a list of candidates ranked from the highest payoff potential to the lowest. The second phase calls for design and cost analysis to be performed on each of the candidate improvements to determine the feasibility for improvements and the cost savings expected to result. Product improvement proposals, engineering change proposals, or changes to the technical manuals are developed for the candidates with the most payoff. In the third phase, management action is taken to obtain funds and implement the improvements with the most promising payoffs. In the final phase, assessments are performed after the improvements are deployed to determine the actual improvement achieved.

(U) A summary of RISE projects initiated during FY 1977-1978 follows:[29]

	No. of Projects
Armaments	19
Electronics	14
Missiles	18
Tank-Automotive	62
Troop Support/Aviation	1
Total	114

Management Information System

Automatic Data Processing Equipment

(U) The Missile Materiel Readiness Command successfully acquired and installed a CDC CYBER 74 to augment their Missile R&D Program.

[28] For RAM improvement to specify items of materiel see FY 1978 Annual Historical Review (For the HQ DARCOM Directorate for Quality Assurance among the holdings of Archives in HQ DARCOM Historical Office).

[29] FY 1978 Annual Historical Review of Directorate for Quality Assurance in Archives, HQ DARCOM Historical Office.

This system will support the rapidly expanding workload at the Advanced Simulation Facility which is operated by the Missile R&D Command at Huntsville, Alabama and will also support other workloads at Redstone Arsenal.

(U) The DARCOM Automated Logistics Management Systems Activity (ALMSA) successfully acquired through the reutilization program an IBM 370/165 to replace an IBM 360/65 which is rapidly reaching CPU saturation. It is anticipated that this acquisition will permit unimpaired support of the Commodity Command Standard System (CCSS) by ALMSA.

(U) A contract was awarded to C3 Corporation to replace the old IBM 270X and 370X Communication Controllers with new Front End Processors at 360/65 installations within DARCOM. The new ADPE will extend systems life and provide expanded communications capability to functional users.

(U) Approval has been granted by Computer Systems Command for reutilization of an excess government-owned UNIVAC 1106 and associated equipment for NARADCOM. This acquisition will allow NARADCOM to accomplish its increased processing requirements at a considerable cost savings, rather than leasing or purchasing additional ADPE.

DOD Military Standard Contract Administration Procedures (MILSCAP).

(U) MILSCAP provides standard procedures for use in machine-processable form between purchasing offices and contract administration offices. The information interchange supports procurement, materiel management, and financial accounting system requirements. During FY 1978, interchange of contract and contract modification data was successfully tested and implemented between Army and Air Force purchasing and administration offices. Testing of the remaining unimplemented chapter of MILSCAP, Contract Payment and Collection Notification procedures, was also initiated during FY 1978, between TSARCOM and the Defense Contract Administration Service Regions, Philadelphia, New York and Dallas.

(U) Distributed Functional Processing. As a result of evaluation of existing ADP capability and projected demands for additional ADP support for DARCOM mission requirements, a general functional systems requirement was prepared and submitted to HQDA requesting approval of the DARCOM Distributed Functional Processing (DFP) concept. DFP provides for installation of minicomputer equipment in direct support of functional user requirements, with general ADP support provided by the existing central computer (host) operating the existing integrated ADP system. The concept capitalizes on the low-cost technology available in the minicomputer area to avoid large scale replacement/redevelopment of current computers and systems. HQDA approval was provided

on 13 September 1978; the prototype distributed system, in support of Procurement functional area requirements, is presently under development at ALMSA, with prototype testing planned for 2d quarter, FY 1979.

(U) Management Information. The Commodity Command Standard System (CCSS) and the Standard Depot System (SPEEDEX) have continued to provide the support they were designed to give to the Materiel Readiness Commands and Depots respectively. As in all systems of this magnitude and complexity, changes and modifications to the systems are inevitable. The management of change procedures instituted during the preceding year to control all systems changes, modifications and new design proved effective resulting in improved logistics mission performance. The automatic data processing hardware supporting these systems is early third generation models and ageing and their capabilities are limited in comparison to newer models. To keep up with the state-of-the-art in computers and move into this new environment, the Management Information Systems Directorate has initiated a major architecture thrust aimed at evolutionary replacement of the ageing IBM 360/65 and CDC 3300 computers used to support CCSS and SPEEDEX.

Materiel Development System

(U) At the close of Fiscal Year 1978, the HQ DARCOM Materiel Development Systems Division had experienced its first anniversary and first full year of operation in a reorganized mode. Reorganized as a part of the overall realignment of missions resulting from implementation of AMARC and the reorganization of Headquarters, AMC, the Division was structured to guide, enhance and assure the capability of the DARCOM ADP environment to support the materiel acquisition process of the command and the associated data processing requirements of the newly established Research and Development Commands.

(U) Initial efforts of the Division were reviewed in the FY 1977 report. Activity for the current reporting period saw these efforts to their conclusion or extended progress in those areas where several years of effort is essential to accomplishment of planned goals and objectives.

Realignment of Automation Management Functions at HQDA.

(U) Changes at the Headquarters DA level affecting the management of Army ADP resources continued to take place during the fiscal year, as well as the continuation of activity essential to implementing the change of the previous fiscal year. During Fiscal Year 1978, ARSTAF responsibilities for communications and automation management were merged in a new headquarters staff office designated as the Office, Assistant Chief of Staff for Automation and Communication (ACSAC).

The action resulted in establishment of the new element (ACSAC) effective 1 October 1978,[30] and discontinuance of the former Army Automation Directorate, OCSA, and the Telecommunications and Command Control Directorate, ODSOPS. MG Charles R. Myer, Director of the latter organization, assumed the position of the Assistant Chief of Staff for Automation and Communications. The initial consolidation effort will concern only the HQDA level, and will not involve DARCOM or other MACOM's. The optimum automation/communications organization for the field is expected to be the subject of a follow-on study(ies) after the ACSAC has matured.

(U) In relation to follow-up on the previous changes which established the HQDA Army Automation Directorate, the principal activity during the fiscal year related to the continuing development of the new operational policies and procedures essential to supporting the realignment of the Automation Directorate and the management of ADP resources within the Army. One of the principal objectives of the new policy/procedural guidance was to bring the management of ADP resources closer in line with the materiel acquisition processes and life cycle management of other defense systems, i.e., application of life cycle management disciplines and requirements of AR 1000-1 (Basic Policies for System Acquisition). These changes resulted in a complete revision in the concept, organization and substantive content of the Army directive system supporting the management of ADP resources (DA publications in the 18-series). Consequently, the Materiel Development Systems Division has participated during the year in the development or review and evaluation of proposed changes to the directives system. The Scientific Applications Branch of the Division chaired a working group for the development of one of the series of directives,[31] which directive is being staff coordinated within Army at the time of this report. The directive relates to acquisition and life cycle management of Scientific and Engineering systems and associated ADP resources.

Concept for Information Processing in the 1980's

(U) ADP technology was in a trend of rapid change, which could be expected to continue. Every new initiative, innovation or announcement of advancement in equipment or application of the computer offers another area of consideration and potential for harnessing the automation improvements in support of the missions, functions, goals, and objectives of DARCOM. In order to provide a structured approach to maintaining surveillance over the changing technology and evaluating the latent potentials for application to the DARCOM environment, a

[30] DA G016, 15 September 1978.

[31] Program TB 18-105, Scientific and Engineering Systems.

collective effort of Directorate for Management Information Systems and its respective field counterparts developed a concept for information processing in decade 1980. The concept addresses the DARCOM operational environment conceived for the period, the projections of the world of automation technology at the time, and the beneficial areas of application within DARCOM. An initial draft of the concept document was completed during the first quarter of the fiscal year, and was staffed within the DARCOM ADP community for review, evaluation and refinement during the third quarter of the year. A final draft document has now been proposed, and is at the time of this report being printed for staff coordination within the DARCOM headquarters, to solicit the comments and recommendations of the functional directorates and separate staff offices. Upon completion of the staff coordination, a final document will be published and will serve as the strategic plan for evolution of the DARCOM 1980 information processing environment. The Materiel Development System Division has served as the focal point for coordination of development of the document, and as a developer and contributor to those areas which have implications of ADP resources support to the research and development and scientific and engineering communities.

Office Automation

(U) Office Automation, one of the principal thrusts of the concept plan for the 1980's, seeks to bring the advances of computer technology directly into the office environment. While the DARCOM effort for harnessing the capabilities of the computer had matured significantly since establishment of the command in 1962, the principal area of application and benefit was the major functional processes and operating systems supporting the materiel management missions of the command. In this environment the DARCOM office manager benefited significantly from the automation of the mission and functional processes under his supervision, however, he had not had the computer at his direct and personal disposal. By contrast, the scientist and the engineer have for years had direct access to and used the computer as a working tool at the bench level. While the office manager has the same needs and urgency of requirements for data and information processing, accepted ADP disciplines and protocol and the state-of-the-art have required the business systems user (manager) to not only pre-plan for and predetermine his information processing requirements, but to accept such services on a pre-determined frequency, weekly, monthly, annually, etc. While this assured the manager the availability of information, timeliness of the information was sacrificed and was inadequate to influence the decision making processes and actions of the manager except in an after the fact or lessons learned mode.

(U) Several considerations made it necessary that DARCOM concentrate attention on the environment of the office manager and to give emphasis to supporting his managerial needs through office automation.

Perhaps the more significant of the considerations were the substantial advances in the field of computers and other related improvements in electronics technology, e.g., in communications, which have brought about a wide range of automation improvements which made it feasible to extend computer support to the needs of individual office worker in his/her own environment. Current and anticipated limitations on resources, e.g., the ceiling recently imposed on recruitment for personnel vacancies, would also impact on the office environment, i.e., in terms of demands for increases in productivity from the workforce and management improvement actions which result in some form of productivity increases or more efficient utilization of the workforce. Also, increases in the complexity and scope of missions, e.g., the sophistication of today's weapons inventory and weapons systems development effort had increased the "information" processing requirements of the command at a very substantial rate, and had had commensurate impact on the needs of the office manager and his staff to collect, store, process, distribute and assimilate such information into their respective decision making processes and office procedure.

(U) In summary, office automation was expected to create an operational environment wherein the office staff would have direct access to information inventories, and the capability through a side assortment of tools to retrieve, process and display such information in a manner most susceptible and responsive to the requirements of the office. The following are some of the benefits anticipated from the office automation environment perceived: increases in individual worker and workforce productivity; compensation for voids, shortages and similar deficiencies in manning and staffing levels; improvement in decision making processes; capability for improving office operations and the development of innovative office discipline and procedures; improvement of employee working environment and job satisfaction; and improvement in office responsiveness.

(U) Progress was made in one stage of the concept known as Executive Level Interactive Terminal Environment (ELITE). ELITE started with the introduction of the electronic mail system currently being used extensively within the command, and was designed to provide direct computer support and a variety of automated management tools to the project manager community. During the first quarter of the fiscal year, the concept was presented to DARCOM Project Managers at the DARCOM Commanders Conference. Based upon favorable acceptance of the concept, ELITE was assigned to a central system design agency (ALMSA) for development. At the end of the third quarter, FY 1978, five selected baseline tools had been developed for use of the PMO. Further details on development of the system will be found in the Annual Historical Review of the design agency.

Configuration Management

(U) Further refinements were made during the fiscal year to the standard automated Configuration Management System (CMS), more commonly referred to as the Technical Data/Configuration Management System (TD/CMS). The standardized system was made available for installation at the Research and Development and Readiness Commands during the preceding fiscal year. The system has now been modified to function in a stand-alone mode, and other modifications are in process to interface operations of the system with the running of Procurement Cycle 404 of the Commodity Command Standard System (CCSS). Installation of the system had been previously completed at the Tank Automotive and Missile Research and Development Commands. This fiscal year the system was installed at the Communications-Electronics Research and Development Command, with implementation of a limited version of the system at the Mobility Equipment Research and Development Command. In contrast to this success in installation of the system, a study conducted by the Natick Research and Development Command has determined the configuration management requirements of the command cannot justify the costs of installation and operation of the sophisticated TD/CMS system. Consequently, NARADCOM has been exempted from implementation of the standard system by the HQ DARCOM functional proponent.

ADP Support for the Research and Development Commands.

(U) Although operational only a short time, some progress is being seen in relation to determining the status of current ADP support to the research and development community, isolating significant voids and deficiencies in ADP support, and the capability for addressing and eliminating the voids, e.g., through possible retrofiting and extension of DARCOM standard systems to the functional processes of the R&D Commands. Some of the more significant activity related to the following.

(U) Continuation of meetings (initiated in the previous fiscal year) with representatives of the research and development commands to discuss their respective needs and the potential of DARCOM ADP resources to respond to their needs. This has been accomplished principally through the medium of periodic meetings of the Scientific and Engineering Computing Council (S&ECC) which includes representation from both the functional and data processing elements of the R&D Commands. The exchange of information provided by this medium was (will be) further supplemented during the 1978 fall-winter period as a result of orientation visits scheduled for the new Chief of the Materiel Development System Division.

(U) A critical command-wide examination of the discipline and processes essential to materiel and weapons systems development and testing. While the results of the evaluation reflect a substantial

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commonality of need for testing and other life cycle management data and information, there is very little standardization of the data collection and processing systems within the materiel development and testing community. To a large extent, these information processing requirements of the research and development commands are inadequately supported by automation.

(U) As a beginning toward standardization of automated systems support for the area, efforts are currently underway which will lead to a standard test data collection system. This will preclude continuation of some previous efforts by the R&D Commands which would have resulted in perpetuation of existing or development of new command unique systems, and the resultant duplication of effort and resources.

Equal Employment Opportunity-Affirmative Action

(U) Since General Guthrie took command of DARCOM in May 1977, it has been his aim to make the command a model for the Army to emulate in the area of Equal Employment Opportunity (EEO) and Affirmative Action (AA). He was particularly concerned that not enough minorities and women had had training opportunities to place them in executive development programs. He noted that the deficiency was spread throughout the command though there were some minorities and women who could qualify for executive development if their skills were developed. To give impetus to the EEO/AA program, in November 1977, he directed that[32] "pre-executive training is to be supported for these employees (minorities and women) who exhibit the basic potential for success but require intensive preparation to develop the requisite skills and knowledge." The DARCOM commander made it plain that all DARCOM supervisors and managers would have their performance appraised in respect to how well they had carried out the command policies regarding EEO/AA, not only regarding executive level positions but at all levels. In fact, it was General Guthrie's practice to have his Subordinate Commanders, Directors, Managers and Chiefs report regularly to him regarding the status, accomplishments, and plans regarding EEO/AA. It was his view that anything DARCOM could achieve would be done, solely through the efforts of over 116,000 plus individuals--men and women, including minorities that comprised the command. To the DARCOM Commander, it was particularly important to assure "that all of our people, regardless of race, color, religion, sex, national origin, age or whatever, have the opportunity to advance to the limit of their abilities and to make the maximum contribution to the accomplishment of DARCOM's mission."[33] General Guthrie regards this as extremely important and gave his full support to the program in all areas.

32 Gen John R. Guthrie, Commander, USA DARCOM, Keynote Address at EEO Official's Conference, St. Louis, MO, 27 Sep 77, p. 7. (Among holdings at Archives of DARCOM HQ Historical Office).

33 Letter, DRCEE, Signed John R. Guthrie, Gen USA Commanding, DARCOM, 14 Nov 77, subj: US Army Materiel Development & Readiness CMD (DARCOM) EEO Conference.

Command Equal Employment Opportunity

(U) During FY 1978, the Equal Employment Opportunity (EEO) Office continued to implement the requirements of the Equal Employment Act of 1972 to provide equal employment opportunity in Federal employment without discrimination because of race, color, religion, sex, national origin, age or physical or mental handicap. A DARCOM EEO/CPO Conference, to be attended by EEO Officers, Civilian Personnel Officers, Federal Women's Program Coordinators (FWPC's) and Hispanic Employment Program Coordinators (HEPC) as well as representatives of Headquarters Department of the Army, Health Services Command, US Army Training and Doctrine Command, US Army Forces Command, US Army Civilian Appellate Review Agency, Military Traffic Management Command, US Army Sergeants Major Academy, US Army Air Defense School, 11th Air Defense Artillery Group and 3d ACR was planned to be held at El Paso, Texas, 29 October-2 November 1978.

(U) In this period, 152 formal complaints of discrimination were filed throughout the command. The bases for the alleged discrimination were as follows:

Race/Color	69
Religion	5
Age	27
Sex	
Female	24
Male	4
National Origin	13
Other (reprisal, harassment,etc)	3
Handicap	7
Total	152

A total of 210 formal complaints were closed in FY 1978 with a finding of discrimination in 16 or 7.6 percent of the cases.

(U) As shown on the chart, next page, the total work force continued on a downward trend from 30 June 1975 to 30 September 1978. There was a decrease in the lower grades (GS/WG 05-09) of 4,427, the middle grades (GS-WG 10-12) of 2,267, and the high grades of 1,069. The supergrades increased by 3 from FY 1975. In spite of the decline in the total work force there have been gains for minority and female employees in the middle and high grades.

Hispanic Employment Program

(U) During FY 1978 the Command HEPC concentrated his efforts in the areas of program evaluation through field visits, program guidance, and direction to coordinators and college recruitment. The Command

PROGRAM STATISTICS

	30 June 1978			30 September 1978		
	Total	Minority	Female	Total	Minority	Female
Lower Grades (GS-WG 05-09)	48,959 (100%)	9,788 (20%)	14,077 (28.8%)	44,532 (100%)	8,596 (19.3%)	14,087 (31.6%)
Middle Grades (GS-WG 10-12)	34,924 (100%)	3,616 (10.4%)	2,206 (6.3%)	32,657 (100%)	3,691 (11.3%)	2,595 (7.9%)
High Grades (GS-WG 13-15 and WS 13-19)	12,421 (100%)	570 (4.6%)	234 (1.9%)	11,352 (100%)	602 (5.3%)	264 (2.3%)
Supergrades (GS 16-18)	55 (100%)	2 (3.6%)	0 (0%)	58 (100%)	2 (3.4%)	0 (0%)

Chart 3

HEPC visited various DARCOM installations with a predominant number of Hispanics in their work force. During these visits his efforts concentrated on on-site advice with the HEPC and the HEP Committee. The Command HEPC directed their efforts in the community toward bringing awareness to young Hispanics of opportunities of employment with the Army in the various career programs.

(U) During the period June 1975 to June 1978, DARCOM lost 889 Hispanics primarily due to reorganizations and changes in work load and missions and functions which required the application of reduction-in-force procedures in such places as Pueblo, Colorado, Rocky Mountain Arsenal, US Army Dugway Proving Ground, Sacramento and Sharpe Army Depots and others. However, in spite of the downward trend in class act positions, the number of Hispanics increased. In grades GS-5 through GS-9, Hispanics increased in numbers by 53 (3.7 percent) and in grades GS-10 - 12 by 25 (2 percent). In grades GS-13 - 15 the percentage of Hispanics (1.1 percent) remained the same.

(U) The Command HEPC developed the Hispanic Employment Program Mini Plan of Action for Fiscal Years 1978 and 1979 to provide guidance in developing local programs throughout DARCOM. He also continues to be involved in serving as a resource person with the DARCOM Field Placement Office, Atlanta. The visit to the University of Puerto Rico, Mayaguez Campus, in November 1977 resulted in 26 students expressing interest and availability for entrance into the DARCOM Intern Training Center Engineering Graduate School Program at Red River Army Depot, Texarkana, Texas. This recruitment effort will be expanded to cover colleges in the Southwest and other areas with a predominant Hispanic population to assure all Hispanics are reached.

Federal Women's Program

(U) More than 60 DARCOM employees, mostly Federal Women's Program Coordinators and Committee members attended the National Women's Conference in response to the US Civil Service Commission (USCSC) request that Federal agencies support the conference via exhibits, attendance and support type activities. The National Women's Conference was sponsored by the National Commission on the Observance of International Womens' Year (IWY) and was funded by Congress. Its purpose was to state the concerns of women from all walks of life; to develop and vote on a Plan of Action that was subsequently submitted to the President of the United States. The Command FWPC was appointed to the USCSC Continuing Committee for the Monitoring of the Federal Women's Agenda developed at the National Women's Conference.

(U) Production of the first of three DARCOM motion pictures designed to depict employment opportunities for and the progression of women within DARCOM commenced in May 1978. These films were to be used in training, recruitment efforts, exhibits and for public relations.

Guidelines for management of the Federal Women's Program were developed at DARCOM Headquarters and were included in DARCOM Pamphlet 690-4. FWP Committees are established and functioning at most DARCOM activities.

(U) The DARCOM FWP Coordinator performed on-site reviews of the EEO program, participated in DCSPER Personnel Management Surveys in addition to numerous public speaking engagements and the conduct of panel discussions and workshops for various other agencies. Also, a survey of promotion actions in relationship to age was conducted; however, the data had not been analyzed by the end of FY 1978.

(U) The high rate of turnover of FWPC's has impacted the FWP efforts. However, there has been a percentile increase in the numbers of women in the DARCOM work force. The specific emphasis that was directed toward recruitment of women into wage system positions resulted in an increase of women into wage grade positions. There was a slight increase in the numbers of women in wage leader and wage supervisor positions.

CHAPTER II

RESOURCES MANAGEMENT

Introduction

(U) Preoccupation with resource scarcities was a way of life for DARCOM but FY 1978 was a year during which the Command began to look at the resource situation with an increased sense of urgency. During the year, a task force led by the DARCOM Deputy Commanding General for Resource Management, MG Robert L. Berquist, completed an in-depth analysis, the results of which appeared in "The DARCOM Manpower Baseline Requirement."[1] Though this study was primarily one devoted to manpower, money and activities were also inextricably involved. What the baseline study revealed was that though the missions and the workload had been steadily increasing through the years since DARCOM was organized in 1962, resources had been declining. For example, civilian strength had declined from the Vietnam war peak (1969) of 183,000 to 117,200 and military strength had declined from a 1962 figure of 22,300 to 10,200 by the end of FY 1968. During this drawdown period, Army strength as a whole stabilized at approximately 785,000 in 1975 but DARCOM strength continued to decline. This was a time when the Army was moving from 13 to 16 active Army divisions which were to be heavier and more sophisticated necessitating fielding of numerous new systems. Support for these divisions and systems, plus other new Army programs were placing a very heavy burden on DARCOM's already strained resources. Consequently, DARCOM, throughout FY 1978, was seeking ways to manage its numerous tasks with declining resources.

Plans and Analysis

Management by Goals and Objectives

(U) Several significant actions were taken in FY 1978 to take advantage of the lessons learned in FY 1977 and to make the DARCOM System of Management by Goals and Objectives more responsive to the needs of field commanders. New DARCOM Goals had been established by the Commanding General in November 1977. They were designed to be in line with the Total Army Goals which were established in September and to provide the basis for the development of the FY 1978 HQ DARCOM Program Plan which was published in March 1978. This document contained, in addition to the Goals, the staff implementing objectives and program

[1] The DARCOM Manpower Baseline Requirement, HQ DARCOM, August 1978, p. 2-3 (MG R.L. Berquist, DARCOM DCGMR).

tasks showing what, how, when, and where, or by whom, actions would be taken to accomplish the Goals during FY 1978. It also contained additional guidance in the form of policies, priorities and areas for emphasis within each functional area.

(U) During the Spring Commander's Conference, 13-15 June 1978, a working group on Command-Wide Goals and Objectives was established to consider: DARCOM Goals and their tie-in with Total Army Goals; Management Goals vs Materiel Goals; Bridging the gap between goals, objectives, and the budget; Participative management (total commitment vs compliance); and based on these considerations, developing a strawman for DARCOM FY 1979 Goals/Objectives.

DARCOM GOALS

(U) The Readiness Goal: Prepare the Total Army for rapid transition to combat, fully capable of performing its wartime mission.

(U) The Human Goal: Provide the Total Army with highly effective and morally responsible military and civilian personnel capable of performing reliably in war; insure equal opportunity for all members; provide quality of life support for our soldiers and their families and require from them reciprocal dedication to service.

(U) The Materiel Goal: Develop, procure, store, issue, field, and maintain a balanced war-fighting and sustaining capability.

(U) The Strategic Deployment Goal: Improve Army deployment capability to move forces as scheduled in order to increase early availability of combat power.

(U) The Future Development Goal: Improve Army equipment and concepts to exploit new technology.

(U) The Management Goal: Manage and utilize existing and programmed resources more effectively. Strengthen the Army's resource justification process.

(U) During the conference, the working group made three basic recommendations which were approved by the DARCOM Commander, GEN John R. Guthrie: adopt DA Goals as the DARCOM Goals; develop a few key DARCOM objectives to meet the DA Goals; and task the DARCOM major subordinate commands (MSC) to develop tasks in concert with the HQ DARCOM staff. The HQ DARCOM staff developed a list of 24 objectives to implement the goals.

(U) In response to the working group recommendations GEN Guthrie established new DARCOM Goals on 26 July 1978. These goals mirrored the Total Army Goals with two minor modifications to make them more compatible with the DARCOM mission.

(U) The 24 objectives were staffed with all MSC's and the headquarters staff and, on 11 August 1978, the Commanding General approved 32 objectives for DARCOM for FY 1979. These were sent to the MSC's and headquarters staff on 14 August with a request for the submission of implementing DARCOM-wide and command-peculiar tasks. Submissions were received during the month of September. At the end of FY 1978, 130 DARCOM-wide and 538 command-peculiar tasks had been received. This number of tasks (668) was more than four times the number published in the FY 1978 HQ DARCOM Program Plan. It was determined that the FY 1979 DARCOM Program Plan should be published in two volumes, the first containing the DARCOM-wide tasks, arrayed by DARCOM objectives within each of the six goals. The second volume would contain all command peculiar tasks arrayed by MSC. HQ DARCOM staff proponents would report the status of DARCOM-wide tasks during quarterly Command Performance Indicator Review given to the Commander. Major subordinate commanders would report the status of selected command-peculiar tasks during commanders' conferences and, at the end of the fiscal year, as an annual report. DARCOM was getting tighter control over meeting objectives through the intensified management of the program.

Delegation of Authority

(U) The Directorate for Plans and Analysis was responsible for DARCOM's FY 1978 Management Objective - 41 which was "to maximize delegation of authority from Headquarters to DARCOM Field Commanders when functional performance can be improved without diluting staff responsibility." Under this objective, efforts were to be made to insure that authority was delegated to the lowest possible operating level.

(U) During FY 1978, the CY 1977 Delegation of Authority cycle was completed. On 11 February 1977, a request was sent to the field requesting submission of possible areas for delegation. In response, HQ DARCOM received 22 replies containing 92 possible areas. By combining duplicates, sending one back for clarification, and grouping similar requests, the end result was reduced to 79 proposals after combining duplicate proposals and grouping similar requests. The submissions were assigned to the appropriate headquarters staff for review. Every effort was made to delegate, with the burden of proof being on the HQ DARCOM staff when non-delegation was being recommended. Staffing was completed in October 1977.

(U) Decisions on the CY 1977 proposals were made and sent to the field on 6 June 1978. There were 54 disapprovals, 21 approvals, with 4 pending which were still awaiting DA or DOD decision at the close of the fiscal year.

(U) On 30 June 1978, DARCOM again went to the field requesting proposals for consideration for possible delegation. This was the CY 1978 appeal. As of 30 September 78 there were 57 proposals submitted by 16 subordinate elements. Twelve of these were returned to the field for further justification of benefits to be derived. The remaining 45 were sent to the concerned directorates for staffing. It was anticipated that decisions would be sent to the field in February 1979.

Military Plans and Operations

(U) Annex K, DARCOM-DCP. On 30 December 1977, a new Annex K, "Augmentation Reserve Force" (ARF), to the DARCOM Disaster Control Plan was published and distributed to subordinate commands and installations. This annex (classified CONFIDENTIAL) identified key DARCOM installations and FORSCOM/TRADOC supporting installations, which provide the ARF under the AR's 50-5, Nuclear Surety and 50-6, Chemical Surety. This Annex was previously identified as Annex Q, to the Civil Disturbance Plan, but was rewritten under the disaster control plan because related annexes (e.g., Nuclear and Chemical accident/incident control annexes) are in this plan.

(U) DARCOM-CDP. The new US Army Materiel Development and Readiness Command Civil Disturbance Plan (DARCOM-CDP) was published on 28 June 1978. The new plan superseded the old US Army Materiel Command plan, dated 19 December 1973, with fourteen changes. The plan was updated based on current DA guidance to implement the new DA-CDP. Prepositioned assets of the Director of Military Support (DOMS) located in key DARCOM depots were adjusted by adding five additional commercial FM Motorola radio packets which had been previously located at FORSCOM installations. Also, deleted from the DOMS controlled assets were the Tactical Radios located at these key depots. The subordinate commands and installations implemented the DARCOM plan which also emphasized the fact that these installations's role could be that of a Base Support Installation, supporting forces involved in Civil Disturbance operations.

(U) DARCOM Mobilization Plan (DARCOM-MP). The US Army Materiel Development and Readiness Command Mobilization Plan, DARCOM-MP, was published under date of 30 June 1978 to supersede the US Army Materiel Command Mobilization Plan, AMC-MP, dated 17 April 1975. The new mobilization plan was published in two volumes (I & II) and two Annexes (A-M). Annex A (Defense Guidance, Evolution, Concept, and

Force Requirements and Capabilities) was given a limited distribution based on need to know. Annex M (PRIMOB/FAM Planning Guidance) was given a limited distribution because of its limited application. Volumes I and II were given a wide distribution.

(U) Annex M is the result of developing a new computer program for determining the Purpose Code T materiel requirements for the Reserve Components for mobilization in order to bring them from their authorized levels to their required levels of equipment, and to determine shortages or overages in Purpose Code T stocks to meet this requirement.

(U) Redistribution of Uncovered Prepositioning of Materiel Configured to Unit Sets (POMCUS) Materiel. The DARCOM plan for the redistribution of selected items of equipment left behind (uncovered) by units deploying to an overseas theater during mobilization was prepared. The items left behind are referred to as uncovered POMCUS materiel (formerly POMCUS residual). The DARCOM plan was developed in accordance with current DA guidance as set forth in Volume II of the Army Capabilities Plan (ACP) (draft), and was published as Appendix XI to Annex H to the DARCOM Mobilization Plan (DARCOM-MP). Pursuant to DA guidance, all Reportable Item Control Code 1 (RICC-1) items left by the departing units were to become wholesale assets on deployment of the units to POMCUS. They were to be redistributed as predesignated by DARCOM based on priorities specified in the ACP. The Materiel Readiness Commands/Service Item Control Centers (MRC/SICC) prepared predesignated shipping instructions on the projected uncovered POMCUS assets and prepositioned them at applicable installations. The present redistribution procedures were being evaluated in exercise NIFTY NUGGET/MOBEX 78.

Contingency Planning

(U) In the area of contingency planning, the following LOGPLANS and ancillary planning documents were prepared or revised during the reporting period:

(C) DARCOM LOGPLAN 801 LG, 11 April 1978, provides preplanned supply requirements in support of US Unilateral Contingency Operations in the Middle East without dependency upon US materiel resources from within the territory of NATO allies.

(C) DARCOM LOGPLAN 701 AR, 7 December 1977, provides preplanned supply requirements in support of III Corps OPLAN Armored "D," 20 May 1977. This LOGPLAN was formulated on the Direct Support concept by shipping required materiel to a Direct Support environment in consonance with the COSCOM's Wartime Logistics Organization.

(C) DARCOM LOGPLAN 4102, 22 August 1977, in support of USAREUR's general war plan was computed and related supply and transportation documentation was positioned at the MRC's, USAREUR's MMC, MTMC and TOA's. The final action, positioning of the transportation movements requirements data, was completed in March 1978. This plan will be revised/published, and recomputed again in 1979.

(C) DARCOM LOGPLAN 77AD, 12 September 1978, was developed to provide logistics support to various sized task forces derived from the Airborne "D" Package identified in XVIII Airborne Corps/USARFOR Abn D Package 77AD. This XVIII Abn Corps/USARFOR plan provides a high priority immediate response force with world-wide orientation in support of the various unified commands operation plans. The DARCOM LOGPLAN, as configured, has the flexibility to provide logistics support to the various sized task forces in the following numbered FORSCOM/ARRED/ARLANT and/or XVIII Airborne Corps/USARFOR plans:

PLAN	COMMAND	TASK FORCE	PURPOSE
0100	EUCOM	Bn/Bde	Protection & Evacuation of US Non-combatants and Others in the Middle East
2100	LANTCOM	Bn	Protection & Evacuation of US Non-combatants and Others in Caribbean Small Island Republics
2200	LANTCOM	Bde	Military Operations in Iceland & Puerto Rico
2348	LANTCOM	Bde	Military Operations in GTMO Naval Base
2360	LANTCOM	2 Bde	Military Operations in Haiti
2362	LANTCOM	Bde	Military Operations in Jamaica
2371	LANTCOM	Bn	Military Operations in Trinidad-Tobago
2373	LANTCOM	2 Bde	Military Operations in Dominican Republic
2375	LANTCOM	Bde	Military Operations in Bahamas
2390	LANTCOM	Bn	Military Operations in Azores & Ascension Island
6100	SOCOM	Bn/Bde	Evacuation of US Non-combatants and Disaster Relief Operations in Central & South America
7010	REDCOM	Bn/Bde	Protection and Evacuation of US Non-combatants and Others in Africa South of the Sahara
7020	REDCOM	Bn/Bde	Disaster Relief Operations in Africa South of the Sahara

(C) Logistics support is planned to be accomplished through a combination of unit accompanying supplies deploying with task force units and XVIII Airborne Corps/DARCOM coordinated preplanned supply which will be available on an on-call basis for shipment and demand supported requisitions submitted by the 1st COSCOM to CONUS ICP's for direct delivery of supplies to the task force or to Fort Bragg, North Carolina for subsequent transhipment to the task force. DARCOM logistics support is planned to sustain military operation in the various operational areas for a minimum period of 30 days with possible commitment to support subsequent operation for a period extending up to 90 days.

Exercise Elite Trooper 78

(C) During the period 3-8 April 1978, HQ DARCOM, its major subordinate commands and key installations/activities participated in a world-wide command post exercise, sponsored by the Joint Chiefs of Staff and nicknamed ELITE TROOPER 78. As a result, the HQ DARCOM Operations Center was augmented with representatives of key headquarters staff elements on a 24-hour basis. DARCOM Readiness Commands and other appropriate major subordinate commands also activated/augmented their operations centers on a 24-hour basis, while the remaining DARCOM subordinates maintained a 24-hour response capability.

Army Materiel Acquisition Review Committee (AMARC)

(U) The major ongoing realignment action within DARCOM during FY 1978 was the series of reorganizations of DARCOM major subordinate commands known as AMARC. This action resulted from the decision to approve and implement the findings of the Army Materiel Acquisition Review Committee (AMARC) Study. To reiterate the background of this study, the Secretary of the Army called together a group of private industry people and government to take a hard look at the Army and its way of doing business in the development arena.* Their study, which was published in April 1974, contained 172 recommendations of which 71 were assigned to DARCOM (then AMC) for action.

(U) Their primary finding was that DARCOM had been more concerned with the readiness of our forces than with the materiel development and acquisition process. In other words, our commodity commanders were spending an inordinate amount of effort in keeping equipment in the hands of the troops in the highest possible state of readiness at all times, sometimes to the detriment of the R&D program, thereby degrading preparations for possible future conflicts.

(U) The recommended solution to this perceived problem was to separate the major subordinate commands into mission oriented development centers for RD&E and initial procurement and into logistic or readiness centers to perform follow-on procurement and logistic support functions. In implementing this organizational concept, all DARCOM commodity commands were discontinued and new R&D and readiness commands were organized. The last of these new commands, the Electronics Research and Development Command (ERADCOM), the Communications Research and Development Command (CORADCOM), and the Communication and Electronics Materiel Readiness Command (CERCOM) were organized at Adelphi, Maryland, and Fort Monmouth, New Jersey, effective 1 January 1978.

*See DARCOM (AMC) Annual Histories for FY 75, FY 76/7T and FY 77 for more details of the group.

(U) Each of these new subordinate commands prepared a listing of milestones to be accomplished in establishing the command in accordance with DARCOM Regulation No. 210-18. At the close of FY 1978, none of these had yet been completed. Moderate slippage had occurred in the two R&D Commands while CERCOM was expected to complete all milestones as scheduled by the end of October 1978.

DARCOM Reorganization

(U) Other DARCOM organizational changes which took place during FY 1978 are shown on the following chart.

Realignment Studies

(U) AMETA/ALMC. A base closure announcement issued by the Secretary of the Army on 26 April 1978 resulted in the initiation of four studies by the Mission and Organization Division of the DARCOM Plans and Analysis Directorate. Summary actions taken on each of these during FY 1978 follows:

(U) The possible disestablishment of the Army Management Engineering Training Activity (AMETA), Rock Island, Illinois, and consolidation of its training functions at the Army Logistics Management Center (ALMC), Ft. Lee, Virginia was proposed. The DARCOM study was begun on 15 May 1978. In addition to considering the merger at Ft. Lee, another alternative was to contract with civilian institutions for the training workload. Although both activities have training missions, AMETA is oriented toward executive level management programs, teaching managerial techniques and analytical methods, while ALMC's instructional effort is in the functional management areas with coverage of analytical techniques specifically related to the role of logistics managers which largely addresses doctrine, policy and procedures. As the course content was not found to be duplicatory, any personnel savings would have been in the administrative overhead. These savings were found to be minimal and far outweighed by the one-time costs, recurring increases in student TDY costs, the probable loss of AMETA's staff, and adverse economic impact in the Quad Cities area. Therefore, the recommendation forwarded to HQDA on 10 August was to continue the current structure and location of AMETA and ALMC.

(U) Applied Technical Laboratory (ATL)/Research and Technical Laboratories (RTL). The disestablishment of the Applied Technology Laboratory (ATL) at Ft. Eustis, Virginia, with the transfer of its missions to other laboratories under the control of the Research and Technology Laboratories (RTL), Aviation Research and Development Command (AVRADCOM) was proposed. Functions and related spaces would be transferred to three AVRADCOM laboratories collocated with the

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DARCOM REORGANIZATIONS

PERMANENT ORDER	DATE	ORGANIZATION	LOCATION	ACTION	EFFECTIVE DATE
PO 87-2	7 Nov 77	US Army Office of the Project Manager DRAGON	Redstone Arsenal, Alabama	Unit Discontinued	29 Sep 77
PO 90-1	16 Nov 77	US Army Central Test Measurement and Diagnostic Equipment Activity (USACTA)	Lexington, KY	Unit reorganized. Transfer of functions to ARRCOM.	1 Oct 77
PO 93-2	23 Nov 77	USA Office of the Project Manager General Support Rocket Systems (GSRS)	Redstone Arsenal, Alabama	Unit organized and assigned to MIRADCOM	1 Oct 77
PO 96-1	5 Dec 77	Battlefield Exploitation and Target Acquisition (BETA) Joint Project Office	Adelphi, MD	Unit organized and assigned to DARCOM	1 Nov 77
PO 97-2	7 Dec 77	Mississippi Army Ammunition Plant	Picayune, MS	Unit organized and assigned to HQ USA ARRCOM.	30 Nov 77
PO 102-1	27 Dec 77	HQ USA Electronics Command (ECOM)	Fort Monmouth, NJ	Unit Discontinued	1 Jan 78
PO 102-1	27 Dec 77	USA Electronics Command, Research, Development and Engineering Directorate	Fort Monmouth, NJ	Unit Discontinued	1 Jan 78
PO 102-1	27 Dec 77	USA Research and Development Technical Support Activity	Fort Monmouth, NJ	Unit Discontinued	1 Jan 78

Chart 4

(UNCLASSIFIED)

Chart 4--Continued.

PERMANENT ORDER	DATE	ORGANIZATION	LOCATION	ACTION	EFFECTIVE DATE
PO 102-1	27 Dec 77	Office of the Project Manager, Army Tactical Data Systems (ARTADS)	Fort Monmouth, NJ	Unit Discontinued	1 Jan 78
PO 102-1	27 Dec 77	US Army Communications and Automatic Data Processing Lab (ECOM)	Fort Monmouth, NJ	Unit Discontinued	1 Jan 78
PO 102-1	27 Dec 77	USA Office of the Project Manager, Position Location Reporting System/ Tactical Information Distribution System (PLRS/TIDS) (CORADCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	USA Office of the Project Manager Missile Minder/Air Defense Tactical Data Systems (MM/ADTDS) (CORADCOM)	Redstone Arsenal, Alabama	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	USA Office of the Project Manager Tactical Fire Direction System/Field Artillery Tactical Data Systems (TACFIRE/ FATDS) (CORADCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78

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Chart 4--Continued.

PERMANENT ORDER	DATE	ORGANIZATION	LOCATION	ACTION	EFFECTIVE DATE
PO 102-1	27 Dec 77	USA Office of the Project Manager Tactical Operations System/Operations and Intelligence Tactical Data Systems (TOS/OITDS) (CORADCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	USA Communications Systems Center (CENCOMS) (CORADCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	USA Communications Research and Development Command Field Offices (CORADCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	USA Communications Research and Development Command Test Facility (CORADCOM)	Fort Hood, TX	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	USA Tactical Computer Systems Center (CENTACS) (CORADCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	USA Systems Engineering and Integration Center (CSEI) (CORADCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78

(UNCLASSIFIED)

Chart 4--Continued.

PERMANENT ORDER	DATE	ORGANIZATION	LOCATION	ACTION	EFFECTIVE DATE
PO 102-1	27 Dec 77	USA Office of the Project Manager Stand-Off Target Acquisition Systems (SOTAS) (ERADCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	USA Office of the Project Manager Control and Analysis Centers (CAC) (ERADCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	USA Electronics Research and Development Command Technical Support Activity (ERADCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	USA Electronics Research and Development Command Flight Test Activity (ERADCOM)	Lakehurst, NJ	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	HQ USA Communications and Electronics Materiel Readiness Command (CERCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	HQ USA Communications Research and Development Command (CORADCOM)	Fort Monmouth, NJ	Unit Organized	1 Jan 78

Chart 4--Continued.

PERMANENT ORDER	DATE	ORGANIZATION	LOCATION	ACTION	EFFECTIVE DATE
PO 102-1	27 Dec 77	USA Electronics Research and Development Command (ERADCOM)	Adelphi, MD	Unit Organized	1 Jan 78
PO 102-1	27 Dec 77	US Army Avionics Research and Development Activity	Fort Monmouth, NJ	Reassigned from ECOM to AVRADCOM	1 Jan 78
PO 102-1	27 Dec 77	USA Project Manager Navigation/Control Systems	Fort Monmouth, NJ	Reassigned from ECOM to AVRADCOM	1 Jan 78

Following units reassigned from HQ DARCOM and USA Electronics Command (ECOM) to USA Electronics Research and Development Command (ERADCOM) 1 Jan 78.

Harry Diamond Laboratories	Adelphi, MD
USA Combat Surveillance and Target Acquisition Laboratory	Fort Monmouth, NJ
USA Electronic Warfare Laboratory	Fort Monmouth, NJ
USA Atmospheric Sciences Laboratory	White Sands Missile Range, NM
USA Electronics Technology and Devices Laboratory	Fort Monmouth, NJ
USA Night Vision and Electro-Optics Laboratory	Fort Belvoir, VA
USA Signal Intelligence and Electronic Warfare Research and Development Activity (SERDA)	Arlington Hall Station, Arlington, VA
USA Office of the Project Manager Remotely Monitored Battlefield Sensor System (REMBASS)	Fort Monmouth, NJ
USA Office of the Project Manager FIREFINDER	Fort Monmouth, NJ

Chart 4--Continued.

Following units reassigned from USA Electronics Command (ECOM) to USA Communications Research and Development Command (CORADCOM) 1 Jan 78.

USA Office of the Product Manager, Automatic Test Support Systems (ATSS)	Fort Monmouth, NJ
USA Office of the Project Manager, Single Channel Ground and Airborne Radio Subsystem (SINCGARS)	Fort Monmouth, NJ
USA Office of Deputy Program Manager, Joint Tactical Information Distribution System (J-TIDS)	Hanscom AFB, MA
USA Office of the Project Manager, Multi-Service Communications Systems (MSCS)	Fort Monmouth, NJ
USA Office of the Project Manager Army Tactical Communications System (ATACS)	Fort Monmouth, NJ

Following units reassigned from USA Electronics Command (ECOM) to USA Communications and Electronics Materiel Readiness Command (CERCOM) 1 Jan 78.

389th USA Band	Fort Monmouth, NJ
241st Military Police Company	Fort Monmouth, NJ
HQ and Installation Support Activity - ECOM	Fort Monmouth, NJ
USA Field Services Activity - ECOM	Fort Monmouth, NJ
USA Television-Audio Support Activity	Sacramento, CA
USA Communication Security Logistics Activity	Fort Huachuca, AZ
USA Office of the Product Manager Signal Intelligence/Electronic Warfare	Fort Monmouth, NJ

Chart 4--Continued.

PERMANENT ORDER	DATE	ORGANIZATION	LOCATION	ACTION	EFFECTIVE DATE
PO 21-1	27 Apr 78	USA Electronic Proving Ground Digital Communications Systems Test Company	Fort Huachuca, AZ	Unit Organized	1 Jun 78
PO 22-1	9 May 78	USA Office of the Product Manager for Commercial Construction and Selected Materials Handling Equipment	Warren, MI	Unit Organized	30 Mar 78
PO 22-1	9 May 78	USA Office of the Product Manager for M551/M551A1 Armored Reconnaissance Airborne Assault Vehicle	Warren, MI	Unit Discontinued	30 Mar 78
PO 34-3	22 Jun 78	USA Electronics Materiel Readiness Activity (EMRA)	Vint Hill Farms, Warrenton, VA	Reassigned from DARCOM to CERCOM	1 Jul 78
PO 36-2	30 Jun 78	USA Signal Intelligence and Electronic Warfare Research and Development Activity (SERDA)	Arlington Hall Station, VA	Change of location to Vint Hill Farms Station, Warrenton, VA	1 Jul 78
PO 49-1	18 Sep 78	Burlington Army Ammunition Plant	Burlington, NJ	Unit Discontinued	15 Aug 78

Chart 4--Continued.

PERMANENT ORDER	DATE	ORGANIZATION	LOCATION	ACTION	EFFECTIVE DATE
PO 49-1	18 Sep 78	USA Project Manager for Satellite Communications (SATCOM)	Fort Monmouth, NJ	Reassigned from DARCOM to CORADCOM	1 Oct 78
PO 51-2	25 Sep 78	USA Security Agency Test and Evaluation Center	Fort Huachuca, AZ	Unit Discontinued	3 Jul 78
PO 54-1	13 Oct 78	USA White Sands Missile Range Troop Command	White Sands, NM	Unit Discontinued	15 Nov 78
PO 55-1	20 Oct 78	Mississippi Army Ammunition Plant	Bay St. Louis, MS	Unit reassigned from DARCOM to ARRCOM	1 Jan 78

National Aeronautics and Space Administration (NASA) research centers (Langley, Ames and Lewis) and three DARCOM elements, HQ AVRADCOM, HQ ATL, and HQ Troop Support and Aviation Materiel Readiness Command (TSARCOM). As the technology application arm of RTL, the ATL directs the integration and militarization of technology emerging from the other elements. Dispersal of this mission and probable loss of ATL's technical personnel would cause severe disruption of the aviation R&D program. For this reason, and because there was no economic advantage in disestablishment and relocation, on 15 September 1978 the study submitted to HQDA recommended status quo.

(U) LSSA/ALMSA. The merger of the Logistic Systems Support Activity (LSSA), Letterkenny Army Depot, Chambersburg, Pennsylvania, with the Automated Logistics Management Systems Activity (ALMSA), St. Louis, Missouri was proposed. A study was initiated in May 1978 to determine the feasibility of consolidating the central system design functions of the two activities and to examine alternate sites. Three locations were considered: St. Louis, Missouri - location of ALMSA and site of a Materiel Readiness Command and an R&D Command; Chambersburg, Pennsylvania - location of LSSA and a depot; Huntsville, Alabama - location of both a Materiel Readiness and an R&D Command. None of the relocation alternatives resulted in manpower or dollar savings sufficient to outweigh the disruption to the logistics structure which would occur in relocating either or both of these activities.

(U) Dugway Proving Ground/Tooele Army Depot. The consolidation of base operations and support activities of Dugway Proving Ground, Utah with Tooele Army Depot was proposed. The study commenced on 15 May 1978. Three alternatives were examined: consolidation of all base operations functions with Tooele; consolidation of selected functions with Tooele; and consolidation of selected functions with White Sands Missile Range. The study found total consolidation to be infeasible as it would separate responsibility for the maintenance, security, and safe use of real property from the Commander using that property for hazardous testing. None of the alternatives resulted in substantial manpower savings. Final results of this study were to be submitted to HQDA in the second quarter FY 1979.

(U) Aviation Development Testing Study. In January 1975, as an outgrowth of an AMARC effort, HQDA (ODCSRDA) directed that DARCOM examine all of its aviation development testing facilities, resources and programs for redundancy or duplication and that appropriate recommendation be made for consolidation and identification of an aviation development testing facility (ADTF) for the US Army Test and Evaluation Command (TECOM). This study, which was conducted and completed by TECOM in June 1975, determined that, of all the DARCOM Aviation Development Testing Facilities, the following should be considered

for consolidation at Yuma Proving Ground, Arizona: the AVSCOM Aviation Engineering Flight Activity (AEFA) at Edwards AFB; the development test part of the Aviation Test Board at Ft. Rucker; the aircraft armament engineering effort at Yuma Proving Ground, Arizona; and the Electronic Proving Ground (EPG), Ft. Huachuca, Arizona.

(U) The Commander, DARCOM, deferred a decision on this study pending discussions with the Commander, TRADOC, who proposed the establishment of an "Aviation Center of Excellence" at Fort Rucker to include separate aviation development test and operational test organizations. The two commanders agreed to leave the development test and operational test activities collocated at Fort Rucker for a one year trial period during which an evaluation would be made of the collocation experience.

(U) Subsequently, in a separate but related action, DARCOM and TRADOC prepared a Joint Working Group Concept Plan for the Realignment of Aviation Testing Resources and Responsibilities, 10 November 1975. This concept plan recommended a split in resources (manpower, dollars, equipment, instrumentation, and facilities) of the Aviation Test Board for the establishment of a DARCOM (TECOM) Aircraft Development Test Activity and a TRADOC Aviation Board, collocated at Ft. Rucker, Alabama. The plan was presented to ODCSOPS in November 1975, approved in January 1976, and implemented beginning 1 July 1976. HQDA (ODCSRDA) agreed to a delay for DARCOM's submission of the study until October 1977, following the end of the trial period for evaluating the collocation experience at Ft. Rucker. Because the new Aviation Board at Ft. Rucker did not become fully operational in July 1976, data collection in support of the trial period evaluation started as of 1 October 1976.

(U) In February 1977, a combined HQDA, DARCOM, and TRADOC steering group, under the chairmanship of the DARCOM Assistant Deputy for Science and Technology, was established to direct a DARCOM/TRADOC study which would complete the previous two interrelated study efforts. In this effort, there were two primary purposes. One was, as a continuation of the DARCOM ADTF Study, to examine the DARCOM aviation development test facilities through quantitative and qualitative analysis of mission, workload, resources, and capabilities for possible elimination of duplication and redundancy; develop alternatives for consolidation; and evaluate alternatives. The other purpose was, as a continuation of the DARCOM/TRADOC Aviation Testing Collocation Study, to evaluate the mission, management, test performance and technical support between the collocated independent development test and operational test activities at Fort Rucker, Alabama; and evaluate the impact and extent of cost and budget impacts if the DT activity were to be relocated.

(U) The basic conclusion of the study effort, completed in February 1978, was that the limited resource savings and possible mission improvements achievable through consolidation did not offset the personnel turbulence, loss of skilled personnel, interim degradation in mission effectiveness and disruption of existing mission operations. Also, the retention of the Aircraft Development Test Activity at Fort Rucker reduced the requirement for an Aviation Board buildup and insured the continuation of aircraft and other support to the Board.

(U) The approved study recommendation was that procedural and other management improvement actions should be taken, in lieu of organizational realignments and relocations, to obtain resources savings and improved mission effectiveness in aviation development testing.

(U) Closing of Frankford Arsenal. During 1978, a decontamination survey and an historical survey of Frankford Arsenal (FFA) were completed. The decontamination of FFA was a prerequisite before the General Services Administration (GSA) would accept disposal responsibility and financial liability for the Arsenal. The funding required to complete the decontamination and clean-up of FFA was estimated at about $8 million, with the completion of the actual decontamination work scheduled for 31 August 1980. At that time too, GSA was to accept FFA for disposal action. Results of the Historical Survey were to dictate which buildings were to be preserved for historical purposes.

(U) In the equipment removal program at FFA, as of 30 September 1978, 99 percent of the Industrial Plant Equipment and over 90 percent of Operating Equipment had been removed. All remaining equipment was to be out of FFA by 31 December 1978. In the TDA equipment category, only 67 vehicles and one railroad car remained as of 30 September 1978. The railroad car is being used for fuel storage. The fuel was utilized to heat the two remaining occupied buildings. Personnel staffing of the Caretaker Activity at FFA was scheduled to be down to one military and 154 civilians on 31 December 1978. One year later, the projected caretaker staffing was one military and between 80 and 100 civilian personnel. The final phases of the closure of FFA were scheduled for 31 August 1980, when GSA was to accept the Arsenal for disposition and on 31 January 1982 when GSA was to assume financial responsibility for the facility.

(U) Aircraft Depot Maintenance. This action involves New Cumberland Army Depot, New Cumberland, Pennsylvania, and Corpus Christi Army Depot, Corpus Christi, Texas. During FY 1978, DARCOM was tasked to study two additional options: the possible consolidation of

aircraft depot maintenance at Harrisburg International Airport, Harrisburg, Pennsylvania (formerly Olmstead AF Base). (This option was requested by the Governor of Pennsylvania); and, if the Navy moved out of Corpus Christi Naval Air Station what would the Army need to assume installation responsibility. These options were studied, documentation prepared and audited, and the results forwarded to DA. No decision announcement was made.

(U) Consolidation of Airspace Over Hill AFB/Wendover/Dugway Proving Ground. This action involved the consolidation of airspace over Hill AFB/Wendover/Dugway Proving Ground. During FY 1978, all air and ground space west of Granite Mountain and all airspace above 1500 feet east of Granite Mountain on Dugway Proving Ground would be transferred to the management control of the Air Force. In addition, 13 spaces and associated aerial surveillance equipment would also be transferred to the AF. Transfer was scheduled to take place in January 1979.

Comptroller

Introduction

(U) During FY 1978, the major objective of the HQ DARCOM Comptroller Directorate was to improve the financial management and the administrative control of funds throughout DARCOM. Some of the major projects were: developing and maintaining a funds control system; developing and establishing of policy for contingency reserves; and assisting the DCG for Resource Management in support of the DA Steering Group relative to improvement in managing resources.

(U) In April 1978, the Comptroller tasked ALMSA to develop an accounting system to be used by commodity commands for all appropriations, in addition to the Army Stock Fund (ASF). Throughout the fiscal year numerous key actions having local impact were initiated. One such action was the continued development of the Command Performance Indicator Review (CPIR) which reflected the Commander's increased concern for overall management improvement of Development, Readiness and Resources Programs throughout the Command.

(U) As the fiscal year drew to a close, special attention was focused on year-end certifications; the PARR, and Zero Base Budgeting (ZBB) as future planning and management tools.

(U) Budget execution steering groups were established both at HQDA and DARCOM to improve the obligation and outlay process within the Army. Of concern were delays in actual obligations against

monthly obligation plans, particularly in the Procurement Appropriations. Intensive management, including improved procedures at year-end, resulted in a 99 percent plus obligation rate for all DARCOM appropriations.

(U) Despite major problems caused by late receipt of funds for pay raises, and reprogramming actions due to new budgeting and funding policy for FMS transportation, the FY 1978 OMA program was executed in a highly successful manner. Approximately 99.9 percent of the $2.2 billion OMA funds was obligated (30 Sep 78 flash obligations), a significant improvement in performance over prior years.

(U) The FY 80-84 Program Analysis and Resource Review (PARR) was submitted to DA in February 1978. The second PARR prepared by the Office of the Comptroller resulted in an increase of $232.2 million in DARCOM OMA funding, as reflected in the May PBG. The FY 79/80 Command Operating Budget Estimate (COBE) was submitted to DA in July 1978.

(U) Extensive effort was placed during the year on review and validation of weapon system cost estimates including Logistics Command Assessment of Projects (LOGCAP), Review and Command Assessment of Projects (RECAP), Department of the Army Program Reports (DAPR), Independent Parametric Cost Estimates (IPCE), and Baseline Cost Estimates (BCE). Input or support was provided for the FY 1981 Military Construction Army (MCA) Program, the RAM/LOG Sample Test Data Collection System, the Analysis Capability of the Army Study, the DARCOM Materiel Acquisition Management Guide, revision of DARCOM Regulation 37-4, and the upgrading of the Deobligation Forecast Model. In Addition, resources were committed for the preparation of a General Functional System Requirement (GFSR) and Management Information System Economic Analysis (MISEA) for the Operating and Support Cost Management Information System (O&SCMIS).

(U) The Finance and Accounting Division's major emphasis during FY 1978 was two fold. First, efforts were directed toward improving and strengthening the finance and accounting structure to effect a more efficient utilization of resources. Second, efforts were aimed toward enhancing the finance and accounting's role in effecting a better control of the Army's ability to obligate and expend funds according to planned levels.

(U) Analysis of command-wide internal review performance disclosed that audit coverage was well balanced between mission and support areas. During FY 1978, DARCOM internal review elements became more involved in year end certification procedures than in previous years. At the beginning of the fiscal year, follow-up action was past due on approximately 553 audit recommendations contained in external audit agency reports. Concerted efforts of this headquarters and subordinate

internal review elements resulted in the reduction of this backlog to a zero balance at 30 September 1978.

(U) The HQ DARCOM internal review office completed two unscheduled special request reviews. One of these on-site reviews involved the Office of the Project Manager for Modernization of the Saudi Arabian National Guard, Riyadh, Saudi Arabia; the other covered procurement procedures of the Office of the Project Manager for the XM-1 Tank, Warren, Michigan.

(U) Concerted efforts to improve DARCOM's performance in processing positions on external audit reports to DA Headquarters resulted in the attainment of an 89 percent on-time record. The command-wide on-time goal for FY 1978 remained at 93 percent. This campaign to improve the quality of DARCOM positions on external audit reports reflected a continuation of a favorable upward trend in quality improvement. The 155 command positions subjected to quality review during the fiscal year indicated that satisfactory progress was made toward achievement of the DARCOM goal.

(U) The major thrust of the Management Review and Analysis Division in FY 1978 was to provide to the DARCOM Commander and Command Group with a Command Performance Indicator Review System to encompass all directorate and staff activities at Headquarters DARCOM. In addition, the division undertook to provide Commanding General financial management control (budget execution) data to the Deputy Commanding General for Resource Management and the Budget Execution Steering Group.

(U) Activities included two in-depth Command Analysis and Evaluations, development and monitoring of Command Performance Indicator Reviews and publication of the Fact Book and Data Book which were distributed to the staff and field elements. The staff conducted field visits and provided technical assistance.

(U) The FY 1978 DARCOM funding programs are shown on Charts 5 through 9 .

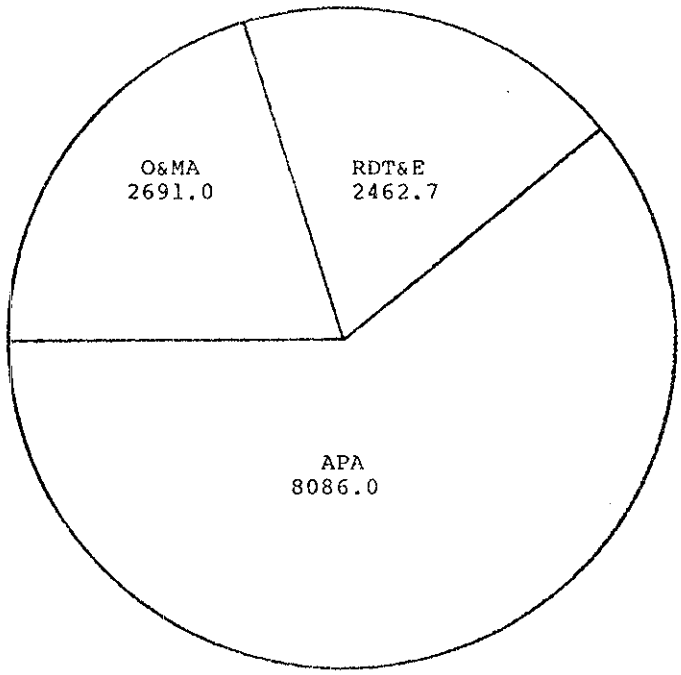
Highlights

(U) Brigadier General Alfred J. Cade was designated as Comptroller on 4 December 1977. Mr. Arthur T. Walker was selected as Deputy Comptroller and reported on 15 May 1978. During the interim period, before the selection, COL John W. Lowden and Mr. Rob Roy McGregor served as Deputy Comptrollers, respectively. On 14 September 1978, the Office of Comptroller was given approval for 25 civilian overhire

ARMY PROGRAMS RECEIVED
APPROPRIATIONS
(MILLIONS OF DOLLARS)

As of 30 Sep 78

Total FY: $13,239.7



FISCAL YEARS	TOTAL RECEIVED	OMA	APA	RDT&E
7T	2,274.4	534.6	995.1	425.1
77	11,938.5	2,313.8	7,373.0	2,251.6
78	13,239.7	2,691.0	8,086.0	2,462.7

Chart 5

APA FUNDING
FY 1978
(MILLIONS OF DOLLARS)
(DIRECT AND REIMBURSABLE)

As of 30 Sep 78

FISCAL YEAR	Aircraft (2031)	Missile (2032)	Weapons & Tracked Vehicles (2033)	Ammunition (2034)	Other (2035)	TOTAL
Available						
7T	12.0	1.5	16.9	15.1	26.8	72.3
77	114.0	72.0	234.0	210.8	394.3	1,025.1
78	715.9	1,014.8	1,778.1	1,763.8	1,492.0	6,764.6
TOTAL	841.9	1,088.3	2,029.0	1,989.7	1,913.1	7,862.0
Obligated						
7T	9.6	0.3	3.5	6.7	19.6	39.7
77	70.7	52.5	131.6	123.4	251.8	630.0
78	602.8	939.2	1,591.9	1,565.5	1,024.1	5,723.5
TOTAL	683.1	992.0	1,727.0	1,695.6	1,295.5	6,393.2
Unobligated						
7T	2.4	1.2	13.4	8.4	7.2	32.6
77	43.3	19.5	102.4	87.4	142.5	395.1
78	113.1	75.6	186.2	198.3	467.9	1,041.1
TOTAL	158.8	96.3	302.0	294.1	617.6	1,468.8

Chart 6

O&MA FUNDING
FY 1978
(MILLIONS OF DOLLARS)

As of 30 Sep 78

Appropriation	Direct	Reimbursable	Total
Available			
Central Supply Activities (Program 7S)	1,028.2	189.5	1,217.7
Depot Materiel Maintenance & Support Activities (Program 7M)	1,012.9	86.7	1,099.6
Support of Other Nations			
(Program P10)	--	208.4	208.4
Other Programs	156.3	9.0	165.3
Total	2,197.4	493.6	2,691.0
Obligated	2,195.0	493.6	2,688.6
Unobligated	2.4	0	2.4

Chart 7

RDT&E FUNDING
FY 1978
(MILLIONS OF DOLLARS)

As of 30 Sep 78

	FISCAL YEAR	DIRECT	REIMBURSABLE	TOTAL
Available	77	99.4	49.6	149.0
	78	1,961.5	352.2	2,313.7
	Total	2,060.9	401.8	2,462.7
Obligated	77	98.3	41.3	139.6
	78	1,886.6	257.8	2,144.4
	Total	1,984.9	299.1	2,284.0
Unobligated	77	1.1	8.3	9.4
	78	74.9	94.4	169.3
	Total	76.0	102.7	178.7

Chart 8

DARCOM DIVISION, ARMY STOCK FUND
FY 1978
(MILLIONS OF DOLLARS)

As of 30 Sep 78

	PROGRAM	ACTUAL
Obligation - End of FY	1,075.4	1,070.0
Sales	1,015.2	951.2
Collections	--	972.9
Cash	321.3	365.9
Accounts Receivable	--	82.1
Inventory	--	2,090.1

Chart 9

351-462 O - 81 -6

positions, not to exceed 10 percent of current authorization of 250 spaces, and based on this headquarters hire lag experience. This authorization included clerical and non-supervisory jobs, up to and including GS-12.

(U) The mission of HQ DARCOM Comptroller is to: provide direction for, and supervise overall management of financial matters; establish and prescribe procedures for DARCOM resource forecasting, budget system, cost analysis, economic analysis, management research and analysis, accounting systems, internal review, audit compliance, and review and analysis of command programs; determine and obtain financial resources required to accomplish missions of DARCOM; supervise the DARCOM Cost Analysis Program; develop and maintain an effective financial and management control system, and procedures for safeguarding and achieving optimum use of resources.

(U) In addition, General Cade was responsible for providing analysis of mission and program accomplishments and resource availability, obligation, and utilization as a basis for management decisions. He was also to provide management analysis of management systems, methods, and techniques as a basis for improving management within DARCOM and direct the DARCOM Productivity Improvement Program. He would also serve as Functional Chief for the Comptroller Career Program and direct the DARCOM Internal Review Program and the audit of non-appropriated funds. The Comptroller would also be the principal point of contact for the General Accounting Office (GAO); Deputy Assistant Secretary of Defense (Audit) (DASD Audit); and the US Army Audit Agency (USAAA).

(U) Programming. The second Program Analysis and Resource Review (PARR) prepared under the auspices of the Comptroller was submitted to DA in February 1978. The submission was the culmination of intensified efforts to involve the DARCOM subordinate commands in the program development process. As a result, the May PBG reflected an increase of $232.2 million in the OMA appropriation.

(U) DA Obligation Plan RCS DD COMP (M) 1442. DA required all MACOM's to develop obligation plans and report subsequent accomplishments against these plans for all appropriations and funds beginning with FY 1979. DARCOM submitted the initial plan (all appropriations and funds) to DA on 9 December 1977. The plan was based on field projections. DA authorized DARCOM to update its OMA plan in March 1978. Actual performance was continually monitored against the plan on a monthly basis. Where obligations (as reported on flash 218 report) differed from the plan for the period by a plus or minus 5 percent, a deviation analysis was required and furnished to DA. New guidance and instructions for automated preparation of the OMA Obligation Plan

were developed and published in DARCOM Circular 37-1 during the 4th Quarter FY 1978. The requirement was established for subordinate commands and activities to submit initial obligation plans for calendar month and program element, with subsequent quarterly reports used to update the initial plan.

(U) Budget/Program Execution Steering Groups. During FY 1978, budget execution steering groups were established to improve the obligation and outlay processes within the Army. In May 1978, the Secretary of the Army set up a budget execution steering group (BESG) comprised of key DA staff resource managers including DARCOM. A similar HQ DARCOM BESG was established, consisting of key DARCOM staff resource managers, including a member of this division who also supported the BESG. An overriding problem was that monthly obligations and outlays were lagging behind plans in several appropriations and most Army MACOM's. Of principal concern within DARCOM were the delays in direct and reimbursable programs in the Procurement Appropriations. In addition, the late supplemental appropriation of civilian pay raises and subsequent funding of about $100 million in September 1978 caused delays in obligation plans for the operation and maintenance appropriations.

(U) Intensive management of the $14 billion plus obligation programs were instituted by the HQ DARCOM Staff, in conjunction with field commands. Monthly reviews of progress and planned actions were made by the DARCOM BESG and the Command Group. Extraordinary steps were taken by HQ DARCOM staff and field commands to achieve 99 percent plus FY 1978 obligations for all appropriations, especially in the last month of the fiscal year. Daily contact was kept with DARCOM commands in the last weeks of September 1978 to achieve 99.9 percent obligation of $2.7 billion OMA budget. Overall, the Army and DARCOM were recognized for this achievement, but the effort was costly in terms of extra management and review processes needed to overcome shortfalls in obligation of critically limited DARCOM budgets. DA and DARCOM made plans to continue the same steering group effort in FY 1979, but with the lessons learned in FY 1978 the FY 1979 obligation programs were expected to be executed in a more timely fashion.

(U) Year End Fund Control Procedures. In early August, year-end funding requirements were solicited from field activities. In addition to the normal reporting schedule to identify fund excesses and shortages in the last weeks of the fiscal year, each activity was tasked to submit a prioritized listing of year-end funding requirements, identifying the project, the dollar requirement, and the latest date of obligation. All requirements were then validated, prioritized within a single DARCOM listing, and submitted to DA for consideration. During the last two weeks of FY 1978, a daily update was maintained to provide

current obligations and unobligated balances by reporting activity. As excess funds were reported by field activities, or as additional funds were provided by DA, the highest priority items were financed. Due to this close monitoring and control of funds and quick identification of validated funding requirements, the FY 1978 DARCOM/OMA unobligated balance was $2.3 million and total obligations were 99.9 percent of available funding.

(U) FY 1978 OMA Overprogramming. The FY 1978 OMA Program and Budget Guidance (PBG) issued to DARCOM major subordinate commands and field activities contained overprogramming action totaling $154.5 million as follows:

Pay Raises	$98.9
Currency Revaluation	11.9
Logistical Readiness Balance (Transfer from MPA/OPA)	28.0
AMMO Renovation/Modification:	
Mission Transfer to P7M	2.4
Additional FMS Earnings-Walker Memo	3.3
Reprogramming of Funds from P7M and P2	10.0

Receipt of funding for the above actions occurred late in the 4th Quarter of FY 1978, thus hindering FY 1978 OMA program execution of projected/planned obligations.

(U) Scope of AIF Operations. DARCOM operated the following installations and activities during FY 1978 under the Army Industrial Fund (AIF) System: two subordinate commands, seven arsenals, eleven depots and four research and development facilities. Three Navy Industrial Plants were transferred to DARCOM and incorporated into the Armament Activity Group AIF Budget. A study was completed and approved by OSD to remove Aberdeen Proving Ground and Dugway Proving Ground from the AIF System effective 1 October 1979 (FY 1980). The FY 1978 AIF operating program totaled over $2.1 billion.

(U) FY 1979 AIF Annual Budget. The FY 1979 AIF Budget Estimates, as submitted to DA, reflected the following operating data:

	(Millions of Dollars)		
	FY 1977 Actual	FY 1978 Est	FY 1979 Est
Orders	1,972.8	2,108.8	2,209.8
Revenue	1,954.4	2,134.2	2,214.5
Costs	1,944.6	2,102.0	2,239.7
Civilian End Strength	64,077	67.027	66,893
Civilian Man-Years	68,193	66,088	67,032

Adjustments made by DA and the Program Budget Decisions issued by OSD revised the budget estimates as follows:

	(Millions of Dollars) FY 1978	FY 1979
Orders	2,105.6	2,071.7
Revenue	2,126.2	2,091.7
Costs	2,086.5	2,136.0
Civilian End Strength	65,931	64,837
Civilian Man-years	65,460	64,314

(U) OMA Resources. The continuing problems of pay of people and the gap between available resources and program requirements confronted the Division in executing the OMA budget. New programs also posed some difficulties. These new programs included ammunition buildup in Europe and Korea; Air Line of Communications (ALOC), a transportation system designed to speed up repair parts shipments overseas by using MAC channel airlift; and Positioning of Materiel Configured to Unit Sets (POMCUS), the accumulation and prepositioning at designated locations of specific items of authorized issuable equipment for combat, combat support, and service support units. The following represents direct OMA funding for FY 1978:

(Millions of Dollars) FY 77/78 COBE	FY 78/78 COBE	FY 78 Final Funding
$1,737.2	$1,932.7	$2,197.4

(U) Second Destination Transportation-FMS. New procedures were implemented in May 1978 to cite the FMS Trust Fund directly on GBL's for second destination transportation costs on an actual basis for all foreign material sales cases and submitting these billings to US Army Security Assistance Accounting Center. With this procedural change, funded reimbursement funds were withdrawn from DARCOM activities and direct funds were adjusted when and where necessary.

(U) Backlog of Maintenance and Repair (BMAR). Total DARCOM BMAR has been growing at a rapid rate from $53.8 million in FY 1976 to approximately $95 million in FY 1980. Headquarters established DARCOM objectives #4-27 in May 1977 to reduce BMAR by 20 percent annually. Policy set forth in the DARCOM Program Budget Guidance Document stipulated that in order for the BMAR effort to get the proper attention (both AIF and non-AIF), it was necessary that installation commanders exercise their total responsibility for resource requirements (manpower, facilities and dollars), budget for requirements, and include resources in overhead rates to reduce their AIF BMAR by 20 percent annually. Previous budget submissions (FY 79-83 PARR, FY 78/79 COBE and FY 80-84 PARR) included requirements for BMAR but additional funds, other than year-end, were not provided by DA.

(U) While the mission of DARCOM remained relatively constant, the continual shortage of funds to operate and maintain its physical plant tended to inhibit the ability of the command to accomplish its assigned mission. This shortage was further aggravated by a number of increased demands on resources, including the assumption of additional responsibilities; the residual funding of recently assigned installations (McAlester, Hawthorne and Crane Ammunition Plant, $2.0 Mil); DA Special Items of Interest (Installation Restoration, Security Upgrade, OSHA, Child Care, $25.0 Mil); the results of the Command FY 80-84 PARR submission which funded DARCOM only at the basic level while increasing the mission program by more than $200 million; and the unremitting effects of inflation and deterioration. The impact of these negative forces - shortages of funds, inflation/cost growth - projected over the next three-to-five years would no doubt further deteriorate the DARCOM physical plant and increase the risk of not being able to maintain base postures sufficiently ready to support the Army materiel and supply requirements. Should the BMAR continue to rise, the command's ability to protect the Army investment in real property would certainly be limited, the cost of replacement would be exorbitant, and the time required to replace it would delay critical missions that needed to be supported.

(U) P7M/P7S Study. In early 1977, a study was undertaken in DARCOM to identify tasks or functions performed at depots which could be funded from P7M rather than P7S. This effort, known as the P7M/P7S Study, was conducted by DESCOM with depot participation. A large number of possible transfers were identified and considered. Eleven alternatives were selected for intensive review. Of the eleven, two transfers, which amounted to almost 3 million dollars were made in FY 1978. These were ammunition renovation and aircraft processing costs at New Cumberland and Corpus Christi. Three more transfers will be made in FY 1979. These were changing the basis for distributing post supply costs from "population served" to "lines issued," moving the effort related to processing travel requests from P7S to Base Ops and moving certain testing costs from P7S to P7M. The FY 1979 transfers add up to approximately 2.5 million dollars. No action was planned to implement the six remaining alternatives.

(U) Storage Charges for FMSO-I. During FY 1978 it was determined that storage charges on open FMSO-I cases had neither been billed nor reimbursement made to OMA since the FMS mission was assumed from HQDA. The US Army Security Assistance Center (USASAC) was requested to audit all old FMSO-II and III cases related to open FMSO-I cases and provide to the US Army Security Assistance Accounting Center (USASAAC), first, a listing of unbilled storage charges for each fiscal year identified to open FMSO-I cases, to serve as a basis for billing FMS customers, and second, a listing of storage charges

billed to FMS customers with related collections deposited to the FMS Trust Fund but never reimbursed to the Army. These actions were accomplished and on 30 June 1978 DARCOM received those reimbursements due for prior years. In the 4th Quarter of FY 1978 reimbursement was made to DARCOM's OMA account for that fiscal year. For subsequent fiscal years, reimbursement to DARCOM will be made by USASAAC on 30 November of the fiscal year. These additional funds provided some relief to DARCOM's critical shortfall in FY 1978 OMA funding.

(U) FY 1981 Military Construction Army (MCA) Program. The FY 1981 DARCOM MCA Program was presented to the Program Budget Committee (PBC) for approval on 7 June 1978 by the D/I&S. It contained 96 projects, consisting of four categories: Mission (42), Air Pollution Control (23), Water Pollution Control (23) and Energy Conservation (8). Each of the projects had been reviewed by this Office relative to the application and acceptability of economic analysis (EA). Based on the review, the following statistical summary was compiled:

	Number	Percentage
Projects	96	-
EA Application	93	97
Adequate Application	92	99
Revision Required	1	1
Initial EA Required	3	3

The requirement for the one revision and the three initial EA's was subsequently satisfied and the Program was approved with minor changes by the PBC and forwarded to DA by the D/I&S.

(U) Operating and Support Cost Management Information System. DARCOM has been developing an Operating and Support Cost Management Information System (O&SCMIS) for DA to provide for the identification, collection and dissemination of O&S costs for existing major weapon systems. It was to be a centralized data base to be used by Army agencies in need of operating and support cost information. O&SCMIS would be created from existing data bases supplemented by sample data collection. The General Functional System Requirement (GFSR) has been completed and forwarded to DA for approval. On 2 June 1978, a test of the GFSR concept was initiated using representative O&S cost elements from available data on the UH-1H, AH-1S, and Black Hawk aircraft systems. The complete O&SCMIS was scheduled to be operational in FY 1983.

(U) Logistics Command Assessment of Projects (LOGCAP). LOGCAP's are prepared to provide timely review of acquisition programs, including consideration of Integrated Logistics Support, identification of "supportability issues," and meeting of operational and readiness requirements prior to deployment. LOGCAP reviews during FY 1978 included the following systems:

LACV 30
MEP (5/10 KW GEN)
XM-1
XM753 NUC PROS
M857 SEMI-TRAILER
MEP (500 KW GEN)
TRADE (OFT)
TRADE (MILES)
TACFIRE
STE/ICE
TACSATCOM (SHF)
CH-47 Modernization
PLD
PERSHING II
STINGER
BLACKHAWK
IAP
GLLD
COBRA
ASE
SEMA
PATRIOT
HELLFIRE
VIPER
I-HAWK
LANCE
CHAPARREL/FAAR
ROLAND

(U) Review and Command Assessment of Project (RECAP) and Department of the Army Program Report (DAPR) Presentations. RECAP's and DAPR's covering technical performance, schedule and cost information on selected weapon systems are prepared each quarter coinciding with the SAR submission by the Project Managers. RECAP's are submitted to the HQ DARCOM level and DAPR's to HQ DA because of special interest in those projects at that level. During FY 1978, AAH, HELLFIRE, CH-47, TACFIRE, and COPPERHEAD were under the DAPR system and the below listed projects under the RECAP system:

DCS/GPS (SATCOM)
Nuc Mun
ACODS
CAWS
NAVCON
TRADE
FVS
CDIR
SEL AMMO
2.75 ROCKET
TSQ-73/TAC/TADS
ATACS
XM-1
M11DE-2
ITV
DCS Army
FAMECE/JET
ACVT
MSCS
REMBASS
M113/113A1
MEP
HET
DIVAD GUN
CCE/SMHE
AWC
SINCGARS
FIREFINDER
TOS/GAMO
SHF TACSATCOM
PLRS/JIIDS
CH-47 Modernization
PLD
HELS
PERSHING II
STINGER
BLACKHAWK
CH-47D
IAP
GLLD
COBRA
ASE
SEMA
PATRIOT
HELLFIRE
VIPER
I-HAWK
LANCE
CHAPARREL/FAAR
ROLAND
TOW/DRAGON

(U) Independent Parametric Cost Estimates. DOD policies governing the materiel acquisition process require an Independent Parametric Cost Estimate (IPCE) for each major weapon system undergoing a milestone review by the Defense Systems Acquisition Review Council (DSARC). Additionally, selected IPR systems require an Independent Cost Estimate (ICE) for systems undergoing a review by the Army Systems Acquisition Review Council (ASARC). The IPCE or ICE is used to assess the reasonableness of the PM's estimate of the cost resources required to complete the program. IPCE/ICE activity during FY 1978 included the following:

Completed

TACFIRE	TOS
SOTAS	FVS

In-Process

Copperhead	GSRS
DIVAD	CH-47 Modernization
XM-1	PATRIOT
SATCOM	ROLAND
RPV	HELLFIRE
AAH	ASH
PERSHING	

(U) Baseline Cost Estimates (BCE) and BCE Reassessments. Baseline Cost Estimates are normally prepared by the Project Management Offices and reviewed and coordinated by the Cost Analysis Offices at the Major Subordinate Commands and HQ DARCOM. BCE's form the basis for audit trail/track throughout the life cycle of a weapon system. Reassessments are made at major decision points and tracked to the initial BCE. The following systems required BCE's or reassessments during FY 1978:

Completed

TACFIRE	ARETS
SOTAS	AN/TTC-39
TOS	
FVS	AN/MSQ-103
CV-DIG	AN/TYC-39
ARTBASS	DGM

In-Process

COPPERHEAD	PERSHING
FAMECE	GSRS
DIVAD	ASH
XM-1	HELLFIRE
SATCOM	PATRIOT
UET	ROLAND
ITV	CH-47 Modernization
RPV	ASH
AAH	

(U) Cost and Operational Effectiveness Analyses (COEA). Coordination with COA, TRADOC, major subordinate commands and the projects concerned was required for the following COEA's:

COPPERHEAD	UET
XM-1	ITV
DIVAD	ADG
SLEEP	PERSHING
FASCAM	Modernization
TSS	RPV
FAMECE	ROLAND
SAW	PATRIOT
IFV/CFV	HELLFIRE
10 TON TRUCK	GSRS
TACFIRE	ASH
POS NAV	AAH
SOTAS	

(U) GAO Approval of DARCOM Accounting Systems. Of the six accounting systems on the current inventory of accounting systems requiring approval, three have now been formally approved by the Comptroller General of the United States. They are the US Army Materiel and Mechanics Research Center (AMMRC), the Test, Evaluation and Analysis Management Uniformity Plan (TEAM-UP), and the HQ DARCOM Fund Distribution System (DFDS). The Standard Depot Management Information System (SDMIS) is currently awaiting GAO response to documentation and subsequent request for additional data to complete the SDMIS submission. The Commodity Command Standard System (CCSS) is undergoing a rewrite of the narrative description and will require assistance from GAO to preclude extensive slippage. The Centralized Integrated System for International Logistics (CISIL) is still in deferred status until system parameters are defined. Pending study results on the application of STANFINS, the potential exists for three more additions to the inventory: DESCOM; DARCOM Standard Accounting System (DCAS); and the Arsenals.

Current Inventory

AMMRC - APPROVED
Team-Up - APPROVED
HQ DARCOM Fund Distribution System - APPROVED
CCSS - DOCUMENTING
SDMIS - DOCUMENTING
CISIL - DEFERRED

(U) Program Budget Accounting System. The Program-Budget Accounting System (PBAS) is a new reporting system being designed by USAFAC personnel which will, by utilizing General Ledger Accounting, accumulate data at the lowest data elements required by management at MSC level and higher. PBAS is slated for implementation in October 1981. Phase II of PBAS is the accumulation of the lowest data elements required for management reports at the DARCOM MSC's (Phase I covered USAREUR). PBAS is being designed to provide raw data at the lowest level required by any management. Through machine roll-up procedures, USAFAC could then prepare reports for all activities at the level required by management.

(U) Even though DARCOM activities do not report directly to USAFAC, the inclusion of DARCOM reporting requirements at the proper level is considered essential for the establishment of the USAFAC data base. A data base established to handle the DARCOM requirements is expected to make reporting easier for our General Operating Agencies and could prevent many reporting problems in our future data submissions.

(U) Standard Army Non-Appropriated Fund Accounting and Reporting Systems (STANS). A standard Army accounting and reporting system for Non-appropriated Funds was being implemented throughout Army. This Department of Army System designated for IBM 360 computers by US Army Computer Systems Command is based upon a Non-appropriated System which was designed and developed for CDC3300 computers by Red River Army Depot. DARCOM in the implementation of STANS was utilizing the central site/satellite concept where possible. Red River Army Depot and Sacramento Army Depot were two central sites which had other DARCOM NAF entities satellited on them. Operating under the IBM360 STANS package were MIRCOM, CERCOM, ARRADCOM, WSMR, and Dugway Proving Ground. All DARCOM NAF entities were scheduled to be under the STANS System by the end of FY 1979.

(U) Program and Fund Control System (PFCS). During the first quarter of FY 1977, the Comptroller of the Army initiated action for the design and implementation of an automated system to control program and funds for the Procurement Appropriation. This action was

based on a recommendation by the Financial Management Advisory Committee (FMAC). Under contract with Control Data Corporation, the general system design and the specific Phase I design were worked out and implemented 30 June 1977. This phase allowed the control and release of APA program in conjunction with DARCOM and USACC, Phases I through III were designed in the preliminary. These phases are respectively:

- PFCS Phase I, Procurement Appropriation only. DA/SOA Level, operational but not completed.

- PFCS Phase II Procurement Appropriation-Direct only, SOA/MSC Level, Target Date of Operation 3d Qtr FY 79.

- PFCS Phase III (PFDCS) All other appropriations except Procurement, DA/SOA level only, 1 Oct 78. This system will not be extended to MSC/GOA/AO by HQDA.

(U) DCSAR/Commodity Command Interface Action Program. A DCSAR/Commodity Command Interface Action Program was established in FY 1978 to improve the accuracy and reliability of Army records and reports of financial condition by assuring that disbursements processed by DCSAR's agree with Army records as to appropriation and balances of unliquidated obligations, to improve relationships/communications between activities, and to act as an arbitrator in unresolved problems between DCASR's and Commodity Commands. Problems were identified, solutions offered, and actions taken to date include implementation of standard correction procedures, the beginning of programming to prorate progress payments, and the implementation of a one-to-one relationship with ACRN-CLIN-PRON on contracts. The program would continue into FY 1979.

(U) Procurement of Nonstandard/Nonstocked Item of Supply/Equipment. HQDA authorized the major commands to bypass the retail stock fund for procurement of nonstandard nonstocked items of supply and equipment. A nonstandard nonstocked item is one that meets all the following criteria: does not have a national stock number assigned; is not stocked at the retail or wholesale stock fund supply levels; is obtainable from local commercial supply sources and will be procured locally except for overseas activities; is an off-the-shelf or otherwise readily available item that will not incur any appreciable order-ship time and; will be consumed/placed in use/expensed upon receipt. HQDA expanded the items authorized to bypass the stock fund to include items for procurement of standard nonstocked materials that have been decentralized by wholesale managers for local purchase direct from vendors/manufacturers or are locally procured through federal supply schedules. The authority granted to bypass the

the stock fund remained in effect for the 4th Quarter of FY 1978 and the total amount of the bypass granted was reported to HQDA.

(U) Army Ammunition Revolving Fund. The Army Ammunition Revolving Fund is a proposed funding system that was to provide a method for the procurement and delivery of ammunition in filling customers requirements. It would provide a continuing basis for procurement of ammunition. It would consolidate identical ammunition end items, components and related services into a singular procurement work directive and contract line item number for the purpose of providing a means for simplifying accounting and control of operating cost for ammo mission. Costs incurred and charged by GOCO, GOGO, and COCO would be charged to customers as their orders were filled. Customer's funds would be obligated when the order was accepted by the AMF and ammunition funds would be obligated when contracts were awarded.

(U) The Ammunition Fund was expected to simplify the administration of the procurement process and improve the controls over the accounting and costing of the ammunition acquisition mission. COA has prepared a Decision Memorandum for ASD (Comptroller) outlining the Ammunition Funding problem and makes the recommendation that Stock Fund be used to finance the ammo components. DARCOM concurred in the Stock Fund approach and was awaiting ASD clearance for feasibility studies.

(U) Army Industrial Fund (AIF) Study. The DARCOM Comptroller was tasked to identify financial management systems that the commands would be using in FY 1980 and beyond. In order to accomplish this task, a HQ DARCOM Study Team was formed. There existed within like activities a mix in the financial systems; e.g., OMA, RDTE, AIF. The Study reviewed all financial systems with a view toward establishing uniform and standard systems within generic activities; viz., standard financial systems within DESCOM Depots, ARRCOM Arsenals, TECOM Proving Grounds, Materiel Development Commands Laboratories, and Materiel Readiness Commands. In the Study, particular emphasis was placed on the Industrial Fund. Constraints and advantages of the Industrial Fund were considered in relationship to alternative financing systems. The Study report contained recommendations together with implementation plans and schedules. A preliminary briefing was given to Commander, DARCOM who authorized field coordination. A decision on Study recommendations was expected early in FY 1979.

(U) Property Accountability - Reports of Survey and Inventory Adjustments (RCS DRCCP-306). On 11 October 1977, the Chief of Staff, Army approved the Report of Audit Survey and Special Inspection of Management and Accountability of Army Materiel prepared by the Department of the Army Inspector General. This report, based on a four-month inspection of 118 company size units (none of which were DARCOM

activities), indicated significant problems in the area of property accountability. The DARCOM recommendation, designed to improve property management was: establish, at MACOM and installation levels, a management information system that maintained stratified visibility of supply accountability adjustment actions. In September 1977, the Chief of Staff, DARCOM, directed the Comptroller to establish such a system within the DARCOM community. Action was accomplished 2 September 1977. The system implemented per the Chief of Staff direction is the subject RCS DRCCP-306 report. Policies, procedures and reporting formats covering the "306" report are being published in DARCOM-R 735-4.

(U) Fast Payback Investments. AIF activities prior to FY 1978 had an option between using Fast Payback Procedures where the AIF would finance the acquisition of investment items, and Quick Return on Investment Procedures (QRIP), in which case the financing was provided by APA. In the majority of situations, the latter method of financing was used in view of the AIF cash situation.

(U) The Assistant Secretary of Defense directed that greater emphasis be placed on the Industrial Fund Fast Payback program. In accordance with this increased emphasis, DARCOM was allocated an additional $1 million in AIF working capital. In addition, revisions were made to accounting procedures for fast payback investments. These revisions consider stabilized billing policies, through establishment of a reserve (revenue set aside), for fast payback items in advance of actual investment. Also, new accounts were established which provided for an analysis of fast payback savings through comparison of amortization of the fast payback period and actual use of the fast payback item.

(U) In line with the increased emphasis on the Industrial Fund Fast Payback Program, DARCOM developed new accounting procedures and coordinated with management on the implementation of DARCOM-R 5-10.[2]

(U) FY 1978 Internal Review Performance. At the beginning of the fiscal year, follow-up action was past due on approximately 553 audit recommendations contained in US Army Audit Agency, US General Accounting Office and Defense Audit Service reports. Follow-up action on many of these recommendations was two or more years past due. Through the concerted efforts of this headquarters and subordinate internal review elements we were able to report a zero backlog at 30 September 1978.

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[2]Ltr, DRCCP-FW, 28 Dec 77.

(U) An analysis of internal review performance command-wide for FY 1978 disclosed that audit coverage was well balanced between mission and support areas. Commanders made extensive use of the internal review function to evaluate problem areas of concern to them. All DARCOM internal review elements became more involved in year end certification procedures than in previous years. Indications are that these efforts paid off and the certification of DARCOM reports was much less traumatic than in previous years.

(U) The HQ DARCOM internal review element completed two unscheduled special request reviews during fiscal year 1978. One of these was a comprehensive review of the Project Manager's Office for Modernization of the Saudi Arabian National Guard. The review was performed on site in Riyadh, Saudi Arabia. The other was a special review of procurement procedures at the Project Manager's Office for the XM-1 Tank at Warren, Michigan. This is a service provided on an "as requested" basis to DARCOM activities who do not have an internal review capability.

(U) Timeliness of DARCOM Responses to External Audit Reports. Implementation of the Comptroller's multi-year program to improve DARCOM's performance in processing external audit positions to DA Headquarters on time reflected a generally rising trend for the past two years. The cumulative timeliness average for FY 1978 was 89 percent, as compared to 84 percent in the previous year. The average for the fourth quarter of FY 1978 climbed to 91 percent, two percentage points below the annual DARCOM on-time target of 93 percent. The primary reasons for late positions throughout FY 1978 were identified as follows: content weakness; late submission to the DARCOM Comptroller; delay in coordination within DARCOM Headquarters; and requirements of DARCOM Command Group.

(U) Accumulated timeliness data for FY 1978 indicated commendable performance on the part of many organizations and, apparently, a lesser understanding of the standards set forth in DARCOM-R 36-2 on the part of a few. A continuing "best effort" was requested from Comptrollers at all levels and DARCOM Headquarters directorates/ offices to ensure that future responses to external audit reports are prepared and submitted in a timely manner.

(U) The program for improving the quality of command positions on external audit reports, initiated in mid-1974, reflected a continuation of the favorable upward trend in quality improvement. The averages for FY's 1976, 1977, and 1978 were 86 percent, 88 percent, and 89 percent , respectively. The average for the fourth quarter of FY 1978 was 90 percent which approached the DARCOM quality rating goal of 93 percent.

(U) During FY 1978, there were 155 command positions subjected to quality review; these averaged out to the 89 percent quality rating statistic cited above. Of the total positions reviewed, the 98 replies prepared in this headquarters averaged 88 percent; the 57 replies prepared in the field averaged 90 percent. Most DARCOM organizations cooperated in attempting to meet the known standards for high quality positions, but performance varied. Many organizations maintained an exceptionally high standard, but personnel turnover and lack of continuing high-intensity effort across the board in other organizations prevented DARCOM from meeting the overall target of 93 percent.

(U) Command Performance Indicator Review. In August 1977 General Guthrie directed that he be given Command Performance Indicator Reviews (CPIR) in each fiscal quarter, prepared and presented by the thirty DARCOM Headquarters directors/office chiefs covering performance in the areas of the DARCOM mission for which they were responsible. The objective of the CPIR System was to provide the commander with information on how well the DARCOM mission was being accomplished and how well his headquarters staff and field commanders were managing their functions.

(U) The Comptroller, in addition to making a presentation on his own performance, was given the overall responsibility for organizing and managing the CPIR System. As a part of this, the Comptroller prepares a handbook of performance indicators for the CG which contains a listing of all of the indicators used by the directors/office chiefs to manage their areas of responsibility. Quarterly CPIR's were conducted in August 1977 and in February, May and August 1978. Following the CPIR sessions, copies of the commander's handbook together with charts used in the presentations were distributed by the Comptroller to the 16 DARCOM major subordinate commanders in order that they might see the things that were being looked at by General Guthrie.

(U) Comptroller Evaluation Surveys (CES). The Headquarters DARCOM Comptroller staff conducted five CES' during FY 1978. Visits to Red River Army Depot and Corpus Christi Army Depot were cancelled as they conflicted with the year-end closing at those installations. The visit to Corpus Christi Army Depot has been rescheduled for FY 1979. The DESCOM visit was the initial survey of that command since its inception and it provided the commander with an independent evaluation of the Comptroller Office operations. This was the second visit to New Cumberland Army Depot and substantial improvements were noted and recognized since the prior CES. These periodic consolidated staff visits continue to be mutually beneficial to this headquarters and the activity surveyed.

(U) DARCOM and Army Force Readiness. On 20 April 1978 the Comptroller briefed the Commanding General and Command Group, US Army Materiel Development Command on DARCOM and Army Force Readiness. The

briefing described how DARCOM provides essential goods and services to the troops through our supply and maintenance operations, and modernization programs. It also related DARCOM's role to the troops in the event of mobilization. The purpose was to increase the understanding of higher level people on the DA staff and major Army Commands, about what DARCOM does for Army Force Readiness and how cuts in DARCOM dollars affect the Army fighting units. The briefing was presented on 11 July 1978 by the Comptroller to the Budget Review Committee at Headquarters, DA, where it was very well received.

(U) Productivity Measurement and Evaluation. As required by AR 5-4, DA Productivity Improvement Program, DARCOM must measure and evaluate its internal productivity. The system, Productivity Trend Evaluation System (PTES), was being upgraded for use in all of DARCOM. The new system, DARCOM Resource Utilization Measurement System (DRUMS), was in the conceptual stage. It was designated to measure an activity's utilization of resources compared with a previous period of time. The DRUMS would be used to identify problem areas, cross-check budget submissions and project an activity's effectiveness at different budget levels to assist Commanders/Managers in the allocation of resources. During the latter half of the year, a draft regulation on DRUMS was prepared and forwarded to field organizations for coordination/comments. The regulation would supplement DARCOM-R 5-8, DARCOM Productivity Improvement Program, and would prescribe policies, responsibilities, and procedures for implementing, administering, and maintaining, the DARCOM Productivity Measurement Program. DARCOM-R 5-8 had been published on 17 March 1978.

(U) Quick Return on Investment Program (QRIP). DARCOM-R 5-10, Quick Return on Investment Program, was published during the year. The regulation implements Chapter 5, Quick Return on Investment Program, of AR 5-4, DA Productivity Improvement Program, and establishes the policies and procedures to be used within DARCOM. DARCOM-R 5-10 further provides for the operation of the AIF Fast Payback System (FPS), the portion of QRIP to be used by AIF installations. In addition, two QRIP seminars were held during the latter part of the year. While no QRIP OPA or PAA appropriations were made for FY 1978, the AIF/FPS invested $522,000 in 25 projects with anticipated annual savings in excess of $442,000.

(U) Committee Management. A critical review of HQ DARCOM committees was conducted during the year. As a result of the review, the number of headquarters committees was reduced by 26 percent. DARCOM-M 15-5, HQ DARCOM Committee Management Program, was published. The Memorandum specifies the policies of the program and prescribes the procedures to be followed to establish, operate, or terminate committees as well as to affiliate with non-DARCOM committees.

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Personnel

(U) Brigadier General Leslie R. Forney, Jr. assumed duties as the DARCOM Director of Personnel, Training and Force Development on 3 October 1977. From 1 November 1978 to 10 February 1978, he served as Acting Chief of Staff, while Mr. William S. Charin was Acting Director of Personnel, Training and Force Development. General Forney retired on 30 September 1978.

(U) As a result of the FY 1977 DA manpower survey of HQ DARCOM, three civilian spaces were eliminated. These were: in Force Accounting and Allocation Branch, Force Development Division, one GS-12 Management Analyst and one GS-9 Management Technician; in Officers Branch, Military Personnel Division, one GS-9 Military Personnel Management Specialist. At the end of the fiscal year, the breakout of authorized spaces in the Directorate was as follows:

Element	Officer	Enlisted	Civilian	Total
Office of Director	2		3	5
Plans & Admin Ofc			4	4
Equal Opportunity Ofc	1	2	3	6
Alcohol & Drug Abuse Ofc			5	5
Civilian Personnel Div			38	38
Force Development Div	2		43	45
Military Personnel Div	7	3	24	34
	12	5	120	137

(U) P7S Shortage--Effect on Manpower Program. In November 1977 the DARCOM Comptroller advised DA of the critical FY 1978 shortage of OMA program P7S (Supply Activities) funds, some $64.2 million. DA agreed to attempt to obtain Congressional approval to reprogram $28.0 million from the Army Procurement Program to P7S. The balance was to be accrued through DARCOM management reprogramming actions. In view of the significant funding shortage and the uncertainties of reprogramming approval or Congressional actions, DARCOM was directed to prepare a contingency plan to reduce personnel by reduction-in-force. Such a reduction plan was developed by the Director of Personnel, Training and Force Development in December 1977 and refined in January 1978.[3] The plan envisioned reductions, if effected in April 1978, of nearly 3,000 employees; if reductions were not taken until later (allowing less time to accrue savings), they would necessarily be greater -- up to nearly 20,000.[4] Based on information available through May 1978, these plans were not implemented. However, in June it became apparent that the funding shortage would not be alleviated

[3]Fact Sheet, DRCPT, for CDR DARCOM, Subj: Reduction-in-Force to Meet P7S Fund Shortage, 14 Dec 77.

[4]Staff Study, DRCPT, Subj: Contingency Plan to Meet $28M P7S Shortage, 30 Jan 78.

and a plan was developed at that point to furlough personnel within the P7S program throughout DARCOM. A tentative furlough plan was developed within the guidelines of Civil Service regulations governing furlough of federal employees. The plan was not implemented because the funding deficit was resolved prior to the critical date when funds would be exhausted.

Personnel Space Authorization and Strength

(U) Civilian. DA authorized DARCOM an increase of 2,585 civilian spaces for the new DARCOM Single Manager for Conventional Ammunition (SMCA) mission in FY 1978. The increase covered transfer of three Navy ammunition plant (Crane, Hawthorne and McAlester), with their personnel, to DARCOM. Other program reductions, however, resulted in a net increase in end-strength of only 714 between end FY 1977 and end FY 1978 (+2,585 SMCA - 1,871 net reductions). See Chart 10 for detailed statistics. Actual civilian strength increased from 104,544 at end FY 1977 to 106,876 (103,827 full-time permanent and 3,049 temporary part-time employees) at end FY 1978 (+2,332). See Chart 11.

(U) Military. DARCOM was increased by a net of 426 military spaces from end FY 1977 to end FY 1978 by DA. This net increase was for new DARCOM missions; namely, the transfer of the USA Security Agency Test and Evaluation Center from the Intelligence and Security Command to DARCOM, and the expanded TRI-TAC Joint Testing function (DARCOM/TECOM). Actual military strength was increased from 8,833 at end FY 1977 to 8,972 at end FY 1978, an increase of 139 (+159 Officers; +3 Warrant Officers; - 23 Enlisted). Actual military strength was materially below the authorized level at end FY 1978; i.e., 10,406 authorized versus 8,972 actual, (-1,434). DARCOM's low standing on the Department of Army Master Priority List (DAMPL), and the Personnel Structure and Composition System, which resulted in a low distribution capability in FY 1978, precluded a high rate of fill for military positions.

(U) Command Grade Objective Program, Officer and Enlisted. On 23 January 1978, DCSPER, DA provided DARCOM with the January 1978 HQDA Command Grade Objective (CGO) for DARCOM officer and enlisted positions for FY 1979. Due to the detrimental effect of the reduction of 483 Captain grades with corresponding increase of 459 Lieutenant grades, a reclama was forwarded to DA requesting restoration of Captain and Lieutenant objectives as previously reflected in the October 1977 Program and Budget Guidance (PBG) document. DA established a military grade imbalance working conference which recognized that DARCOM should be given some relief on the distribution of the CGO. The findings of the group were presented to a general officer steering committee. The DA updated CGO for FY 1979 increased DARCOM by four

REFLECTS THE ADJUSTMENTS IN DARCOM MILITARY AUTHORIZATION AND CIVILIAN EMPLOYMENT PROJECTIONS

DA PROGRAM TO DARCOM (OCT 78 PBG)

	MILITARY				CIVILIAN EMPLOYMENT PROJECTION		
	TOTAL	OFF	WO	EM	TOTAL	FTP	TPT
END FY 77	9980	3155	241	6584	106271	104528	1743
END FY 78	10406	3210	239	6957	*106985	105392	1593
FY 78 (+/-)	+426	+55	-2	+373	+714	+864	-150

*Excludes 541 overhire authorized by DA.

DARCOM PROGRAM (SEP 78 PBG)

	MILITARY				CIVILIAN EMPLOYMENT PROJECTION		
	TOTAL	OFF	WO	EM	TOTAL	FTP	TPT
END FY 77	9902	3119	238	6545	107410	105478	1932
END FY 78	10354	3196	242	6916	108166	106147	2019
FY 78 (+/-)	+452	+77	+4	+371	+756	+669	+87

NOTE: DARCOM Program for military spaces differs from DA Program due to administrative lead time in implementing/reporting military changes.

DARCOM Program for civilian spaces exceeds DA Program based on DARCOM's over-allocation of spaces in anticipation of hire lag (Authority: paragraph 4-4e, AR 570-4; and paragraph 3-8, DA Pamphlet 570-4).

For explanation of increases to DARCOM's end FY 78 military and civilian authorizations refer to narrative Chapter 1 "Fiscal Year 1978 Civilian and Military Personnel Changes".

Chart 10

(UNCLASSIFIED)

MAJOR DARCOM ACTIVITIES
ACTUAL CIVILIAN STRENGTHS

	FY 77 30 SEP 77 TOTAL	FY 78 30 Sep 78 TOTAL	DIFFERENCE AS OF 30 Sep 78
TOTAL	104,544	106,876	+2,332
(FTP)	(102,149)	(103,827)	(+1,678)
(TPT)	(2,395)	(3,049)	(+654)
HQ DARCOM	1,205	1,214	+9
SUB-MACOMS	54,833	60,877	+6,044
DEPOTS (DESCOM)	36,564	37,172	+608
PROJECT MANAGERS	1,283	1,310	+27
RESEARCH LABS	4,523 1/	771 2/	-3,752
ALL OTHER	6,136	5,532	-604

1/ Exclude Ballistic Research Lab, which is included in the Sub-MACOM total as part of ARRADCOM for end FY 77.

2/ Under AMARC reorganization (mergers/discontinuances/reassignments/redesignations): excludes MERADCOM (formerly MERDC); NARADCOM (formerly Natick Labs); Harry Diamond Lab (now under ERADCOM); and other small units no longer designated in Research Lab category. Includes only the Human Engineering Lab and the USA Materials and Mechanics Research Center.

Chart 11

(UNCLASSIFIED)

Colonel, five Lieutenant Colonel, 26 Major, and 221 Captain grades. This still left a deficit of 331 Captain grades between the PBG and CGO; however, the restoration of 221 Captain grades reflected a significant improvement.

(U) Officer Distribution Plan 4th Quarter FY 1979. The Officer Distribution Plan (ODP) (formerly designated Projected Requisitioning Authority), extended out to the 4th Quarter FY 1979, provided DARCOM with an austere coverage of 84 percent requisitioning authority versus authorized TDA/TOE positions. The ODP received from the Military Personnel Center required a volume of substitution of lower officer grades for the higher grades reflected as authorized in TDA/TOE positions. During FY 1978, DARCOM's Personnel Priority Model group was raised from three to two. The next ODP update from MILPERCEN for DARCOM, scheduled for December 1978, was expected to reflect this increase in ODP priority.

Civilian Manpower Guidance and Ceilings

(U) In FY 1978, DARCOM did not apply any self-imposed civilian hiring freeze on subordinate commands or activities, neither was one imposed by DA/DOD or the President. In FY 1978 DARCOM closely monitored civilian on-board strengths in order to preclude a shortfall at end fiscal year. Projected employment targets were received from subordinate commands and activities and with minor exceptions these targets were approved.[5] As a result of these actions, DARCOM experienced only a minor shortfall (vacancy) of 109 civilian positions (106,985 authorized versus 106,876 actual), or 0.10 percent under.

Army Management Headquarters Activities (AMHA)

(U) In May 1977, DARCOM recommended to DA that the Army regulation dealing with the Army Management Headquarters Activities ceiling, and the DOD Directive, be amended to reflect the AMARC reorganization, discontinuing the commodity commands and establishing the new materiel readiness and materiel development commands as Field Operating Activities. This would leave only HQ DARCOM and the seven DARCOM Staff Support Activities under this controlled program.[6] At the close of FY 1978, no response had been received from DA; DOD still had the proposal under study at the end of FY 1978.[7]

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[5]Msg, DRCPT-SA, Manpower Ceiling Control Report (DRCPT-135), 161830Z Aug 78.

[6]Chapter I, Annual Report of Major Activities, Dir of Personnel, Training and Force Development, FY 1977.

[7]ASD(A) Memo for the Army Member, DOD Management Headquarters Working Group, DARCOM Management Headquarters Activities, 2 May 78.

Manpower Utilization, Standards and Policies

(U) Manpower Surveys. Fourteen surveys covering approximately 9,000 spaces were conducted. Twenty, covering 20,000 spaces, had been scheduled, but six were canceled at the commander's request. Space requirements validated by survey teams resulted in a decrease of 38 military spaces and increase of 579 civilian spaces. The surveys of MIRCOM and TARCOM, resulting in recommendations for significant manpower increases, tended to accentuate the steadily widening shortfall between DARCOM's manpower requirements and increased workload demands. The survey results for each activity surveyed are tabulated at Chart 12.

(U) Manpower and Force Management Civilian Career Program. Since 1973, when the Manpower and Force Management Civilian Career Program was established, DARCOM had provided referral lists for vacancies in the program. On 15 February 1978, the effective date of revised Civilian Personnel Regulation 950-1, HQDA began providing referrals for all vacant manpower and mission and organization positions in the Army, with HQ DARCOM providing personnel to help screen careerists' records to determine qualifications for referral.

(U) Installation The Army Authorization Documents System (ITAADS). Implementation of ITAADS extension plan was completed on schedule.[8] The system provided for the processing of TAADS documents by most of the major subordinate headquarters and their units (not included were ERADCOM and its units and most of DESCOM's depots and depot activities--Letterkenny, New Cumberland and Savanna were included). Of the separate units that report directly to HQ DARCOM, only those located at an ITAAD installation were included in the system. The extension of ITAADS to the remaining depots was scheduled to begin during September 1978, but the schedule was postponed indefinitely pending availability of automated terminal links to ITAADS data bases. A request was forwarded to HQDA to extend the system to ERADCOM.

(U) Management of Change (MOC) Study. The Management of Change Study, approved by the Chief of Staff, Army, on 26 August 1977, limited the updating of unit authorization documents to a semiannual cycle, with exceptions requiring HQDA approval.[9] HQ DARCOM implemented the study on 1 April 1978.[10] Through a combination of managements controls and intense efforts, initial FY 1980 TDA/MTOE for all

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[8] Annual Report of Major Activities, FY 1977, Directorate for Personnel, Training and Force Development, p. 18.

[9] Ibid, p. 22.

[10] Ltr, DAMO-FDU, 10 Jan 78, Subj: Revision of The Army Authorization Documents System (TAADS), and HQ DARCOM 1st Ind thereto, DRXMM-TM-S, 7 Mar 78.

RESULTS OF SURVEYS CONDUCTED BY HQ DARCOM - FY 1978

ACTIVITY SURVEYED	AUTHORIZED			RECOG REQMT			DIFFERENCE		
	MIL	CIV	TOTAL	MIL	CIV	TOTAL	MIL	CIV	TOTAL
PM-ACODS	6	15	21	6	15	21	0	0	0
Space Program Ofc	11	9	20	11	10	21	0	+1	+1
PM-SANG	27	48	75	31	51	82	+4	+3	+7
HQ MIRCOM	182	3165	3347	157	3379	3536	-25	+214	+189
FSA	0	146	146	0	155	155	0	+9	+9
FO-HQ AF Sys Cmd	1	2	3	1	2	3	0	0	0
PM-Nuclear Munitions	11	40	51	10	38	48	-1	-2	-3
PM-Mun Prod Base Mod & Exp	18	190	208	18	187	205	0	-3	-3
Log Control Act	9	193	202	8	179	187	-1	-14	-15
ALMC	71	380	451	72	415	487	+1	+35	+36
Catalog Data Act	1	133	134	1	129	130	0	-4	-4
HQ TARCOM	143	3204	3347	*133	*3509	*3642	-10	+305	+295
FSA	47	112	159	* 41	* 114	* 155	-6	+2	-4
HISA	10	482	492	* 10	*515	* 525	0	+33	+33
TOTAL	537	8119	8656	499	8698	9197	-38	+579	+541

*Survey had not been finalized; therefore, survey team recommendations were used.

Chart 12

DARCOM units were developed and submitted to DA by the 30 September 1978 date required by the Army Force Program. It was the first time DARCOM had achieved the goal, and information available indicated that DARCOM was the first major command to reach the 100 percent submission goal.

Civilian Personnel Management

(U) FY 1978 was a year of significant change in the field of civilian personnel management. The fiscal year saw completion of a major organizational realignment throughout the command, the AMARC realignment. It witnessed a continued intense emphasis in the Equal Employment Opportunity Program. It saw the development of new concepts of data processing in the civilian personnel area. It recorded management's continuing efforts to achieve mission goals within the constraints of high grade ceilings and average grade controls. These and other aspects of the historical record do not point to the past as much as to the future. Today's situation is the base from which tomorrow's steps will be taken and today sets the future's demand for professional competency, adaptability to change, and the need to meet management's requirements through use of one of the key resources, people. DARCOM used its Career Intern Program, its MARED system, its Upward Mobility programs, and its priority placement programs to retain and develop skills which might otherwise have been lost. Great challenges in the future were seen to lie ahead for civilian personnel management.

(U) AMARC Implementation. The Army Materiel Acquisition and Readiness Committee (AMARC) established a requirement to separate the readiness and the development functions of defense organizationally in order to enhance the defense posture of the nation. This resulted in a major realignment of DARCOM which was completed during Fiscal Year 1978. The primary impact of the major AMARC realignment within DARCOM was the separation of the materiel readiness (logistic) and the research and development functions of the commodity commands. The following new Major Subordinate Commands (MSC) resulted:

Commodity	MSC
Armament	US Army Armament Materiel Readiness Command (ARRCOM)
	US Army Armament Research and Development Command (ARRADCOM)

Commodity	MSC
Missile	US Army Missile Materiel Readiness Command (MIRCOM)
	US Army Missile Research and Development Command (MIRADCOM)
Tank-Automotive	US Army Tank-Automotive Materiel Readiness Command (TARCOM)
	US Army Tank-Automotive Materiel Readiness Development Command (TARADCOM)
Aviation	US Army Troop Support and Aviation Materiel Readiness Command (TSARCOM)
	US Army Aviation Research and Development Command (AVRADCOM)
Electronics	US Army Communications and Electronics Materiel Readiness Command (CERCOM)
	US Army Communications Research and Development Command (CORADCOM)
	US Army Electronics Research and Development Command (ERADCOM)
Mobile Equipment	US Army Mobile Equipment Research and Development Command (MERADCOM)
Food and Clothing	US Army Natick Research and Development Command (NARADCOM)

Project Managers Offices related to the respective commodities and missions are attached to the appropriate MSC's, except for those Project Managers Offices reporting directly to Headquarters DARCOM.

(U) A significant aspect of the total AMARC realignment was the effectiveness of priority pplacement in providing jobs for adversely affected employees and in keeping involuntary separations to a minimum number. Most separations resulting from these actions were due to retirements and those declining transfer of function to another geographical area. Many employees who would otherwise have been separated were provided placement and their skills and expertise were saved to the Army because they made themselves available for placement through the DOD Priority Placement Program and other placement efforts.

(U) Implementing Procedures for Candidate Evaluation. Within the Department of the Army, Civilian Personnel Officers have long encountered obstacles in accomplishing proper job analysis and candidate evaluation. Recognizing the lack of guidance, DARCOM established a task force of Chiefs of Recruitment and Placement Branches to develop an action plan in order to resolve the problem. The task force developed a uniform approach to the establishment of valid, job related crediting plans for in-house merit staffing. The end product resulted in the publication of a systematic approach to valid personnel selection which has increased confidence and credibility on the part of managers, unions, and employees.[11] The DARCOM pamphlet on the implementing procedures for candidate evaluation was accepted by other MACOM's as well as by some Air Force activities. Publication and application of the pamphlet placed DARCOM first among government employers in meeting the standards mandated by the Federal Executive Agency Guidelines on Employee Selection Procedures.

(U) Information System (SCIPMIS). In 1975 the Army's Director of Civilian Personnel advised both the Deputy Chief of Staff for Personnel and the Director, Management Information Systems, Department of the Army, that a standard data based, civilian personnel system had been developed, validated and approved.[12] The system was required to support civilian employees, supervisors, and management in a credible and responsive way. It was designed to be an improvement over previous systems, to eliminate duplications, to be cost effective, and to interact with other systems in order to provide the greatest benefit to the Army. This was known as CIVPERSINS. SCIPMIS is now functional in a number of areas. One of the notable ways in which the system serves management in a specific program area is in Equal Employment Opportunity programs. As a result, the Army's Director of Equal Employment Opportunity has advised all Equal Employment Opportunity Officers to become familiar with this system and with the services available through it in facilitating and augmenting their local programs.[13] Equal Employment Opportunity Officers were encouraged to use SCIPMIS in support of their programs through fixed standard statistical reports and the Personnel Information Retrieval System. Each one was provided a series of Information Sheets intended to depict the extent of the SCIPMIS capability which would be most helpful to them. Training programs and a training manual are being developed.

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[11] DARCOM-P 690-1, CIVILIAN PERSONNEL, Implementing Procedures for Candidate Evaluation, A Systematic Approach to Valid Personnel Selection, October 1977.

[12] Memorandum, Subj: Civilian Personnel Management Information System Functional Requirements, Thru DCSPER to DMIS, 11 Dec 75.

[13] Ltr, OAS, Subj: Standard Civilian Personnel Management Information System Support of the Equal Employment Opportunity Program, 11 Aug 78.

(U) Equal Employment Opportunity. A revised DARCOM-P 690-4, ACTION pamphlet was issued during the fourth quarter, FY 1978.[14] This revised issuance incorporated changes in the Hispanic employment program, providing guidance for the Hispanic Employment Program Coordinator. It expanded coverage of the DARCOM ACTION Award. It reemphasized the requirements for supervisory training in Equal Employment Opportunity. It expanded the coverage of Equal Employment Opportunity for Non-Appropriated Fund (NAF) employees. It incorporated new US Civil Service Commission guidance on qualifications and testing into the DARCOM Upward Mobility emphasis. The revised issuance, coming late in the fiscal year as it did, was an achievement in planning and publication. It was expected that FY 1979 would record achievements in its implementation.

Career Management

(U) Screening and Referral. During FY 1978, efforts continued to develop job-related screening and referral instruments based upon appraisals of skills, knowledges, abilities and personal characteristics (SKAP). All but one career program had instituted such procedures. The remaining program (Engineer & Scientist) had a similar program in the stage of development which was expected to be completed in FY 1979. The establishment of a single centralized funding source for career interns, executive development, and long term training became a reality in FY 1979. As with all new programs, difficulties were experienced in the identification of requirements and use of the funds. As experience was gained, it was anticipated that significant benefits would result; e.g., better prioritizing of training needs, dedication of adequate resources, and more efficient accounting procedures. Other matters of interest included decentralization of command-wide referral in the Procurement and Quality and Reliability Assurance career programs, which were expected to serve to expedite the filling of vacancies in these career programs.

(U) Civilian Personnel Center (CIVPERCEN). The approval by the Director of the Army Staff to establish a Department of Army Civilian Personnel Center (CIVPERCEN) was perhaps the most dramatic of FY 1978 events. The CIVPERCEN would administer Army-wide career programs, overseas recruitment, program evaluation, and manage centralized spaces and funds for executive development, career interns and long term training.

(U) Materiel Acquisition and Readiness Executive Development (MARED). During FY 1978 there were over five hundred applicants for MARED participation of which 222 were nominated, and 103 were selected

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14 DARCOM-P 690-4, ACTION, May 1978.

by the MARED Board. Of these 103 selectees, 16 were minority and 12 were women. This significant increase over last year's minority and female selectees (four minorities and no women out of 70 selectees), was attributable to the personal involvement of installation commanders in insuring that DARCOM activities actively encouraged qualified minority and female nominees for MARED. The 234 people currently in MARED have in their first two years of activity, achieved 38 promotions, 21 reassignments, 19 temporary placements and 101 training courses (275 weeks of training), some of which included the 19 and 20 week Logistics Executive Development and Program Management courses as well as the Industrial College of the Armed Forces. Other significant developmental activities engaged in by MARED participants during FY 1978 were a one year fellowship in Congressional Operations with the House of Representatives, seven Department of Army level assignments, and participation on a DOD Trienneal Review Committee. Additionally, the first two selectees for the newly initiated one year ASA(RDA) Procurement Staff Development Program were both MARED participants.

Support Functions

(U) Special Recruitment and Career Intern Management. A high level of fill was maintained during FY 1978 for most programs covered by the centralized recruitment effort. Both the centralized RDTE E&S program and the centralized E&S formal schools recruitment fell short of established goals. Noncompetitive pay compared to the private sector and US Civil Service Commission (USCSC) certification procedures, combined with the overall shortage of engineering graduates account for the shortfall.

(U) Minority and female intake remained below the established goals. Increased utilization of intern candidates produced an increased minority intake, but not sufficient to meet goals. Positive efforts to increase intake from internal sources, in addition to DA removal of the test requirement, include relaxation of mobility requirements for internal candidates at established training sites and spreading intake throughout the fiscal year in some career fields. Past successes in external minority intake were not considered as likely to be attained without action by the USCSC to restore the outstanding scholar option, or comparable selective placement factors.

(U) In an effort to restudy minority recruiting efforts, the three FPO Chiefs were brought into HQ DARCOM for a conference in July 1978. General Guthrie gave the keynote address. They conferred with the Director of Personnel, Training and Force Development; Chief, Civilian Personnel Division; Chief, Career Management and Development Branch; Command Equal Employment Opportunity (EEO) Officer and others concerned. In February 1978, the EEO Recruiting Brochure for the DARCOM

Career Intern Program was approved by General Guthrie. This brochure was distributed for information and action by EEO Officers and Civilian Personnel Officers in the identifying, counseling and processing of highly qualified individuals, including minorities and women, for the DARCOM Career Intern Program.

Position and Pay Management

(U) DARCOM Grade Control Program. The DARCOM-wide 30 September 1977 average grade (8.61) was .05 over the DA-assigned goal of 8.56. Guidance to commands/activities on the new OMB program for reduction of GS average grade for selected occupational series (which does not replace the ongoing DA grade control program) was furnished.[15] Of the six series codes in which DARCOM was in excess of DA-assigned FY 1978 target grade, two occupations (Supply Clerical and Technician GS-2005-0 and Physics GS-1310-0) contain significant concentrations of DARCOM population. To assist in stabilizing workforce and improve mission performance DARCOM requested that DA eliminate the GS average grade ceilings. DA responded by eliminating the requirement to achieve FY 1978 average grade ceilings and guidance to commands/activities on ceiling suspension was provided.[16] A command study group considered average grade and high grade control and reached a concensus on a system to replace average grade ceilings and on methodology for high grade reduction ceiling assignment.[17] During the 4th quarter, commands were informed that the requirement for TDA submissions to reflect assigned average grade was eliminated and guidance on control of grade escalation was furnished.[18] As of 31 August 1978 DARCOM-wide filled average grade (8.48) was .06 below FY 1978 ceiling of 8.54, due primarily to seasonal impact of lower graded summer personnel. It was anticipated that 30 September 1978 DA CIVPERSINS data (not available until on or about 25 October 1978) would reflect an average grade close to the FY 1978 ceiling.

(U) DARCOM Reduction of Senior Level Civilian Positions Program. As of end FY 1977 the on-board high grade population GS-13 and above, including PL 313's, was 10,743, or 189 below the DA-assigned ceiling.

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[15] 1st Ind, DRCPT-CP, from C, Civ Pers Div to DARCOM Cdrs, 12 Jan 78, to DAPE-CPP ltr, 16 Nov 77, Subj: Controlling Grade Escalation in the General Schedule.

[16] Ltr, DRCPT-CP from Actg CofS to DARCOM Cdrs, 2 Feb 78, Subj: Controlling Grade Escalation in the General Schedule.

[17] Memorandum, DRCPT-CP, from Dir, Pers, Trng and Force Development to Cdr, DARCOM, 9 Aug 78, Subj: Civilian Grade Ceilings.

[18] Msg, DRCPT-CP, from Dir, Pers, Trng and Force Development to DARCOM Cdrs, 301206Z Aug 78, Subj: Civilian Grade Controls.

DA assigned revised DARCOM FY 1978 and FY 1979 ceilings, separately for GS-13's and GS-14+, as a result of DOD directed reduction required by DOD appropriation Authorization Act, 1978. The DA-assigned FY 1978 ceilings were a target, however, the FY 1979 ceilings were assigned as firm ceilings to be achieved by end FY 1979. Intra-DARCOM distribution of command/activity proposed high grade FY 1979 ceilings was in accordance with command study group methodology recommendations. Certain high priority areas received special consideration and were excluded from the cut. The reduction was then distributed either on a pro-rata basis or through priorities determined by the appropriate DARCOM DCG. DARCOM commands/activities were informed of FY 1979 ceilings assigned for planning purposes and were requested to submit impact statements.[19] As of 31 August 1978, DARCOM filled GS-13 positions (6607) were 213 below FY 1978 target (6820) and GS-14+ positions (3932) were 77 above FY 1978 target (3855). It was anticipated that DA CIVPERSINS data (not available until on or about 25 October 1978) would continue to reflect GS-13 population below target and GS-14+ population above end FY 1978 target.

(U) Labor Relations. During the 2d Quarter FY 1978, HQ DARCOM and NFFE Local 1332 negotiated a significant article to the Negotiated Agreement between the parties. Article XIV-Promotion and Internal Placement provides that all career program vacancies in HQ DARCOM were to be announced. This was a direct result of a decision by the Federal Labor Relations Authority which stated that acceptance of employment applications in Army career programs are a negotiated matter.

(U) Honorary Awards. Five HQ DARCOM employees received the Meritorious Civilian Service Award: Dr. Richard Haley, Directorate for Development and Engineering; Mr. Henry Mlodozeniec, Office of Manufacturing Technology; Mr. Isidore Berg and Mr. James Strother, Office of the Comptroller; Mr. Grover Krone, Directorate for Materiel Management.

Military Personnel Management

(U) FY 1978 might be labeled as conservative and lean regarding military personnel. Despite the increasing stability of active component personnel, retirements and other personnel actions demanded constant surveillance and intensive management of available manpower resources for the objective of maximum effective utilization. Imbalances of some skills and grades in the Army inventory tasked commanders and supervisors to exert their best managerial efforts toward mission accomplishment.

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[19] Msg, DRCPT-CP, from Dir, Pers, Trng and Force Development to DARCOM Cdrs, 221850Z Sep 78, Subj: Reduction of Senior Level Civilian Positions.

(U) Organizational Effectiveness (OE). The OE office opened late in FY 1977 with the purpose of adding the dimensions of advanced management techniques and applied behavioral science to DARCOM's repertoire of management improvements. OE office activities accelerated during FY 1978 in the areas of program development and program management, recruitment and training of 22 military and civilian Organizational Effectiveness Staff Officers, and in providing OE support of DARCOM commanders' conferences, headquarters, directorates and selected major subordinate commands.

(U) Officer Personnel Management System. A major challenge was to reconcile the dilemma of decreasing officer strength in the Army overall and the increasing demands for officer personnel within DARCOM. The problem was exacerbated by: DARCOM receiving only 92 percent fill on officer authorizations in early 1978; a further reduction to 84 percent in June 1978; increased authorizations for officer positions on tables of distribution and allowances (TDA); and DARCOM's group three position on the Department of the Army's Master Priority List (DAMPL). Efforts were initiated to improve DARCOM's situation. An increase in DARCOM's Personnel Priority Model from group three to group two was sought and obtained from DA. However, shortages would remain a fact of life in the foreseeable future. To better meet the critical task of allocating scarce resources, development of a computer program to add speed and accuracy to the process was begun. Additionally, a project was initiated to develop an automated officer accounting system to provide timely information on assignments and positions of DARCOM officers throughout the world. This information was expected to help decision makers to decide how best to utilize personnel on station and those on orders to DARCOM.

(U) Army Continuing Education System. To fulfill the demand to improve the quality of military personnel, a position of Education Specialist was established in the Military Personnel Division and staffed. The expected result was for improved coordination and implementation of DA sponsored programs through the media of 10 DARCOM education centers and five sub-centers dispersed throughout CONUS. Improved management of DARCOM requirements for officers with graduate level education was expected to materialize.

(U) Officer Evaluation Reports. In March 1978, The Military Personnel Center, Department of the Army (MILPERCEN) instituted stricter policy regarding submission of Officer Evaluation Reports (OER). OER returned by MILPERCEN for correction would be considered late if not received by MILPERCEN within the original 45-day suspense. This policy greatly increased late OER submissions. The Commander, DARCOM, stated that late OER would not be acceptable. These policies have created changes in procedures for OER processing within the Headquarters

Military Personnel Office (HQ MILPO) including a new suspense system which requires telephone calls to insure timely movement of OER through the rating channel.

(U) Reserve Counterpart Training. The HQ MILPO assumed responsibility for providing administrative support for reserve officers on Counterpart training tours in HQ DARCOM. Counterpart training is that function within the Officer Personnel Management System-US Army Reserve (OPMS-USAR) that was directed toward the professional development of the USAR officer in the Individual Ready Reserve (IRR). It afforded the IRR officer an opportunity for short tours of active duty training with a component of the Active Army in specifically designated positions for order to updating the officer regarding trends and developments in the Active component.

Schools Management

(U) FY 1978 was another year of manpower and money cuts, with resultant cancellation of classes at DARCOM schools and failure to completely satisfy the training needs of DOD personnel. The annual Schools Conference was held on 2 May 1978. The objective of the conference was to provide the DARCOM schools with policy guidance affecting education and training, to afford the conferees the opportunity to present topics of mutual interest, and to openly discuss problem areas and reach decisions.[20]

(U) Impact of Manpower Reductions. In FY 1978, civilian manpower reduction of 25 spaces resulted in cancellation of 35 classes (25 resident and 10 on-site) and approximately 850 students (500 resident and 350 on-site) who did not receive training as programmed. Of this amount, approximately 700 (400 resident and 300 on-site) were DARCOM students.[21]

FY 1979

(U) In FY 1979, the impact upon DARCOM resulting from the training base reduction imposed by Decision Package Set No. 040 was as follows: US Army Logistics Management Center (USALMC) portion of the training base reduction was 40 civilian and six military (two officers and four enlisted) manpower spaces. The US Army Management Engineering Training Activity (USAMETA) portion was 13 civilian manpower spaces. It was estimated that, as a result, 17 percent of DARCOM (1815 students) and 12 percent of non-DARCOM (1536 students) FY 1979 training requirements could not be provided. In addition, DARCOM's capability to provide consulting and research for The Department of the Army and The Department of Defense would be reduced by approximately 20 percent.[22]

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[20] Minutes of DARCOM Schools Conference, 2 May 78.

[21] Msg, DRCPT-SA, FY 78 Civilian Manpower Reduction, 091325Z Dec 77.

[22] Ltr, DALO-RMB, Subj: Reduction in Training, 1 Jun 78; 1st ind, DRXMM-E, Subj: Reduction in Training, 11 Jun 78.

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Military Equal Opportunity Program and Affirmative Action

(U) FY 1978 convened as the Department of the Army completed revision and publication of AR 600-21, Equal Opportunity in the Army. DARCOM EO followed DA's lead and the trend for FY 1978 was set. The DARCOM EO Office initiated an examination of its regulatory and program guidance, and the results were the publication of the first narrative and statistical reporting procedure designed for use within the DARCOM EO program.

(U) During FY 1978, current EO program guidance was scrutinized and existing regulations were examined. An additional regulation, the DARCOM Narrative and Statistical report (DARCOM-R 600-4) was added to the program.[23] For the first time since the inception of the EO program at DARCOM, a tool for use as a statistical analysis device was available to the EO program. DARCOM-R 600-4 more than proved its usefulness. Significant revamping and widening of segments regarding promotions and military justice have occurred. Originally the regulation's reporting procedures called for the computation of honorable vs dishonorable discharges by race. The data are now more selective in identifying punitive discharges as separate from discharges that are only adverse in nature. Promotion information at the beginning of FY 1978 was based solely on population and numbers

[23] DARCOM Regulation 600-4, DARCOM Equal Opportunity Narrative and Statistical Report (RCS DRCPT-304).

promoted by race and sex. As of the last quarter, promotion data can now be obtained as elibibility, standing list, and personnel actually promoted. Lastly, an additional category was added to the demographic section of the report. Now Spanish descent may be monitored as well as Black and White statistical information. These actions along with the original publication of the DARCOM-R 600-4 have resulted in a concise assessment of EO programs and activities.

(U) A major area of concentration during FY 1978 was the publication of the third DARCOM Affirmative Actions Plan (AAP).[24] In keeping with changing times and trends, the AAP was rewritten. Previous plans leaned toward the instructional and philosophical points of view. The latest AAP contained managerial actions and related guidance geared toward creating affirmative actions that were functional and that fitted within the management systems and procedures of DARCOM.

(U) A concerted effort has been made throughout the FY to compile programs of instruction (POI) from all subordinate EO activities reporting directly to DARCOM. POI's were reviewed with the intent of obtaining an overall picture of the day-to-day training posture of EO programs over DARCOM. This was a continuing project.

(U) The Army EO program profited by the issuance of letters to the field from the Army Chief of Staff, General Bernard W. Rogers and BG John H. Johns, former Director of Human Resources Development of the Department of the Army. General Rogers aired his concern for the disproportionate amount of punitive actions being received by Black soldiers.[25] General Rogers' letter was dispatched by the Equal Opportunity Office to all commanders throughout DARCOM. General Johns released an open letter to all EO personnel updating current program activities and addressing areas of concern.[26] Individual staff personnel received copies of the General Johns' letter. Both letters were most significant as they reflected command emphasis and were influential in impressing all levels of the chain of command with the importance of equal opportunity throughout the US Army. Staff assistance visits during FY 1978 have contributed significantly to the solidification of EO programs. The visits act as the adhesive that cements all aspects of the program into a cohesive managerial entity.

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[24] Ltr, DRCPT-R, Subj: Affirmative Actions Plan (AAP), 24 Feb 78 w/DARCOM's AAP incl.

[25] Ltr, DRCPT-R, Subj: Equal Opportunity (EO), 19 Sep 78, w/Gen Rogers' ltr, Subj: Black Soldiers and Disproportionate Punitive Actions, 18 Jul 78.

[26] Ltr, DRCPT-R, Subj: Equal Opportunity Program, 22 May 78, w/BG Johns' ltr, Subj: Open Letter to Army Equal Opportunity Personnel, 24 Apr 78.

Alcohol and Drug Abuse

(U) The Alcohol and Drug Abuse Prevention Program was highly successful during FY 1978 in accomplishing its objectives of prevention, identification and rehabilitation.

(U) The prevention and education phase of the program was emphasized. Orientation for non-supervisory personnel reached the DARCOM goal of 40 percent. The goal established for supervisory training was surpassed.

(U) The number of personnel admitted to the program during FY 1978 exceeded the number enrolled in FY 1977. In FY 1978 a total of 778 clients were enrolled in the Alcohol and Drug Abuse Prevention Control Program (ADAPCP).[27]

(U) Staff Assistance Visits were conducted at 19 installations.[28] The purpose of these visits was to provide technical assistance and evaluation of the programs. These visits not only assured that policy and regulations were observed but also that the program received increased visibility and emphasis.

(U) The title of the former Headquarters Alcohol and Drug Abuse Office was changed to Headquarters Counseling Services Office to better describe its ability to cope with a wider range of human problems. During the fiscal year, the headquarters program provided assistance to 42 employees. Of these, four were seen for problems other than alcohol or drug abuse. Non-supervisory orientation was conducted for approximately 500 employees. Supervisory training was conducted for 133 supervisors.

Installations and Services

Mission and Organization

(U) The mission of the Directorate for Installations and Services, HQ DARCOM, is to direct, supervise, and develop the authorization and funding program for and/or coordinate the management and utilization of the physical plant of the US Army Materiel Development

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[27] Ltr, DAPE-HRL, Subj: ADAPCP Summary (RCS: CSPA-1291), 11 Oct 78.

[28] Msg, DRCPT-H, Subj: DARCOM Alcohol & Drug Abuse Prevention & Control Program Staff Assistance and Evaluation Visit Schedule FY 78, 241812Z Aug 77.

and Readiness Command and the logistical support services incident to the operation of its installations, to include: construction; utility operations, repair and maintenance of facilities; functional aspects of information system design, development, training, implementation, and operation; environmental protection involving air, water, noise, and all other forms of pollution; conservation of energy and natural resources; land management; fire prevention and protection; real estate; family housing, housing referral service, guest houses, barracks, and bachelor quarters; intraservice and interservice support agreements (excluding wholesale supply support agreements); audio-visual activities; direct and general support maintenance, authorization, utilization, and redistribution of installation equipment, industrial plant equipment, and administration transport vehicles, utility railroad equipment, and marine floating equipment; retail supply activities, clothing sales stores, and self-service supply centers; commissaries, post exchanges, theaters, post restaurants, open messes, and commercial-industrial type activities. Directs Energy Coordination Center activities. In general, the DARCOM Director of Installations and Services serves as Resource Manager and Program Director for the Military Construction, Army (MCA) Appropriation, and Program Director for the DARCOM Installations and Services Program, as the Resource Manager and Program Director for the DARCOM Family Housing Management Appropriation (Budget Programs 1800 and 1900), and directs the operation of the DARCOM Installations and Services Activity (ISA) at Rock Island Arsenal.

(U) The Installations and Services Directorate includes a Plans and Programs Office and three functional divisions: Services, Engineer, and Housing Management.

Military Construction

(U) Twenty-three military construction projects were authorized by the Congress in FY 1978 budget. MCA appropriated amount for FY 1978 was $106.6 million. See Chart 13 for comparative year MCA Programs. Urgent Minor MCA Projects, FY 1978 and self-amortizing minor construction projects ($75,000-$400,000) funded for construction, for DARCOM installations or activities amounted to $6.9 million. Twenty-three projects were funded during the fiscal year.

DARCOM Master Plan Review Board

(U) DARCOM Master Plan Review Board was established under provisions of AMCR 11-4 for the purpose of providing assigned directorate members with visual detailed reviews of Future Development Plans, submitted annually by each (GOGO) installation. Installation master plans are the source documents for development of military construction programs. They provide for new and expanded facilities required for

(UNCLASSIFIED)

MCA PROGRAM MAGNITUDE

($ MILLION)

FIELD SUBMISSION	DARCOM PROGRAM	DARCOM PORTION OF DA PROGRAM	DARCOM TOTAL APPROVED BY CONGRESS
FY 76 160	102	66	58
FY 77 191	118	90	70
FY 78 274	187	55	107
FY 79 225	137	154	110

Chart 13

(UNCLASSIFIED)

support of the approved missions and workloads, and for timely replacement of temporary deteriorated facilities.

(U) Review comments and recommendations are routinely forwarded to HQDA for inclusion in its technical review. All construction accomplished at installations must be consonant with the DA approved plans. The following plans were reviewed and approved: Pine Bluff Arsenal - Basic; Rock Island Arsenal - Future; Watervliet Arsenal - Future; Yuma Proving Ground - Future; and Corpus Christi Depot - Basic.

Nonreimbursable Master Planning Assistance Funds

(U) In order to provide up-to-date master plans, HQDA, through the Corps of Engineers, has made funds available to the District Engineer Offices that support DARCOM installations. These funds are for Phases II, III, and IV of Master Planning. The amounts allocated were as follows:

	Programmed	Obligated
FY 76	420,000	420,000
FY 7T	608,700	608,700
FY 77	534,000	460,000
FY 78	2,056,000	2,188,000
FY 79	778,500	

Production Base Support

(U) By the end of fiscal year 1978, $116.1 million in Production Base Support Construction Projects was awarded. This exceeded the construction award forecast by 11 percent, primarily due to reprograming XM-1 Tank funds at Lima Army Modification Plant and at Stratford Army Engine Plant. Another factor in the increase was the award of Project 5772541, The Sulphuric Acid Concentrator at Sunflower Army Ammunition Plant for $15.637 million.

(U) During FY 1978, quarterly Production Base Support Interface meetings were held at various installations to keep abreast of significant actions, although the shortage of travel funds limited the number of meetings. Representatives of the Office, Chief of Engineers; the Office, Deputy Chief of Staff for Research, Development, and Acquisition; US Army Materiel Development and Readiness Command; DARCOM's major subordinate command headquarters; and the Project Manager for Munitions Production Base Modernization and Expansion attend the meetings.

(U) Facility Working Group meetings, first held during FY 1973 but reaching full implementation during FY 1974, were beneficial in improving local-level coordination between the ammunition plants

and the engineer districts. Again, the shortage of travel funds restricted the frequency of these meetings.

(U) While money for many Mod/Expansion and Production Support and Equipment Replacement (PS&ER) projects had become increasingly tight, funding was assured for the controversial project at Mississippi Army Ammunition Plant. With a view toward increased congressional control and visibility, the House Appropriations Committee expressed a desire to have all final designs completed by the time the Army's appropriation request was submitted to Congress, effective with the FY 1977 program.

(U) Beginning with the FY 1977 budget program, procurement-funded construction had to be authorized by the Army Services Committees as well as being approved by the Appropriations Committees.

Housing Management

(U) Follow-up housing management staff reviews were completed at various DARCOM installations. Ninety-five percent of the installations received a rating of Adequate or Better.

(U) The CY 1978 Family Housing Survey indicated that seven DARCOM installations had a requirement for additional housing units. The DA plan for new construction of housing was as follows:

FY 1981	Sierra Army Depot	36 units
	Picatinny Arsenal	61 units
	Seneca Army Depot	64 units
	Red River Army Depot	24 units
	Hawthorne Ammo Plant Rehab	200 Substandard
FY 1983	Letterkenny Army Depot	31 units
FY 1984	Rock Island Arsenal	113 units
	St. Louis Support Activity	38 units

Excess Equipment

(U) During FY 1978, under Services Division guidance, DARCOM installations and activities declared 2,799 line items of equipment valued at $11.3 million excess. Seven hundred sixteen line items valued at $6.2 million (including 317 administrative use vehicles valued at $4.8 million) were redistributed within the command. The remainder were made available to other DOD/governmental activities through property disposal channels.

(U) The Installation Equipment Management System which automates property book accounting, authorization and utilization management, schedules preventive maintenance, and accumulates maintenance costs was implemented at seven DARCOM installations bringing the total to 13 at the end of the fiscal year. The system provides the local commander total visibility of equipment and simplifies the overall management.

Property Accountability

(U) DARCOM's program to improve property accountability at the property book hand receipt level was initiated in October 1977 as a result of the Army Chief of Staff's concern over the unsatisfactory condition of property accountability in the Army. DARCOM Commanders at all levels were directed to become personally involved to improve property management by conducting wall to wall inventories, elevate hand receipts to the supervisory level, reconcile property books, turn in all excess, etc. The first Command Equipment and Supply Management Reviews that emphasized property accountability were in the 2d quarter FY 1978. They were very disappointing in that only one out of nine or 11 percent of installations inspected were adequate or better. Although the numbers of those installations with adequate or better ratings improved during the 3d quarter (22%) and again in the 4th quarter (32%), improvement was too slow. However, with the high visibility the program is enjoying in DARCOM, it is anticipated that the improvement trend will continue in Fiscal Year 1979 and at a faster pace.

Environmental Quality

(U) The DARCOM Environmental Program is a broad-based multi-disciplined effort encompassing environmental management, applied technology for pollution abatement and environmental enhancement, and research and development for solution of unique environmental problems. The Environmental Quality Office (EQO) of the DARCOM Plans and Analysis Directorate was the focal point for the command program, working closely with the environmental representatives within the functional directorates of the headquarters in everyday matters of environmental concern. The DARCOM Environmental Quality Committee, consisting of a representative from each DARCOM directorate, materially contributes to the management effort.

(U) The mission responsibilities of the EQO expanded significantly during the past year. Contributing to this expansion was the formal identification by the Environmental Protection Agency (EPA) on 19 October 1977 of DARCOM installations which were not in compliance

with air and water pollution regulations. Further, the past year saw the enactment of several new or revised environmental laws, which established new or more stringent standards and eliminated the principle of Federal supremacy with respect to compliance with both the procedural and substantive aspects of State environmental regulations. Primary Federal legislation included the Air Pollution Control Act Amendments of 1977 and the Clean Water Act of 1977.

(U) In order to meet the demands of the increased emphasis by regulatory officials for environmental compliance, the Commander, DARCOM, directed that a Pollution Abatement Operations Center (PAOC) be established within the Headquarters. The PAOC portrays the up-to-date status of the entire DARCOM environmental program and has proven to be an extremely valuable management tool. It also received considerable high level interest, having been visited by the Secretary of the Army and the Chief of Engineers as well as other senior Army officials.

(U) In support of the PAOC, the Chemical Systems Laboratory developed the Environmental Program Information System (EPIS). The EPIS was in the final stages of implementation and was to be fully operational by early in CY 1979. Full implementation would include a computer terminal to be located in the PAOC. DARCOM headquarters would ultimately have the capability of quickly retrieving data on the status of any pollution problem/project at any installation, as well as generating the data for recurring reports.

(U) Direct benefits already derived from the PAOC were: more credible environmental information is available; quick response to queries; identification of installations in non-compliance or potentially in non-compliance; identification of installations which are likely to have regulatory proceedings initiated against them and/or which have regulatory procedures underway; identification of pollution problems with grantees; and critical review of problem installations.

(U) With the expansion of the DARCOM environmental mission responsibility, it became necessary to increase the staffing of the EQO. In September 1978, an additional authorization for six personnel was approved. With this increase, authorized staffing for the EQO was two military and 10 civilians.

(U) Both the Clean Air Act Amendments of 1977 and the Clean Water Act of 1977 shifted the responsibility for enforcing reduction of pollutants from the federal level to state and local levels. This change required that all federal facilities comply with state and local procedural requirements as well as meeting source performance standards. The pressure upon federal facilities to achieve environmental compliance was greatly increased.

(U) As in past years, the DARCOM ammunition plants continued to be a major source of pollution. An effort to identify pollution sources, both by DARCOM and also under the auspices of the Huntsville Division Engineers, resulted in the initiation of corrective projects at all remaining DARCOM installations with pollution problems.

(U) The initial EPA identification of DARCOM non-complying installations had listed 22 installations with air and/or water problems. During the year, two installations, Kansas AAP and Louisiana AAP, achieved compliance. However, fifteen additional installations were identified as being in non-compliance status as a result of Army Environmental Hygiene Agency (AEHA) surveys and reports, National Pollution Discharge Elimination Survey reports, identification by the installation itself, etc. Thus, at the end of the fiscal year, 35 installations were in non-compliance status.

(U) Regulatory proceedings were defined as actions where a Notice of Violation, a Cease and Desist Order, a Show Cause Notification, or an Intent to Sue has been received by an installation. There were 20 such on-going actions at 18 installations. Three installations (Anniston Army Depot, Scranton AAP and the Carbonic Facility, Galling Chemical Co.) were the subject of active litigation.

CHAPTER III

MATERIEL DEVELOPMENT

Development and Engineering

Introduction

(U) Funding contraints, coupled with uncompensated inflationary cost increases during the year, resulted in a general decline from FY 1977 completions of RDTE technical objectives (see Chapter VII: Highlights and Trends, for details of the technical objectives decline and the figures to follow pertaining to manufacturing technology and product improvement). In the area of manufacturing technology, the overall subordinate command performance for FY 1978 was 121 percent achieved of 703 Value Engineering Proposals (VEP) target goal. Even so, this was not as good as FY 1977, being some 14 percent lower, but it was an estimated saving of $101,630 million for the year. For the depots, FY 1977 VEP's were exceeded by 6 percent with the attainment of 104 percent of the goal of 625 set for FY 1978, amounting to a savings of an estimated $19.3 million. In its product improvement program for FY 1978, DARCOM scheduled 897 technical milestones for completion of which 56.6 percent were accomplished. The low completion percentage was attributed to unrealistic scheduling. Improved scheduling and increased emphasis on the product improvement program promised to yield a higher percentage of completions in future years.

(U) RDTE areas where technical thrusts were being made during FY 1978 fell into broad categories as follows: conventional weapons and munitions, electronics, aviation, chemical warfare and biological defense, combat and individual soldier support, missiles, and tank/automotive. Specifically, advances were required and being pursued in anti-armor ammunition, anti-armor penetrating weapons, liquid gun propellants, fuzes, smoke and obscurants, intelligence, electronic jamming and confusing, surveillance and target acquisition, information systems, aeronautical components and weaponry, aircraft propulsion, tank and automotive engine design, detection equipment and medical defenses against chemical/biological threats, improved food and food services, improved soldier clothing and individual equipment, terminal homing devices, and more.

(U) This chapter will treat the DARCOM policy management effort in the materiel development and acquisition areas of: Development and Engineering, Product Improvement, International Research and Development, Battlefield Systems Integration, and Laboratory and Development Command Management. Specifics covering the development

of systems under program and project management are included in Chapter IV: Project Management-Weapons and Chapter V: Project Management-Equipment Systems, those programs and/or projects reporting to the Commander DARCOM, directly. Program and Project Managers reporting to major subordinate commanders have their histories included within the Annual Historical Reviews of the major subordinate command concerned.

Program and Budget

(U) The DARCOM Five-Year RDTE Program for FY 1980-1984 was submitted to the Deputy Chief of Staff for Research, Development and Acquisition, Department of the Army, in January 1978 as follows:

Thousands of Dollars

FY 79	FY 80	FY 81	FY 82	FY 83	FY 84
2,241,706	2,180,864	2,114,258	2,177,764	2,212,306	2,187,677

(U) The Deputy Chief of Staff for Research, Development and Acquisition, Department of the Army, in the Research, Development and Acquisition Committee with other DA Staff, reviewed the DARCOM program and changed it as of 6 May 1978 as shown:

FY 80	FY 81	FY 82	FY 83	FY 84
2,376,566	2,296,097	2,237,814	2,323,612	2,287,523

(U) In January 1979, the FY 1980 program was presented to Congress.

Program Control

(U) The FY 1978 RDTE Program Apportionment Request, September 1977, was $1,830.3 million. As of 30 October 1977, the RDTE Program released to DARCOM totalled $2,032,599 million.

Management Systems and Procedures

(U) The implementation of the Secretary of the Army's concept, known as Total Risk Assessing Cost Estimate (TRACE) for FY 1978, consisted of 11 projects, seven of which requested release of FY 1978 Risk Capital identified in their programs for probable uncertainties.

(U) The practice of limiting face-to-face reviews with major subordinate commands, project managers (PM) or laboratories to one a year was successfully implemented and the third annual RDTE Program

Review was conducted in the May-June time frame of 1978. The third review gained greater participation by the DCSRDA staff and TRADOC headquarters. DCSOPS has indicated a desire to participate in future annual reviews. The existing practice minimized the number of program reviews requiring field participation/preparation both to this headquarters and to headquarters DA. It further reduced the number and time duration of meetings required between DARCOM and DA staff members required to resolve differences toward establishing an Army RDTE Program.

(U) The Programs & Budget Division (DRCDE-P) continues to provide support to the School of Logistic Science of the Army Logistic Management Center (ALMC) by providing guest speakers and technical assistance for the Cost Estimating for Engineers, Decision Risk Analysis, and Research and Development management courses currently being conducted at the ALMC.

(U) In an effort to modernize the RDTE reporting system, DA developed an automated Modernized Army Research and Development Information System (MARDIS). The system includes a Program Data Form (PDF) for data capture, which replaces manually prepared forms supporting the budget formulation, phase scheduling, and apportionment processes. MARDIS became operational with the submission of data in partial support of the FY 1980 budget. While the data was late and not actually used as the final package, it was submitted and, as such, permitted us to get over the "birth pains" of a new system implementation. It was to be used for the POM submission of FY 1981-1985 data due in this headquarters in November, this year.

Program Execution

(U) The FY 1978 RDTE funding document (DA Form 1323) was received in October 1977 from the Comptroller of the Army. After receipt of funds, program directives (AMC Form 1006) were released to the field to cover the approved plan for each project and/or task. These Forms 1006 were forwarded to the Finance and Accounting Division, Comptroller, DARCOM, along with Schedule I and AMC Form 20 requesting issuance of funds to the major subordinate commands and laboratories. Program directives were issued throughout the year for the current and prior fiscal years. These program directives were used to reprogram, issue released funds, and withdraw unobligated funds excess to current requirements. An average of approximately 10 program directives were issued each working day. In addition to this, numerous program revisions for each subordinate command were processed within this headquarters and approvals returned to the subordinate commands.

(U) In FY 1978, DARCOM subordinate commands, independent corporate laboratories, project and product managers again operated under the concepts and principles of incremental funding. Through a concerted SCORECARD effort, reports began in October 1977 on a monthly basis. Subordinate commands and independent activities reported their unobligated balances of the FY 1977 carryover program as well as their FY 1978 unobligated balances at project level. As of September 1978 this status of funds was reported on a weekly basis. The total unobligated balance for FY 1978 as of 30 September 1978 was $82.1 million.

(U) The following chart reflects the total FY 1978 program and prior years unobligated amounts which were carried over for each major subordinate command and separate activity (HQ DARCOM) as of 30 September 1978:

COMMAND	PROGRAM ($1,000)	UNOBLIGATED ($1,000)	PLANNED CARRYOVER FY 77 FUNDS ($1,000)
ARRADCOM	207.7	6.8	6.8
ARRCOM	15.3	.8	.8
AVRADCOM	324.5	8.1	8.1
TSARCOM	12.8	1.0	1.0
ERADCOM	192.1	22.8	22.8
CORADCOM	147.6	10.1	10.1
MIRADCOM	508.5	4.9	4.9
MIRCOM	25.6	1.5	1.5
TARADCOM	187.9	2.8	2.8
TARCOM	6.9	1.9	1.9
TECOM	181.1	2.9	2.9
MERADCOM	30.6	.5	.5
NARADCOM	20.9	2.2	2.2
DARCOM HQ	100.0	10.3	10.3

(U) Through the SCORECARD reporting system, this headquarters continuously assessed the progress of each command toward meeting an obligated goal established by the subcommand and/or activity, and present up-to-date, meaningful briefings to Headquarters Staff.

Developments Summary

(U) In FY 1978, the Army had its first DOD-approved Mission Element Need Statement (MENS) for Anti-Armor, Close Combat System. Approval by the Secretary of Defense was in January 1978. MENS called for systems other than missile to be considered as viable candidates. The Army also had the first Rationalization Standardization Interoperability (RSI) plan approved by Secretary of Defense for Close Combat Anti-Armor Systems in March 1978.

(U) The implementation of the MENS was initiated by DCSOPS with a Vice Chief of Staff, Army approval for a Special Task Force reporting to DCSOPS with guidance provided by a Letter of Instruction (LOI). COL Christenson of Fort Hood was selected to be the Director of the Special Task Force which was stationed at Fort Benning. Five missile concept contractors were selected whose concepts were briefed to Special Task Force in May 1978. Also briefed at this time were the Ground Launched HELLFIRE, the ARRADCOM STAFF concept, and Product Improved TOW.

(U) All of the above actions were nullified by Congressional decision to reduce funding for FY 1979 from $7.1 million to $1.0 million with restrictive language requiring Army to use the $1 million to determine whether the Ground Launched HELLFIRE (GLH) concept could satisfy the requirement for a follow-on system to TOW. This has resulted in action to shift the DA Special Task Force to a TRADOC Special Study Group (SSG).

(U) A new armor threat was determined for the near future. As a result, a crash program was initiated to provide an improved warhead for TOW to meet this newly defined threat. This impacted on the EOCM technology program effort for TOW.

(U) Emphasis was being placed on the need for a MOUT/MOBA Assault weapon with several candidates proposed for consideration. These were the Rifleman's Assault Weapon (RAW), the Special Hard-target Assault Weapon-Lightweight (SHAWL), the Marine Corps Special Multipurpose Assault Weapon (SMAW), and ARRADCOM's Recoilless Rifle Concept. Also proposed for consideration was the FRG Armburst and the Swedish Carl Gustaf, but only for the MOBA/MOUT role.

(U) VIPER technical difficulties (high dispersion, warhead and detent problem) was all resolved and the program was on track. Adequacy and dispersion were improved and was as good or better than ROC requirements. Also, penetration was better than ROC requirement.

(U) The construction of the production base pilot plant for basic propellant ingredient N-Hexyl Carborane (NHC) was on schedule.

(U) Another attempt was initiated to establish an active co-development program with the four-country (rather than NATO) agreement (US, UK, FRG, France). The tentative basis for further discussion was U.S. agreement to consider development of indirect fire weapons and the other three countries to concentrate on direct fire anti-armor systems. The NATO project to select a second generation cartridge for

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the Infantry, Project 1W664608DF21, continued in FY 1978. Testing was underway at Cold Meece, England, where the ammunition was being tested in QA-type tests to establish baseline conditions for the weapons and weapons system tests. Engineering type tests were continued at Meppen, Germany. Some problems of weapon performance and of design were encountered. The caseless weapon system developed in Germany was withdrawn for further development. Troop-type tests of the remaining systems were initiated at the German School of Infantry, Hammelberg, Germany. Development of the Squad Automatic Weapon, Project 1W663607D640, continued during FY 1978. Two U.S. designs were being obtained - one, the XM248 would be fabricated by the Ford Aerospace and Communications Corporation; a second design, a heavy barrelled M16A1 rifle, modified to fire from an open bolt was being built under the direction of BRL. Two foreign designs were proposed for the program. The XM248 developed by Fabrique Nationale of Belgium (FN) was under contract for delivery in January 1979. A second design developed by Heckler & Koch of Oberndorf, Germany was offered free by the producer. The offer was accepted pending availability of funds. All of these weapons would fire the standard 5.56mm cartridges (M193 & M196) and/or the new longer range XM777 and XM778 cartridges.

(U) The Joint Services Small Arms Program (JSSAP) of the Army was being reevaluated to determine its future scope and direction. During FY 1978, representatives of DARCOM and its subsidiaries coordinated their planning with representatives of the Navy, Marine Corps, Coast Guard, and the Air Force to arrive at a mutually agreeable approach to the problem of integrated, multi-service requirements that could be addressed within existing materiel acquisition process. The intent of the program was to harmonize requirements and avoid duplicate effort wherever possible. The general concept of the program was approved by the Under Secretary of Defense for Research and Engineering (Dr. Ruth Davis) on 10 May 1978.

(U) The German 120mm gun system was selected by the Army for eventual use in the XM1 tank. Congress was so notified and a request for $10.9 million FY 1978 reprogramming action was submitted. Congress failed to act promptly and the planned 1 April 1978 start of the U.S. adaptation and integration program was delayed beyond FY 1978.

(U) The XM1 tank program proceeded into DT/OT II on schedule. A Project Manager for Tank Main Armament Systems was established at Dover, NJ reporting to the PM, XM1 who was in turn designated as a Program Manager.

(U) Fabrication delays encountered with the Fighting Vehicle Systems program caused compression of the testing schedule to achieve

minimum program delay. The Vehicle Rapid Fire Weapon System (BUSHMASTER) completed its competitive test between externally powered and self powered gun versions and a selection was planned for the first quarter of FY 1978.

(U) The Improved TOW Vehicle (ITV) was type classified Standard and approved for production in June 1978.

(U) The M735EI APFSDS-T (Armor Piercing, Fin Stabilized, Discarding Sabot-Tracer) 105mm tank gun round was approved for production by a Special In-Process Review in September 1978. The M735EI is identical to the M735 except that a staballoy penetrator is substituted for the tungsten alloy in the original round. Development of the XM774 APFSDS-T 105mm tank round continued in FY 1978. The XM774 has an improved penetrator and sabot as compared with M735, and also uses staballoy.

(U) The High Survivability Test Vehicle - Lightweight (HSTV-L) entered active development. It was to weigh less than 20 tons and would mount an improved version of the DARPA/ARRADCOM 75mm gun. The HSTV-L was part of the Armored Combat Vehicle Technology (ACVT) program being system managed from the office of the Army Chief of Staff. The High Mobility/Ability (HIMAG) test rig, a predecessor of HSTV-L, underwent chassis testing and was being fitted with a turret containing an early version of the 75mm weapon. HIMAG was strictly a test vehicle, with the capability of varying weight, horsepower, suspension characteristics and fire control systems. It was to help the armor community determine what parameters should be specified to improve survivability and firepower in future combat vehicles.

(U) During this year the Army successfully fired the initial Engineering Development Prototype COPPERHEAD Laser Guided Projectiles from the M109, 155mm Howitzer, at ranges net to 11km. This was done using the Ground Laser Locating Designator and a target designator noted in a RPV.

(U) Type classification and approval was completed for production of the AN/TPQ 36 Mortar Locating Radar which would greatly enhance the target acquisition capability of the Army. Also type classified was the Howitzer, Self-propelled, 8-Inch M110A2. The significant difference between the M110A1 and M110A2 is the addition of a muzzle brake to the cannon. The muzzle brake reduces the recoil momentum with the Zone 9 charge to an acceptable level. The Zone 9 charge required with the XM650 rocket assisted projectile to meet the 29.31 km range requirement. Radio Data Link, Sound Ranging AN/GRA-114 is inset in conjunction with the AN/TNS-10 Sound Ranging Recorder

Set. When deployed, it would replace approximately 50km of field wire which interconnects each sound observer and microphone with the recorder.

(U) A contract for initial production of the STINGER man-portable air defense missile system was awarded to General Dynamics Romona on 20 April 1978. This action was contingent on approval by OSD of a detailed US/NATO coproduction plan.

(U) Two firm-fixed-price, best effort Engineering Development Contracts were awarded to Ford Aerospace and Communication Corporation and General Dynamics Corporation on 13 January 1978 for the DIVAD Program. This engineering development program (29 months) is structured as a government "handsoff" or "SKUNK WORKS" development competition between the two contractors. A competitive shoot-off plus a 3 month DT/OT with the evaluation of initial production proposals, will allow the selection of a single contractor to produce the initial quantity of 200 units. An integrated logistic support development phase, a maturity phase, and preparation of a competitive technical data package was included during this phase. A competitive follow-on production contract was to be awarded in FY 1982 for the remaining units.

(U) The UH-60A Black Hawk helicopter, the Army's replacement for the tried and true Huey, entered full scale production. The first aircraft was delivered to the Army in the fall of 1978.

(U) After completing a highly successful Feasibility Demonstration Program, the Army has given the go-ahead for full scale engineering development of a mini Remotely Piloted Vehicle (RPV). The RPV was being designed to find (utilizing real time TV video), and then designate targets for precision guided weapons (with a laser range-finder/designator) out to 40km in front of the FEBA.

(U) The XV-15 Tilt Rotor Research aircraft completed hover flights at Army's Research and Technology Laboratories and was being prepared for transitional (vertical to forward) flights early in 1979.

(U) The Multiple Integrated Laser Engagement System (MILES), the core system for a family of laser engagement simulators, has the potential to revolutionize Army tactical unit training. MILES devices were being developed for the M16 rifle, the Army's full family of machineguns, the VIPER, DRAGON, TOW, the main battle tanks (M60A1, A2, Ae), and the M551 AR/AAV. Follow-on efforts will expand the MILES system into air defense weapons, mines, helicopters, artillery, high performance aircraft, and enemy weapons systems. The prototype packages consisted of laser transmitters which simulate effects of the

weapons, the laser detector array which detects and decodes incoming laser signals, and hit indicating mechanisms which combine audio and visual signals to convey near misses and kills. Other systems could be added as new weapons are identified. Revised training device requirements (TDR) for MILES were approved by HQDA in April 1974 and updated in December 1976. For every weapons system involved, the laser transmitter would have a hit probability comparable to the weapon simulated, as well as duplicating the weapons effects. An infantryman, for example, could "kill" another infantryman with his M16 device but could not disable a tank. Conversely, a tank could "kill" not only another tank, but also TOW crews and infantrymen. The key to this is distinct pulse codes for each weapon and discrimination logic in each detector. During the past year, the basic MILES Program (Infantry Devices) moved through the engineering development phase of the program. The contractor, XEROX Electro-Optical Systems, completed this phase on schedule (12 June 1978) and under cost. Developmental Testing (DTII) was completed by TECOM at Aberdeen Proving Ground and the operational test was completed on 13 October at Fort Carson, Colorado. Independent test reports were due 15 January 1978 with final test results within 45 days thereafter. Future planning included a DEVA IPR on 15 February 1979 and an award of a production contract on 10 April 1979.

(U) The Armor Full Crew Research Simulator (AFCRS) is to be a full mission simulator for the crew of an XM1 tank. It would utilize state-of-the-art high fidelity simulation technology, previously applied primarily to aircraft applications, in the armor area. The simulator is to be installed in 1980 at the Armor School at Ft. Knox, Kentucky and used as a research test bed to identify training requirements, assess and validate these requirements to support future part tank and crew simulation development in the 6.4 (approved TDR) funding category. During the past year two companies, General Electric and Singer Link, finished up their 6.2 studies. A major portion of these studies was the submission of an advanced engineering proposal. These proposals were evaluated by PM TRADE and a contract was awarded to General Electric on the 20th of September for one device to be installed at Ft. Knox, Kentucky in November 1980.

(U) A program plan has been developed for the 10 Ton Expanded Mobility Tactical Truck. In response to DA tasking, alternate acquisition strategies formulated for: competitive procurement for the Army world-wide requirement; and a directed procurement of the German MAN truck for deployment in Germany only, and competitive procurement for the remainder of the world-wide requirement. A Letter of Agreement was prepared with approval scheduled for October 1978, and a Required Operational Capability scheduled for approval by 1 June 1979. Current Technical Feasibility Testing with two US candidates and the MAN 10 Ton

Truck was scheduled for completion in December 1978. A type Classification In-Process Review was convened for the XM915 Series Trucks (XM915 thru XM920). It was agreed to Type Classify the Series after completion of the Initial Production Evaluation/First Article Test for each model. A policy conflict for nondevelopmental items was recognized between requirement to Type Classify before procurement and the requirement to complete testing and Integrated Logistic Support readiness before Type Classification. An effort was initiated to formulate nondevelopmental policy for AR revisions to resolve these issues.

(U) Technical/User Feasibility Tests of two Swedish candidate vehicles for the oversnow Small Unit Support Vehicle requirement (SUSV) was completed. The Letter Requirement was approved. Procurement could be accomplished in FY 1979, but procurement funds had not been programmed as of the end of FY 1978.

(U) The Family of Engineer Construction Equipment (FAMECE) completed DT/OT II testing. Type Classification In-process Review was scheduled for November/December 1978.

(U) The Lighter, Air Cushion Vehicle, 30 Ton (LACV-30) completed DT/OT II testing. The Type Classification (TC) In-process Review recommended TC, Standard, with the Logistician, US Army Logistics Evaluation Agency, nonconcurring. The IPR Recommendations were forwarded to DA for approval.

(U) The Dragon Jump Pack completed accelerated development, was Type Classified Standard, and Initial Issue planned for November 1978. The Jump Pack is to provide aerial delivery of the Dragon Missile, ready to fire, by the individual parachutist.

(U) The heating/winterization requirements of vehicles, construction and materials handling equipment were reviewed. The status of user problems were reviewed and plans made for a response to them. SB9-16, "Personnel Heater and Winterization Kit Policy for Tank-Automotive, Construction and Materials Handling Equipment" was supplemented to: include other equipments, such as shelters, generator sets, etc.; insure that standard and currently qualified heaters were used insofar as possible; and to insure that requirement documents and development plans address winterization in sufficient detail.

(U) A NARADCOM DEVA IPR was held on 10 May 1978 to recommend to type classification as standard the new Personnel Armor System for Ground Troops (PASGT) vest and Kevlar helmet. The Department of Army approved the recommendations on 26 June 1978.

(U) NARADCOM established process and product parameters to meet military service requirements for shelf stable, lightweight and compact foods during FY 1978. Pilot production confirmed the feasibility of compressing flour to a density of approximately one gram per cubic centimeter without impairing baking performance. Supply introduction of compressed flour was accordingly scheduled for FY 1979.

(U) A prototype low fat, filled dry milk was under investigation for use where refrigeration was limited. This process was found so successful in Navy concept tests that the Services asked for early supply introduction of this item.

(U) Process parameters were established for reversibly compressed shredded carrots for salad use. Technical requirements were also developed for introduction to two types of dehydrated celery: glycerated celery, giving a yield ratio of three to one and gum treated celery, with a yield ratio of five to one. Promising results were also being obtained with dehydrated cucumbers.

(U) Airdrop of the Jump Pack, DRAGON Missile, DRAGON weapon system M47, attached to the individual parachutist was required to allow the combat infantryman and the DRAGON to enter the battlefield together thus improving their capability to quickly bring DRAGON into action against enemy armor. The DRAGON jump pack successfully completed DT II/OT II and has been type classified (LCAA) after the DEVA-IPR held at NARADCOM in July 1978. First production procurement of 2700 jump packs was initiated by NARADCOM.

(U) In September 1978, TARADCOM type classified the Simplified Test Equipment for Internal Combustion Engines (STD/ICE), a special purpose automotive test equipment item to be used at organizational maintenance levels and as an interim at the direct support maintenance levels. Its purpose is to make engine diagnosis by the average mechanic easier, faster, and more economical than the existing means of diagnosis frequently used called "parts replacement." The STE/ICE set consists of a small vehicle test meter (VTM) (approximately one foot square), plus sensors and cables for connecting it to vehicles. The VTM can perform more than 45 types of measurements on gaoline and diesel engines and accessories systems, to include pressure, speed, voltage, current, resistance, compression balance and engine power. Readings are digitally displayed as PASS/FAIL or directly in units familiar to the mechanic (pounds per sq. in., rotations per minute, volts, ohms, etc.). Test limit values are listed on flip cards conveniently mounted on the VTM. The VTM can also be connected directly to diagnostic connector assemblies being incorporated into future vehicles. Current application of the STE/ICE to existing vehicle

fleet can be done by means of special adaptors issued as part of this STE/ICE kit. STE/ICE is to be available for issue in 1979. On 23 August 1978, CORADCOM conducted a special IPR (SIPR) at Fort Monmouth, New Jersey. The purpose of the SIPR was to effect Type Classification as Limited Procurement (LP) ten units of the Automatic Test Equipment AN/USM-410(V)1 (floor mounted) and eleven units of the AN/USM-410(V)2 (van mounted), with procurement to be executed in FY 1979 and FY 1980. The SIPR was also to Type Classify Limited Procurement (LP) those twenty AN/USM-410(V)'s already procured or in the process of being procured. This automatic test equipment was needed to support weapon systems being fielded which incorporate complex circuitry techniques. Results of the SIPR were forwarded by DARCOM to DA for review in September 1978.

(U) In 1974, a ROC was approved for a 600 gallon per hour (GPH) and 3000/2000 reverse osmosis water purifying unit (ROWPU). Development was begun immediately and DT/OT testing was started in 1976. The units failed to pass the OT tests in March 1977. Starting in August 1977, the units were redesigned to correct the deficiencies found during previous testing. Redesigned prototypes were received early in 1978. DT II A/OT II A tests are nearing completion. Results as of the end of FY 1978 were very encouraging and indicated that all the problems had been corrected. As a result of the redesign, the production capacity of the units had been improved considerably. Type classification was scheduled for May 1979 with contracting scheduled for June 1979 and IOC in 1981. The two units are eventually to replace all of the Army's present inventory of water purifying equipment. These include Erdlators, distillation units, pretreatment kits, and ion exchange units. The ROWPU's will remove salt from sea and brackish water; most bacteria and viruses; and most chemical, biological, and radiological contaminants from any water source. Chlorine is to be used in the purified water, in small quantities as a residual disinfectant.

(U) The Stand-off Target Acquisition System (SOTAS) completed its concept formulation (AD) phase and approval to enter full scale development was granted by DSARC II. Two AD configuration models were provided to USAREUR for participation in REFORGER 78 & 79. These units are to be retained by USAREUR to provide training capability pending completion of the ED program.

(U) The general unsettled political and military condition of the world continued to spur requirements for increased intelligence of the type which addresses major issues. Defense Intelligence Agency (DIA) has issued and/or validated current tasking to the Army Foreign Science and Technology Center (FSTC) and Missile Intelligence Agency (MIA) calling for long range equipment projections in the areas of Combat Support, Combat Vehicles Infantry Weapons Systems, Ground Forces and Missiles. Foreign Intelligence Officer (FIO) support to DARCOM

Headquarters was improved slightly through the employment of a rotational assignee. This move partly filled a critical void in providing current intelligence support that has been severely curtailed due to lack of resources. This action was well received based on the increasing number and frequency of requirements generated for intelligence support within the Headquarters. FIO-type support to this Headquarters remained a serious problem and would until adequate trained personnel became available. There was no way to avoid this problem--rotational assignees being a "band aid" approach. Staffing of the Foreign Science and Technology Division improved slightly through the acquisition of a clerk to handle the large volume of documents within the office; however performance of all assigned tasks continued degraded by lack of resources.

(U) DRCDE-F continued studying the role and function of Net Technical Assessment. It was expected that this function, with the initiation of a successful methodology could be accomplished through DIA taskings of FSTC and MIA. Many of their tasks call for assessments of technological features of foreign weapons and support systems and for projection of technology development.

Scientific and Technical Information (STINFO)

(U) The STINFO program was funded under the Army RDT&E Program Element 6.58.03.A, Technical Information Activities of AR 37-100-78. $2.852 million was financed in FY 1978 to support the following STINFO projects: M367 - Automated Engineering Data Preparation System; M720 - Technical Information Functions; M728 - Information Technology; M729 - Youth Science Activities, Symposia and Conferences; M761 - Technical Information Analysis Centers; M903 - Signal Intelligence/ Electronic Warfare Technical Information.

(U) A draft AR 70-XX, Technical Libraries, Information Functions, Information Centers, Information Analysis Centers, Management of, was prepared and provided to the Army field elements for review and comment. Comments were received and were being evaluated for inclusion in a subsequent draft. The Army, Navy and Air Force (with the endorsement of NATO) organized and presented an international conference titled "Technology Transfer in Industrialized Countries." This conference, held in Estoril, Portugal, from 6-11 November 1977, was attended by the US and 16 NATO and other countries. This office provided the Army portion of the Tri-Service management for this conference.

(U) Further actions in STINFO included: accepted responsibility for coordination of Army-wide efforts in Technology Transfer; established new project support for analog information store and forward (x-ray, graphics and photographics) using slow scan television techniques and commercial telephone lines; established new project support for fostering information transfer via conference and symposia; and began management planning structure using immediate, short, mid, and long range time increments.

Defense Standardization Program (DSP)

(U) The last link of the organization of the DARCOM commands recommended by AMARC (Army Materiel Acquisition Review Committee) was completed with the establishment of the Electronics R&D Command (ERADCOM), Communications R&D Command (CORADCOM) and the Communications and Electronics Materiel Readiness Command (CERCOM). ERADCOM and CORADCOM were assigned standardization symbols ER and CR, respectively, and designated by the Army Departmental Standardization Office as Assignee Activities for Federal Supply Classes and Area Plans within their expertise. The Standardization Directory (SD-1) was revised to eliminate the EL symbol and replaced with the appropriate symbol for electronic/communication systems/components.

(U) The FY 1978 funds for the DARCOM portion of the Army DSP was over $12 million which was comparatively equal to FY 1977 DSP funds. Under the Zero Base Budgeting concept, the $12 million represents approximately 80 percent of the budgeted funds that were financed to accomplish the DARCOM DSP mission in FY 1978. Approximately $1.5 million was utilized for contractual standardization effort. The attendant in-house manyears decreased from 247 to 226, a shortfall of 21 manyears.

(U) The Army was asked to develop a plan of action for review of military specifications and standards which call for the use of cadmium electroplating. The Office of the Under Secretary of Defense has provided us the guidance as a result of Environmental Protection Agency's enforcement and pretreatment regulations for toxic substances under the authority of the Federal Water Pollution Control Act. This subject was receiving Congressional interest.

(U) The Office of Management and Budget (OMB) developed policies on Acquisition and Distribution of Commercial Products (ADCP) which require all Services to review their specifications with a view to cancelling them if commercial items could be bought from the suppliers using market acceptability criteria. The Army had nearly 4,500 documents of the 8,000 selected indiscriminately from the body of the DOD Index of Specifications and Standards (DODISS) specifications which might qualify for cancellation and adoption of an industry association document. The DODISS contained approximately 40,000 documents, so approximately 20 percent of all DOD and Federal documents were involved.

(U) The following Standardization Area Program Plans were coordinated, approved, and published: Packaging Standardization Document Program Plan, 3 April 1978; Soldering Standardization Document Program Plan, 22 May 1978; Configuration Management Standardization Program Plan, 8 March 1978; and Human Factors Standardization Program Plan, 19 June 1978.

Independent Research and Development (IR&D)

(U) Responsibility for the technical evaluation of seven additional defense contractor's IR&D programs was transferred to the Army in 1974, with the understanding that the second part of the IR&D process, that of negotiation of ceiling on dollar recovery, would be transferred as soon as practicable. The transfer of this latter responsibility, in which this office supports the Headquarters DARCOM Procurement and Production Directorate, was completed in the past year for ESL, Hazeltine, AVCO and Martin Marietta. It was expected that the negotiation responsibility for General Motors R&D Center, and Boeing Vertol would be completed in 1979. The transfer would require actions by this office to determine the proper classification of contractor efforts, whether IR&D, Bid and Proposal, or indirect engineering. Present Army (Industry Liaison Office) responsibility for the technical evaluation included 30 defense contractors totalling about $816 million.

(U) Executive on-site reviews of contractors' IR&D programs were continued. The executive management type of review was initiated by this office for Army use in 1975 as an experimental, optional technique. This approach, prompted by DDR&E emphasis on eliminating duplication in technical evaluation and reduction in the cost of IR&D administration, has proven successful. It has provided the insight necessary to the complete evaluation, at low cost to the Army, achieved with a minimum of technical personnel. It has generally been accepted with enthusiasm by industry. Because of the small number of people involved (normally 6-8 DOD and 4-6 contractor) highly effective DOD-Industry technical interfacing has been achieved. Army influence on IR&D contractor's programs has been enhanced. This should be of great benefit to Army RDT&E programs, as the contractors address more Army objectives and requirements in their IR&D projects. Duplication of contractor technical efforts should be minimized.

(U) Because of the radical reorganization in DARCOM major subordinate commands, there were numerous changes in the IR&D focal points which support this office in the administration of the Army's part of this DOD function. Efforts to familiarize the newly assigned personnel with IR&D procedures have not always produced knowledgeable coordinators. Because of their increased workload, technical inputs have been late and inadequate, with some impact on the total evaluation and negotiation. Efforts will be increased to expedite training in the complicated procedures and policies of IR&D through meetings with IR&D focal points from commands and laboratories.

Unsolicited Proposals

(U) There was no backlog of unsolicited proposals at the end of FY 1978. This was attributed to the efficient submitting of the

proposals to the command or separate laboratory with technical expertise for proper evaluation and to encouraging submitters to go directly to the appropriate commands, thereby reducing retransmission time and expense. The DARCOM Regulation for Unsolicited Proposals (DARCOM-R 70-2) was rewritten and was to be distributed to the field in early CY 1979. The "Guide for Submitting Unsolicited Proposals" (DARCOM-P 70-8) was also rewritten and was to be distributed in early CY 1979.

DA Advanced Concepts Team (ACT) Liaison

(U) During FY 1978, 11 new starts were achieved. Ten additional programs were carried over from FY 1977. Due to internal constraints, ACT was funded at $3.0 million rather than $5.0 million. There appeared to be no problems with the ACT program except that more funds were necessary to keep productive programs going. Non-productive programs were cancelled and the residual funds redistributed where possible.

Technical Industrial Liaison Office (TILO)

(U) Two Tri-Service Industry Information Centers were formally established. The first, hosted by the Army, is located in the DARCOM Headquarters in Alexandria, Virginia. The US Navy hosts the second center located at the Office of Naval Research in Pasadena, California. A third center to be hosted by the US Air Force was discussed with the possible location at Wright-Patterson Air Force Base, Dayton, Ohio. The effectiveness in providing a Tri-Service Information Center for Industry in the Washington area appears to have paid off as this activity averages approximately 100 visitors per month. The interest was in all three Services and was evenly distributed. Attendance appeared to be increasing steadily. The complete staffing of the Army TILO Activity continued to be a problem. DARCOM Pamphlet 70-6, titled "US Army Research Development and Planning Information for Industry" was completed, printed and widely distributed. Full support was provided to the ARRADCOM Advanced Planning Briefing to Industry (APBI) held in West Point on 26-27 September 1979, resulting in a very successful meeting.

(U) The West Coast TILO activity in Pasadena continued to be staffed with two individuals. In view of changing requirements, to achieve better utilization of personnel and better coverage of the Western part of the country, one position was officially changed from Clerk-Typist to Information Specialist. Hopefully, this change would increase the effectiveness of the center which should be reflected in the number of visitors to the activity. Management of the West Coast activity was more closely monitored and would continue to be furnished more positive guidance to improve efficiency, service, and response to industry.

TRADOC has requested DARCOM to assume the function of providing requirement documents (ROC, LOA, LR, etc) to industry. Negotiations were initiated to establish a responsive and effective program that would include periodic reviews, updating and release of new documents as these become available in the future.

Product Improvement

Trends and Growth

(U) As product improvement has grown in both degree and level of interest, it has grown in annual resource magnitude and involvement of materiel systems. Actions previously held as beyond the scope of product improvement were becoming recognized as the normal and inseparable aspects of product improvement. These include conversion of weapons systems and evolutionary development of operational capability. The latter often requires substantial investment in RDTE funds. It was also being recognized that, while engineering and testing efforts were required, there may not be any retrofit of the improvement to existing systems or equipment, but rather the improvement would be included in new production only. Emphasis continued to be placed upon the successful application of the modification kits in those PIP's. The product improvement mission of the Army was largely administered by DARCOM. Other Army elements were using DARCOM to accomplish their improvements, or as in the case of The Surgeon General, were joining DARCOM in the semiannual joint reviews as a means of getting their improvement programs approved and recognized for funding. These trends are addressed further in the following paragraphs.

(U) The Fiscal Year 1980 program was approximately $1.2 billion in aggregate of all types of funding resources identified for approved product improvement proposals. See Chart 14. This was approximately 10 percent of the total DARCOM budget for FY 1980.

(U) The use of product improvement to upgrade existing equipment through enhanced capability based on state-of-the-art developments is recognized by AR 1000-1 as the preferred alternative to the development of a new system.[1] In terms of reduced fiscal resources requirements, time, and logistic impacts, product improvement, where technically feasible, may well be the optimum alternative and it must be seriously evaluated in the consideration of any new system development undertaking. One of the formally recognized future development goals of DARCOM was the greater use of product improvement in lieu of new development.[2] What was needed was awareness and initiative on the part

[1] AR 1000-1, 1 Apr 78.

[2] DARCOM Form 2133-R, DARCOM Future Development Goal, FD-6-1

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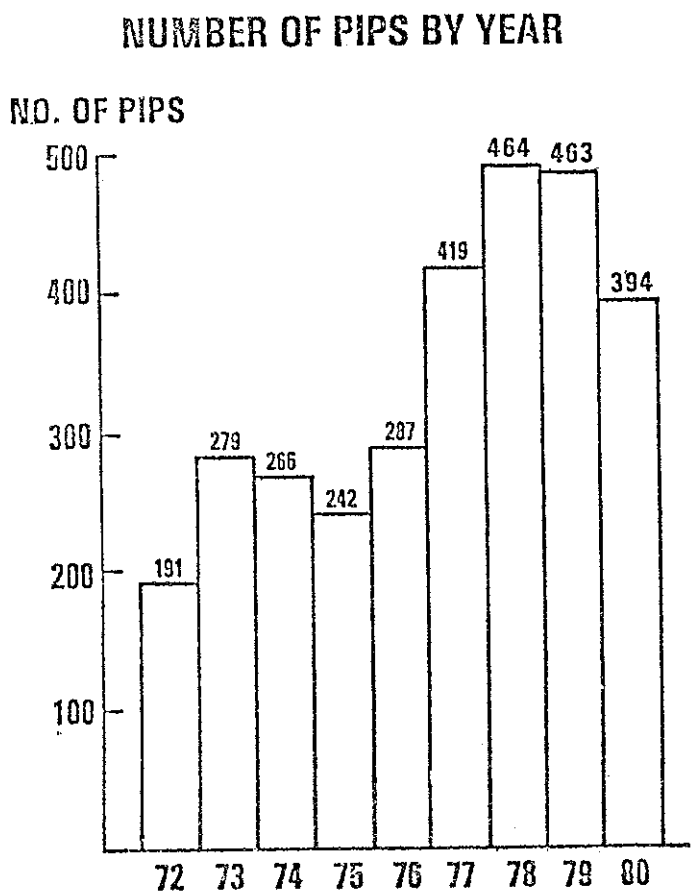
PRODUCT IMPROVEMENT PROGRAM GROWTH



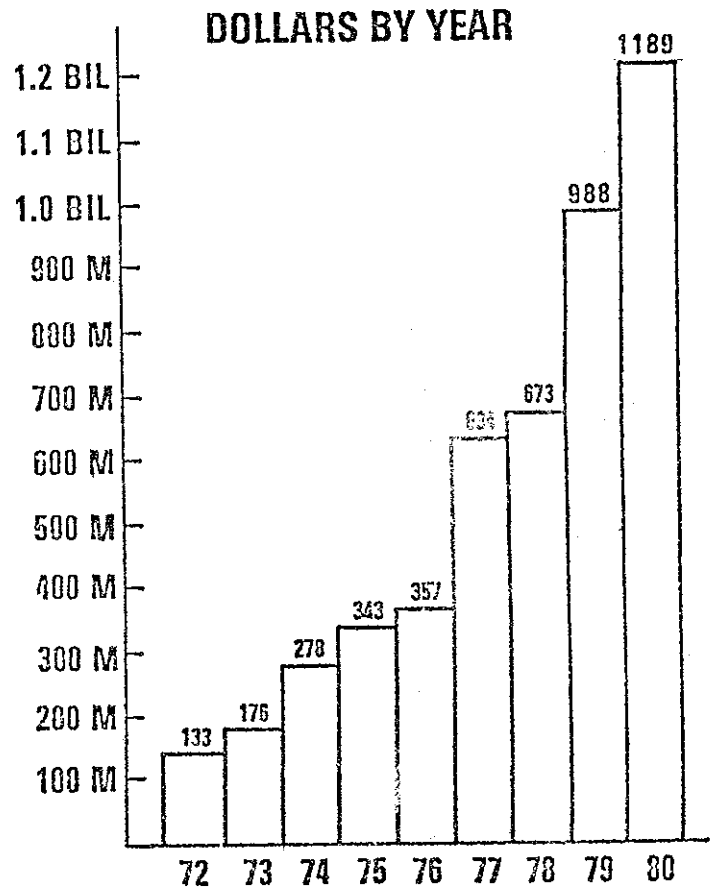


Chart 14

(UNCLASSIFIED)

of the DARCOM and TRADOC development communities to use product improvement which was preferable to new system development. Both the developer and the user needed to recognize PI as an alternative and needed to consider the PI alternative in the initiation of each new development.[3] This concept was being highlighted at Army and DARCOM Commanders Conferences, the product improvement management course, through articles in technical publications, revisions to DARCOM policy, and papers before professional groups.

Joint Reviews

(U) The Joint DA/TRADOC/DARCOM PI Review continues to be the major forum for reviewing DARCOM's PI program for resource recognition and confirmation of status, especially TRADOC coordination. In addition to TRADOC participation, which has grown from one representative to as many as 15 depending upon the PIP's being considered, the Army Materiel Systems Analysis Activity (AMSAA) and the Test and Evaluation Command (TECOM) also participate. These semiannual reviews are held at DARCOM Headquarters with the chief of DARCOM PI Office as chairman. The fall session addresses the Program Objective Memorandum (POM) estimates (planning year plus the next four fiscal years), and any late start or revised, previously approved PIP's. The spring session primarily addresses the planning year PIP's submitted as preliminary estimates the preceding (fall) session and any late or significant revisions to previously approved PIP's. The spring session PIP's all must have complete documentation including formal TRADOC concurrence in order to be approved.

Priorities

(U) Twice a year the Office of the Deputy Chief of Staff for Operations (DCSOPS) assigns a priority to each approved PIP and these are annotated in the formal minutes of each joint review session. This prioritization is used to budget and reprogram resources for PIP's in management actions between the joint reviews. Each PIP is prioritized to compete on its own merit with all other items in the acquisition budget. In December 1977, TRADOC began to prioritize PIP's along with the other items in the RDTE and the procurement. Special attention was given by this office to assure that identifiers were placed on each PIP to facilitate TRADOC recognition and association of the PIP with the resources as carried in the Army budgets. It was anticipated that this TRADOC prioritization would eventually have a distinct impact upon the DCSOPS priority assignments.

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[3]Fact Sheet, DRCPI, 15 Sep 78, Subj: Modular/Evolutionary Development of Missile Systems.

Coordination With TRADOC

(U) In the previous fiscal period it was recognized that TRADOC was DARCOM's partner in PI and timely coordination of PIP's with appropriate TRADOC elements was essential. However, preliminary overtures and the resulting guidance proved inadequate. A determined effort was initiated during November 1977 with TRADOC headquarters to simplify coordination procedures and identify points of contact within TRADOC and within DARCOM. The first comprehensive POC listing was published 8 February 1978. Wide dissemination of the listing led to recognition of its usefulness, a flood of corrections, and identification of many additional Points of Contact (POC) throughout the Army. The 5 July 1978 edition of the POC listing for FY 1978 identified POC's not only throughout the TRADOC and DARCOM structures, but also with DA and the Marine Corps.[4] This is viewed as an essential PIP information service and would be updated and published as required.

Resourcing

(U) Early in the DARCOM Product Improvement Program, the ultimate responsibility for a product improvement was identified with that command or project manager assigned management responsibility for the weapons system or line item of equipment to be improved upon. With this responsibility for execution of the PIP, from inception through installation of the last modification kit, must be the authority to control the required resources. There are four fiscal appropriations, with many substratifications within these appropriations, that can be required to fund a PIP. To simplify budgeting and funding for PIP's the DARCOM Plans and Analysis Directorate developed and issued clarification of this policy.[5] In effect, the PIP proponent would be responsible for programming, budgeting, and funding in all appropriations and these funds would be released by DARCOM to the PIP proponent for issue to supporting activities. (The exception is OMA P732207 funds issued to DESCOM). A simplified guide for determining these responsibilities was included with the DRCPA guidance.

Regulatory

(U) Delegation of the responsibility for revising the 1 April 1975 Product Improvement Regulation (AR 70-15) was granted to DARCOM in July 1977. The current regulation had been made obsolescent by the rapid and evolutionary changes in the concept of the Army's product improvement mission. These changes had begun even before the issue of

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[4] Ltr, DRCPI, 5 Jul 78, Subj: Product Improvement Points of Contact for Coordination.

[5] Ltr, DRCPA-O, 27 Jul 78, Subj: Budgeting and Funding for Product Improvement Proposals (PIP).

the current regulation and necessitated issuance of implementing instructions to the field as conditions changed. DARCOM Pamphlet 70-5 was issued in November 1977 to formalize and consolidate instructions for the preparation and processing of the new Product Improvement Management Information Report (PRIMIR).[6] This report was necessary to provide essential management information. This new format answered the purpose of the old product improvement proposal format in AR 70-15[7] as well as the quarterly information reports on modification kit and obligation status. In addition, frequent supplemental guidance was issued, largely by means of product improvement information update letters, to update the PI concept and provide specific management and responsibility guidelines.

(U) Product improvement management was not merely the "front end" PIP approval process. It included the entire spectrum of responsibilities and actions through testing, procurement, and installation of the modification kits. Once this fact was recognized, it was evident that both the PIP regulation and the modification/MWO regulation, AR 750-10, should be combined in one complete document. This agreement was negotiated with both DCSLOG and DCSRDA during the last fiscal year. This step to bridge the long-standing and always counterproductive gap between initial development responsibility and fielding of the improvement would not alone solve the chronic interface problems, but constituted at least one positive, basic step to that goal. On 29 September 1977, the final draft of the combined regulation was forwarded to the Deputy Chief of Staff for Research, Development and Acquisition for approval. This action emphasized the DARCOM conviction that only a single regulation would properly reflect the one continuous process of product improvement and modification, and reported that coordination with the Office of the Adjutant General had resulted in a recommendation that a new category designation within the 700 series of AR's be used to remove any parochial stigma of either a development or a logistics proponency.

PI Management Course

(U) During this fscal year, as in the preceding period, representatives of this office conducted short seminars at each of the major subordinate commands to promote an understanding of the product improvement mission, DARCOM's role, our management plans and requirements, and our procedures. A total of perhaps 300 people participated

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[6] DARCOM Pamphlet 70-5, Nov 77, Subj: Product Improvement Management Information Report (PRIMIR).

[7] Ltr, DRCPI, 29 Sep 78, Subj: Proposed AR 70-15, Product Improvement and Modification of Materiel.

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in these two to four hour on-site sessions. However, the continuing flow of questions to our office and the inadequacies in many of the PIP submissions and in scheduled PIP accomplishment led to the realization that a formal, professionally taught course in product improvement was desperately needed.[8] The Army Management Engineering Agency (AMETA) agreed to develop and conduct a three-day course at each of the major subordinate commands at least 12 times during FY 1979 to provide the indoctrination to the program participants. The first course was scheduled for the week of 16 October 1978.

Assessment

(U) Responsibilities of the Product Improvement proponent have been repeatedly emphasized since the formation of the DARCOM Product Improvement Office in July 1975. The responsibility for assuring that an independent assessment is made of the test data prior to any production decision has been particularly stressed and was the subject of a specific presentation at the 25 September 1977 DARCOM Commanders' Conference. Since then the assignment of PIP's for assessment has been the result of mutual agreement between the independent test data assessors: AMSAA and TECOM. Their review of PIP's to determine the necessity and extent of test data assessment is a continuing process and the results are published on a semiannual basis.[9] TECOM advises PIP proponents directly of those PIP's which are not considered of such complexity or significance to warrant an independent test data assessment.[10]

Modification Kit Application

(U) Another aspect of PIP proponent responsibility is that for assuring that resources and other provisions are anticipated and provide for the timely installation of modification kits, or cut into new production of the end item. In March 1978, a joint DARCOM headquarters and DESCOM team conducted an audit at each of the major subordinate commands to determine the status of FY 1978 scheduled and financed PIP/MWO kit installation.[11] In general, the results were disappointing and showed that over $20 million of P2207 OMA resources programmed for PIP kit application to be accomplished in this fiscal year would be excess to the needs of the PIP program. This was primarily due to over-optimistic forecasting and failure to make timely

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[8] DF, DRCPI, 30 Jan 78, Subj: Request for Training Seminar on Product Improvement Proposals (PIP's).

[9] Ltr, DRCPI, 26 Oct 77, Subj: Independent Evaluation of Product Improvement Testing.

[10] Ltr, TECOM, Subj: Product Improvement Programs (PIP's).

[11] MFR, Report of Trip to Depot System Command, Chambersburg, PA, 10 Apr 76.

revisions in kit application plans. As a result of this audit, commodity commanders were made aware of the reality of their command's management shortcomings and the necessity for dedicated, intensive management of this critical area of product improvement. A follow-up audit at the same commands in August of 1978 indicated some improvement and that a conscientious effort was being made by the commodity commands toward realistic modification kit application forecasting. DARCOM still had problems, but these had been identified along with the necessary remedial actions.

Audit Trail Stewardship

(U) The planning, approval, management and execution of a PIP are based on events and decisions which leave an audit trail. The collection and preservation of this documentation for every approved PIP is the responsibility of the PI proponent.[12] This responsibility has been equated with stewardship and a periodic review by each command on a spot check basis of a PIP selected by this headquarters was initiated in October 1978.[13] This stewardship program emphasized the necessity for cohesive, continuous management responsibility from the initiation of the proposal to the installation of the last modification kit in the field and the evaluation of data collected to assess the overall effect of the improvement.

(U) After reviewing the memorandum, PEQUA recommended, in a letter to the Commander Headquarters AMC, ATTN: AMCRD and AMCRP dated 21 April 1975, subject: Expanded Manufacturing Technology Program, that PEQUA be immediately tasked for aggressive response to DOD desires and the Army needs. Later, in a letter dated 24 April 1975, subject: Manufacturing Technology/Cost Reduction Initiatives, the Deputy Commanding General, AMC, tasked the Army Materials and Mechanics Research Center (AMMRC) to review the effectiveness of the Manufacturing Method and Technology Program in order to identify potential areas of maximum opportunity for cost reductions as well as major production obstacles. In a first indorsement, dated 16 May 1975, responding to PEQUA's recommendation of 21 April, the Director of Research, Development, and Engineering advised PEQUA that AMMRC had been directed to support and consult with PEQUA on matters pertaining to MM&T. This Office of Manufacturing Technology initially consisted of the Acting Chief and a secretary. On 24 February 1976, a letter signed by the

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[12] Ltr, DRCPI, 4 Aug 78, Subj: Product Improvement Documentation Responsibility.

[13] Ltr, DRCPI, 28 Sep 78, Subj: PIP Stewardship Evaluation.

Deputy Commanding General for Materiel Acquisition designated Colonel Newell E. Vinson as the point of contact and the Acting Chief of the office. This office nucleus was shortly thereafter augmented by reassignments and reduction-in-force actions, following a reorganization as a result of a study report dated 1 August 1975 whose purpose it was to align AMC's functions and staff. The Directorate for Development and Engineering at Headquarters DARCOM, at this time found itself with a surplus of engineers and scientists who could readily fill the vacant engineering spaces available in the Office of Manufacturing Technology. Accordingly, four engineers were assigned to that office. On 27 October 1976, an official Table of Distribution and Allowance (TDA) was prepared by the personnel office listing the following personnel spaces:

LINE	NO.	DESCRIPTION	MOS
01	1	Chief	GS-801-16
02	1	Electronic Engineer	GS-855-15
03	1	Aeronautical Engineer	GS-801-15
04	1	Chemical Engineer	GS-833-15
05	1	General Engineer	GS-801-14
06	1	Mechanical Engineer	GS-800-14
07	1	Aeronautical Engineer	GS-801-14
08	1	Industrial Engineer	GS-895-14
09	1	General Engineer	GS-801-12
10	1	Secretary (Steno)	GS-318-07
11	1	Clerk Steno	GS-312-05

(U) Due to the nature of the Reduction in Force (RIF), realignment, and the fluidity of the situation, many changes and adjustments took place. Consequently, the TDA, as shown above, was never fully implemented though the changes encountered were ordinary ones.

(U) In line with his "Cost Reduction Initiative," the Deputy Secretary of Defense, on 21 October 1975, issued a Memorandum for the Director, Defense Supply Agency, subject: Improving the Effectiveness of Department of Defense Logistics and Resource Management. In this memorandum the Deputy Secretary stated that the Department of Defense must do a better job of incorporating logistics management factors during the design and acquisition of weapons systems and materiel to fulfill the DOD mission. He further pointed out that three existing offices in DSA had the potential to provide the professional expertise needed to help in this task, and that the Defense Product Engineering Services Office (DPESO) was one of them. Furthermore, he supported the expansion of these offices with DPESO being the first of the three to be expanded.

Manufacturing Technology

Organization

(U) The Army Manufacturing Methods and Technology (MMT) Program was established in the Directorate for Production and Procurement (AMCPP) in 1964 as part of the Army Production Base Support Program with goals to improve existing manufacturing technology, translating new technology into production line processes, and supporting the modernization and expansion of military hardware production base. On 4 March 1971 the Director of Requirements and Procurement (AMCRP) issued a Memorandum of Understanding, subject: Assumption of Engineering Responsibility, for the Transfer of Manufacturing Methods and Technology Function. The purpose of this memorandum was to delineate the responsibilities of the Director of Research, Development, and Engineering (AMCRD) for assumption of control over the Manufacturing Methods and Technology function relative to the Production Engineering Measures Program and to provide an interim support capability during the transition period.

(U) As a result of needed clarification and delineation, and also to emphasize the importance of the Manufacturing Technology Programs, the Assistant Secretary of Defense, Installation and Logistics, issued on 14 July 1974, a Department of Defense Instruction (DODI) entitled, Manufacturing Technology Program, which cancelled and reissued the previous DODI, dated 30 January 1969, with the same title and number but with the express purpose of broadening the objectives of the Manufacturing Technology Program in support of the Industrial Preparedness Program.

(U) For some time previous to this, the Armed Services had been facing critical cost problems in the acquisition of weapons systems and the prospects of having to continue to face them caused the Deputy Secretary of Defense on 11 April 1975, to issue a memorandum for the Secretaries of the Military Departments, subject: Cost Reduction Initiatives. He was convinced there were numerous opportunities to obtain significant cost savings in the production of Defnese Materiel by increasing the application of the state-of-the-art of manufacturing techniques and by the development of new or improved manufacturing technology. At a briefing entitled Manufacturing Technology Management given by the US Army Production Equipment Agency (PEQUA) to the Director of Research, Development, and Engineering (AMCRD) on 15 April 1975, the Director provided PEQUA with a copy of the Cost Reduction Initiatives Memorandum.

(U) On 8 June 1976, a Memorandum of Understanding between DOD Product Engineering Services Office and Headquarters, US Army Materiel

Development and Readiness Command was signed by the Deputy Commanding General for Materiel Development, DARCOM, and the Director, Weapons Systems Production Management, OASD (I&L), wherein it was understood and agreed to that the DPESO group was to be allocated to the Army and was planned to be collocated under the Chief, Office of Manufacturing Technology, DARCOM. Shortly thereafter, three spaces, two GS-801-14 General Engineer slots and one GS-301-6 secretary, were collocated at Headquarters DARCOM. These three spaces were transferred to the Office of Manufacturing Technology on 8 July 1978. In January 1978, COL Vinson received permanent change of station orders and was replaced by COL John H. Tipton who retired at the end of six months, in June 1978. Because of the inability to recruit an acceptable GS-801-16 Civilian Chief quickly, COL Tipton orally appointed the senior GS-801-15 General Engineer as Acting Chief. In November 1978, a GS-16 was selected and was expected to come aboard on 22 January 1979.

(U) The staffing of The Office of Manufacturing Technology was as follows at the close of FY 1978.

1 GS-16 - Chief
1 GS-15 - Engineer for Producibility (PEP) and Ammo MMT plus Critical Technology Export Control
1 GS-15 - Engineer for Electronics, Avionics & Commo MMT plus NC/CAD/CAM/CAT and the related Machine Tool Task Force & the Army's ADMIT program (Automated Design, Manufacture, Inspection/Testing)
3 GS-14 - Engineers for the other 3 MMT Procurement PBS accounts plus Tech Transfer, Training and Commercial Commodity Acquisition
1 GS-14 - Engineer managing VE & DTC
1 GS-14 - Engineer managing the $50 million OMA funded Production Engineering program
1 GS-12 - Engineer/Program Analyst
2 GS-14 - Engineers to manage Army Production Readiness Review support
1 GS-07 - Secretary (Steno)
1 GS-06 - Admin Services Assist (Steno)
1 GS-03 - Clerk Typist (Tempo)

Mission and Function

(U) The mission and functions statement of the Office of Manufacturing Technology has remained substantially the same as conceived at the outset when the office was activated on 20 January 1976, and as outlined in chapter 16 of the April 1976 issue of the DARCOM

Regulation 10-2 entitled, Organization and Functions. The aforementioned Memorandum of Understanding and agreement of 8 June 1976, to allocate to the Army the DOD APESO group to DARCOM and to collocate them with the OMT, did have a minor impact on the mission and functions statement of the Office of Manufacturing Technology. The changes brought about by the assimilation of the duties and responsibilities of the Defense Product Engineering Service Office have been prepared and submitted for publication, and have been reflected in the 1978 edition of the DARCOM-R 10-2. On 29 August 1978, a realignment of responsibilities and assignments of the OMT was implemented to improve the workload distribution and to increase the efficiency and effectiveness of the office. This realignment had no impact on the regular mission and functions of the office.

Accomplishments

(U) The management of the Army Manufacturing Methods and Technology Program may be divided into three historical stages, depending on which directorate was managing the program. The first stage covers the period from the time the program was established in 1964, under the control of the Director of Production and Procurement, to the time when it was transferred and placed under the control of the Director of Research and Development on 4 March 1971. The second stage covers the period from the time when the Director of Research and Development assumed management responsibilities to the time when the Office of Manufacturing Technology was established, on 20 January 1976, and reported directly to the Deputy Commanding General for Materiel Development at DARCOM, which represents the current or the third stage.

(U) Because of the nature of the mission and functions performed by the Office of Manufacturing Technology in providing centralized management for its program, the number of projects funded and released to the field commands for obligation vary from year to year which, when reported to headquarters, must be carefully analyzed so that accomplishments may be evaluated on two different criteria; i.e., dollars released and obligated and numbers of projects released and obligated, both on a percentage basis. Also, the number of active projects differ from time-to-time and year-to-year. For example, during the period from the beginning of FY 1970 to the end of the first half of FY 1978 there were a total of 541 active projects on the books, funded at a value of $59,841,000. At the end of FY 1978, there were 499 active projects, funded at a value of $236,304,600.

Manufacturing Methods & Technology (MMT) & Military Adaptions of Commercial Items (MACI).

(U) The budget for FY 1978 covering a combination of 200 Manufacturing Methods and Technology, together with 40 Military Adaption of Commercial Items (MACI) projects, was valued at $76,570,000. It was released to the commands for obligation. During that year the commands succeeded in obligating $66,661,798 or 87.1 percent of their budget. In the previous year, FY 1977, the budget contained a combination of 175 MMT and 40 MACI projects valued at $79,124,598, of which the commands obligated $78,410,551 or 99.2 percent. These figures, and others like them, simply show that the MMT and MACI programs differ from one another in that there is no relationship between the yearly dollar values, the number of projects, and the time required to obligate the different projects because some low valued projects may require more time to obligate than some high dollar value project, and vice versa. Consequently, the only realistic measure of effectiveness and accomplishment is the percentage value. Although the track record provided is very limited, this is due to the fact that the OMT has not been in existence very long.

Producibility Engineering and Planning (PEP)

(U) The Producibility Engineering and Planning (PEP) Program, despite the fact that it is very important and the driving force to achieving producibility of a product in an assured timely manner and at an affordable cost, has not been very active in this or previous fiscal years, and possibly unavoidably overlooked due to the shortage of personnel in the OMT. This situation was brought about by the inability to acquire an acceptable GS-16 as Chief of the OMT in a reasonable time, which caused the informal nomination of an acting Chief who, in addition, had to perform his normal assigned duties as an action officer. In addition, questions have arisen regarding who should rightfully manage the PEP program, especially since it is presently being funded by Development & Engineering Directorate. The OMT intends to straighten this matter out in the next fiscal year.

Commercial Commodity Acquisition Program (CCAP)

(U) Pursuant to the memorandum issued by the Office of the Secretary of Defense, on 14 January 1977, entitled, Commercial Commodity Acquisition Program, whose purpose it was to initiate the pilot CCAP, the Department of the Army on 16 February, issued a directive that since the majority of the Army actions required during the pilot program would be the responsibility of DARCOM, it requested that DARCOM manage the pilot CCAP program. At this time the Office of Manufacturing Technology was selected as the Point of Contact for

the Army. The CCAP is a direct off-shoot of a memorandum issued by the Office of Federal Procurement Policy, dated 24 May 1976, wherein the administrator was convinced of the need for a fundamental change in procurement direction; i.e., to emphasize the acquisition of commercial off-the-shelf products in order to achieve optimal effectiveness in supply and support operations. The purpose of CCAP was to explore the acquisition methodology and procedures, the logistics support, and the reduction of life-cycle-cost by use of qualified commercial products to satisfy military requirements. It was further the objective of the CCAP to be the transition vehicle for the "Implementation of the Policy on Acquisition and Distribution of Commercial Products (ADCP)" as stated in the Office Federal Procurement Policy (OFPP) letter of 27 December 1977 which also cancelled CCAP effective 31 December 1978.

Production Engineering (PE)

(U) The duties and responsibilities for managing the Operation and Maintenance, Army (OMA) funded PE program was assigned to a newly acquired general engineer, GS-14, replacement to fill a position that had been vacant for about 10 months. The FY 1978 PE program was valued at approximately $60,000,000. The significant accomplishments by this office in this area include the development of an efficient and effective methodology for readily identifying and allocating released funds for translation into quantifiable prioritized PE workloads which, in turn, assist the OMT to prepare and defend future budgets.

Value Engineering (VE)

(U) The mission of the Office of Manufacturing Technology includes the Value Engineering Program. In FY 1978, the assigned objective for Value Engineering Proposals (VEP), originating in-house, was 1385 proposals while, as a matter of fact, MSC's actually completed 1570 proposals, thereby accomplishing 113 percent of the assigned goal. In FY 1978 the number of Value Engineering Change proposals (VECP) DARCOM received from contractors amounted to 528 proposals of a set goal of 600 or 12 percent short of the set goal. The reported Value Engineering validated first year savings/cost avoidance amounted to $176,000,000 or 235 percent of a set goal of $75,000,000. During this fiscal year General J. R. Guthrie, Commander, DARCOM, made a major VE address to the Society of American Value Engineers (SAVE) at their Indianapolis, Indiana conference in May. His message concerned DARCOM's desire to receive more contractor submitted VECP's.

Design-To-Cost (DTC)

(U) Another responsibility of the Office of Manufacturing Technology is to establish policies and procedures for DTC in coordination with the Deputy Commanding General for Materiel Readiness (DCGMR) as it relates to the Integrated Logistics Support (ILS). During FY 1978 a draft DTC Army Regulation was written by the Office of Manufacturing Technology in order to implement the Department of Defense Instruction 5000.28. The draft was being circulated for comment and/or concurrence at the major subordinate commands and selected project manager offices at the end of FY 1978. Under the chairmanship of the OMT, a tri-service group had been formed to review the numerous existing Data Item Descriptions (DID) being used in DTC contracts. The purpose of this review, as stated in DA guidance, was to reduce to one, or at most, two, the DID's for standard use by the Army, Navy, and Air Force procuring agencies.

Communications and Electronics

(U) Manufacturing Methods and Technology projects covering electronics, communications, avionics and all computer related activities prior to FY 1978 were managed by special assignments to qualified OMT staff members. Early in 1978 a new GS-15 action officer, whose educational background and experience qualified him to assume the responsibility to manage these electronic related activities, was added to the OMT staff. Immediately thereafter, guidelines were established for a program management concept for the administration of the MMT program in the three MSC's (CERCOM, CORADCOM, and ERADCOM) emerging from the reorganization of the Electronics Command (ECOM) and for implementing the concepts. In an effort to get a better control of other electronics projects, a plan was defined for the development of an MMT project in support of the Near Millimeter Wave (NMMW) Large Scale Integrated (LSI) and Very High Speed Integrated (VHSI) circuit programs. Another significant action resulted in developing the initial concepts for a program for an integrated computer-aided system for the design, manufacture, inspection and testing of materiel acquired by the Army.

Army Product Engineering Services Office (APESO)

(U) As a result of an agreement stemming from a Memorandum of Understanding between DOD Product Engineering Support Office (DPESO) and HQ DARCOM, dated 6 June 1976, a ten member segment of the DPESO was to be allocated to the Army and collocated under the Chief, Office of Manufacturing. Although the first DPESO action officer reported for duty at the Office of Manufacturing Technology a number of months

before the office was officially transferred, and despite the fact there was no other PESO personnel available to assist, no time was wasted in making the office operational. Plans, goals, and objectives were formulated for the dissemination of Production Readiness Reviews (PRR) policy and procedures, to the Readiness/Research and Development Commands and Project Managers (PM). The success of attaining these goals and objectives represents one of the major accomplishments of the Army (APESO) staff at the Office of Manufacturing Technology.

(U) Other APESO accomplishments during FY 1978 include: (1) manpower level of APESO was brought up to full initial strength of two engineering and one clerical/administrative officer, though this strength was considered inadequate for accomplishment of expected actions, (2) the official transfer of the Army PESO functions from Defense Logistics Agency to Headquarters DARCOM was accomplished in July 1968, (3) a draft DARCOM Production Readiness Review (PRR) regulation was prepared and staffed throughout the Readiness Research and Development commands and PM's for review and comments, and (4) PRR assessments, which would extend into FY 1979, were initiated under Army PESO staff supervision for the following systems: PATRIOT, US ROLAND, XM-1 Tank System, FVS, and the Ground Laser Locator Designator (GLLD).

(U) Full time production engineering support was provided to the following systems: PM, US ROLAND - Initial Production Facilities (IPF) proposal evaluation and negotiation; PM, AAH - Design-to-Cost study of the prime and subcontractors for the Advanced Attack Helicopter; PM, VIPER - IPF proposal evaluation; PM, FAMECE/UET - Cost studies (Commercial vs Military) on dozers, loaders, and graders; and PM, TACFIRE - Evaluation of Tacfire Printer System and Related Analog Computer Systems.

International Research and Development

Mission

(U) The Office of International Research and Development was established 1 July 1975 by the combination of the International Development Branch of the Research, Development and Engineering Directorate with selected elements of the International Division of the Office of Deputy Chief of Staff - Research, Development and Acquisition (DCSRDA). The Office reports directly to the Assistant Deputy/International Research and Development, Deputy Commanding General for Materiel Development.

(U) This office managed US Army participation throughout the year in the following international research, development and standardizationprograms: Mutual Weapons Development Data Exchange Program and Defense Development Exchange Program; Cooperative Research and Development Program; US Canadian Defense Development Sharing Program; International Professional (Scientists and Engineers) Exchange Program; North Atlantic Treaty Organization (NATO) Military Agency for Standardization (MAS) and Advisory Group on Aerospace Research and Development (AGARD); American-British-Canadian-Australian (ABCA) Standardization Program; Central Treaty Organization (CENTO) Standardization Programs; Air Standardization Coordinating Committee (ASCC) Program; The Technical Cooperation Program (TTCP); and the American-British-Canadian-Australian (ABCA-Naval) Program.

(U) In addition, this office manages DARCOM participation in North Atlantic Treaty Organization (NATO) AC/225 panels, AC/243 Panels, AC/301, AC/302, AC/280 Groups, and the US-Germany Staff Talks.

(U) The management effort has increased considerably in support of the new DOD Standardization/Interoperability Policy which states "Equipment procured for the use of personnel of the Armed Forces of the US stationed in Europe under the terms of the North Atlantic Treaty should be standardized or at least interoperable with equipment of other members of the North Atlantic Treaty Organization." This increased effort is referred to as NATO RSI (Rationalization/Standardization/Interoperability).

Accomplishments

(U) Following are the highlights of activities and accomplishments of the assigned programs during the period 1 October 1977 - 30 September 1978:

(U) Mutual Weapons Development Data Exchange Programs and Defense Development Exchange Program (DEA). A total of eighteen new DEA's were effected during the period, two with Australia, four with France, two with the Federal Republic of Germany, one with Israel, one with Korea, two with Japan, two with the Netherlands, one with Norway, and two with Sweden. In addition, ten new DEA's are pending - one with Republic of China, two with France, one with Denmark, three with the Federal Republic of Germany, one with Japan, one with the Netherlands, and three with Norway. At the end of the period DARCOM had monitorship of 208 DEA's involving 16 countries. These DEA's require the participation of 32 Army activities. Also, DARCOM participates in 30 DEA's sponsored by the US Navy and 17 DEA's sponsored by the US Air Force. The Army terminated seven DEA's (one with Australia, one with France, four with Germany and one with Japan).

(U) Cooperative R&D. Cooperation with our NATO allies continued to receive high level emphasis. The concept of Rationalization, Standardization and Interoperability (RSI) has resulted in an increase in the number of identified areas for cooperation to the point that an average of 16 cooperative projects were in existence with some 12 additional projects pending finalization of arrangements. It is anticipated that these numbers will increase significantly in the ensuing months.

(U) US/Canadian Defense Development Sharing Program. One project continued during the reporting period, the Recording Radiation Monitor and Automatic Radiation Alarm System. Two or three possible candidates were investigated. Problems continue to plague the successful participation in this program, and the Army is actively pursuing ways and means to overcome them.

(U) International Professional (Scientists and Engineers) Exchange Program. During the reporting period, a total of 36 Scientists/Engineers were assigned to Army activities under this program. Twenty-eight were representatives of the Federal Republic of Germany and eight were representatives from Korea. The cumulative total of Scientists/Engineers assigned to DARCOM activities since the program was initiated in 1964 is 266 of which 243 were from the Federal Republic of Germany.

(U) North Atlantic Treaty Organization. Administrative support was provided for numerous NATO Standardization Working group meetings sponsored by the NATO Military Agency for Standardization (MAS); NATO Conference of National Armaments Directors (CNAO) and the Military Committee (MC). These groups met to discuss standardization and develop STANAGS in the area of: Ammo Interchangeability; Camouflage and Concealment; Combat Engineering; Medical; Land Force Logistics; Materials Handling; Command and Control, Infantry Weapons; Electronic Parts; Assemblies, Components, Spare Parts and Materials; Communications; etc. Approximately 150 STANAGS and STANAG amendments were processed for ratification and implementation.

(U) NATO AGARD PROJECT 2000. The AGARD (Advisory Group for Aerospace R&D) National Delegates Board was presented with a request from the North Atlantic Military Committee to consider a Technological Forecasting Study which would evaluate the fundamental technological developments in the aerospace disciplines up to the year 2000 and the impact of these developments on possible military applications. To accomplish this task, three Study Groups have been established, entitled (1) Attack of Surface Weapons, (2) Defense Against Missiles, and (3) Detection, Location and Recognition of Ground Targets. Three Army officer personnel were actively participating in the Study Groups.

(U) American-British-Canadian-Australian (ABCA) Standardization Program. During FY 1977/78, the US Army hosted three Quadripartite Working Group meetings in the US and participated in 15 CONUS meetings. In addition to the above, the US hosted TEAL XX in Hawaii in May 1977. A portion of the ABCA Standardization Program involved loans of equipment between Armies. During the reporting period 44 new loans of US equipment and extension of 8 existing loans were processed. Also, 41 loan applications for foreign equipment were processed.

(U) Central Treaty (CENTO) Standardization Program. During the reporting period, approximately six CENTO agreements were processed for ratification and implementation.

Battlefield Systems Integration

Mission

(U) The Directorate for Battlefield Systems Integration (BSI) completed the third year of operations in FY 1978. BSI was formed in August 1975 to correct three major deficiencies in the materiel acquisition process: (1) the indefinite process by which new system concepts were formulated and introduced; (2) the comparative isolation in which branch or function oriented employment doctrine was developed; and (3) the lack of standardized criteria for ensuring that new systems would properly mesh with existing systems. BSI was responsible to participate in creative inter-disciplinary design work which treats the Army in the field as a total and cohesive system, integrated so that combat subsystems such as ground forces, organic aerial units, and appropriate components of the USAF and Navy work in a common framework with each element configured to maximize total system capability.

(U) The directorate carried out its responsibilities by directing the conduct of system studies which examined all aspects of a system for interoperability to identify gaps or duplication by participating in evaluations, and by monitoring development programs in order to develop recommendations which would further system integration. Along with the BSI basic charter as the representative of the materiel developer, an intercommand agreement had been made with TRADOC whereby the director would periodically review BSI activities with the TRADOC commander and his staff.

Personnel

(U) To carry out these missions, the directorate was staffed with a small, highly qualified group of military and civilian personnel.

The director, a major general, was authorized a PL-313 deputy, nine 06 system directors, and six civilian technical personnel GS-15 and 16, an 05 executive officer, and four secretaries. These positions have never all been filled. Neither of the two GS-16 associate deputy director positions have ever been filled and during FY 1978, as many as five system director positions were simultaneously vacant for an extended period.

(U) On 31 January 1978, Major General I. A. Hunt, who defined and organized the directorate and was the first director, retired. Since the deputy director had also departed to assume leadership of a joint Army/Air Force program, one of the system directors was temporarily appointed acting director pending assignment of a general officer. This "temporary" appointment lasted for almost five months, resulting in some weakening of BSI influence because of the high level inter-command coordination modus operandi previously established. On 19 June 1978, the DARCOM Chief of Staff was appointed to also act as the Director, BSI.

(U) During FY 1978, it became apparent that some changes were required in the personnel authorizations. A TDA change was approved which converted an existing vacant GS-16 position to a GS-7 Administrative Assistant to assume some of the property, administrative and classified document management responsibilities. In addition, one GS-5 secretarial position was upgraded to GS-6 and the remaining GS-16 to a PL-313. At the end of this year, seven of nine system directors' positions were filled and referral lists for the deputy director and associate director positions were being developed.

Funding

(U) In FY 1978, BSI received $3.641 million of an initial budget request of $7.0 million. The directorate faces even more severe budget cuts in FY 1979. The Joint Conference on the Defense authorization bill reduced the initial request of $7.0 million to $3.0 million. During this fiscal year, approximately 40 percent of the budget was allocated for study support from METREK Division of MITRE Corporation, a Federal Contract Research Center. The remaining funds were allocated for other contract study support and administrative expenses (e.g., travel and civilian salaries).

Accomplishments

(U) With the personnel available and the funding received, BSI conducted studies which addressed a wide range of problem areas and produced an impressive number of recommendations to improve the integration of battlefield systems, components and weapons.

(U) In order to provide a systematized framework to conduct integration studies, BSI has initiated development of a Battlefield System Architecture. The architecture, as envisioned, will describe the functional elements of the battlefield and their inter-relationships based on doctrine and system/equipment characteristics. MITRE Corporation provided the initial input toward development of the architecture when they delivered a description of selected elements of the air defense, fire support, Intelligence Surveillance and Target Acquisition (ISTA), close combat, and command and control mission areas for use in developing a base line (1978) architecture. Completion of a baseline battlefield architecture is programmed for FY 1979.

(U) To assist in evaluating the effect of equipment changes within the architecture, an expanded SCORES threat scenario was developed to represent Soviet maneuver, combat support and service support units as well as the maneuver dynamics of a Soviet division. This expansion provided more detail and eliminated the need for uncontrollable assumptions. The remaining accomplishments are discussed under the headings of the five BSI performance goals.

Integration of Existing/New Systems

(U) A study was conducted to identify problems and opportunities in the Suppression of Enemy Air Defenses (SEAD), and to propose allocation of resources to conduct a SEAD campaign. The study examined Army capability to counter air defense and recommended changes in tactics and materiel developments required to improve the capability. The study provided data inputs as well, to the Joint Defense Suppression Group to study Army/Air Force roles in SEAD.

(U) In the communications area, several studies were completed. Probably the most significant was Corps Communications for 1985 (CORCOM 85) which formulated the framework for a tactical communications system at Corps and below. The results of the study were being used by both materiel developers and users and in addressing requirements for future communications systems. Other studies addressed problems associated with communications in built-up (urban) areas, and requirements and shortcomings for tactical satellite communications which directly impacted the CORCOM 85 work. Specific doctrinal issues and system problem areas identified in early studies such as TACSATCOM resulted in a TRADOC effort to define user requirements and priorities and a project manager effort to correct identified material and system shortcomings. Continuing analysis of tactical communications needs and capabilities were expected to result in refinement of the postulated CORCOM 85 architecture.

Rationalization, Standardization and Interoperability

(U) In furtherance of Rationalization, Standardization and Interoperability (RSI) efforts, a study of NATO communications interoperability was completed and the results provided to TRADOC headquarters and user agencies and to DARCOM development activities. The study group worked closely with UK representatives and contractors to identify requirements and capabilities of the UK mobile radio systems. Interoperability opportunities both with and without equipment changes and concept modifications were identified.

Improvement of Future Combat Capabilities

(U) A study of the Mobile Subscriber Equipment (MSE) Communications Concept and its intended role in the Integrated Tactical Communications System (INTACS) was completed. The study identified significant deficiencies and technical inconsistencies in the MSE concept as defined in the INTACS program. The study results were provided to the user and development communities and used in redefining the MSE technical concepts. The Single Channel Ground and Airborne Radio System (SINCGARS) program was reviewed to evaluate equipment vulnerability and countermeasures to the postulated threat. The results of this review were used by the project manager to validate ECM requirements and better identify actual needs and trade-offs. Another effort analyzed the tactical Army Data Distribution Connectivity (ADDS) network in terms of unit locations, terrain and radio frequency parameters. The results indicated the postulated ADDS will interconnect nearly all divisional users in a central European terrain model. This information was used in developing and supporting the ROC for ADDS.

(U) A US technology forecast for 15-18 technologies expected to be available in the 1990-2000 time period was completed and used in a US-UK bilateral technology exchange in September 1978. It provided the basis for future system design concepts that could lead to US/UK cooperative development programs.

(U) A key element for the field commander was the timely production of intelligence based on the factors associated with enemy, weather and terrain. The Intelligence Preparation of the Battlefield (IPE) concept is a systematic procedure for producing intelligence. BSI initiated work on a concept validation, demonstration and testbed for a computer driven graphic overlay/template presentation of terrain factors. This first step of IPB utilizes the earlier developed Division Real Time Application System (DIVRAS) data base. By the end of FY 1978, the IPB concept for portraying terrain data had been demonstrated and work will continue in FY 1979 to integrate other capabilities into the testbed.

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Integration of Technology Base with User Requirements

(U) Under BSI direction, an updated edition was published of the highly regarded Technology Base SPIDERCHARTS which relate base technology programs to user requirements as stated in Scientific and Technology Objectives Guide (STOG). Each edition has improved and is used extensively as a standard reference throughout the user and developer community. An Engineering Development SPIDERCHART was published. This chart presents a listing of equipment being developed by mission area, prioritizes requirements and identifies gaps and trade-offs. It is expected this effort will achieve the same acceptance and usefulness as the Technology Base SPIDERCHART.

Analysis of Systems Effectiveness

(U) BSI continued its policy of adapting and using existing computer models in analyzing effectiveness of existing and conceptual systems. The Combat Capability 1985 (COMCAP 85) model was improved to serve as a data base for BSI company level force-on-force effectiveness analyses. BSI's ability to provide quick response analyses on the relative value of alternative materiel solutions to various combat requirements has been significantly improved.

(U) A counterfire evaluation methodology was developed to supplement the lethality related value method used for direct fire weapons. The counterfire methodology uses a value system that explicitly represents contribution of suppression and is directly applicable to on-going efforts in the allocation of artillery and tactical air support in Zone II.

Analysis of Relative Costs

(U) The methodology for identifying the amount of resources consumed by functional groups of systems in various force unit configurations was completed and demonstrated. This capability was used in conjunction with systems effectiveness analysis to produce trade-off analyses of equipment and systems.

(U) BSI continued to address and attack a wide spectrum of potential problem areas and has continued to make progress in identifying voids and gaps in battlefield capabilities. In spite of severe personnel turbulence and continued reduction in fiscal resources, BSI achieved considerable success in furthering the interfaces of the various combat capabilities into a more cohesive integrated Army battlefield system. However, the constraints imposed by the FY 1979 budget was expected to limit BSI's goals and programs for the next fiscal year.

Laboratory and Development Command Management

(U) The acting chief, Office of Laboratory and Development Command Management, continued to exercise DARCOM Headquarters staff responsibility for developing the DARCOM Technology Base RDT&E program and managing the corporate and R&D Command laboratory complex for the Assistant Deputy, Materiel Development for Science and Technology. This included policy guidance and oversight of the Science and Engineering personnel program which reinstituted manpower survey guidelines after the cancellation of REFLEX. The position of office chief was regraded to GS-16, and recruitment was initiated for that position and for one GS-15 action officer position which was vacated by retirement.

(U) As required by AR 672-305, DARCOM's annual ranking of laboratories was recommended by DRCLDC with same input from DRCDE participants in the DA/TRADOC/DARCOM RDTE program review at the R&D Commands and laboratories. The top five to receive Awards for Excellence were: Human Engineering Laboratory (HEL), Ballistics Research Laboratories, Night Vision Laboratory, MIRADCOM Laboratories, and Combat Surveillance and Target Acquisition (CSTA) Laboratory. Nominations of HEL as Laboratory of the Year and CSTA as Most Improved Laboratory were not approved at Army Secretariat level.

(U) DRCLDC planned and conducted both its annual review of the DARCOM research program and the Laboratory Directors Conference at the Army Research Office (ARO), Research Triangle Park, North Carolina, on 8-10 March 1978. The 6.1 program review covered the FY 1978 and planned FY 1979 ARO and laboratory projects; areas of emphasis included ignition/combustion of gun propellants, target and background signatures, near millimeter waves, gun tube wear and erosion, smokes/aerosols, and armor penetration mechanics and materials.

(U) Other activities for the year included: presentations on the Technology Base and Laboratory Operations to the Project Manager Orientation Courses and foreign visiting teams from Finland and Canada; supervision of development of the Millimeter - Sub-millimeter Wave R&D Plan, the Smoke-Obscuration R&D Plans and the Energy R&D Plan; publication of DARCOM Regulation 70-11 on Annual Laboratory Posture Reports; participation in DOD/DA plans to shift from grants to contracts for research programs with non-profit institutions; and development of the DA approved study recommending transfer of operational control of the Biomedical Laboratory at Edgewood from DARCOM to the Surgeon General.

CHAPTER IV

PROJECT MANAGEMENT: WEAPONS SYSTEMS

(U) Fiscal Year 1978 began with an aggregate of 58 Project and Program Managers, and closed with a total of 65. The number of PM's reflected the merger of PM TOW and PM DRAGON into PM TOW/DRAGON, and the addition of PM's for Commercial Construction Equipment/Selected Materiel Handling Equipment (CCE/SMHE); Armor Training Devices (ARD); Fighting Vehicle Armament; 30mm Ammunition; Tactical Fire Direction System (TACFIRE); Missile Minder/Air Defense Tactical Data Systems; Position Location and Reporting System (PLRS); Tactical Operations Systems (TOS); Target Acquisition Designation System (TADS).

XM1 Tank System

General

(U) The Office of the Program Manager (OPM), XM1 Tank System, continued as a Class II activity of Headquarters, US Army Materiel Development and Readiness Command. The XM1 Program Office was located at the Michigan Army Missile Plant, Warren, Michigan, with field offices located in Washington, DC; Bonn, Germany; Picatinny Arsenal, New Jersey; Aberdeen Proving Ground, Maryland; Fort Knox, Kentucky; and Fort Bliss, Texas.

(U) During FY 1978 Chrysler delivered the eleven pilot vehicles, DT II and OT II phases of testing were initiated and liaison offices were established at Fort Knox, Kentucky and Fort Bliss, Texas. The Full Scale Engineering Development (FSED) Phase was approximately two-thirds completed, with controls established to maintain schedules and control costs.

(U) In January 1978 the Secretary of the Army decided that the 120mm gun should replace the 105mm on the XM1 tank. In view of the expanded mission responsibilities in the research and development areas of both the 105mm and 120mm gun systems, on 11 August 1978 the Office of the Project Manager, XM1 Tank System, was redesignated Office of the Program Manager, XM1 Tank Systems, and the Office of the Project Manager for Tank Main Armament Systems (TMA) was established provisionally. Additionally, the Project Manager was charged to exercise full line authority over all planning, direction and control of tasks, and designated associated resources for both the 105mm and 120mm Tank Main Armament Systems utilized by the XM1, M48A5, M60A3, and M60A1 tanks, as well as related international cooperative tank main armament development programs.

(U) The Lima Tank Plant was activated during this period, with modernization and expansion efforts conducted by the Corps of Engineers. The XM1 Tank System Program was to develop and field a main battle tank for use during the 1980 time frame and beyond.

Mission

(U) The Program Manager was responsible for the development, procurement, production, testing, distribution, and logistical support of the XM1 Tank System and related ancillary equipment. Also, he was responsible for national and international 105mm and 120mm tank main armament systems, and for the US portion of the German-American Tank Harmonization Program.

Personnel

(U) To accomplish the assigned mission, the Program Manager's authorized strength was increased from 139 to 152 spaces during this period. The authorized strength included 54 military and 98 civilian positions.

(U) The chart below shows the organizational structure and key personnel of the Program Manager's Office as of 30 September 1978.

Congressional Hearings

(U) On 23 February 1978 BG Donald M. Babers, Program Manager, along with BG Richard D. Lawrence, Chief Tank Forces Management Office, appeared before the House Armed Services Committee. The hearing covered the 120mm gun program and an in depth discussion on the decision of the adoption and production of the 120mm gun for the XM1.

(U) On 13 April 1978 and 10 May 1978, MG Babers appeared again before the HASC with Honorable Samuel S. Stratton; Chairman, Honorable Percy A. Pierre, Assistant Secretary of the Army (RD&A); Lt Gen Donald R. Keith, Deputy Chief of Staff for Research, Development and Acquisition, subcommittee members, Dan Daniels, Bill Nichols and professional staff member Justus White. Hearings held on these dates dealt specifically with the Army Reprogramming Request No. 78-14 P/A, FRG Smooth Bore 120mm Gun, and XM1 Tank. The issues discussed included the four subsystems adopted from the German Government, gun tube, breech assembly, kinetic energy round of ammunition and the HEAT multi-purpose round.

(U) Along with Dr. Percy A. Pierre, Assistant Secretary of the Army (Research, Development and Acquisition), MG Babers appeared on 7 April 1978 before the Senate Armed Services Committee (SASC) to discuss the Army tank program in the areas of production capacity, armament, back-up diesel program and tank war reserve.

(UNCLASSIFIED)

OFFICE OF THE PROGRAM MANAGER, XM1 TANK SYSTEM, DARCOM
KEY PERSONNEL ASSIGNMENTS

30 September 1978

OFFICE OF THE PROGRAM MANAGER (PROV) DRCPM-GCM
Prog Mgr — MG D. Babers — 32662
Dep Prog Mgr — COL H. Vetort — 32284
XO — MAJ W. Shelby — 31684

ASST PM FOR LOG DRCPM-GCM-APML
LTC R. Walker — 32449

ASST PM FOR PDN DRCPM-GCM-APMP
LTC G. Parolini — 32661

OFC OF THE PROJ MGR (PROV) DRCPM-TMA
Proj Mgr, COL P. Kenyon — AV 880-5309

WASH FLD OFC DRCPM-GCM-MT
C, LTC P. McVey — AV 284-8565

APG LN OFC DRCPM-GCM-G
C, LTC F. Luksik — AV 283-2773

BONN FRG LN OFC DRCPM-GCM-BL
C, LTC F. Mehrtens — Bonn 124457

FT KNOX LN OFC DRCPM-GCM-K
C, MAJ D. Hartley — AV 464-7227

COST MGT & ANAL OFC DRCPM-GCM-A
C, A. Jokubaitis — 32479

INTL OPS OFC DRCPM-GCM-I
Act C, W. Von Zastrow — 31284

PROG BUD OFC DRCPM-GCM-P
Act C, MAJ A. Bartlett — 32828

PLANS & SCD CON OFC DRCPM-GCM-T
Act C, T. LaForge — 32777

SYS ENGR DIV DRCPM-GCM-S
C, E. Trapp — 32189

SYS INTGR BR -SI
C, M. Arnold — 32410

FIREPOWER BR -SW
C, L. Wolcott — 32663

AUTOMOTIVE BR -SN
C, I. Smith — 31231

ARMOR BR -SA
C, J. Roossien — 31676

PROD ASSURANCE & TEST BR -SP
C, L. Gerback — 31348

FT BLISS LN OFC -SP-B
C, CPT J. Dyson — AV 978-4001

LOG MGT DIV DRCPM-GCM-L
C, LTC B. West — 32283

PROC & PDN DIV DRCPM-GCM-C
C, V. Emerson — 32827

PROC BR -CC
C, M. Gergell — 31607

PDN BR -CP
C, C. Sheufelt — 32347

LIMA TANK PLANT OFC -U
C, LTC G. Telenko — 32223

SPT OPS DIV DRCPM-GCM-O
C, LTC D. Moore — 32205

MAILING ADDRESS:
OFFICE OF THE PROGRAM MANAGER
XM1 TANK SYSTEM
ATTN: DRCPM-GCM-(APPROPRIATE SYMBOL)
WARREN, MICHIGAN 48090

AUTOVON: 27 PLUS EXTENSION
COML: 57 PLUS EXTENSION

	AUTHORIZED STRENGTH AUTHORIZED	ASSIGNED
OFF	49	38
WO	1	1
EM	4	2
CIV	98	102
TOTAL	152	143

Chart 15

(UNCLASSIFIED)

Reliability, Availability, Maintainability Status (RAM)

(U) Reliability Failure Criteria. During the past year, Revision "C" of the Reliability Failure Criteria dated 15 August 1977 was updated to Revision "D" dated 3 March 1978. The primary purpose of the update was to reflect design change impacts resulting from tests and user requests and to correct typographical/technical errors contained within Revision "C." The Revision "D" version has been used at two official DT/OT II Scoring Conferences with few problems.

(U) Improved Data Collection System for XM1 DT II. The new improved data collection system termed Tank-Automotive Integrated Data Base was used for the first time on the XM1 DT II vehicle test at APG. To resolve "growing pain" problems initially encountered with its takeover and application, the XM1 PMO worked closely with the test sites. Also, the data was made available for direct computer interactive access for involved Army agencies. The new system was more heavily oriented to Logistics aspects than were available through the previous systems and allowed a more complete analysis of test data.

(U) DT/OT II RAM-D Pre-Test Meeting. A RAM-D pre-test meeting was held in early 1978 to assure a mutual understanding among all involved Army Agencies (particularly scoring members) of the pertinent facets to be considered in the XM1 DT/OT II tests. Factors such as essential test data, test schedule, scoring conference concepts and data aggregation were discussed to establish ground rules prior to DT/OT II test commencement.

(U) RAM Scoring Conferences. Both DT and OT II scoring conference were held. Although some minor disagreements occurred, the basic intent and philosophy established by the XM1 coordinated failure criteria was followed. The successful conduct of the official scoring conferences was felt to be directly tied to the pre-test meetings and practice scoring conferences held on contractor test data.

(U) DT/OT II RAM-D Problems. During the training phase of OT II and during the initial phase of DT II, several major problem categories occurred, directly impacting demonstration of RAM-D parameters. These problem areas, including hydraulics, fuel system, air cleaner system and fire control, were subjected to an extensive modification with the goal of a major RAM improvement. Though test results were limited, a substantial improvement in RAM was seen in line with the XM1 PMO RAM projections established for the modification program.

Technical and Testing Activities

(U) Testing. DT/OT II of the XM1 Tank System moved into full swing in the past year. FY 1978 saw the completion of Engineering

Development Testing by the contractor (EDT-C); training of DT and OT test personnel; delivery of a new contractor facility vehicle and eleven FSED prototype vehicles; the start of prototype qualification test, Government (PQT-G); and the start of Operational Testing.

(U) Two facility vehicles (FV-1 and FV-2) were involved in EDT-C during October 1977 through January 1978. One was used solely for automotive tests on the powertrain and suspension (accumulating 4089 miles), while the other was dedicated to engineering evaluation of the fire control system. The latter vehicle logged 798 miles and fired 2091 main gun rounds in the fire control testing. This testing provided the final engineering check of FSED systems prior to the delivery of FSED prototypes for Government testing.

(U) During November 1977 through August 1978 the FSED contractor conducted training of both DT and OT personnel. This training consisted of training both operator and maintenance personnel through DS/GS level. Training was performed using contractor facility vehicle assets at Aberdeen Proving Ground (APG).

(U) Deliveries of the FSED prototype XM1 tanks began in February 1978 with the last prototype being delivered to APG in September 1978. The first XM1 prototype (P1) was shipped via air to Anniston Army Depot on 6 February 1978 to undergo a complete physical teardown and maintenance evaluation (PT/ME). This activity marked the beginning of Government evaluation, DT. PT/ME was completed 10 April 1978 and the vehicle returned to Chrysler to prepare it for subsequent desert and nuclear testing.

(U)PQT-G began 15 March 1978 with the turnover of the second XM1 prototype to the Materiel Testing Directorate at APG. Testing activity increased at APG, involving six FSED prototypes and one facility vehicle. Also, automotive, weapons and vulnerability phases were in progress at APG. PQT-G, desert phase, was conducted at YPG June-October 1978 with one prototype, but hardware and logistical problems caused PQT-G to slip its schedule. One result was that Arctic testing, originally scheduled November 1978 - June 1979 was postponed one year to October 1979 - May 1980 to provide an additional vehicle asset to DT/OT and to relieve the logistical burden to support Arctic testing during peak DT/OT activity.

(U)OT activities began 17 April 1978 with delivery of two prototypes to Ft. Bliss for a one month validation of training materials by the TRADOC training cadre. OT formally got underway 15 May 1978 using five XM1 prototypes and five M60A1 Rise tanks as a baseline. Phase 1 training was conducted by a TRADOC cadre from 15 May through July 1978 which enabled twelve XM1 and twelve M60 crews to be trained in that period. Prior to starting Phase II, individual precision fire,

6281 miles and 2068 main gun rounds were logged on the five XM1's at Ft. Bliss. Phase II began 5 September following an extensive configuration update program on the XM1 tanks at Bliss during the month of August 1978. Delays in execution of OT due to hardware and logistic problems plus the update period in August caused the OT schedule to slip six weeks. The original schedule had a planned completion date of 15 December 1978, but was revised for the end of January 1979.

(U) In consonance with the configuration update (modification) program carried out at Ft. Bliss on the OT vehicles, a similar program was instituted to bring the configuration of the DT vehicles in line with that of the OT vehicles. As opposed to the parallel program carried on at Ft. Bliss, a serial program was initiated in September at APG to allow testing to continue while one prototype at a time was modified. The intent of the program was to incorporate the latest design changes and maintain a nearly uniform configuration between XM1 prototype vehicles. This program was to continue into October 1978 and be complete with the update of P1 at Ft. Bliss prior to shipping to WSMR.

(U) As of 30 September 1978, the eleven XM1 prototypes accumulated 13,745 miles and fired a total of 5,145 rounds in DT and OT testing. A list of the delivery dates and initial activity is shown below.

PILOT	DELIVERED	LOCATION	ACTIVITY
1	7 Feb 78	AAD	PT/ME
2	15 Mar 78	APG	PQT-G
3	17 Mar 78	APG	PQT-G
4	17 Apr 78	Bliss	OT II
5	17 Apr 78	Bliss	OT II
6	15 May 78	Bliss	OT II
7	15 May 78	Bliss	OT II
8	7 Jun 78	APG	PQT-G
9	19 Jun 78	APG	PQT-G
10	8 Sep 78	APG	PQT-G
11	19 Jul 78	APG	PQT-G

(U) Critical Design Review (CDR). The principle CDR meetings were held at Chrysler Sterling Defense Division on 15 thru 18 November 1977. Additionally, a detailed engine CDR was conducted on 9 and 10 November at AVCO Lycoming, Stratford, Connecticut. The CDR was co-chaired by the Government XM1 System Engineering Division and top management of Chrysler Sterling Defense Division. Attendees included commodity commands, test agencies and members of the XM1 Test Integration Working Group (TIWG).

(U) The objective of the CDR was to examine the XM1 detail design to ensure that all technical requirements of the system specification were satisfied by the vehicle design. Examination of design definition for special tools and design approaches for test equipment was also an objective of the CDR.

(U) A total of 33 action items were identified during the CDR, including 14 which were recorded during the engine CDR. All of the action items had been reported as resolved, or where further follow-on actions (testing, etc.) were required, dates were established for firm resolution. Final resolutions of all of the action items were approved by the XM1 PMO and Chrysler and a formal close-out report, documenting the resolution obtained for each action item, was published in March 1978.

Cost and Operational Effectiveness Analysis (COEA)

(U) COEA Studies. TRADOC began the XM1 COEA update in December 1977 with the express purpose of revalidating results of the 1976 XM1 COEA. However, issues such as the "dirty battlefield" and the "combined arms battlefield" led to a decision by Headquarters, Department of the Army, and TRADOC to, in effect, require a new COEA as input to DSARC III. The COEA was to focus on cost, force effectiveness, threat changes, combat effectiveness under reduced visibility (night and dirty battlefield), and the combined arms battlefield. The XM1 was to be compared to both the M60A1 and M60A3 in both a performance characteristic analysis and force on force computer simulations. Also, a 20 year Life Cycle Cost Estimate (LCCE) was to be completed for each of these systems. A new Cost and Operational Effectiveness Analysis (COEA) requirement--a Cost Training and Effectiveness Analysis (CTEA)--also was to be completed. The COEA was scheduled to be completed and the report delivered to HQ TRADOC by 1 January 1979.

(U) Mock-Up 120mm Configuration. On 15 November 1977 Chrysler Corporation delivered an XM1 Final Report--(105mm/120mm) System Integration Design/Program Assessment. This report and a 120mm XM1 mock-up included a recommended configuration for incorporating the GE 120mm smoothbore on the XM1 Tank System. Major changes from the 105mm XM1 would include approximately a one ton weight increase; a new gun shield; reduced 7.62mm ammunition stowed from 11,400 rounds to 10,000 rounds; and a main gun ammunition stowage from 55 rounds to 48 rounds with 40 rounds fully compartmented and eight additional rounds in the turret basket under spall covers.

(U) Subsequent to user evaluation of the initial Chrysler 120mm mock-up and Army approval of the 120mm program, the user requested consideration be given to stowage options which would differ from the Chrysler proposal but would address the key user concerns of HFE, vulnerability, and maximum main gun stowed ammunition. On 22 May

1978, the XM1 PMO briefed the CG, USAARMC, on eight logical stowed ammunition options and requested that no more than three be selected for further evaluation in the Chrysler Concept Phase 120 day contract. The three options selected by the user provided from 40 up to 53 main gun rounds and included the possibility of trading the left front fuel tank for a vented ammunition compartment in the same location. It was planned that Chrysler was to provide a study and mock-up(s) of these configurations in conjunction with a BRL vulnerability analysis so that the user could indicate his preferred configuration as input to the 120mm XM1 FSED contract.

(U) 120mm Gun Program. The US Tank Main Armament Evaluation (TMAE) was completed in December 1977. Candidates tested and evaluated were the US 105mm M68 cannon, the German 120mm smoothbore system, and the UK M13A 120mm rifled system. Each system fired growth potential ammunition as well as main candidate ammunition. Based on TMAE results, the Secretary of the Army selected, on 31 January 1978, the German 120mm cannon and ammunition for further US development and ultimate fielding on the XM1 Tank System. A 120mm Special ASARC on 17 April 1978 approved a program to begin 1 June 1978 with DSARC III in December 1981 and first production August 1984. This program called for a 120 day concept phase contract with Chrysler followed by a 34 month FSED phase contract. As congressional funding had not been received by the close of FY 1978, the Army program was revised to plan for a June 1982 DSARC and first production as early as August 1984.

(U) The testing of the ammunition, cannon, hull/turret, and the tank system was initiated in FY 1978. It was projected to accelerate in FY 1979 and continue at a high level for the test community during FY 1980 and FY 1981. Actual testing began in August 1978 with 120mm ammunition, and in September began the ballistic vulnerability testing of the gun shields. Extensive testing of the 120mm cannon, all four rounds of ammunition, ballistic protection, fire control, and gun mount was scheduled for FY 1979. This testing was to intensify during FY 1980, and be further increased by full-up tank contractor testing with TECOM support. The total testing effort required of TECOM encompassed over 34,000 rounds and substantial automotive evaluation through Government Prototype Qualification tests (PQT-G) of the tank system in FY 1981. By FY 1982, the test program was expected to taper off.[1]

(U) User Coordination. Close coordination with the User Community was a continuing goal of the Program Manager's Office. Periodic User Reviews and mock-ups were conducted throughout the year. The coordination of the User's concerns and ideas were enhanced by the creation of the TRADOC System Manager (TSM) Office at Ft. Knox, Kentucky. This office became the focal point for coordinating the collective User position as opposed to dealing with individual Armor Center Agencies and Departments prior to the TSM creation.

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[1]Ltr, DRSTE-TO-O, to CG DARCOM, 5 Apr 78, Subj: TECOM Support of the 120mm XM1 Tank.

(U) Automotive. The year started with an Air Force Team review of the AGT-1500 turbine and ended the year with an Engine Task Force review. Chartered to review the application of the turbine in the XM1, the Air Force team reviewed producibility, and provided lessons learned from its turbine experience. The Engine Task Force Committee was chartered by MG Babers to assess the development program, the vehicle installation, and determine whether the engine could be ready for production release by ASARC/DSARC in Spring 1979.

(U) Last year the turbine extended durability program was instituted to provide necessary engine maturity prior to production. The three facility vehicles were completed and had started the 9,000 mile durability tests. Completed were 3,200 hours of the 8,530 hour Laboratory Development Program, including a preliminary low cycle fatigue test and a 400 hour durability test.

(U) The preliminary low cycle fatigue test was initiated in February 1978 to determine the cyclic stress life of turbine due to engine starts, rapid accelerations and other forms of speed and temperature excursions. On the 241st cycle of the 1,000 cycle test the low pressure turbine wheel failed. A design change from the Validation Phase C101 material, the wheel was a C103 material casting. Examination of all wheels on hand indicated that the new design did not cast properly to meet the design requirements. Consequently, the decision was made to return to the Validation Phase C101 material. After the engine was rebuilt a 1,000 cycle LCF test was rerun and completed in July 1978 without further incident.

(U) In July 1978 a 400 hour durability test was initiated. Due to high operating temperatures after 60 hours, the engine was split for inspection. Damage had been sustained in the hot section due to the combustor coking and flaking off of coke particles. The high pressure turbine and nozzle and the low pressure turbine and nozzle were replaced because of the coking damage. Restart of the durability test was delayed while development tests were conducted to correct the coking problem. The 400 hour durability test was completed in September 1978 without further incident.

(U) Armor/Compartmentalization. The contractor's armor ballistic structure test program culminated with the test and evaluation of the FSED Ballistic Hull and Turret. Test results demonstrated a substantial improvement in ballistic performance over DT/OT I and further verified the structural integrity of the FSED hull and turret designs. Assessment of the contractor's vulnerability reduction techniques and crew survivability methods were to be performed during DT II testing of a fully equipped pilot vehicle. The DT II vulnerability test was scheduled to be completed in April 1979. BRL continued to expand the data base on defeat of kinetic energy and HEAT projectiles, and initiated the development of a complete configurational description of the XM1 Tank for Vulnerability Analysis.

(U) Considerable progress was made in the design and development of the ammunition compartments during FSED. The contractor instituted design improvements which proved effective in reducing blast and fire effects, minimizing structural damage and enhancing crew survivability. At the close of this fiscal year the contractor was engaged in a test program to determine the optimum method of preventing the sympathetic detonation of adjoining rounds through propellant case fratricide. The contractor fabricated two additional compartments, hull and bustle, that were to be tested against kinetic energy threats early next year while BRL continued to develop baseline data to support the contractor's design efforts.

(U) System Survivability/Fire Control. A study was conducted incorporating a positive pressure system (E-49) on the XM1 Tank. This study was undertaken in response to Public Law 95-79 and was included into the Army's report to Congress on incorporating overpressure system into combat vehicles scheduled for production in 1980 and beyond.

(U) TARADCOM was tasked by PMO to perform three studies in support of the LaBerge seven point CBR program. These studies were scheduled for completion in January 1979 and were to be incorporated in the DARCOM response to DA on 31 January 1979.

(U) The driver's night viewer AN/VVS-2(V)2 was evaluated for the effects of nuclear radiation and a final report was being rewritten. The tests indicated that the viewer AN/VVS-2(V)2 was inherently hard to nuclear effects.

(U) Also, the XM1 program participated in Miser's Bluff experiment with GFS head, CWS, loader's weapon station, fuel tanks, battery box and rear skirts. Preliminary indications showed that all the items survived the experiment in that the crew would have been able to continue the mission.

(U) Transient radiation effects (TREE) tests on piece part and circuit levels for those components and circuits where no data base existed continued during this period. These tests were being utilized to resolve marginal situations and establish the required approved parts list.

(U) During the April through June 1978 time frame, a large number of problems were reported relative to the XM1 hydraulic system. Since the hydraulic system had not been a problem during the validation phase, the decision to form a Hydraulic System Task Force was made on 30 June 1978. Pilot vehicles were retrofitted in accordance with study recommendations made in a final report dated 21 July 1978.

(U) The Muzzle Reference Sensor (MRS) System development was initiated during the FSED program. Early in DT testing, MRS System

employed in the DT/OT II pilots encountered problems associated with proper installation of the collimate reticle assembly on the gun tube muzzle. Redesign of the collimated reticle assembly mounting arrangement to simplify the mounting requirements was initiated in July 1978. The revised design utilized a key way and flats machined into the M68 gun tube muzzle for positive retention of the collimator assembly. Preliminary firing tests conducted at APG on 1-11 September 1978 indicate that the new design would be successful.

(U) During the validation phase, the night vision system was not designed for the XM1 fire control system. The DOD Far Infrared (FIR) Common Modules were specified as the basis for the XM1 night sight, however, the common module development schedule was such that their specific configuration was not established until late in the XM1 validation phase.

(U) In November 1976, the XM1 FSED contractor awarded the Hughes Aircraft Company a subcontract to design and develop a Thermal Imaging System (TIS) using the FIR Common Modules and provide the interface required for integration in the existing gunner's primary sight. Seventeen systems were fabricated and delivered for DT/OT II testing.

(U) The TIS was evaluated by the Army Night Vision Laboratory and it demonstrated system performance (minimum resolvable temperature) compliance with the contractual specification. Also successfully demonstrated were the requirements for the electrical and mechanical interface compatibility with the crewman and vehicle.

(U) In August-September 1977, it was determined that the original design effort for the TIS was deficient in producibility and DTUC considerations, and a major redesign by Hughes was initiated in October 1977. The design maturity program progressed through 1978 and was to yield two prototype models of a production configuration.

(U) The first system was scheduled to be delivered by 15 December 1978 and was to be used for GPS integration verification and laboratory environmental and performance testing. The second system was to be delivered by 31 January 1979 and installed in an ED pilot vehicle for interface and performance testing.

International Programs

(U) International Responsibilities. The International Operations Office, which had principal staff responsibility for all international matters affecting the XM1 as a total system, continued to pursue XM1/Leopard 2 standardization/interoperability efforts based on the US/GE Harmonization MOU of 1974, as amended. The office also continued

detailed discussions and data exchange with the Governments of the Netherlands and the United Kingdom, and others, relating to their pending national selection of tank systems and componency.

(U) Standardization. Germany completed testing of the XM1 validation turbine engine in July 1978. The turbine reportedly met expectations and was awaiting return shipment to the U.S. Germany was to continue to monitor the turbine testing through a German observer stationed in Warren, Michigan, until May, then at AVCO-Lycoming, Stratford, Connecticut, for the remainder of the year. Germany agreed to announce a decision by the end of 1979 on the possible future use of the turbine power pack. Several unique German requirements had not been met and these turbine requirements continued to be a major concern of the Standardization Working Group.

(U) Germany welcomed the U.S. initiative toward track standardization. The U.S. was designing a larger end-connector to fit the Leopard 2 sprocket, providing a short term interoperability solution.

(U) Standardization on other items/components was progressing more slowly because both the XM1 and Leopard 2 were nearing production and changes were becoming more difficult and costly. Items in this category included machine gun mount, muzzle-reference system, battery mountings, fire extinguisher, emergency-firing devices, laser rangefinder, thermal sight, and fire-control items.

(U) US/GE Harmonization Executive Group. As a result of the US/FRG Harmonization Memorandum of Understanding (MOU) of 11 December 1974, the U.S. and GE established an Executive Group as well as a subordinate Working Group. Major General Babers, Program Manager, XM1 Tank System, was U.S. Chairman of the Executive Group.

(U) Two Executive Group sessions took place between October 1977 and October 1978, which were chaired by Major General Babers in conjunction with his German counterpart. The Executive Group sessions served primarily to implement the Harmonization MOU, to give guidance to the Working Group, and to review the progress achieved. The Executive Group has also been assigned responsibility for the standardization activities.

(U) Co-production/Foreign Military Sales. As expected, the United Kingdom announced the decision to develop and produce a national concept main battle tank. The XM1 turbine power pack was still a contender for their new tank and the UK was attempting to obtain two turbine power packs for testing. Initial request for the power pack was under the ABCA agreement and further discussions were scheduled for 30 October through 3 November 1978.

(U) The Government of the Netherlands (GON) continued to gather XM1 cost and production information in order to make a decision for

the next Dutch main battle tank. A Netherlands technical group visited PM XM1 in January 1978 and Chrysler representatives visited NL in April 1978 for co-production discussions.

(U) In anticipation of a Dutch Letter of Offer, PM XM1 requested authority to negotiate a co-production license with NATO countries. GON requested a Letter of Offer in June and indicated that a similar offer had been requested from Germany on the Leopard 2. Chrysler made another visit to GON in August 1978 with detailed information concerning producibility of the XM1 in the Netherlands. The Dutch continued to show interest in the XM1 and sent 25 Industrial Steering Group representatives for a one-week visit with Chrysler and subcontractors.

(U) PM XM1 received authority to conduct co-production negotiations with the GON and a Government-to-Government MOU was signed by the US/NL Secretaries of Defense. The XM1 International Operations Office spent a considerable amount of time during September and October clarifying the USG position relative to co-production. The Dutch main battle tank decision was expected before the end of the year, and the International Operations Office was attempting to present the XM1 in a favorable light.

Tank Main Armament System Development and Production

(U) Tank Main Armament Evaluation. During November-December 1977 additional firing trials of the British and German 120mm tank armament systems against special armor targets were conducted at Aberdeen Proving Ground (APG). The test program included 105mm XM774 Cartridges for comparison purposes.

(U) During the same period, activities of the Tank Main Armament Evaluation Working Group (TMAEWG) were being compiled and assembled into a comprehensive report consisting of the Executive Summary, Software Evaluation, On-site Evaluation of National Trials, Analytic Performance and Effectiveness Assessment and U.S. 1977 Firing Trials.[2]

(U) The selection decision was preceded by a series of high level briefings and announced by the Secretary of the Army on 31 January 1978. Finally, a special Army Systems Acquisition Review Council (ASARC) convened 17 April 1978 and approved the proposed 120mm Tank Main Armament program. August 1984 was established as the planning date for the start of 120mm XM1 production, meanwhile interoperability of ammunition was stressed and configuration management was emphasized.

(U) During the following months' efforts to verify program cost estimates, consider program alternatives, and respond to Congressional

[2]Tank Main Armament Evaluation, 5 Vols, January 1978.

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questions received major emphasis in the quest to obtain approval of the FY 1978 reprogramming actions and the FY 1979 program authorization necessary for initiating the technology transfer, fabrication and test of the selected 120mm system.

(U) Licensing negotiations were initiated in September 1978. Initial meetings quickly exposed unanticipated restrictions in license application, prohibitive license costs and limitations of technical data to be provided.

(U) Ammunition Production (Cartridge, 105mm, APFSDS-T, M735). When the M735 cartridge was type classified Standard in September 1976, there were questions as to demonstrated performance, particularly in regard to the NATO Heavy Triple target. A special IPR was held on 25 October 1977 to review pre-production data. The IPR agreed that the M735 had demonstrated capability to meet or exceed all ROC requirements.

(U) In November 1977, requirements were updated for supplying approximately 7,000 M735 cartridges to support XM1 DT/OT II. At the same time typical start-up difficulties were encountered by tungsten core and projectile manufacturers and in testing of first article samples. Major efforts were directed to resolving these problems, and in June-July 1978 the cartridges to support XM1 DT/OT II were delivered on schedule.

(U) In January 1978, failure occurred during elevated temperature firings from a worn tube which exceeded typification limits. Investigation of the worn tube interface was intensified. The characteristics of actual tubes in the field were determined and efforts initiated to assure firing reliability by means of an improved obturating band. Assembly of M735 Projectiles was slowed to approximately half-rate and assembly of cartridges other than those required for tests was curtailed. By September 1978, a redesigned obturator identified as the "J" band appeared to assure reliable firing from worn tubes and actions were in progress to phase the "J" band into production by November-December 1978.

(U) Firm fixed price contracts for procurement of the FY 1978 quantities of tungsten cores and M735 projectiles were awarded in September 1978.

(U) During 1978, the Independent European Program Group (IEPG) continued to evince interest in producing the M735. In May 1978, it was decided to compare the effectiveness of the M735 with the British PPL-64. A quantity of 107 M735 rounds was furnished in September 1978 for IEPG tests in England and France which were completed in October 1978.

Throughout the year activity continued on the value engineering proposal to substitute Staballoy for tungsten as the core material. In September 1978 the M735A1 Cartridge (with Staballoy core) was type classified standard.

(U) Ammunition Development (Cartridge, 105mm, APFSDS-T, XM774). The Validation In-Process Review for the XM774 was held on 26 October 1977 at the Ballistic Research Laboratory, Aberdeen Proving Ground, Maryland. The agreed position was that the XM774 should enter full scale engineering development with the goal of type classification by April 1979.[3] Fabrication of DT II hardware started in May 1978 and was delivered to APG in August 1978 for the DT II start in October 1978.

(U) Ammunition Development (Cartridge, 105mm, TPDS-T, XM797). The Letter of Agreement (LOA) for the XM797 Cartridge was approved on 21 November 1977. An IPR was held 16 January 1978 at the USARRADCOM, Dover, New Jersey, where voting members agreed that the XM797 should enter advanced development.[4]

(U) The Test Integration Work Group was established and held its first meeting on 18 April 1978. Approximately 40 cartridges reflecting two competitive configurations of the XM797 were delivered for tests at Yuma Proving Ground where the capability of the ablating nose cap to restrict the projectile flight to 2300 meters was demonstrated.

(U) Ammunition Development (Cartridge, 105mm HEAT-MP-T, XM815). Although the LOA for the XM815 was approved 27 June 1977, the conceptual IPR scheduled for the 4th quarter of FY 1977 was deferred due to lack of FY 1978 funding. In August 1978 the LOA was revised by TRADOC to reflect the need for eventual greater performance from the XM815 which intensified the need for electronic multi-option type fuzing.[5]

Major Logistics Development Activities

(U) Physical Teardown/Maintenance Evaluation. A physical teardown/maintenance evaluation of the XM1 Tank System was conducted at Anniston Army Depot, Alabama during the period 8 February to 9 April 1978. It was accomplished on a three shift, around the clock, seven days per week operation, utilizing two teams per shift. Participants and observers from various DARCOM and TRADOC commands were engaged in the effort while hands-on participation was limited to Anniston Army Depot employees and soldiers from TRADOC Schools. This was the first occasion for tank, tools, test sets, and publications to be brought together. There was a total of 5,084 comments, 241 product assurance alert notices, and 54 interim test reports emanating from the PT/ME. While many of the findings of the PT/ME would have been later identified during OT/DT II testing, the early comprehensive evaluation to detect expression design, quality, and maintainability problems was valuable because it permitted change with sufficient lead to make accomplishment reasonable.

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[3]DRDAR-BLC ltr, 26 Oct 77, Subj: IPR Results.

[4]DRDAR-LC ltr, 16 Jan 78, Subj: IPR Results.

[5]ATZK-CD-MS ltr, 16 Aug 78, Subj: Draft Revised Letter of Agreement (LOA) for the XM815, 105mm HEAT-multi-purpose round.

(U) Skill Performance Aids. The XM1 Tank was to be the first major weapon system fielded with equipment publications developed under the Skill Performance Aids concept. Draft Equipment Publications for the XM1 Tank System were delivered by the contractor in December 1977. Evaluation of the 51 volumes of publications was conducted during Physical Teardown/Maintenance Evaluation (PT/ME), during DT/OT II training and testing, and during review by TRADOC and DARCOM agencies. Evaluations and reviews resulted in approximately 2900 comments and recommended changes. The changes were initially incorporated as marked-up pages for rapid dissemination to the test sites. The skill performance aids concept replaced the integrated technical documentation and training concept while the requirement for a job performance guide for the operator and maintenance manuals was deleted. Quarterly updates to the draft equipment publications were to continue through July 1979.

(U) Maintenance Test Support Packages (MTSP). Maintenance Test Support Packages (MTSP) containing technical manuals, tools, test sets and repair parts were delivered to each test site prior to arrival of the FSED pilot tanks. Modification of test sets, replacement of tools, update of technical manuals and replenishment of repair parts was a continuous requirement. Initial problems with insufficient repair parts, test set malfunctions, and technical manual content required a great deal of intensive management. Replenishment of the MTSP was to continue throughout DT/OT II testing.

(U) Depot Planning. A Depot Planning Task Force was organized in November 1977 to accelerate planning for depot overhaul of the XM1 Tank System and major components. The task force, consisting of representatives from OPM, XM1, TARCOM, ARRCOM, CERCOM, and Anniston Army Depot visited prime and subcontractor facilities in January and February 1978. Information gathered during these visits was used on a basis for budget estimates and a new start proposal submitted in FY 1978. The task force outlined milestones and responsibilities for depot planning.

(U) Provisioning. Provisioning for support of the XM1 Tank System in the field began in June 1978 and was to continue throughout the FSED phase. On 8 June 1978, the first provisioning conference was held while the contractor submitted the first increment of provisioning documentation on 27 June 1978. The XM1 Tank was the first TARCOM and ARRCOM supported system to use Logistics Support Analysis System (CCSS) for provisioning. This provisioning effort was a systems approach with priority on long leadtime systems with relatively stable designs.

(U) Transportability. Air, rail and heavy equipment transporter (HET) transportability of the XM1 Tank was successfully demonstrated

during the FSED Phase. The vehicle was moved seven times by C5A aircraft, five times by rail, and twice by M911/M747 HET. No major problems resulted during these moves which would indicate that XM1 transportability will be a problem.

(U) Formal testing of air transportability was conducted by TECOM on 12 May 1978 at APG. Rail and HET documentation by TECOM was yet to be performed, but was scheduled at APG during DT II.

(U) Military Traffic Management Center (MTMC) agreed formally in a letter dated 14 June 1978 to publish the Transportability Guidance Technical Manual (TGTM) for the XM1 Tank. The target date for initial publication was September 1979.

(U) A Defense Freight Railway Interchange Fleet (DFRIF) heavy duty flatcar analysis was completed and approved.[6] The analysis concluded that the DFRIF required 1,002 heavy-duty flatcars, each capable of carrying two XM1 tanks to satisfy known peacetime and mobilization planned movement requirements. Present DFRIF flatcars (which could carry two M-60 tanks) could carry only one XM1 tank due to its increased length.

(U) Considering the age of the present DFRIF flatcars and the XM1 production schedules, the procurement of 502 of the 1,002 flatcars would be required during the period of FY 1980 through FY 1984 to meet DOD requirements. Therefore, it was requested that action be taken to enter 502 flatcars into the FY 1980-FY 1984 POM cycle of the Army Materiel Plan (AMP), and that the remaining 500 flatcars be procured from FY 1985 through FY 1993. Already included in the POM/AMP were 291 flatcars with 90 for FY 1980 and 94 for FY 1981 funded and 107 for FY 1982 carried as unfunded.

Procurement & Production/Facilitization

(U) Production/Facilitization. The FTF had continual meetings with Chrysler and their major subcontractors, Allison and AVCO, to review and perform audits on contractor's programs for production planning/manufacturing engineering services necessary for timely production of the XM1 Tank System. This included the production planning/manufacturing engineering services necessary for the expansion, modernization and facilitization of the Lima Tank Plant (LTP) for production of the XM1 Tank System. In addition, Chrysler, as the prime contractor for production of the XM1 Tank System had the responsibility for managing their subcontractors to have them supply component parts with sufficient lead time to ensure that the XM1 tank production schedule would be met on time.

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[6] Ltr, Military Traffic Management Command, 24 Feb 78, Subj: Submission of Defense Freight Railway Interchange Fleet (DFRIF) Equipment for Inclusion in FY 80-84 Program Objective Memorandum (POM).

(U) Also taken in consideration was the production planning/ manufacturing engineering services necessary for the modernization and facilitization of the GOCO Stratford Army Engine Plant for timely production of the AGT-1500 turbine engine by AVCO. These meetings further discussed the services necessary for the construction and facilitization of a new privately financed plant in Indianapolis, Indiana, for Detroit Diesel Allison Division to produce the new X1100 transmission and final drive for the XM1 Tank System, and the services necessary for the facilitization of other subcontractor facilities to produce their respective component parts and supply them to Chrysler with sufficient lead time to insure that the XM1 Tank production schedule will be met on time.

(U) The FTF has ensured that the requirement for machines be kept to an absolute minimum and maximized use of machines available from government resources.

(U) Technical Review/Evaluation. Technical Review/Evaluation for Definitization of Manufacturing Engineering/Production Planning Contract was organized and conducted by FTF preparatory to negotiations of final scope and terms for defining production planning aspects of Contract DAAK30-77-C-0007. These efforts resulted in Contract DAAK30-77-C-0007 being definitized after great in-depth fact finding, auditing, and negotiations. Modification #10 to the contract was signed on 26 May 1978 between Chrysler and the Government in which the scope of work, delivery schedule, special and general provision, terms and conditions were included and increased the total cost of this contract from $79.1 million to $381.8 million.

Lima Tank Plant Activity

(U) Activation of the Lima Tank Plant continued through FY 1978 with both modernization and expansion efforts by the Corps of Engineers and activation of Chrysler functional areas. During the period, construction of the 250,000 square feet additional structure was completed to include roofing and pouring of the new concrete floor. New siding was placed around the entire main production building and all ancillary buildings were completed; the new power station was completed and activated; major power substation equipment was delivered and installed; and construction of the new 1.4 mile test track was begun. All other work at Lima was on schedule and beneficial occupancy of the boiler plant was given to Chrysler in October 1978.

(U) Chrysler Corporation activated its management offices as well as some of its manufacturing areas to include flame cutting and tool room. Also, Chrysler assumed maintenance support of the Lima Army Modification Center under a cross services contract effective 1 October 1978. At that time, it became a GOCO plant. The strength of Chrysler Corporation on site was 333 personnel, including 233 salaried and 100

hourly wage. Approximately 100 DIPEC machines were received, and over 40 of these had been installed. Beneficial occupancy of the LTP was planned for April 1979.

(U) In May 1978, the Lima Tank Plant Office was established with LTC George J. Talenko as Chief. Organizationally, this office was a branch and reported directly to the Chief of the XM1 OPM, Procurement and Production Division.

DX Rating

(U) The FTF nominated the XM1 Tank System to be placed on the DOD Master Urgency List (MUL) for FY 1979.

(U) Initial production of the XM1 tank system was scheduled to commence at the Lima Army Modification Center (LAMC), Lima, Ohio, with the rolloff of the first two tanks in February 1980. Prior to this first rolloff, extensive modernization and expansion work was required in the main manufacturing plant as well as installation, tryout and qualification of all Industrial Plant Equipment. Placing the XM1 Tank System on the DOD MUL would assure meeting established schedules, assure expeditious resolution of industrial resource conflicts due to materiel and energy shortages, and establish production priorities for long lead time requirements among items competing for the same resources.

(U) Approval had been authorized by the Joint Chiefs of Staff, and forwarded to DOD, prior to being sent to the President.

(U) Initial Production Readiness Review (IPRR). Department of Defense Directive 5000.34, Defense Production Management, required that weapon system production decisions would be supported by an assessment of the program's readiness for production, based on a formal production readiness review. A Production Readiness Review (PRR) was conducted by the DOD component and defined by DOD Directive 5000.34 as "A formal examination of a program to determine if the design is ready for production, production engineering problems have been resolved, and the producer has accomplished adequate planning for the production phase."

(U) The objective of a PRR was to verify that the production design, planning, and associated preparations for a system had progressed to the point where a production commitment could be made without incurring unacceptable risks of breaching thresholds of schedule, performance, cost, or other established criteria. The Army implemented the DOD PRR requirements through DARCOM Regulation (DRAFT), Production Readiness Reviews, dated 5 June 1978. This regulation required that an Initial Production Readiness Review (IPRR) also be conducted.

(U) Major goals established for the IPRR included the necessity to familiarize the contractor with the DOD PRR Policy and requirements; explain and refine as necessary, procedures and detailed questions to validate evaluation criteria which will be used during the formal PRR; and identify the necessary contractor furnished and other documentation required for the formal PRR.

(U) The XM1 PRR Program was an independent and objective review of production readiness and associated risks. Assistance in the conduct of the IPRR was to be provided by the Army Product Engineering Services Office (APESO), the Defense Product Engineering Services Office (DPESO), and other government activities.

(U) Mission. The overall mission of the PRR Team was to verify that the XM1 Tank System had reached a satisfactory state of production readiness, that the necessary planning for production had been accomplished and documented, and that the contractor and major subcontractors involved could implement and carry out the production decision.

(U) The specific mission of the IPRR was to introduce the contractors to the specific requirements of the formal PRR. Included in the PRR were to be briefings by OPM XM1 and/or APESO, and discussions between PRR functional area team captains and contractor counterparts.

(U) The objectives of these discussions were to ensure that all individuals concerned understand PRR policy and procedures, and to ensure that contractor and government personnel understand and were in general agreement with the content, context, and purpose of each evaluation criterion and questions to validate each criterion. Also, it was important to identify the need for and availability of contractor furnished and other documentation required to address each question to validate each criterion or would otherwise be required for the formal PRR.

(U) Results of the Initial Production Readiness Review (IPRR) Conducted 11-14 September 1978. The XM1 Initial Production Readiness Review (PRR) was conducted at Chrysler Corporation Sterling Defense Division and OPM, XM1 during the period 11-14 September 1978. Chrysler Corporation, AVCO, Detroit Diesel Allison Division, and Hughes Aircraft were represented by a total of approximately 25 people. This group established major goals which were achieved during the initial PRR. These included the goals to familiarize the contractor with the DOD PRR policy and requirements; explain and refine as necessary, procedures and detailed questions to validate evaluation criteria which will be used during the formal PRR; and identify the necessary contractor furnished and other documentation required for the formal PRR.

(U) The pertinent goals were achieved by conducting a series of meetings of each of the functional area teams with their respective contractor counterparts. Both government and contractor personnel benefitted significantly from these meetings. The contractors gained a thorough understanding of the overall PRR concept, the specific evaluation criteria which were to be addressed during the formal PRR scheduled for November, and the specific points which were to be examined so that each evaluation criterion could be properly assessed. Constructive comments were given by the contractors to the government. These were used to consolidate information requirements and more effectively evaluate each criterion by revision of some of the criteria.

(U) Procurement. The Full Scale Engineering Development/Producibility Engineering and Planning (FSED/PEP) contract was in the 23rd month of a planned 36 month effort, and the performance of the overall contract was on schedule. All eleven prototype vehicles had been delivered and were undergoing DT/OT II testing. The funds obligated under this contract totaled $225,656,214 through September 1978. Released to the Chrysler Corporation were the Requests for Proposal for LRIP (110 vehicles) and the System Technical Support (STS) procurements. The proposal for the LRIP was expected 2 November 1978; and the proposal for the STS effort on or about 11 December 1978.

(U) On 26 May 1978 definitive agreement was reached with Chrysler Corporation for the contract for Manufacturing Engineering, Tooling, Special Test Equipment and Facilities Procurement Program (METSFPP). A cost-plus-fixed fee contract for the period 29 April 1978 through 30 September 1981 at an estimated cost of $353,000,000 was negotiated. The METSFPP effort was directed toward facilitizing the Lima Tank Plant, the Detroit Tank Plant and other supporting facilities to produce the XM1 Tank System at a rate of not more than 60 vehicles per month, on a 1-8-5 shift basis, with a surge capacity of 150 vehicles per month, on a 3-8-5 basis.

(U) The facilities contract, a companion contract to the METSFPP contract was also progressing on schedule and was funded in the amount of $151.5 million through 30 September 1978 for authorized acquisition of Industrial Plant Equipment. Chrysler and the major subcontractors received Government authorization for the expenditure of $113.4 million through FY 1978. A letter contract modification to incorporate the increase in production capacity from the original requirement for a production rate of 30 vehicles per month (based on a total buy of 3,312 tanks) to accommodate the production rate specified above was being negotiated (definitized).

(U) Preliminary contractural activity to include the preparation of the RFP for the conceptual phase of the 120mm Gun Program has been completed and further action toward its implementation was being withheld pending Congressional approval of the program.

(U) Procurement action for long lead time funding of the initial increment of spares, detailed spares and training components was accomplished. These spare parts and components were to be produced concurrently with the items for initial vehicle production.

Financial

(U) Funds. At the end of FY 1978, the FSED Contract value was $232.8 million and cumulative funding for this contract totaled $210.5 million of which $101.6 million was FY 1978 funding. The FY 1978 program authority for the XM1 tank development was $118.7 million of which $3.1 million was TRACE and provided for armor improvement activity. Two million dollars of the $118.7 million was provided to finance improvements in the fuel economy of the AGT-1500 engine. A $2.0 million payback for FY 1977 funding withdrawn by DARCOM and expected in FY 1978 was not received, however, it was to be provided in FY 1979, if required.

(U) An RDT&E estimate was prepared in April 1978, after a January decision by the Secretary of the Army to initiate development and testing of the German 120mm gun system and to adapt it to production as the future main armament for the XM1 tank. It totaled $171.5 million, with a FY 1978 requirement of $12.3 million. An amount of $1.4 million had been funded earlier in FY 1978 and was used by TMAD for Tank Main Armament Evaluation. The balance of $10.9 million was submitted as a reprogramming request and was conditionally approved by Congress, but the conditions were not met and funding was not provided in FY 1978. Consequently, a planned 1 June 1978 start date was not met. A Congressional approval was expected in early FY 1979 which would require a program re-estimate.

(U) Army Procurement Appropriation (Weapons and Tracked Combat Vehicles). The FY 1978 program was authorized at a total of $288.5 million to support the facilitization effort and initial procurement actions for the FY 1979 buy of 110 vehicles. This facilitization effort was supported by $113.4 million for initial production facilities (IPF) and $123.9 million for production base support (PBS). Funds related to the FY 1979 procurement were $37.0 million for advance procurement of hardware items, $9.1 million for spares, and $5.1 million for training equipment. Funds in the amount of $106.4 million and $114.7 million were obligated with Chrysler Corporation for IPF and PBS, respectively, for the facilitization effort. A total of $16.2 million was obligated with various agencies to support rehabilitation of industrial plant equipment, transportation of IPE, initiation of a Cross Services Contract at the Lima Tank Plant and other miscellaneous support activities. Another $34.2 million was obligated with Chrysler Corporation for advance procurement of Long Lead Hardware items. Other FY 1978 obligations included $2.0 million for advance procurement of 110 M68 cannons (105mm), $ .8 million for night vision devices and the total amounts of spares and training equipment.

(U) The FY 1977 program was authorized at a total to $100.8 million with $35.6 million and $65.2 million for IPF and PBS, respectively. During FY 1977, the program was restructured to provide $21.2 million for IPF and $79.6 million for PBS. A $14.4 million decrease in IPF was accomplished and the PBS line increased in December 1977. The carryover balance of $13.0 million plus the $14.4 million was obligated during FY 1978 for the continuing facilitization effort. Programs for FY 1976 and FY 1975 remained as previously reported, at $2.5 million and $2.0 million respectively.

(U) C/SCSC and the CPR. The XM1 prime contractor and numerous subcontractors employed the Cost and Schedule Control System Criteria (C/SCSC) to manage the FSED phase of XM1 Tank System program. As a result of the use of C/SCSC the total contract met with favorable cost conditions for FY 1978. The contractor was considered to be essentially on schedule. Through the efforts of the PMO and the contractors, a significant management reserve was effectively established to fund unforeseen contingencies. Using current C/SCSC reports, it was forecast that at the conclusion of the FSED phase, the overall contract would show no cost overrun. Barring any unforeseen significant hardware problems during the remainder of the test program, efficient use of management reserve should alleviate the majority of currently projected contract requirements and thereby assure no cost overrun.

(U) Evaluation of Contractor's Design-To-Cost Report. Chrysler submitted the second detailed report as of 8 May 1978. A team conducted a government review and validated procedures and estimates for the prime contractor and major subcontractors. The next report was due October 1978. Cost control/reduction programs were formalized by the contractors and the DTC estimate was reduced as FY 1977 changes were incorporated. In addition, the basis for the DTC program was modified from 3312 vehicles at 30/month to 7058 vehicles at 60/month.

(U) Life Cycle Cost (LCC Study) The LCC Study completed in FY 1977 was updated to reflect selection of the FRG 120mm gun as a follow on to the current 105mm gun. This study was used to revise DCP 117A and support Congressional Hearings for funding of the gun program. Chrysler was required to estimate life cycle costs during the current program phase and a management plan for this effort was presented to the PMO during September 1977 with detailed design evaluation plan (trade studies) to support reductions in overall government costs. Their initial estimate of program Life Cycle Costs was due during October 1978.

Smoke/Obscurants

RDT&E Programs

(U) The Army RDT&E projects and tasks assigned to the Smoke/Obscurants Project Management Office are:

	Element Code	DA Project or Task	Title
(1)	6.36.08 (AD)	1X463608D009	60mm Ammunition
(2)	6.36.27 (AD)	1W463627DE82	Smoke Munitions & Materiel
(3)	6.46.01 (ED)	1X464601D144	Smoke Mortar Rounds
(4)	6.46.09 (ED)	1W464609D191	Smoke Munitions & Materiel
(5)	6.57.02 (Test)	1X665702D204	Smoke Test Criteria
(6)	6.46.14 (ED)	1X464614D373-14*	155mm Howitzer Ammunition

*Customer reimbursable order provided by PM-CAWS.

(U) The basic funding level of the established and future requirements of the Smoke development program is reflected in the charts below. Also shown is the procurement and production base support program for fiscal years 1976-1984.

(U) Advanced Development: Smoke Munitions and Materiel. In the 155mm Improved Screening Smoke Projectile program, a felt wedge WP design was developed and designated XM825. This round was proven stable in flight and as a result was placed in competition with the XM803. The XM802 program was terminated due to its similarity to the XM803. Engineering design tests were completed in June 1978, while the DTI/OTI were initiated in July 1978 and completed in September 1978.

(U) In the case of the 81mm Improved Screening Smoke Projectile direction was given in the 1st Quarter FY 1978 to accomplish a minimum sustaining program due to the identification of the improved mortar (UK L16A2) for possible adoption by the United States, and the determination of an optimized screening concept or a ballistic metal cartridge. A program was established which explored central burster concepts and base expulsion with various fuzing. Data was to be furnished TRADOC to determine future development program in FY 1979.

(U) Engineering Development: Smoke Munitions and Materiel. In regard to the M239 Launcher/L8A1 Grenade Fielding Program, during September 1977, initial delivery was made to USAREUR, and the initial fielding demonstration was held at Vilseck/Grafenwoehr, Germany. M239 launcher and tank/launcher interface kits were applied to 774 USAREUR M60A1 tanks during FY 1978. Additionally, all M60A3 tanks and all M60A1 tanks delivered after March 1978, had launcher interface

ESTABLISHED REQUIREMENTS
SMOKE DEVELOPMENT PROGRAM
BASIC FUNDING LEVEL

PROGRAM	PROJECT/ TASK	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85
Smoke Test Criteria	D204	448K	800K	800K	800K	1000K	1200K	1200K	1200K
81mm Improved Smoke Projectile	DE82-09	AD: 7506K							
	D144-02	685	2300K	1260K	1666K	ED: 3990K			
						1030K	1940K	1020K	
4.2 inch Improved Smoke Projectile	DE82-26		AD: 3650K						
	D144-03		850K	1350K	1450K	ED: 3850K			
						1050K	1780K	1020K	
155mm Improved Smoke Projectile	DE82-12	AD:4279							
	D373-14	1879K	ED: 6367K						
			2758K	2354K	1255K				
Armored Vehicle Rapid Smoke System	D191-01	ED: 5053K							
		1310K	1126K	917K	600K	500K			
Vehicle Engine Exhaust System	D191-11	ED: 3828K							
		579K	856K	580K	900K	700K			
Man-portable Large Area Screening System	DE82-07		AD: 2278K						
	D191-10		576K	937K	765K	ED: 2120K			
						985K	735K	400K	

Chart 16

FUTURE REQUIREMENTS
SMOKE DEVELOPMENT PROGRAM
BASIC FUNDING LEVEL
PART I

PROGRAM	PROJECT/ TASK	FY78	FY79	FY80	FY81	FY82	FY83	FY84	FY85
60mm Improved Smoke Projectile	D009 D144-01		AD: 1645K						
			536K	504K	605K	ED: 3110K			
						860K	1800K	450K	
IR Defeating Vehicle Exhaust System	DE82-20 D191-16			AD: 1357K					
				367K	990K	ED: 2009K			
						479K	840K	690K	
IR Defeating Grenade	DE82-06 D191-08				AD: 1740K				
					1040K	700K	ED: 3220K		
							920K	1340K	960K
High Volume Large Area Screening System	DE82-27 D191-27				AD: 2910K				
					1010K	910K	990K	ED: 2990K+	
								2000K	990K
Training Smoke	DE82-21 D191-17					AD: 2975K			
						1360K	1245K	370K	ED
									1500K
Helicopter Airburst Grenade	DE82-22 D191-18					AD: 3520K			
						1530K	890K	1100K	ED
									805K
Helicopter Grenade Launcher	DE82-23 D191-23					AD: 4100K			
						1900	1100K	1100K	ED
									1000K

Chart 17

(UNCLASSIFIED)

FUTURE REQUIREMENTS
SMOKE DEVELOPMENT PROGRAM
BASIC FUNDING LEVEL
PART 2

PROGRAM	PROJECT/ TASK	FY 78	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
Man-portable Obscuration Device	DE82-24 D191-24						AD: 2100K 900K	1200K	ED 900K
Smoke Dissipation System	DE82-25 (D191-25)					AD: 5545K 1155K	1550K	1300K	1540K
Multispectral Screening System	DE82-05 (D191-26)					2000K	AD: 7183K 1483K	1800K	1900K
Retaining/Reinforcing Obscuration Device	DE82-28 (D191-28)						AD: 5745K 1200K	1800K	2745K
RPV Obscuration System	DE82-29 (D191-29)						AD: 5443K 1400K	1500K	2543K
Multispectral Artillery Dissemination System	DE82-30 (D191-30)							AD: 2900K+ 1500K	1400K
Auto-Loading Smoke Grenade Discharger	DE82-31 (D191-31)							AD: 3000K+ 1000K	2000K
Deep Area Multispectral System	DE82-32 (D191-32)							AD: 3193K+ 1193K	2000K

Chart 18

(UNCLASSIFIED)

(UNCLASSIFIED)

PROCUREMENT & PRODUCTION BASE SUPPORT PROGRAM
FOR SMOKE/OBSCURANT MATERIEL

$ IN MILLIONS

ITEM	FY76-78	FY79	FY80	FY81	FY82	FY83	FY84
CTG 60mm	-0-	-0-	-0-	-0-	-0-	*	*
CTG 81mm	-0-	-0-	-0-	-0-	*	*	-0-
CTG 105mm	6.8	-0-	-0-	-0-	-0-	-0-	-0-
Proj 155mm	9.4	10.6	-0-	-0-	11.2	11.7	-0-
Smoke Pots (A/T)	-0-	-0-	-0-	4.4	4.5	4.7	5.0
Grenade, Hand (A/T)	9.5	2.9	5.1	7.0	8.1	10.8	11.4
Grenade, Launcher L8A1 Armored Vehicle Protection	24.4	5.9	17.3	19.2	23.3	25.8	26.0
Launcher, Grenade Armored Vehicle Protection	17.2	6.1	8.7	7.5	7.6	5.5	2.3
Production Base Support Measures	6.0	2.2	3.1	*	*	-0-	-0-

* Requirement and cost not yet determined

Chart 19

(UNCLASSIFIED)

kits applied during tank production. The significance of fielding was that the prime assets of the tank fleet were provided an immediate smoke screening capability; the milestone was met on time and within cost; fielding was achieved within two years of the decision to buy the UK system; and a system involving both US and UK components became operational.

(U) In the Expanded Launcher Application Program, TECOM testing of the M239 launchers adopted to the M88A1 was completed and the test report was published in June 1978. The vehicle/adaptation hardware was added to the rebuilt and new M88A1 MRV's during overhaul/production and full release for issue of the adopted vehicles was obtained in July 1978.

(U) XM1 Tank/XM250 Launcher: Engineering support of XM1 tank/XM250 launcher interface kit development was initiated in December 1977, and the XM250 launchers and L8A1 grenades for XM1 DT/OT II were provided in March 1978 while a PM-XM1/PM Smoke support agreement was signed in April 1978. DT/OT II were initiated in FY 1978 and maintenance/training/publications support provided for those tests.

(U) M901 ITV/XM243: DT/OT III was conducted during FY 1978 and completed in June 1978. Efforts were initiated to support M901 IPT/FOE test planning for tests required to prove XM243/ITV compatibility sufficient for TC of the XM243.

(U) XM2 IFV/XM3 CFV/XM257/XM258: In March 1977, a support agreement was signed between PM-FVS and PM Smoke, and in June 1977, initial funding was received from OPM-FVS. Smoke launchers for DT/OT II were provided PM-FVS in February 1978 and DT/OT II was initiated.

(U) Vehicle Engine Exhaust Smoke System (VEESS): A special IPR was held in October 1977 to obtain agreement with the accelerated schedule. Customer and user evaluation testing was conducted and completed during FY 1978. A decision was made to add the system to the M60A1/A3 tanks and the RISE engine by ECP/ERR rather than type classify the system. ECP's were submitted to OPM-M60 Tanks/TARCOM for approval during June 1978.

(U) Countermeasure Test Program. Smoke Week I was completed during November 1977 at Dugway Proving Ground during which a number of electro-optical (EO) systems/devices were subjected to the smoke/dust environments. Characterized clouds of smoke, smoke/dust, and dust alone were provided by initiation of inventory, development, and foreign munitions--both smoke and high-explosive. For each test trial the "particulate concentration--path length (CL) vs time" was determined along a sightline through the smoke/obscurant plume. Participants recorded their EO devices performance (vs time) for

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eventual comparison with the coincident CL from the smoke/obscurant cloud. Results from conduct of Smoke Week I were published in April 1978. This confidential report (limited distribution) was titled "Smoke Week I, Electro-Optical (EO) Systems Performance in Characterized Smoke Environment at Dugway Proving Ground, UT, Nov 77," and had Defense Documentation Number of ADC015328.

(U) The report on results from the Manportable Common Thermal Night Sight Smoke Test (MCTNS) conducted at White Sands Missile Range during July 1977 was jointly published by OPM Smoke and Harry Diamond Laboratories in January 1978. Performances of thermal night sights, day sights, electro-optical tracking links, and beam-rider guidance systems (functioning in various characterized smoke environments) were shown graphically. These graphs depicted time-coincident obscuration of the electro-optical (EO) devices and concentration-length (CL) of the smoke clouds. The "CL vs Time" plots indicated the concentration of smoke integrated across the line-of-sight of the EO devices. This Confidential report (Manportable Common Thermal Night Sight Smoke Test at White Sands Missile Range) had Defense Documentation Number ADC015243.

(U) During May 1978, tests were conducted at Ft. Sill to characterize dust/debris clouds resulting from dynamic firing of single and multiple artillery rounds. Projectiles (155mm and 105mm HE) were fired so as to impact upwind of cloud sampling arrays provided by Dugway Proving Ground Safari Team. The resulting dust/debris cloud passed the instrumented areas where transmissivity, dosage, and particle size distributions were determined. These data are valuable inputs for effort relating to performance of electro-optical devices in a realistic battlefield environment. Data were analyzed and reported by DPG. The final test report "Dust/Debris Test Conducted at Fort Sill, OK" was published in September 1978 by DPG.

(U) PM Smoke sponsored tests to gather data required by the electro-optical /obscurant modeling community to support Joint Technical Coordinating Group obscurant manual development. These tests were conducted at Dugway Proving Ground during October-December 1977. Data were collected on cloud physical and obscuring characteristics for all U.S. inventory and available foreign smoke munitions. Obscurant effects in the visual, near IR, mid IR, far IR and millimeter wavelength were obtained. Because of varied funding sources and their required audit trail, five reports were published to cover the overall effort.

Procurement and Production

(U) Cartridge, 105mm, Smoke HC BE, M84A1. Production was completed of the improved end item configuration together with the

smoke canister sub-munitions needed for renovation of prior configurations included in world-wide stock assets. Depot renovation of assets was also initiated and provided for the projectile ogive rethreading needed to accommodate the M565 Fuze and upgrade the functional reliability of the round to a 92 percent level.

(U) Projectile, 155mm, Smoke, HC BE, M116A1. Prototype testing of the improved M116E2 projectile was completed. Procurement authorization for end item production was received following type classification of the configuration as the Army standard M116A1 projectile. No depot renovation or rework of stock assets was planned. Unserviceable assets are, however, being collected for down-loading and salvaging of projectile bodies in support of next years production buy of the improved smoke round.

(U) Smoke Grenade Launcher Materiel for Armored Vehicle Protection. Delivery of L8A1 Grenades, M239 Grenade Launchers and provisioning parts continued from the FY 1976 funded and initial production contract with the United Kingdom's (UK) Ministry of Defense. Also, delivery of vehicle modification kits for USAREUR application continued from the FY 1977 funded production contract with the Chrysler Corporation.

(U) Follow-on contracts were negotiated by USAPAE with the UK on a multi-year basis. The L8A1 Grenade contract covered FY 1977 and FY 1978 authorization and programs for the FY 1979 and FY 1980 planned acquisition, whereas the M239 Grenade Launcher contract covered FY 1978 authorization and programs for FY 1979 and FY 1980 acquisition plans.

(U) Americanization of UK technical data continued in support of a U.S. production base. Progress included procurement and fabrication use of the Americanized drawings, specifications and standards for sample quantities of the L8A1 Grenade and M239 Launcher.

Committees and Interfaces

(U) Interface with TRADOC. The Assistant Project Manager for Tactical (APMT) Doctrine participated in the staffing, coordination and joint DARCOM/TRADOC Working Groups for preparation of LOA's for a smoke cartridge for the 4.2" mortar and Manportable Smoke Generator for Large Area Smoke (LASS), the improved 155mm smoke projectile ROC with mini-Cost Operational Effectiveness Analysis (COEA), and associated Validation Inprocess Review actions. He staffed and provided comments/participation to TRADOC and other DA organizations relative to threat documents, training publications, studies, scenarios field experiments and simulations. The APM-T participated in Army and Tri-service conferences on smoke, armor technology and Military

Operations in Built-up Area (MOBA). Other significant events include smoke program briefings for the Vice Chief of Staff, Army (VCSA) and Under Secretary of the Army, the FORSCOM Chemical Officer Conference in November 1978, the HQ, USAF DCSOPS in February 1978 and the TRADOC DCG for Training in September 1978.

(U) Quadripartite and NATO Interface. The OPM Smoke was involved in the Infantry, Armor, Artillery, Aviation and Combat Development Quadripartite Working Groups (QWG). The Project Manager, or staff members, made presentations to QWG Aviation, Technical Coordinating Panel (TTCP) Sub Group J Symposium in England, May 1978, NATO Panel 3, June 1978, in Belgium, and coordinated HQDA papers and smoke inputs to ongoing panels.

(U) Army Science Board (ASB). PM Smoke chaired a joint DARCOM/TRADOC Ad Hoc Committee which prepared, published and distributed in December 1977 a formal review and assessment of the ASB (then Army Scientific Advisory Panel (ASAP)) report entitled, "Smoke as an Optical Countermeasure" (Nov 76 Secret). This response became a cornerstone in the actions to respond to GEN Kerwin's message regarding realistic battlefield conditions. OPM Smoke coordinated regularly with the DA Executive Secretary of the ASB and ensured that appropriate members were in attendance at smoke tests, symposia and technical meetings.

Toxicology.

(U) In October 1977, a Memorandum of Understanding (MOU) was negotiated among PM Smoke/Obscurants, Chemical Systems Laboratory, and US Army Medical Research and Development Command. This MOU delineated operational and support relationships in the performance of studies required to evaluate human health and environmental effects of smoke and obscurants. This agreement provided for the toxicological studies related to the development and utilization of smoke munitions and other smoke generating systems. The toxicological studies were required to assess: health and environmental hazards of industrial activities required for manufacture of the smoke materiel; effects resulting from exposure of troops to the disseminated smoke; and environmental impacts which may result from the disseminated smoke during field use of smoke for testing and training purposes. Data derived therefrom was to provide the basis for recommendations to Federal regulatory agencies as to acceptable levels and conditions of exposure of troops, civilian workers and the environment to chemicals used in the Army Smoke Program.

Advanced Attack Helicopter (AAH)

Introduction

(U) A two place twin-engine rotary wing aircraft, the YAH-64 Advanced Attack Helicopter (AAH) was specifically designed to deliver anti-armor and area supression fires for the day, night, and limited weather anti-armor mission with emphasis on the ability to fight, survive, and live with troops in the "Front-Line" battlefield environment. The YAH-64 AAH represented an optimization of helicopter technology for the modern tank-heavy battlefield environment.

Background

(U) An AAH task force was established in January 1972 to assess the requirement for an attack helicopter in the 1975-1985 timeframe by revalidation of the Advanced Aerial Fire Support System Qualitative Materiel Requirement (QMR) or identification of new operational characteristics. Included in the study were flight evaluations of Lockheed's Cheyenne, Sikorsky's Blackhawk, and Bell's King Cobra. The task force study concluded that the future attack helicopter was to have a relatively small vulnerable area and a high degree of maneuverability to survive in a mid-intensity conflict. Requirements developed by the task force described a less complex, highly agile aircraft optimized for nap-of-the earth flight, and survivability in a high threat environment.

(U) In August 1972, it was determined that none of the three prototypes met the new AAH requirements; therefore, the decision was made to terminate the AH-56 (Cheyenne) development and to begin the AAH program. The materiel need document was approved by DA on 28 September 1972. The "Cheyenne" Project Management Office (PMO) was redesignated the AAH-PMO and spaces and personnel transferred. Also in September 1972, the Secretary of the Army approved the initiation of the development of an Advanced Helicopter System which would provide greater agility, hover performance and heavier aerial fire support capability than currently possessed by existing Army aerial weapons systems. DEPSECDEF authorized release, on 10 November 1972, of the AAH RFP to industry for a phased engineering development program, specifying a $1.4 to $1.6 million(FY 1972 constant dollars) constraint on recurring fly-away design-to-unit production cost. Subsequent changes in DOD Budget Guidance Manual redefined design-to-cost to include non-recurring costs; thereby increasing the AAH design-to-cost goal by $0.104 million to $1.704 million (FY 1972 constant dollars). On 22 June 1973, competitive Phase I Engineering Development contracts were awarded to Bell Helicopters and Hughes Helicopters.

(U) Government testing (flyoff) was completed 30 September 1976 and the AAH DSARC held on 7 December 1976 resulted in approval of the AAH to enter full scale Engineering Development (Phase 2) of the AAH system.[7] The Secretary of the Army selected Hughes Helicopters (YAH-64) as the prime aircraft system contractor for Phase 2. Public announcement of the $317.4 million contract award was made on 10 December 1976. Phase 2 consists of modification of the two Phase 1 aircraft, fabrication of three additional air vehicles, subsystems development, and testing and integration of mission equipment subsystems into these aircraft.

(U) A major mission equipment subsystem for the AAH was the target acquisition and designation system. Due to the sophistication of this subsystem and a decision to develop this equipment competitively by the government, a separate project office was established in March 1977 within the AAH Project Office (now Program Office). Contracts for the competitive development of the Target Acquisition Designation System (TADS) Pilots Night Vision System (PNVS) subsystems were awarded 10 March 1977 to Martin Marietta and Northrop Corporation Renegotiation of the contracts with Hughes Helicopters and General Electric Company (T700 engine), Martin Marietta and Northrop in May 1978 to accommodate a program stretchout due to a FY 1978 budget reduction was completed. It resulted in a Phase 2 engineering development schedule of 56 months.

(U) A charter designating COL C. A. Patnode, Jr., Department of the Army Project Manager for the TADS/PNVS was signed on 24 August 1978. Although funding for the TADS/PNVS Project was included within the AAH line item, the separate TADS/PNVS Project Office intensively managed the competitive TADS/PNVS development effort.

(U) On 12 October 1976, the AAH Project Manager briefed the DCGMD, DARCOM, on a recommended course of action to develop XM788/789 30mm Ammunition for the AAH 30mm gun (XM230 Hughes Helicopters Chain Gun) by establishing a Product Manager Team satellited at ARRADCOM, Dover, NJ.

(U) COL D. J. DeLany (then LTC) assumed project responsibility on 10 December 1976, but the initial 30mm Ammunition Product Manager Charter approved by the CG DARCOM on 16 June 1978 designated him as the DARCOM Product Manager. The Product Manager reported to the AAH Program Manager.[8] The office of the Product Manager, 30mm Ammo was included in the AAH Program Management Office.[9]

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[7]AAH Staffing Plan, Jul 78, p. 2.

[8]Prod Mgr Charter for 30mm Ammo, 21 Jun 78.

[9]AAH Staffing Plan, FY 78, p. 3.

FY 1978 Program Development

(U) In Fiscal Year 1978 the AAH was being developed in accordance with proposed Decision Coordinating Paper (DCP) 123,a, dated 29 November 1977, which was forwarded by DA to OSD on 1 January 1978.

(U) During this period, a $100 million funding reduction resulted in ten months extension to the Phase 2 schedule which later (after Congress restored $65 million in the budget) was renegotiated to a 56 month development program with the start production scheduled to begin in December 1980. Negotiations consistent with the 56 month development schedule were completed with Hughes Helicopters for Phase 2 Development and also with General Electric Corporation for modification of the T-700 engine contract as required to accommodate the Aircraft schedule.

(U) As a result of completion of negotiations and modification of the Hughes Helicopters contracts, the current contract price shown on this report includes an increase of $13.8 million AAH Funding for Skill Performance Aids.[10]

In August 1978, the fourth in a series of Critical Design Reviews (CDR) was successfully conducted at Hughes Helicopters. Major areas covered were: Infrared (IR) Suppressor, Integrated Pressurized Air Subsystem, Armor, Environmental Control Subsystem, Area Weapon, Aerial Rockets, Armament Controls, and External Stores. The Area Weapon System Mock-up Review was also conducted at Hughes Helicopters on 7 August 1978.

TADS/PNVS

(U) In October/November 1977, Martin Marietta Aerospace (MMA) and Northrop Corporation (NC) successfully completed Critical Design Reviews. Designs were updated and fabrication and assembly were initiated. Mission Equipment Development Laboratory (MEDL) became operational at Hughes Helicopters and had been used to check out MMA and NC systems.

(U) In order to prepare AAH test pilots to use TADS/PNVS in a nighttime nap-of-the-earth environment prior to AAH test flights, the Army contracted for several surrogate trainer devices in 1978. PNVS trainers consisting of Martin and Northrop PNVS systems mounted on modified AH-1's were ordered from Martin and Northrop in June 1978 for delivery in FY 1979.

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[10] SAR YAH-64, 30 Sep 78, p. 2.

(U) Two TADS trainers were also ordered. Contracts were awarded through the Hellfire PM to Aero Ford in May 1978 to refurbish two Airborne Target Acquisition Fire Control Systems (ATAFCS) and to Rockwell in July 1978 to integrate the refurbished ATAFCS systems on AH-1's

(U) A plan was developed to provide Smoke and Obscurants testing which would answer OSD questions concerning operation of the TADS/PNVS/Hellfire in a degraded weather environment. However, sufficient funding was not available within the AAH program to fund the proposed testing. DARCOM/DA indicated that they were to provide the necessary funds to initiate the tests in FY 1979.

(U) A Memorandum of Understanding was signed in November 1977 to establish guidelines for providing information to the Navy to evaluate potential applications of the PNVS to Navy aircraft.[11]

30mm Ammunition

(U) Development of 30mm Ammunition continued through FY 1978 on schedule and within cost limits. The qualification testing of the TP (Target Practice) cartridge was expected to be completed in first quarter FY 1979.[12]

Integrated Logistics Support

(U) Integrated logistics support efforts continued during this phase with Logistics Support Analysis (LSA) reviews, support equipment specifications and design reviews, and Training Device Preliminary and Critical Design Reviews. Two Integrated Logistics Support Management Team (ILSMT) reviews were conducted to review progress and validity of contractor ILS concept development. The New Skill Performance Aids concept was contractually implemented to develop Equipment Publications and Extension Training Material. Normal Government Furnished Materiel (GFM) efforts continued.[13]

AAH Program Management Structure

(U) As one of the Army's top priority programs, the AAH was structured under the new DARCOM multi-level project concept.

(U) Brigadier General Edward M. Browne was designated Department of the Army (DA) Program Manager for the Advanced Attack Helicopter (AAH) System, and assumed program responsibility on December 1976. The Program Manager reported to the Commanding General (CG), US Army

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[11] DF, DRCPM-AAH-TP, Subj: AHR FY 78, 5 Feb 78.

[12] FONECON w/A. Cianconi, 30mm, 5 Feb 79.

[13] DF, DRCPM-AAH-LM, Subj: AHR FY 78, 26 Jan 79.

Materiel Development and Readiness Command (DARCOM) which the Project Manager for the TADS/PNVS, and the Product Manager for the 30mm development report to him and used certain elements of the AAH staff to assist them in their program efforts.

(U) The Program Manager was responsible for overall program management of the AAH System, including the aircraft and its related mission equipment and subsystems. He directed and controlled all phases of research, development, procurement, production, distribution and logistic support involved for the AAH and its subprojects. He was directly responsible for the life cycle management of the AAH and centrally directed, coordinated, integraded, and supported the materiel development and acquisition activities of the subordinate Project Manager of TADS/PNVS and the Product Manager, XM 788/789/799 30mm Ammunition.[14]

(U) Personnel strength, both authorized and assigned, for the AAH PMO is shown in following table:

Personnel Strength
Advanced Attack Helicopter Program Manager's Office

DATE	CIVILIAN		MILITARY		TOTAL	
	AUTH	ASSIGN	AUTH	ASSIGN	AUTH	ASSIGN
30 Jun 73	79	72	12	12	91	84
30 Jun 74	76	74	9	9	85	83
30 Jun 75	76	74	10	10	86	84
30 Jun 76	83	73	10	10	93	83
30 Sep 76	83	76	10	10	93	86
30 Sep 77	98	92	14	14	112	106
30 Sep 78	89	85	14	12	103	97

Program Cost Estimate

(U) The total AAH Program cost estimate at time of Development Estimate (DE) approval in November 1976 was $3758.1 million. As of 30 September 1978, program changes and economic escalation was $381.2 million, raising current cost estimate to $4139.3 million.

[14] AAH PM Charter, 18 Aug 78, p. 1.

BLACK HAWK

(U) Chartered originally on 11 December 1974 as the US Army Office of Project Manager (PM) for the Utility Tactical Transport Aircraft System (UTTAS), it was redesignated 7 September 1977 as US Army Office of Project Manager, BLACK HAWK. The current commander, Colonel Richard D. Kennyon was designated 29 October 1976 as Project Manager.[15]

(U) The BLACK HAWK was envisioned as the Army's first true squad carrying helicopter, and designed to perform the missions of transporting troops and equipment into combat. Further, it was to be able to resupply the troops while in combat, and perform associated functions of aeromedical evacuation, and repositioning of reserves.[16]

Organization and Staffing

(U) At the beginning of Fiscal Year 1978, the personnel authorization was 92 (76 civilians and 16 military). In December 1977, the authorization was decreased by seven civilians,[17] and in August 1978, four civilian overhires were authorized[18] plus two additional military officers.[19] This increased the total authorization to 87 (69 civilians and 18 military).

(U) The onboard strength at the beginning of Fiscal Year 1978 was 83 (67 civilians and 16 military). At the end of the Fiscal Year, the strength was 85 (67 civilians and 18 military).

(U) As of 30 September 1978, the BLACK HAWK RDT&E Program was $37,935,000.00.[20] Fiscal Year 1978 funding resources are stratified as indicated below:

Funds	Project Number	Total Funding
RDT&E	BLACK HAWK Airframe 6.42.06.A 1X464206D378	$29,349,455.00[21]

[15] Permanent Order 88-1, DARCOM Headquarters, 10 Nov 77.

[16] Project Charter, 18 Jan 77.

[17] TWX, DRCPT-SA, 082047Z Dec 77.

[18] Ltr, DRCPT-SA, 25 Aug 78.

[19] 1st Ind, DRCPT-SU, 14 Aug 78.

[20] DA Form 1323, BLACK HAWK RDT&E Program, Aug 78.

[21] AMC Form 1006, BLACK HAWK Airframe, 25 Aug 78.

Funds	Project Number	Total Funding
	BLACK HAWK Producibility Engineering and Planning (PEP) 6.42.06.A 1X464206D378	$ 4,405,975.00[22]
	BLACK HAWK Engine 6.42.06.A 1X464206D189	$ 4,180,000.00[23]

(U) At the end of 4th Quarter FY 1978, the FY 1978 Airframe Program released by DA was $33.755 million of which $30.624 million or 90.7 percent was obligated and $32.916 million or 97.5 percent was committed.

(U) The FY 1978 released Engine Program was $4.180 million of which 99 percent had been obligated. Of the remaining amount, $30 thousand was committed for contract contingency reserved and $22 thousand was held pending a possible add-on to the General Electric contract.

APA Funding

(U) The FY 1978 Aircraft Procurement, Army (APA) funds totaled $228,306,000.00. However, the BLACK HAWK Project Manager's Office had full control of only 89.4 percent or $204,200,000.00 of the allocated funds. Of the controllable funds 90.7 percent were obligated as of the end of Fourth Quarter Fiscal Year 1978. The program was stratified as indicated below:

Funds	Budget Line Items	
APA	Number 7-1100.68.8.01007 (CA8) BLACK HAWK Airframe	$133,658,700.00[24]
APA	(CB8) BLACK HAWK Engine	$ 54,885,400.00[25]
	(CC8) BLACK HAWK Avionics	$ 4,726,000.00[26]

[22]AMC Form 1006, BLACK HAWK PEP, 21 Aug 78.

[23]AMC Form 1006, BLACK HAWK Engine, 5 Apr 78.

[24]AMC Form 1006c, BLACK HAWK Airframe, 28 Sep 78.

[25]AMC Form 1006c, BLACK HAWK Engine, 28 Sep 78.

[26]DARCOM Form 1006c, BLACK HAWK Avionics, 19 Oct 77.

Funds	Budget Line Items	
APA	(CF8) BLACK HAWK other GFE-Engine	$ 60,000.00[27]
	(CG8) BLACK HAWK Training Equipment	0[28]
	(CH8) BLACK HAWK other GFE-Airframe	$ 461,000.00[29]
APA	Number 8 - 1100.68.8.01008 (CE8) BLACK HAWK Engine Advance Procurement	$ 10,408,900.00[30]
APA	Number 24 (TZ8) Provisioning BLACK HAWK	$ 24,100,000.00[31]
APA	TOTAL	$228,300,000.00

Milestones

(U) The following major milestones were achieved during Fiscal Year 1978:

(U) On 26 September 1977, General Electric was awarded a cost contract in the amount of $1,195,410 to procure peculiar equipment required to manufacture T700-GE-700 Engine Blisks and Impellers.

(U) On 14 October 1977, the option for the Second Year of the BLACK HAWK requirements was exercised and a mod was issued to Sikorsky in the amount of $129,423,500 at target price.

(U) General Electric was awarded, on 28 October 1977, a Fixed Price Incentive (FPI) type contract in the amount of $80,159,173 for the second year production of the T700-GE-700 Engine.

(U) On 20 December 1977, the 1000-hour endurance, on-condition maintenance test was successfully completed. The purpose of this test was to subject a T700 Engine to an abusive endurance environment early enough so that design improvements, revealed during the test, could be incorporated into the first production engine.

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[27] AMC Form 1006c, BLACK HAWK Other GFE-Engine, 26 Oct 77.

[28] DARCOM Form 1006c, BLACK HAWK Training Equipment, 19 Oct 77.

[29] AMC Form 1006c, BLACK HAWK Other GFE-Airframe, 28 Sep 78.

[30] AMC Form 1006c, BLACK HAWK Engine-Advance Procurement, 27 Jul 78.

[31] AMC Form 1006c, BLACK HAWK Provisioning, 12 Oct 77.

(U) The T700 Maturity Contract Modification was awarded on 19 January 1978 in the amount of $300,323. This modification provided engine contractor support compatible with the BLACK HAWK Airframe Maturity Program.

(U) The first T700 production engine was accepted on 13 March 1978 by the Army at the General Electric Company, Lynn, Massachusetts. This engine was delivered ahead of schedule.

(U) On 31 March 1978, the T700-GE-700 Engine Alternate Vendor Cost Reduction Program DAAK50-78-C-0004 was awarded to General Electric on a Cost Plus Incentive Fee (CPIF) Contract with a target price of $1,075,000. This program was designed to reduce the production unit cost of the T700 Engine by the introduction of additional vendor sources.

(U) A T700 Engine Component Improvement Program (CIP) contract was awarded on 12 May 1978. This program consisted of various programs which provided for continuing improvements in T700 engines in the areas of reliability, maintainability, durability, Service Revealed Deficiencies (SRD) correction and time between overhauls. A major part of the CIP was the Fleet Leader Mission Cycle Test. In June 1978 testing was started and approximately 1000 hours of engine test time was accumulated. The test was a continuous program where an engine was operated in a typical aircraft installation environment and accumulated low cycle fatigue exposure on the engine and its components in advance of the field high time engines by at least two years. This advanced lead time was to insure that appropriate redesign hardware was available early enough to support the engine maintenance program and to preclude logistical shortages or excessive unscheduled engine removals.

(U) On 18 May 1978, a Request for Proposal (RFP) No. DAAK50-78-R-0005 for the T700-GE-700 Engine Third Year Production requirement was issued to General Electric Company.

(U) Modification #65 to Engine Maturity Contract was awarded on 14 June 1978 to General Electric Company for torquemeter calibration for Airworthiness and Flight Characteristics (A&FC) Testing and Performance Verification Testing at a target price of $312,341. Modification #66 to Engine Maturity Contract was awarded to General Electric Company for accident investigation work up to $25,000.

(U) A Request for Proposal (RFP) No. DAAK50-78-R-0011 (P6A) was issued on 31 August 1978 to Sikorsky Aircraft Division for modification of eight BLACK HAWK (UH-60A Aircraft) to accept a Stand Off Target Acquisition (Radar) System (SOTAS) and redesignated EH-60( ) Aircraft.

(U) On 8 September 1978 a modification was awarded to General Electric Company to authorize procurement of long lead time items needed to update the New England Manufacturing Company.

(U) A Basic Ordering Agreement (BOA) No. DAAK50-78-C-0005 (P6D) and delivery order number 0001 was awarded on 15 September 1978 to General Electric Company. This contract was for labor, material, and equipment and facilities necessary to perform specified tasks in support of the T700 engine.

(U) The Army accepted on 28 September 1978 the twenty-third production T700 engine. The first twenty-three engines were delivered on schedule.

(U) On 29 September 1978 General Electric was awarded a Cost Plus Fixed Fee (CPFF) Contract No. DAAK60-78-C-0023 for the T700-GE-700 Engine Suitcase Tester Development Program. This contract was for the development and evaluation of a "suitcase" size engine/airframe interface troubleshooting instrument.

Preparation for Materiel Fielding

(U) During the time frame March through October 1978, requisitioning procedures were established and tested between the field using units and the UH-60A airframe and engine contractors. Support List Allowance Cards (SLAC) were prepared by the contractors and forwarded to Fort Rucker. Filling of the Authorized Stockage List (ASL) and Prescribed Load List was to begin on 1 December 1978. Also in preparation for fielding, nine production training courses were conducted at General Electric and Sikorsky for instructor/key personnel from TRADOC and DARCOM. These instructions were to form the foundation on which all future training was to be conducted. The T700 Engine Simulator which was delivered to the Aviation Center represented the first of a family of 12 devices that were to be delivered to TRADOC schools for BLACK HAWK pilot and mechanic training.

Technical Publications

(U) The airframe "New Look" maintenance manuals for Aviation Unit Maintenance (AVUM)/Aviation Intermediate Maintenance (AVIM) level and the Repair Parts and Special Tools List (RPSTL) were completed, verified by the Army, and were to be submitted for TAG printing in November 1978. TAG printed engine maintenance manuals for the AVUM/AVIM level and the RPSTL were distributed in September 1978. Review of Change 1 to the Depot Maintenance Work Requirements was also completed.

Product Assurance

(U) The reliability assurance warranty option for the BLACK HAWK first production year was exercised in December 1977 followed by the completion of administrative procedures in September 1978. An agreement was reached with the NAVPRO on the procedures for the acceptance of the production BLACK HAWK aircraft. Also, detail status discussions with Sikorsky were continuing at the end of the year while demonstration of replacement time for 18 components was accomplished. Sikorsky initiated 686 failure analyses during the year and submitted 557 for approval. As of the end of the year, all but seven of the submitted reports had been reviewed and all of those reviewed were approved or had comments resolved. The DARCOM goals for in-house Value Engineering Proposals and the goal for dollar savings were exceeded. However, no contractor Value Engineering Change Proposals were received.

Contractor Maturity Ground Testing

(U) Contractor maturity testing continued throughout Fiscal Year 1978. No load lube and gear pattern development tests were successfully completed in December 1977 on the main transmission, and on the tail and intermediate transmission in February 1978. Sikorsky conducted the main transmission 200-hour qualification test which was completed on 25 August 1978 after a penalty run. Also, the tail and intermediate transmission 200-hour prequalifcation test was completed 21 July 1978. Sikorsky successfully completed on 20 April 1978 a 20-hour whirl test of the production main rotor, and a 50-hour whirl test of the tail rotor was completed on 24 April 1978. Then on 29 September 1978 the 200-hour endurance test of the production tail rotor was started. This was preceded by two water-tightness tests of the main rotor blade tip on 21 April 1978 and 12 May 1978. As a result, Sikorsky was making a production change to require caulking of the screw heads, made a change to the caulking procedures, and was looking at the possibility of additional drain holes in the tip cap. During Third Quarter Fiscal Year 1978 Sikorsky completed all tail testing on the Structural Test Article (STA) to failing load which included the upper and lower tail pylon and the stabilator. All testing was 100 percent successful and no structural modifications were required.

(U) On 7 July 1978, the Ground Test Vehicle (GTV) commenced the maturity phase 300-hour Military Qualification Test (MQT). It was interrupted twice the first time due to a separation of the tail pylon at the hinge point on 13 July 1978 after 42 hours, and again on 29 August 1978 following the failure of the main transmission upper bearing retention ring after 75 hours. Following the tail pylon

separation, the GTV was refurbished with the tail pylon from the company -owned prototype and new tail and intermediate transmissions. Also, the upper bearing retention ring bolts have been redesigned from aluminum to titanium, and the titanium bolts proved to be satisfactory in both the GTV and head and shaft fatigue test facility. Running continued toward the completion of the 300-hour MQT without further incident.

(U) Fatigue and vendor component testing was approximately 55 percent complete at the end of Fiscal Year 1978. Unlimited fatigue life was demonstrated in the fatigue testing of the tail rotor rotating controls; swashplate guide; main rotor swashplate assembly; main rotor push rods; and the rotating scissors and pressure plate assembly. The contractor continued to calculate and revise fatigue lines as test results were accumulated. Modifications to components were being made as necessary and where practical to meet fatigue life requirements.

Contractor Maturity Flight Testing

(U) In December 1977, Sikorsky completed the engine exhaust survey on aircraft S/N 73-21650 to determine the exhaust installation losses and to provide a baseline for future exhaust surveys with the IR suppressor installed. Aircraft 650 was down for its scheduled update from 25 January 1978 to 1 April 1978. Following 650's update, Sikorsky conducted IR development flights to optimize the size of the ram air scoops on the engine inlet and to optimize the IR suppressor core cooling. Engine exhaust de-swirl vanes were added as a result of IR testing. Sikorsky also conducted Automatic Flight Control System (AFCS) development flights with emphasis on resolving comments resulting from the Preliminary Airworthiness Evaluation (PAE) II. As a result of evaluating the aircraft vibration characteristics during this flight testing, Sikorsky made a decision to use the soft mount configuration on the stabilator. On 19 May 1978, aircraft 650 crashed and was a total loss. Consequently, the BLACK HAWK test program was restructured to allow for continued testing without additional aircraft. Program restructuring forced environmental (i.e., tropic and desert) and A&FC testing to be accomplished using production vehicles rather than on prototype aircraft.

(U) Prior to its scheduled production update which began on 23 December 1977, aircraft 651 was utilized for the conduct of a flight loads survey, stabilator development, engine Electrical Control Unit (ECU) evaluations, and performance testing from October to December 1977. Also, Aircraft 651 was used as a test bed for accident investigation and flew for the first time following update on 26 July 1978. Since its initial flight, this aircraft had been undergoing

shakedown flight testing and AFCS verification testing including structural measurements, rotor surveys, stabilator controllability, AFCS gain development and an AFCS and handling qualities evaluation. Aircraft 652 had been used primarily for avionics and acoustics testing. This aircraft was being updated from 29 March 1978 to 1 September 1978 and had undergone final avionics testing including Command Instrument System (CIS) evaluations and AFCS verification testing.

Government Verification Testing

(U) The Preliminary Airworthiness Evaluation (PAE) II was conducted from 14-18 November 1977 at Sikorsky's West Palm Beach, Florida Flight Test Facility. A limited handling qualities evaluation of the BLACK HAWK was performed during PAE II to determine the aircraft dynamic characteristics with the electronics AFCS installed.

(U) A "quick look" at the IR signature was conducted by the Government at Sikorsky in April 1978 using equipment provided by General Dynamics. Favorable results were obtained.

Project Manager For Nuclear Munitions

Mission, Personnel, Trend

(FOUO) The Project Manager, Nuclear Munitions (PM-NUC), exercised full line authority and responsibility for planning, directing, and controlling the allocation and utilization of authorized resources in all phases of research, development, procurement, production, distribution, logistical support, and stockpile safety and reliability testing programs of assigned nuclear munitions programs.

(FOUO) Project Manager reported directly to the Commander, US Army Materiel Development and Readiness Command, on all matters pertaining to life cycle management of nuclear munitions. In the assigned area of responsibility, the PM functioned as the DARCOM spokesman in dealings with the Office of the Secretary of Defense, the Assistant to the Secretary of Defense for Atomic Energy, and other higher authority or lateral agencies as required. This office organized and chaired joint nuclear weapons program groups for which the Army was the designated materiel developer to include Joint Department of Energy/Department of Defense (DOE/DOD) Phase 2 Feasibility Study Groups, Design Review and Acceptance Groups (DRAAG) and DOE/DOD Project Officer Groups. The Office of the PM-NUC also provided the Chairmen for the Joint Test Working Groups (JTWG) and the Comprehensive Test Plan Group (CTPG) as well as the principal Army member for the Configuration Control Groups (CCG) (nuclear warheads) and Joint Task Groups (JTG).

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(FOUO) At the beginning of FY 1978, there were 38 personnel (32 civilian/6 military) on board. By the end of the fiscal year, this had increased to 42 (34 civilian/8 military). The authorized strength in October 1977 was at 53, but two major actions during the year decreased this authorization to 48 (38 civilian/10 military). The first was a requirement from DARCOM Headquarters that two RDTE civilian spaces be eliminated and funds returned, and the other was a DARCOM manpower survey (March 1978) resulting in a reduction of three personnel (two civilian and one military).

(FOUO) Manpower utilization in FY 1978 was approximately 33.5 civilian manyears and 7.5 military at a cost of $1.3 million. Total magnitude of nuclear programs managed was in excess of $61 million as shown below.

OPM NUCLEAR MUNITIONS
NUCLEAR MUNITIONS PROGRAMS
APPROPRIATIONS
$ THOUSANDS

APPROPRIATION	FY 78	FY 79	FY 80	FY 81	FY 82	FY 83
PROCUREMENT	24459	26306	31559	32975	26161	32641
RDTE	18079	20344	34938	44280	46491	34252
OMA	19521	22996	25576	26933	27017	27017
TOTAL	62059	69646	92073	104188	99669	93910

(FOUO) Of increasing concern during the past year was the proliferation of special study groups on which personnel of this office were required to serve. By actual count there were 25 boards or committees requiring representation from this office. The situation arose because of the unique nature of nuclear munitions which involved critical coordination between the Army and DOE, and demanded critical concentration on matters involving safety. This, in turn, drove program execution which required intensive interface coordination with weapon systems PM's and commands, DOE, and HQ DA. In addition to the paperwork generated by these study groups, we found this office had to spend considerable time on travel even though it had several strategically located field/liaison offices. Although we have been attempting to alleviate the situation by various administrative actions, this could prove to be a continuing problem throughout FY 1979.

(FOUO) During the past year the Project Manager again requested that DARCOM Headquarters provide the funding guidance for programs for which he had management responsibility directly to this office and not the system PM's. These programs were separately identified in the RDAC and Congressional budgets by program element as nuclear munitions

items and were not in any way associated with the system. The new 8" and 155mm were prime examples. Separate negotiated agreements could and had been worked out with the subordinate commanders and PM's concerned.

Programs

(FOUO) XM785 Nuclear Projectile. The XM785 Nuclear 155mm Projectile Program was initiated in FY 1978 with advance development (AD) funding. On 2 February 1978, the DOE formally agreed to join the DOD in the Phase 3 Engineering Development of this projectile. The DOE designated the Lawrence Livermore Laboratory (LLL), and Sandia Laboratories, Livermore (SLL) to develop the W82 Nuclear Warhead for the XM785 Projectile.

(FOUO) A General Officer Review was conducted on 16 February 1978 at which technical and funding guidance were provided. Due to funding constraints and an impending Comprehensive Test Ban (CTB) on all testing of nuclear weapons, engineering development (ED) funding was limited to providing Army support to the DOE test program.

(FOUO) A memorandum of understanding dated 27 June 1978, on the division of responsibility between the Army and DOE was approved by the Project Manager, COL James H. Sloan, Jr., for the Army and Mr. Herman Roser, Albuquerque Operations Office Manager for the DOE. Also, the W82 Military Characteristics (MC) and draft coordinated Stockpile-to-Target Sequence (STS) were approved on 9 May 1978 by the Military Liaison Committee (MLC).

(FOUO) Primary activities during FY 1978 concentrated on configuration studies of warhead, fuzing, and rocket motor componentry, evaluating proposed interchangeable mechanical joints, developing techniques for applying copper rotating bands to titanium projectile bodies, developing a new high energy rocket motor propellant, and conducting early gun firing tests. A number of gun firings were conducted during the fiscal year to evaluate the new aluminized propellant and adequacy of warhead components.

(FOUO) XM753 Nuclear Projectile. On 13 July 1977, the Byrd-Baker Amendment to the DOE FY 1978 production appropriation was introduced and suspended further production efforts until October 1978.

(FOUO) DEVA IPR held on 27 April 1978 resulted in standard type classification of the M735 Fuze M754 Type X Projectile, H4272 Extractor Tool and H4278 Spanner Wrench and authorization to procure XM753 production rocket motors. The H4277 Extractor Tool used on the M422E1 AFAP was to be modified for use on the XM753. When so modified, it was to become an H4274 Extractor Tool.

(FOUO) DTII/OTII continued with satisfactory results. All specifications were met with exception of the 400 pound combined projectile and container weight limit requirement which was exceeded by approximately five pounds. Overweight condition could be trimmed but at expense of added features requested by the user.

(FOUO) LANCE WHS. Production of the M238E1 Adaption Kit was started in January 1978 at Lockheed Electronics and the first delivery was made to the Army depot in July. Production was proceeding slightly ahead of schedule and no problems were anticipated. In the meantime, TECOM completed final testing of the M238E1 Adaption Kit in July. Six flight tests were conducted and all were successful. In addition, a series of nuclear effects tests were conducted which demonstrated ability to meet all required levels.

(FOUO) The XM144 Hard Link Army Safe Device (HLASD) completed prototype testing in April and qualification testing in September. A diagnostic study of an out of tolerance condition during qualification tests showed a marginal torque output in the clipping spring. This was being corrected and additional tests were to be conducted in early 1979.

(FOUO) LANCE HLASD application concept alternatives were identified, evaluated, and coordinated. The concept adopted was for use of selected theater GS personnel to modify adaption kits with HLASD's in an OCONUS modification center. Coordination with USAREUR indicated that if they had a heavy work load during the period when the modification was to be applied, they would not be able to do the job. Plans, therefore, were based on the worst case and included costs for funding depot teams to perform the operation.

(FOUO) During FY 1978 efforts were made to provide M240 and M241 trainers for a new FMS case and GS unit assigned to support the host nation. Difficulty was encountered in supplying required items due to low trainer stocks, long lead times to obtain components, and disinterest of manufacturers in producing small quantities of hardware. This problem was elevated to HQDA for consideration and several alternatives were suggested. Pending resolution by DA, efforts to obtain hardware from excess materiel were continued.

(FOUO) A camouflage paint compatible with the cork ablative was successfully developed and tested during the year. The specification was in the final stage of approval.

(FOUO) PERSHING II. This fiscal year was an extremely fruitful period for the PERSHING II Warhead Section Development Program. In May 1978, the Department of Energy assigned responsibility of both

the Earth Penetrator (EP) and Air Burst/Surface Burst (AB/SB) Warheads to Los Alamos Scientific Laboratory and Sandia Laboratories, Albuquerque.

(FOUO) The feasibility of the EP Warhead to successfully penetrate hard targets was demonstrated. The results from the flight test, Davis gun, and reverse ballistic ground tests, when correlated with the analytic studies, showed the EP is ready to enter into engineering development. During this period, AB/SB Adaption Kit progressed from a concept into the preliminary model stage. Models were built and successfully showed the concept to be valid. The advanced development program was completed, and we are now preparing for ASARC/DSARC II.

(FOUO) M454/M109G Compatibility Program. This program of the US M454 with the German M109G Howitzer was completed and the joint US-GER test report was published in October 1977. BRL published a firing table addendum based on the results. DOE reviewed the results, approved the M454 with the M109G, and stated the M454 Major Assembly Release limits would not be exceeded. In December 1977 the Army NWSSC conducted a special safety study of the M454/M109G and concluded there appeared to be no safety problems when using M454 with the M109G.

(FOUO) Germany was to produce the special support plates needed to make their H4196 Extractor Tool work with the M109G. When they provide the US with drawings, the data was to be incorporated into the technical manuals with the special M109G ramming procedure.

(FOUO) M454/M198 Compatibility Program. In October 1977, DA asked whether any M454/M198 capability could be provided without testing. This request was expanded in January 1978 to include the NATO FH70 and SP70 Howitzers. DA was advised in March 1978 the M454 could be safely fired from the M198 with the XM206 prop charge (Zones 1 and 2). No M454/M197 (Zone 3)/M198 compatibility could be provided without testing. Testing was required for any M454 capability with the FH70 and SP70 Howitzers. Alternative firing programs were provided. The Chairman of the Army NWSSC concurred in the positions presented.

(FOUO) In June 1978 DA directed a test program that was to provide full M454/XM206/M197/M198 compatibility. DA would determine the need for M454/FH70 capability while the M198 Program could be adjusted to include the FH70. Prior to conducting the full compatibility program, a pre-test was to be conducted to determine if M454/M197/M198 combination would exceed DOE major assembly release limits.

(FOUO) PIA Procurements. During 1978, PM-NUC began management of the follow-on procurement of PERSHING 1A M15 Warhead Section subassemblies in support of both US and German requirements. This procurement resulted from the extension of the life of the PERSHING 1A Missile System and the continued depletion of warhead section assets for follow-up operational tests (FOT) and annual service practice (ASP) tests. In 4th quarter FY 1978 initial procurement contracts were placed by ARRADCOM. Because of fiscal constraints, additional procurements were to be made in FY 1979 and FY 1980. Total procurement cost was expected to be greater than $18 million. Also, initial deliveries of M15 subassemblies will occur in 1st quarter CY 1980. The NICP at ARRCOM evaluated future spares requirements for incorporation into the procurement actions. Substantial effort was directed to reestablishing the production base for the various components which had not been procured for approximately six years.

(FOUO) Power Supplies for Permissive Action Link (PAL) Equipment. Several significant accomplishments involving a reliable field power source for PAL equipment occurred. An ERADCOM (HDL) hand crank generator (G076) in development for a field radio system was found to have characteristics favoring adaptation as a PAL power source. The PM actively pursued this item as a much needed substitute for the difficult to maintain T436 power supply.

(FOUO) A more extensive use of vehicle adapter was anticipated so that the field organizations could, in many instances, simply interface with available and properly equipped tactical or combat vehicles to provide controller power.

(FOUO) This office also initiated development activities on a lithium primary battery which was anticipated to be a direct drop-in replacement for the rechargeable NICAD batteries used in the T436 power supply. The lithium/sulphur dioxide system should be smaller, lighter, and provide longer life at substantial cost savings.

(FOUO) As a stop gap measure to reduce cost and provide a more supportable power source, a previously developed power supply using standard vehicle batteries was modified and its tech data package updated. This action was taken to insure the availability of a power source if developmental problems prevented the timely fielding of the G76 Generator in support of the XM753 Program.

(FOUO) MK74 Shaped Charge. The Project Manager initiated actions which would type classify and procure the Navy developed MK74 Shaped Charge and its associated inert training device. The procurement quantities of charges to support trainer and user requirements for the emergency destruction of Army nuclear weapons replacing the M2A3, general purpose demolition charge. During 1978, a contract was placed for the initial quantities of live and inert devices while the procurement action underwent a transition to the single service ammunition

manager at ARRCOM during the past year. Initial deliveries were planned for 4th quarter FY 1979. A correspondence DEVA IPR for TC action was successfully accomplished during 1978.

(FOUO) Operational Review of the NIKE HERCULES, MEDIUM ATOMIC DEMOLITION (MADM), SPECIAL ATOMIC DEMOLITION MUNITION (SADM), and 155mm Artillery Fired Atomic Projectile (AFAP) M454. The PM provided the DARCOM representative for an operational review of four major weapon systems. Sponsored by DCSOPS and supported by all major commands involved as well as the Department of Energy, this review required a complete on-site evaluation of CONUS and OCONUS training support and user organizations of the four systems. The final report of the committee was forwarded to DA for review and several significant actions are expected as result of this extensive effort.

(FOUO) Value Engineering. The VE goals established for the Project Manager for FY 1978 were achieved and exceeded. The following table shows the results:

	Goal	Actual	% of Goal
VEP's Initiated	4	9	225%
Savings Validated	$500,000	$683,000	137%

(FOUO) Nuclear Weapons Explosive Ordnance Disposal (EOD). Significant changes in EOD techniques involving nuclear weapons occurred during the past year. Leading the way with simplified techniques and reduced disassembly requirements was the LANCE nuclear warhead section. The new style EOD nuclear warhead trainer called the Type 3D was also introduced. This innovative design provided a cutaway view of internal warhead design to complement optional procedural methods and damage assessment techniques. A key ingredient in allowing simplified procedures was a foam kit which could be used to desensitize and immobilize weapon system explosives. Other fielded systems were being reviewed on a case-by-case basis to determine the applicability of the new techniques. Also, developmental systems were being continuously reviewed to assure the simplest and safest EOD procedures are generated to support the new weapon system when fielded.

(FOUO) NUWAX - 79. During 1978 the office participated in planning for a nuclear weapon accident exercise which was to be conducted at the Nevada Test Site in April 1979. This first of its kind joint exercise was to be conducted to allow evaluation of the command, control, communications, and other functions involved in interdepartmental coordination and related activities at the scene of a major nuclear weapon accident. NUWAX - 79 was to involve weapons of all three services and require support by all DOE design laboratories. This office provided coordination for materiel support of the

Army LANCE Warhead Sections used for NUWAX - 79 as well as DARCOM representation associated with the exercises. The PM also provided NUWAX - 79 briefings to other DARCOM elements responsible for nuclear accident/incident control.

(U) Stockpile Reliability Test Program. The joint Army-DOE Stockpile Reliability Test Program was conducted as planned for CY 1978. Where test results indicated that safety/reliability of stockpiled munitions were adversely affected, follow-on action was taken to establish root cause of the problem and followed by corrective action to the stockpile to assure that requirements for safety and reliability continued to be satisfied. In view of the SALT II talks, considerable interest was expressed in the scope of this program by senior officials of the Army and Department of Defense. The Under Secretary of the Army was briefed and appeared satisfied on the scope of the program. Because of the age of the stockpile, a more comprehensive test program was conducted for older systems to better ascertain the extent of degradation due to age.

(FOUO) White Paper on Nuclear Survivability. The PM-NUC authored a paper on nuclear survivability. It compares current survivability levels for unprotected man with levels for man protected by expedient battlefield techniques.

(FOUO) It concluded that soldiers can be effectively shielded from nuclear exposure by the use of foxholes, dirt coverage, or by being inside armored vehicles. It recommended that hardware nuclear survivability be increased to be commensurate with the levels that soldiers can survive when making use of battlefield shielding expedients.

(FOUO) Command, Control and Security (CC&S). Based on initiatives by OPM Nuclear Munitions during CY 1978, the Chief of Staff, Army authorized in January 1979 a study of Command Control and Security. AMSAA was assigned to do the study which was expected to be a basis for new Army policy pertaining to nuclear weapons. The study was to address the relative merit of several security concepts such as the Emergency Disablement System (EDS) and Category F PAL, and how these concepts might complement the exterior defense (physical security) of weapon storage sites.

(FOUO) OPM NUC provided the Army member to the tri-service Project Officers Group (POG) on the Emergency Disablement System (EDS). This POG was formed in response to a EUCOM ROC relative to improved command control and security of nuclear munitions which was validated by JCS. The Air Force served as the lead service for this program.

(FOUO) An Executive Project Officers meeting in September 1978 resulted in a decision to prepare a feasibility report similar to the

Phase II reports prepared early in nuclear weapon development programs. Based on this report, it was the intent of the Air Force, as lead service, to request that full scale engineering development be initiated for a remotely controlled EDS.

(FOUO) ILS General. During FY 1978 ILS activities included presenting a LOGCAP briefing for XM753 Projectile to DARCOM HQ and a LOGCAP briefing for XM266 Warhead Section (PERSHING II) to PERSHING Project Manager's Office. These briefings were the first LOGCAP's, and although requiring extensive dedication of manpower resources, proved beneficial in assessing the ILS posture of our programs.

(FOUO) Several nuclear munitions Logistic Working Group meetings were held during FY 1978. The systems involved were XM753 Projectile, XM785 Projectile, LANCE Warhead Section, and PERSHING II Warhead Section. These meetings included participation from many organizations in the nuclear munitions community such as ARRCOM, ARRADCOM, TRADOC Schools and Logistic Center, Project Manager Offices, Navy, Marine Corps, Department of Energy, and DOE Laboratories, HDL, Field Command/ Defense Nuclear Agency, and Military Traffic Management Command.

(FOUO) A nuclear weapon review visit was made to USAREUR early in FY 1978 for the purpose of ascertaining problems first hand and participants in the visit were from ARRCOM, ARRADCOM, and this office.

(FOUO) Other activities during the year included submission of PPQRI information to TRADOC for the XM785 Projectile processing of XM785 BOIPI feeder data (DA Form 33628-R), and coordinating preparation of automated ILS milestone submissions for the XM266 PERSHING II Warhead Section and the XM785 Projectile.

Fighting Vehicle Systems

Background

(U) The Office of the Project Manager, Mechanized Infantry Combat Vehicle was established by AMC in January 1968. The office was reorganized and redesignated in July 1975[32] as the Office of the Project Manager, Mechanized Infantry Combat Vehicle Systems and at the close of FY 1978 was located at Michigan Army Missile Plant, Sterling Heights, Michigan. Effective 14 July 1975, Brigadier General Stan R. Sheridan was designated the Department of the Army Project Manager for the Mechanized Infantry Combat Vehicle Systems (MICVS).[33] In May 1977 DA approved the redesignation to Program Manager, Fighting

[32] DARCOM General Order No. 56, 19 Apr 76.

[33] Special Order No. 157, 6 Jun 75.

Vehicle Systems (PM-FVS). Further, the MICV TBAT II for infantry and scout was redesignated Project Manager, Fighting Vehicle Armament Systems (PM-FVA). The Program Manager reports to the Commanding General, US Army Materiel Development and Readiness Command (DARCOM).

Mission

(U) The Program Manager was responsible for program management of the FVS including the Infantry Fighting Vehicle (IFV), the Cavalry Fighting Vehicle (CFV), and other derivative vehicles. He managed the overall FVS program which was to provide the Army with lightly armored full tracked fighting vehicles with two variants - an infantry version and a cavalry version. These vehicles were to have improved cross-country mobility, mounted firepower, a swim capability, and be air transportable. He was directly responsible for the life cycle management of the FVS, and was to centrally coordinate, integrate, and support the materiel development and acquisition activities of the subordinate PM for Fighting Vehicle Armament (FVA) Systems.

Personnel/Organization

(U) At the end of FY 1975, the authorized strength for the MICV Office was 10 military and 50 civilians. As shown below, the FY 1978 authorization for FVS stood at 26 military and 108 civilians (11 positions were authorized overhires). This increase was a direct result of the significant increase in mission and scope of the former MICV Office.

Strength Figures

		Authorized	Assigned
As of October 1976			
Military Officers		23	15
Warrant Officer		1	1
Enlisted		2	1
Civilian		108	80
	TOTAL	134	97
As of September 1977			
Military Officers		23	17
Warrant Officer		1	1
Enlisted		2	2
Civilian		108	98
	TOTAL	134	118
As of September 1978			
Military Officers		23	17
Warrant Officer		1	1
Enlisted		2	1
Civilian		108*	97
	TOTAL	134	116

*Includes 11 authorized overhires.

Significant Events

(U) In December 1977, a separate PM reporting to the PM, FVS was designated for Fighting Vehicle Armament Systems. He was responsible for the 25mm gun, 25mm ammunition, the XM758 fuze family, and the XM231 Firing Port Weapon, as part of the FVS program. In February 1978, the PM, FVS appeared before the House Armed Services Committee to answer questions regarding the development and procurement programs.

(U) A Producibility Engineering and Planning (PEP) effort for the IFV/CFV began in May 1978 at FMC Corporation which reflected the start of our formal production planning. A request for Proposal (RFP) was released for production of Long Lead Item (LLI) Tooling/Components, primarily involving tooling for the transmission, TOW, integrated night, and stabilization system.

(U) A "Hot Cell" test on the latest train configuration was started in May 1978. Its purpose was to environmentally test the Cummins low profile hydromechanical transmission as an integral unit in the IFV power train. The new low profile engine with the radiator remounted on top allowed the pack to be removed and installed as a unit and facilitates the ground-hop capability.

(U) Beginning in June 1978, a review of suspension and durability tests were scheduled, in addition to the vehicle-mounted TOW and 25mm gun turret testing and the "Hot Cell" testing of the power train. This automotive testing included the improved IFV/CFV 2½ inch diameter linear shock absorber and high strength steel torsion bar system. Cycling tests of the high strength steel torsion bar had shown a 100 percent durability improvement over the original tube-over-bar system.

(U) Formal contractor testing began in September 1978 using two all-up IFV engineering prototype vehicles. Testing was to include running approximately 12,000 vehicle miles, firing 25,000 rounds of 25mm ammunition and 16 TOW missiles. Formal government tests were scheduled to start in April 1979. Contractor testing was to be interrupted for a two week period in November 1978 in order for OTEA to conduct a limited operational evaluation (human factors, maintainability reliability) of the two competitive gun systems. Results of this testing was to be used by the 25mm Gun Source Selection Evaluation Board (SSEB) for the Gun Decision in December 1978.

(U) Design of the carrier for the General Support Rocket Systems (GSRS) continued. The first prototype, due for delivery in June, began contractor testing in July 1978. Six more prototypes were to be built for delivery to the two competing rocket system contractors (Boeing and Vought) for eventual government system testing.

IFV and CFV Development

(U) The Office of Management and Budget (OMB) in December 1977 deleted the Fighting Vehicle Systems (FVS) procurement funds from the FY 1979 President's Budget. These funds were required for the purchase of long lead item tooling and components needed to meet the May 1981 start of production date which was mandated by Congress. Deliberations in Congress with respect to reinstatement of these funds took place during the course of the fiscal year. While the FVS development program was not then affected by these discussions, production delivery would be jeopardized if the funds were not released by November 1978.

(U) On 3 January 1978, the reworked IFV/CFV Cost and Operational Effectiveness Analysis (COEA) results were presented at HQ TRADOC. These results indicated that both the IFV and CFV were the most cost-effective alternatives of those presented, and were the only alternatives which resulted in Blue Success. General Starry subsequently approved the COEA findings.

(U) The first of two prototype turrets was completed in April 1978 and turret testing was initiated. Successful TOW slug missile firings were performed to check out the structural integrity of the vehicle mounted TOW system. Subsequently, in June 1978, 15 TOW missiles were successfully fired at both stationary and moving targets at ranges varying from 500 to 3,000 meters. Of the three failures that were experienced, two were due to broken lead wires in the missiles themselves while the third failure resulted from reversed wiring of the error detector system. After corrective measures were taken, no further problems were experienced. One missile scored a hit at both 500 and 3,000 meters, the gunner having recaptured the missile after it passed through the first target and guided it on to the further target. The second prototype turret was completed in September 1978 and immediately went into primary gun system testing.

(U) An Infantry Fighting Vehicle Task Force (IFVTF) headed by MG Crizer had been established in September 1977 reported its findings in mid-April 1978. Its purpose was to conduct a Congressionally-directed study to reevaluate the specific requirements for, and the design of, the IFV/CFV, and to assess the need for a more survivable follow-on vehicle. The findings confirmed both the requirement for the IFV/CFV and its current design. Also, the Task Force concluded that a more survivable vehicle was not appropriate at the time to increase effectiveness. The increased survivability of the vehicle would be offset by the high investment cost, unacceptable delays in fielding the vehicle, and medium to high technical risk.

(U) A Producibility Engineering and Planning (PEP) contract was signed with FMC Corporation in June 1978 marking the start of

formal production planning. Also released was a Request for Proposal (RFP) for Long Lead Item (LLI) Tooling/Components for production. The LLI Tooling/Component production was scheduled to be awarded in FY 1979 and was to involve primarily tooling for the transmission, TOW missile system, integrated sight, and power control/stabilization system.

(U) An Automotive Test Rig was completed in July 1978. It was used to evaluate the re-packaged low profile power package with integrally mounted radiator, the redesigned engine compartment air flow, and the improved suspension system. After 500 miles of final acceptance operation at the contractor's plant, the vehicle was transferred to the Nevada Automotive Test Center for extended durability testing.

(U) On 13 July 1978, the results of the BG Mahaffey IFV/CFC Special Study Group (SSG) were presented at a pre-ASARC. The significant conclusion of the study findings was that there was no better alternative to the baseline IFV/CFV program in terms of cost and operational effectiveness. These results were subsequently presented to the ASARC in a formal decision paper.

(U) Troop training for OT Ia was initiated at Fort Carson in August 1978. It consisted of classroom sessions covering the 25mm Externally Powered (EP) and Self Powered (SP) Guns, as well as the M240C coaxial machine gun. With troop interest and motivation extremely high, training continued for the remainder of the fiscal year.

(U) In the latter part of the fiscal year, it was determined that the FVS program would experience a three-month delay in the delivery of the IFV/CFV pilot vehicles which were scheduled for contractor and Government testing. This necessitated a readjustment of the development schedule which would maintain the May 1981 production date without reducing the requisite activities of formalized testing. The program rescheduling was initiated based on taking advantage of combined contractor and Government training and testing to make most efficient use of the available time.

Derivative Vehicles

(U) The General Support Rocket System (GSRS) was being developed to provide a low cost, multiple launch, unguided rocket system. It was to be a quick reaction, non-nuclear system, and was intended to supplement existing field artillery. As such, it was to operate within the division areas and provide the capability to engage mid-range targets, deliver large volumes of fire, and defeat lightly armored targets. To improve the survivability of the GSRS, it combined the use of armor protection, quick reaction and "shoot-and-scoot" tactics.

(U) It was being developed under the direction of the Project Manager, GSRS, located at Redstone Arsenal, Alabama. A TRADOC Systems Manager had been established and was located at Fort Sill, Oklahoma.

(U) The vehicle was a "cab-over-transmission" configuration providing space for the three-man crew with necessary fire control equipment. Sufficient armor was provided to permit the completion of a fire mission without dismounting from the vehicle. The launcher, rockets and associated fire control equipment were being developed separately from the vehicle.

(U) Significant milestones for the program:

12 Apr 77	Program Approval.
3 Jun 77	Letter Contract signed with FMC Corporation .
17 Aug 77	Design concept approval by developer and user representatives.
28 Nov 77	Letter Contract definitized.
11 Aug 78	Facility Vehicle delivered to Government.
28-29 Nov 78	First vehicle prototypes to rocket prime contractors: Vought Corporation, Dallas, Texas and Boeing Aerospace Company, Seattle, Washington.
May 79	Start Government tests.
May 80	System approval for continuing developing effort and initial production.

Vehicle Systems

(U) Introduction. During FY 1978, the program proceeded towards the goal of fielding an Infantry Fighting Vehicle/Cavalry Fighting Vehicle (IFV/CFV).

(U) A common two-man turreted vehicle was used for the IFV, with its nine man squad, and the CFV with its five man squad. Interior stowage and seating arrangement were essentially the major differences between these two vehicles. Accomplishments were achieved in the following specific areas.

(U) Automotive Test Rig. A rig, embodying the new high strength torsion bars, redesigned suspension system, unitized cooling system and latest configuration power pack, was assembled in July 1978. This rig was subjected to 500 miles at the contractor's plant and 1,000 miles at the Nevada Automotive Test Site. Tests to date indicated very good results with the suspension system, some failures with the cooling system fan drive and radiator,and some performance problems with the transmission were encountered. These problems are in the process of being corrected.

(U) Dynamometer Cooling Test. Test conducted at the contractor's facility indicated that the unitized cooling system provided power pack cooling below design expectations but well above any current fielded track vehicle. Retests with improvements are scheduled.

(U) Turret Gun Drive System. The new two man IFV/CFV turret contained the new all electric turret gun drive system which replaced the old MICV one-man turret with electro-hydraulic controls. Gunner and Commander controls were available to direct and fire the 25mm gun, 7.62mm coax machine gun, and the TOW missiles. Stabilized turret for surveillance and fire-on-the-move capability was available as well as the conventional power and manual modes of operation. During FY 1978, this system underwent successful development testing.

(U) TOW Weapon System. The TOW Weapon System (TWS), consisting of an Integrated Sight Unit (ISU), Command Guidance Electronics (CGE), Power Converter, and Dual Tube Tow Launcher, successfully passed engineering development testing. TOW missiles were successfully fired at both stationary and moving targets during a test conducted in June 1978.

(U) Fabrication of Eight Pilot Vehicles. Fabrication of eight pilot vehicles was well under way during this period, with delivery scheduled early in FY 1979.

Armament Engineering

(U) 25mm Gun/Ammunition System. The 25mm gun program continued with the two candidate weapons underoing contractor demonstration tests (Prototype Qualification Test - Contractor, PQT-C) and Government hardstand testing (Prototype Qualification Test - Government, PQT-G).

(U) As the XM241 Self-Powered 25mm Gun underwent PQT-C by the developer, Ford Aerospace and Communications Corporation (FACC), approximately 8,000 rounds were fired by the contractor during the period of June 1977-February 1978. The gun demonstrated its readiness to enter PQT-G at Aberdeen Proving Ground, Maryland.

(U) Also, the XM242 Externally-Powered 25mm Gun continued under development by the contractor, Hughes Helicopters. During January-February 1978, the 5,000 round PQT-C was conducted, during which this gun also demonstrated its readiness to enter PQT-G.

(U) Five guns of both the SP and EP designs were delivered to APG for the PQT-G which was conducted during the period of March-October 1978. A total of approximately 86,000 rounds were fired during this test, which also provided data on the 25mm XM790 series ammunition. Vehicle-type ammunition ready boxes and flexible feed chuting

were obtained for use during this test from the Infantry Fighting Vehicle/Cavalry Fighting Vehicle (IFV/CFV) Contractor, FMC Corporation. Results of the test were made available to a Source Selection Evaluation Board (SSEB) for a selection of one of the two contender weapons by January 1979.

(U) During Fiscal Year 1978 guns of both SP and EP designs were provided to FMC for vehicle integration tests where approximately 40,000 rounds were fired from vehicles in both configurations. At that point, both guns were ready for a brief vehicle-mounted operational test (OT Ia) to be conducted by OTEA during early FY 1979, with results to be used as input to the gun selection process.

(U) The 25mm Ammunition Program continued with FACC developing the XM790 family of ammunition - the Americanized, production engineered and improved version of the Oerlikon ammunition for their KBA-B02 gun. To date, over 300,000 rounds of ammunition (primarily the XM793 TP-T cartridge) were manufactured and fired to support not only the development of the ammunition, but also the XM241 and XM242 guns, the XM714E5 fuze, and the XM2 and XM3 vehicles. Type Classification of this ammunition was scheduled for fourth quarter FY 1979.

(U) PQT-C results indicated that the penetration and accuracy requirements were met with the XM791 APDS-T ammunition. PQT-G was to start at APG in January 1979 and was scheduled for completion by March 1979.

(U) PQT-C and most of PQT-G were completed on the XM792/3 HEI-T/TP-T ammunition and all of the requirements except for metal parts security were met. Projectile process and design changes in the rotating band and tracer cavity areas were made to correct the metal parts security deficiency. Quantities of this ammunition were being manufactured for a metal parts security PQT-G retest, which was scheduled for March 1979.

(U) <u>XM231 5.56mm Submachinegun/Firing Port Weapon</u>. Development continued on the XM231 Submachinegun (SMG), the selected Firing Port Weapon (FPW) for IFV/CFV application. During Fiscal Year 1978, advanced prototype weapons (of the longer barrel, improved striker fired version) were fabricated to conduct further weapon and vehicle integration testing. PQT-C weapon endurance testing was completed for the SMG, demonstrating good reliability, and advancing it to the PQT-G weapon testing stage. The sight system was removed as a Value Engineering effort to reduce cost, maintain function, and to maintain a good field of fire compatible with the revised IFV vehicle structure. A newly designed Blank Firing Device was being tested since the standard M16 Series Rifle BFA was not functionally compatible with the SMG. Simulated vehicle mounts were used as weapon firing fixtures to assist

in the validation of the safety and durability of the late 1977 mount design. Another Government agency expressed interest in using the SMG in a mobile security transport role.

(U) M240C 7.62mm Coaxial Machinegun (MG). The M240 MG, procured as a modified MAG 58 from Fabrique Nationale in Belgium, was the adopted US coaxial MG and was being used in several programs including XM1 and M60 series tanks. Sixteen M240C MG's were delivered to FMC, Inc. in November 1977. The right-hand version MG installed in the IFV/CFV was identified as the M240C, and fired in prototype vehicles to validate the complete weapon system installation.

(U) XM714 Fuze Program. XM714E5 - Fuzes for PQT-G testing were fabricated, delivered, and assembled on the automated assembly line. The PQT-G testing of the fuze was conducted at APG and YPG where the fuze performed satisfactorily.

(U) XM714E6 - Development of the XM714E6 fuze for the HEI and HEDP rounds for the Advanced Attack Helicopter (AAH) continued through FY 1978. The development was almost complete at the end of the fiscal year.

Logistics Management

(U) Logistic Support Analysis (LSA). LSA in support of the Infantry/Cavalry Fighting Vehicles (IFV/CFV) progressed during this period. Although design drawing releases held up this effort, it was envisioned that the process would be completed in a timely manner.

(U) The LSA "D" sheet was modified to support the Front End Analysis (FEA) required under the Integrated Technical Documentation and Training (ITDT) concept. While this increased the analysis time required for LSA, it was to reduce any duplication of work, and ultimately reduce the time involved in preparation of the LSA and FEA.

(U) Examples of future application of LSA data included the preparation of training materials, equipment publications, maintenance test support packages and associated listings, and final qualitative quantitative personnel requirements information. Also, it could be applied to the identification of special support equipment requirements, to include special tools, test measurement, and diagnostic equipment.

(U) The LSA data generated was to be validated during the physical teardown and maintenance evaluation scheduled for FY 1979.

(U) Integrated Technical Documentation and Training (ITDT). The ITDT approach was being utilized in preparation of training materials and equipment publications. Due to time and funding constraints, the ITDT program was to address only the Operator and

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Organizational Maintenance Level prior to the system OT II. Direct and General Support Maintenance Levels were to be addressed prior to fielding. This concept was consistent with the ITDT Policy Statement, dated 31 January 1978, and signed by General Starry (TRADOC) and General Guthrie (DARCOM).

(U) The Front End Analysis (FEA) portion of this effort was being conducted in conjunction with the Logistic Support Analysis effort to preclude duplication of effort and reduce costs.

(U) Initial efforts under this concept were to prepare Extensive Training Materials (ETM) as soon as possible, but to utilize conventional training materials to support PQT-G and OT II. In June 1978, a major decision was reached to cancel the conventional approach and to utilize the ETM's prepared to support PQT-G and OT II.

(U) Also, the FVS PMO took steps to assign the FVS TSM as the Assistant Contracting Officer Representative (ACOR) responsible for the training components of ITDT. It was hoped that this would have resulted in a better training package due to TRADOC expertise in training development.

(U) Efforts this year were pointed at providing draft materials to be used in a six month validation effort. This effort was to be combined with the conduct of a physical teardown/maintenance evaluation scheduled for December 1978 through May 1979. The validated package was to be utilized to support PQT-G and OT II.

(U) Supply Management. Efforts were underway to determine the most feasible, cost effective manner of supporting the IFV/CFV in its initial deployment. As it stood, plans called for contractor logistic support for the first three years of production. This would include supply support of peculiar spare and repair parts and maintenance support at the depot level.

(U) The effort was in the early planning stages and it was envisioned that through a series of meetings with other Government agencies, the plan and the extent of required contractor support was to be definitized during the next fiscal year. It was possible that the early provisioning data for contractor support may have proved that this support was required to a lesser extent. Coordination with the MRC's to minimize CLS was being planned.

Product Assurance Test and Evaluation

(U) Testing - Engineering Design Test-Contractor (Vehicle). The vehicle contractor (FMC Corporation) continued with FVS development

with initial testing from a test stand firing mount which accommodated both the externally-powered (EP) and self-powered (SP) 25mm guns. Firing was conducted at the Hollister Test Center and proceeded through February 1978, expending a total of 15,000 rounds from the EP and SP guns.

(U) These tests were followed by test firing of both the EP and SP guns mounted in FVS turrets and reworked MICV chassis which started in March 1978 and continued through this reporting period. These two vehicles were also used to train OTEA personnel in the operation and maintenance of the guns for the ensuing OT Ia operational tests in November 1978. A total of 66,000 rounds were fired during this reporting period.

(U) To compile basic data on FVS suspension components, an Automotive Test Rig (ATR) was tested over an appropriate mixture of cross-country, secondary and paved terrain at FMC Corporation and the Nevada Automotive Test Center. It was started in June 1978 and continued through this reporting period, The ATR was fabricated from an old MICV hull, fitted with redesigned suspension components and upweighted to FVS design configuration. Approximately 2,100 miles of a planned 6,000 mile test were completed as of 30 September.

(U) Testing - Prototype Qualification Test-Contractor (25mm Guns). Developmental testing of the SP gun started with a formal configuration audit in July 1977 and continued through February 1978. Approximately 7,300 rounds were fired prior to entering PQT-G.

(U) Testing started with the EP gun in January 1978 and continued through February 1978. A total of 5,000 rounds were fired.

(U) Testing - Prototype Qualification Test-Government (25mm). PQT-G for both EP and SP guns was started on 1 March 1978 and was completed on 9 November 1978. This test was highlighted by the fact that the EP and SP gun systems were in competition for the selection of a single gun to enter PQT-G on the FVS vehicle and ensuing full scale production. Developmental ammunition was also an integral part of this test to determine its suitability for Type Classification. Approximately 45,000 rounds from five EP guns, and 43,000 rounds from five SP guns were fired during this test in which neither gun displayed optimum performance particularly under environmental extremes and ammunition was plagued with quality problems.

(U) Testing - Prototype Qualification Test-Contractor (Firing Port Weapon). PQT-C for the FPW started in August 1978 and was completed in September 1978. In this test, four guns were fired a total of 42,313 rounds to determine the suitability of the item to enter PQT-G which was scheduled to begin immediately following the PQT-C, but was not started during this reporting period to allow an evaluation of test incidents and attendant gun reliability.

(U) RAM - IFV/CFV RAM Requirements. For any systems development program to have a meaningful and productive RAM program, it was necessary to have realistic and demonstrable requirements. With the inception of the IFV/CFV program, discussions were initiated with TRADOC to develop realistic and mutually agreeable RAM requirements which focused primarily on their magnitude and format. It was important to establish valid baseline data representing the intense PQT-G/OT II environment and to agree on a format that would allow demonstration with a reasonable degree of confidence. After much discussion and effort, realistic requirements were developed that assured the Army (if achieved) of a highly reliable system and were realistic and demonstrable.

(U) Quality Assurance - IFV/CFV PEP. Considerable effort was expended in establishing the parameters and related guidance for development of the Product Assurance Portion of the vehicle and long lead item technical data packages. Development effort, while suspended for approximately two months, was resumed and was progressing at full capacity. Related efforts conducted during this period were addressed to long lead item design review participation which was completed in September 1978.

Procurement and Production

(U) Cost Growth of XM241 SP Gun and 25mm Ammunition, Contract DAAA09-75-C-2048. Contract DAAA09-75-C-2048, with Ford Aerospace and Communications Corporation, had major cost increases during this period. One of these was Change Order P00055, which changed the specifications for the 25-round capacity tactical ammunition container to a 30-round capacity container. The container was to be designed to meet provisions for bulk stowage of ammunition in the IFV and CFV vehicles. This change was estimated to cost an additional $225,000.

(U) Other contract cost growth was submitted and approved for the Ford Aerospace and Communications Corporation. Cost Growth Proposal No. 1 was in the approved amount of $2,313,600, which covered general increases in almost all areas of manufacturing materials and labor for the gun and ammunition, except for the APDS round and subcontractor claims in the ammunition area. Cost Growth Proposal No. 2 was in the approved amount of $1,415,775, which increased APDS-T round costs by $450,292 and an equitable adjustment for utilization of the Oerlikon 044-2 configuration, in lieu of the AFC validation phase projectile configuration ($965,483). Finally, Cost Growth Proposal No. 3 was in the approved amount of $768,000, covering gun fabrication variance due to numerous design changes and difficulty to produce.

(U) XM714 Fuze Family. Contract DAAK30-78-C-0114, amounting to $1,476,998, was awarded to Honeywell, Inc., on 27 September 1978 for

the design and fabrication of eight 30mm XM714E6 fuze automated assembly machines. When combined with six existing automated XM714E5 25mm fuze assembly machines developed under a previous contract, these machines were to form a complete automated assembly machine line capable of producing a minimum of 90,000 30mm fuzes in support of the Army's Advanced Attack Helicopter Program.

(U) 25mm Gun, Automatic. Solicitation DAAK30-78-R-0039 was released on 18 July 1978 for the proposed procurement for the Producibility Engineering and Planning and Engineering Support phase of the 25mm Automatic Gun, with three priced follow-on Initial Production options. The resulting contract was to provide for delivery of a complete technical data package adequate for competitive procurement and a quantity of 1,510 guns provided the three options were exercised. Competing engineering development contractors included the Ford Aerospace, Communications Corporation, and Hughes Helicopter Company. A formal source selection decision was to be made in January 1979 to select the single contractor to proceed with this phase of the 25mm gun program.

(U) IFV/CFV Development Program. Phase I Letter Contract DAAK30-77-C-0002, awarded to FMC Corporation on 4 November 1976, was definitized by Modification PZ0018 dated 17 October 1977.

(U) Phase II Letter Contract DAAK30-77-C-0052, awarded to FMC Corporation on 30 August 1977, was definitized by Modification PZ00014 dated 28 April 1978.

(U) General Support Rocket System. Letter Contract DAAK30-77-C-0005, awarded to FMC Corporation on 3 June 1977, was definitized by Modification PZ0005 dated 28 November 1977.

(U) IFV/CFV Production Program. Letter Contract DAAK30-78-C-0069 was awarded on 12 June 1978 to FMC Corporation for Producibility Engineering and Planning (PEP) of the Infantry Fighting Vehicle (IFV), and the Cavalry Fighting Vehicle (CFV) which were developed under Contract DAAK30-77-C-0002 and DAAK30-77-C-0052. PEP encompassed the modification of the ED configuration to effect improved producibility without degradation of the performance requirements; the examination of producibility of materials, components, and the overall vehicle to facilitate quantity and economical production fabrication and assembly techniques; and the conversion of development data into specification standards, test and inspection procedures, and other documents needed for production. The contract was to extend for 25 months (through February 1980).

(U) Production Phase (IFV/CFV) - Long Lead Item (LLI) and System Technical Support (STS) Production Procurement. Action was initiated

in January 1978 to start preparation of technical inputs required in preparation of Request for Proposals for the proposed LLI and STS contracts. Since the FY 1979 PEMA program had been removed from the budget, and in order to meet the May 1981 vehicle delivery mandated by Congress, it was determined that solicitations would be issued requesting planning proposals for LLI and STS requirements. Further, and in order to be authorized to obligate production funds for LLI and STS prior to ASARC/DSARC, a letter requesting this authorization was forwarded through DARCOM to DA on 12 July 1978. An interim answer was provided by DA letter dated 10 August 1978, and final approval was anticipated with the FY 1979 program release.

(U) Production Phase (IFV/CFV) - Systems Technical Support (STS). On 31 August 1978, the RFP package for the STS contract was furnished to TARADCOM (PCO). In order to meet the required 1 February 1979 contract award date, and since there was no FY 1979 PEMA program in the budget, it was necessary that the solicitation be for planning purposes. On 15 September 1978, RFQ DAAK30-78-Q-191 was issued to FMC requiring this planning proposal by 1 November 1878.

Program Management

(U) General. The combined programs presently managed by this office represented an anticipated expenditure of $313 million in RDT&E funds from the inception of the program through FY 1982 and over $3 billion in procurement funds during the period FY 1977 through FY 1990. Operationally, these programs represented the capability, which was not presently available, and that were to be in the field through the late 1990's.

(U) Program and Fiscal Resources. Fiscal Year 1978 RDT&E program in the amount of $53.292 million was received from DARCOM and customer orders. As of 30 September 1978, status of allotment reports for fiscal years 1975 through 1978 were reviewed, their accuracy verified, and the reports certified. The results of this review for FY 1978 are summarized:

Program	Program Authority ($000)	Obligations	Percent of Obligation
Infantry Fighting Vehicle (IFV)	$31,564	$31,403	99.5
Cavalry Fighting Vehicle (CFV)	174	173	99.4
Fighting Vehicle Armament Sys (FVAS)	12,164	12,030	98.9
Advanced Attack Helicopter (AAH)	1,978	1,860	94.0
General Support Rocket System (GSRS)	7,000	6,976	99.7
Other Reimbursables	412	388	94.2
TOTAL	$53,292	$52,830	99.1%

(U) Joint reviews were conducted with the TARCOM Comptroller's Office of all unliquidated obligations against their source documents. Also, an update of the procurement budgets were prepared for the period FY 1979 through FY 1984 via P-forms. Modernized Arms, Research and Development Information System (MARDIS) data for FY 1979 through FY 1984 were prepared and submitted to DARCOM in January.

(U) Fiscal year 1978 RDT&E funds in the amount of $7 million were received from the PM, General Support Rocket System (GSRS) to design and develop a chassis to be used as a carrier vehicle for the rocket system. It was anticipated that RDT&E total program effort by the FVS office on the GSRS project was to exceed $46 million while the anticipated procurement program was to exceed $59 million.

(U) The PM, Advanced Attack Helicopter (AAH) provided FY 1978 RDT&E funds in the amount of $1,978 thousand to initiate development and fabrication of the E6 type fuzes for the 30mm ammunition program.

(U) A 30mm XM714E6 production base machine line was established at Honeywell, Inc., Defense Systems Division, Minneapolis, Minnesota under contract DAAK30-78-C-0114 for production of the 30mm fuze. Funds for this contract totaling $1.6 million were received from the Production Base Modernization PM, DRCPM-PBM.

(U) Management Information. During the period of 1 October 1977 to 31 December 1977, the Management Information Control System (MICOS) continued to help manage the many aspects of the Fighting Vehicle Systems. There was major innovation; a one week management review was conducted at the Naval Post Graduate School in Monteray, California. At the review, a regular MICOS meeting was conducted after which each division and office presented key information relative to their areas of responsibility. The last part of this successful review was devoted to presentations by each contractor allowing him to present his program.

(U) The MICOS system continued to function extremely well from 1 January to 30 June 1978. As the build of the eight prototypes began, the MICOS system became instrumental in identifying problem areas and providing an in-depth monthly look at the program. Work was begun on a system which was designed to work off of a computer generated analysis of contractor monthly cost report submittals, and could provide managers with a monthly look at cost information. A manager training session was conducted followed by the first cost briefing.

(U) In late June 1978, the probability of a slip in prototype build and ultimate delivery was identified. Working closely with the contractor, a series of meetings were conducted to work out a schedule which would provide adequate testing for the vehicle. A final vehicle

schedule was agreed to in late August 1978 and the other projects within the program were incorporated into a Master Schedule.

(U) The Cost Management System (CMS) became fully operational. Monthly management meetings were conducted which assisted greatly in overall Program control.

CHAPTER V

PROJECT MANAGEMENT: EQUIPMENT/MANAGEMENT SYSTEMS

US Army Communications Systems Agency

Background

(U) US Army Communications Systems Agency (USACSA)/Project Manager DCS (Army) Communications Systems was established in 1967 as a joint US Army Materiel Development and Readiness Command/US Army Communications Command (DARCOM/USACC) project management activity at Fort Monmouth, New Jersey, with the full-line authority of Commanders of both DARCOM and USACC.

(U) The USACSA Commander, as the Project Manager DCS (Army) Communications Systems, reported directly to the Commanding General, DARCOM, concerning management of those functions derived from AR 10-11 - R&D, planning, product assurance, configuration management, type classification, materiel management, integrated logistics support, production, engineering, initial production facilities, procurement and production, and distribution. As the Commander of USACSA, a major subcommand of USACC, he reported directly to the Commanding General, USACC, concerning management of those functions derived from AR 10-13 - systems engineering, programming and budgeting, overseas contract administration, installation, and on-site test and acceptance.

(U) A DA-directed study in 1972 resulted in the "triple-hatting" of the USACSA Commander/Project Manager as the Commander, US Army Communications-Electronics Engineering Installation Agency (USACEEIA). In this capacity, he was responsible for detailed system engineering, installation, test and acceptance of worldwide systems, Army-wide telecommunications automation development and maintenance, worldwide radio progagation engineering services, and Army-wide electromagnetic compatibility engineering services.

The Product

(U) Essentially, the agency's product was nontactical telecommunications projects assigned to the Army for acquisition. These were of two types:

(U) Research and Development. R&D projects were assigned to the agency by DARCOM who also provided the appropriate RDT&E funds; the projects usually consisted of feasibility studies and similar undertakings and were assigned to this agency's Deputy Project Manager for R&D.

(U) Systems/Equipment Acquisition. This type of project represented about 95 percent of the agency's workload, and nearly all of these tasks were assigned to Deputy Project Managers for centralized management. These tasks ranged from the acquisition of a single piece of equipment to the acquisition and installation of an inter- or intra-country, or even global telecommunications system. A large number of the agency's tasks fall somewhere between these two extremes.

(U) Practically all systems or equipment acquisition tasks were assigned to the agency by USACC, who also provided the appropriate funds (Other Procurement, Army funds). It was normal USACSA practice to acquire, deliver and install these systems or equipments through contracts with US industry, using the existing DARCOM procurement office organizations, as well as other DOD procurement offices as the peculiarities of an individual task may dictate. The acquisitions were fulfilled by "off-the-shelf" equipment, meaning existing equipment in industries' or the government's inventories, or by modifying existing equipment for a specific telecommunications system or purpose.

(U) USACSA does not own any telecommunications systems or equipment assets. Instead, it acted as an agent in the sense that it acquired and installed systems and equipments, and once it has been accepted, turned the system or equipment over to the local O&M Commander; it then becomes part of his inventory.

(U) Sensitive to its life cycle responsibilities for the equipment it acquired and fielded,the agency managed all matters pertaining to integrated logistics support. In addition, USACSA operated the Army Inventory Control Point for OPA and APA principal items peculiar to USACSA centrally managed systems, projects and tasks.

(U) On the average, about 65 new tasks were received and a similar number were completed or transitioned each year. At any given time there were about 175 active tasks on hand.

(U) During FY 1978, 92 new tasks were received and 60 were completed or transitioned. At the end of the fiscal year, 177 active tasks were on hand, of which 96 were classified as major, requiring intensive management.

(U) In the course of implementing these many tasks, all disciplines in the communications-electronics field were used because the USACSA was involved in virtually every area for which USACC was responsible, except the operation and maintenance of facilities. Practically all means of transmission were employed, such as microwave line-of-sight, troposcatter, satellites, land and sea cables, and high frequency

radio. These means were used to furnish all modes of communication (voice, data, etc.). Computer processor controlled automatic switches and terminals were also employed in many subsystems; and the agency was deeply involved in the improvement of Army Air Traffic Control facilities at airfields in the Pacific, Europe, and CONUS.

Comptroller/Director of Programs

(U) Obligation of the USACSA Funding Program. The Other Procurement Army (OPA) Program remained the major resource of USACSA. In FY 1978 the total Army and Customer Program was $129 million. The APA appropriation for Army Airfield amounted to an additional $6 million, while direct cite of customer funds added $21 million for a total procurement program of $156 million. Management of O&MA contractual requirements accounted for $8 million more which established the overall total acquisition program of $164 million. Of the total, 61 percent was awarded during the fiscal year, a percentage somewhat better than the 50 to 55 percent obligation rates of previous years.

(U) The program incurred turbulence in major areas such as Digital European Backbone (DEB), Selective Release Improvement Program (SELRIP), Secure Voice Phase II, and the Satellite Interconnect Facility which affected the agency's execution rate. Late definition and program realignment in the Panama and Korea efforts further restricted the agency's ability to obligate a higher percentage of the acquisition program.

(U) The OPA Program for the next five fiscal years indicated a continuation of major items such as AUTODIN, AUTOSEVOCOM, Transmission Media, Tech Controls, and Pentagon Communications. A new effort was underway entitled Worldwide Military Command and Control System (WWMCCS) which was currently forecast to be the largest single endeavor ever assigned to the agency. This effort was projected to exceed $500 million.

(U) Management Information and Control Systems. USACSA's Project Management Control System (CSA PERT), fully operational and widely used within the agency, was a management tool for planning and control of major projects. At the end of FY 1978, 25 projects were on the automation system.

(U) Included in the management applications of CSA PERT were the following expanded capabilities: (a) Cal Comp plotter (located at CERCOM) provides the capability of producing a variety of plots and Gantt charts from CSA PERT systems; (b) Xerox 1200 (located at CERCOM) provides a rapid reproduction capability of CSA PERT, outputs and other reports, reduced to 8 x 11 sheets.

(U) The Project Management System used by USACSA at Fort Huachuca (PERT-66) had been expanded to provide a specialized historical capability which was successfully used by USACSA action officers. Concurrently with this expansion, USACOMISA developed a method using AUTODIN to send network plotting data to the Cal Comp plotter at Fort Monmouth. Consequently, graphics were available for projects using PERT 66.

(U) The USACSA Project Assets Status Report (BOM) prepared by SAAD was transmitted by AUTODIN to Fort Monmouth where it was reformatted on tapes that could be printed at the recipient's data processing sites. At the present time, these tapes were shipped registered mail to the following: 1st Signal Brigade, 5th Signal Command; 7th Signal Command, Headquarters ACC; and USACC Japan, USACSA Field Office - Pacific.

(U) Considerable time and effort was devoted over the years to the procurement of an upgraded data communications terminal. Installation of the new terminal was scheduled in September 1978.

(U) Several business applications were incorporated and updated to provide a bureau type of operation.

Logistics

(U) Type Classification/Reclassification Program. During the period October 1, 1977 through September 30, 1978, formal type classification/reclassification In-Process Reviews (IPR) necessitating preparation of IPR agenda packages continued to be scheduled. Written concurrences from IPR participants (US Army Communications Command, US Army Logistics Evaluation Agency, and the US Army Training and Doctrine Command) were received for all scheduled proposals and achieved 13 type classification and eight reclassification actions.

(U) In addition, abbreviated procedures for type classification of equipments fielded prior to January 1972 resulted in type classification of nine items. Equipments/systems which were type classified during this period included Analog Switch AN/FTC-39(V)1 and PIL Test, Measurement and Diagnostic Equipments.

(U) Since the implementation of the formal type classification/reclassification IPR procedures in FY 1974, written concurrences were received from the IPR members for all USACSA proposals. It had not been necessary to convene a formal IPR.

(U) In FY 1978, USACSA type classification actions for 717 systems/equipments and reclassification of 88 equipments were recorded and broadcast by the US Army Materiel Development and Readiness Command,

Materiel Status Office. The current schedule for type classification reflected 84 systems/equipments which were to require scheduling of formal IPR's during FY 1979. Equipments required for such major programs or systems as Worldwide Technical Control Improvement Program, additional configurations of the DCS Microwave Radios, European Telephone System (ETS), Digital Radio and Multiplex acquisition (DRAMA), and Digital European Backbone (DEB) were included in the current schedule.

(U) At the end of this fiscal period, USACSA had prepared 78 nomenclature requests which include 56 new nomenclatures, 13 revisions, and nine deletions.

(U) The Value Engineering Company continued to provide contractual effort to perform the research and obtain the technical data required to prepare the IPR agenda packages, and prepare nomenclatures due to limited personnel resources. During FY 1978 $98,600 was expended for this effort.

Item Management Transfers

(U) For the second time since its inception, the program for realignment of items, from principal to secondary management, was rescheduled by DA/DARCOM. Concern over budgetary impact and validity of the original realignment criteria caused DA to direct DARCOM to redefine the criteria and establish a computer decision program to permit the decision making to be largely automated.

(U) The new schedule calls for three budget review cycles, during which inactive items were to be deleted and the remaining items aligned as either potential PA Secondary or Stock Fund. Final realignment of these items was now for 1 October 1980 (FY 81).

(U) Also, during FY 1978, 306 items were reviewed and studied for potential transition to CERCOM as principal items. Of this total, 183 were transferred, 15 were deleted from the supply system and 33 are pending transfer. The balance of 75 were still under review at year end.

(U) Product Improvement Program. The Product Improvement (PI) Program, established by AR 70-15 provided the procedures for obtaining approval and funding for configuration changes which involved substantial engineering or modification of existing fielded Army/Tri-Service equipment, type classified standard, or limited production. The PI of existing fielded equipments was initiated to satisfy user requirements; correct proven performance deficiencies; insure safety

of personnel; prevent damage to equipment through operational usage; improve reliability, availability and maintainability (RAM); significantly reduce production costs or logistics support requirements; or make significant simplification standardization, environmental or compatibility changes in design.

(U) All PI programs were proposed as separate projects by preparation of a Product Improvement Proposal (PIP). The PIP served to initiate the project and was used as a planning and funding document containing necessary rationale for proposed improvement with required support data and method of implementation.

(U) The execution of an approved PIP was accomplished by publication of a DA Modification Work Order (DAMWO). In January 1976, Department of the Army directed that all future retrofit actions were to be accomplished under an approved PIP.

(U) Product Improvement programs currently implemented in accordance with AR 70-15 included the Digital Subscriber Terminal Equipment (DSTE) Product Improvement Program. Under the DSTE Upgrade Program, General Dynamics Corporation was awarded a contract in March 1975 to provide three DSTE product improvements under the DARCOM Product Improvement Program. The three DSTE PI programs were approved by DARCOM for implementation to provide improved tape supply slide for low/high speed paper tape punches, scheduled for field application during FY 1979, and to provide cooling fan for the low speed paper tape punches, scheduled for field application during FY 1979.

(U) Future approved PI programs scheduled for implementation in FY 1979 follow:

(U) The AN/GSQ-166 and AN/MSQ-73 were transportable tech control facilities (TCF). Proposed modification was to combine the two TCF's into a single unit, providing a more efficient facility by expanding mission operation, circuit operation and circuit monitoring capabilities. Application was to be by Sacramento Army Depot, California, to modify 10 systems utilizing an engineering implementation plan developed by USACEEIA. Modification was to begin first quarter FY 1979 with completion by 4th quarter FY 1981.

(U) The AN/GTC-29(V)2 was a transportable automatic voice switching facility (AVSF). Proposed modification was to provide for the installation of line conditioning equipment for 20 circuits in the AVSF and was to improve reliability and quality of transmission with technical controls, and other communications facilities located some distance away. Application by Tobyhanna Army Depot was scheduled for implementation during the first quarter of FY 1979 and completion by the first quarter of FY 1980.

(U) The AN/TSC-38B was a communications central housed in a transportable S-414 shelter. This system consisted of four functional subsystems: the radio subsystem, telephone subsystem, voice frequency telegraph subsystem, and teletype subsystem. The proposed modification was to provide the AN/TSC-38B with a low-level signalling capability to the teletype subsystem to prevent emanating signal transmission, an improved high frequency (HF) antenna system to meet all contingency operations, provide a spectrum analyzer for optimum transmitter tuning, and recabling and equipment standardization to improve reliability and maintainability. Application by a designated Army depot was scheduled for implementation during the first quarter FY 1979 with completion by the fourth quarter FY 1982.

(U) The AN/TSC-25 was a communications central, housed in a transportable S-141 shelter and functioned as a high frequency radio set which provided the transmission media for teletypewriter and voice communications. The proposed modification was to provide low-level signalling capability to existing teletype, replace or rehabilitate antenna mast AB746 to improve received signal levels at antennas, and to insure mission operation and capability.

(U) The overseas AUTODIN ASC's (AN/FYO-42V) configurations were fielded in the September 1967 - April 1969 time frame and was subjected to a continuing upgrade and enhancement program to meet changing and projected DCS subscriber requirements. Proposed Product Improvement was to replace the existing Memory/Memory subsystems at all ASC's to expand core storage capability, increase speed of the message processor by decreasing memory cycle, eliminate software program restrictions caused by current addressing scheme and reduce dependence on components that were reaching design, and supply and support obsolescence. The M/MCRP had already been implemented and was slated for completion in FY 1979.

(U) The AN/FTC-31(V) was a Dial Central Office switch which was designed and fabricated by Philco Ford in mid-1960 with twelve installed worldwide. Proposed Product Improvement was to enhance the operational reliability and maintainability of the AN/FTC-31(V) well into the 1985 time frame by replacement of inter-bay wiring harnesses, electrolitic capacitors, DC-DC converters, float rectifiers and batteries, repackage regenerative repeater circuitry or functional circuit cards; and, also provide built-in test equipment (BITE) for fault isolation down to discrete component or circuit card. The AN/FTC-31 enhancement was implemented by Ford Aerospace and Communications Corporation, and was scheduled for completion in the FY 1979 time frame.

Procurement and Product Control

(U) Pre-Award Acquisition Guidance on ARP Preparation dealt with guidance given action officers on development of an Acquisition Requirements Package (ARP). While the USACSA Regulation 715-6 offered written direction on the preparation of ARP's, P&PC Directorate also made available its personnel to aid the action offices in putting together a viable package. Such aid included, but was not limited to, help in writing sole source justifications, recommendations and suggestions on clauses to be included in the contract, advice on procurement method best suited to proposed project, maintenance of a file of all types of ARP's as a reference for the action officer to aid in structuring a new ARP, and continuing update of the "Lessons Learned" file.

(U) Electronic communications involved maximum use of contractor-developed, off-the-shelf equipment. The major procurements were predominantly competitive; however, support and resupply were largely bought by sole source procurements. All sole source recommendations and justifications were rigorously screened before signature by the Project Manager. During FY 1978, 90 sole source justifications and recommendations totaling $24,754,927 were reviewed.

(U) When acquisition requirements packages over $200,000 or a sole source acquisition over $100,000 had been completely assembled and coordinated at USACSA, it was subjected to final review by the Joint Acquisition Requirements Review Committee (ARRC) and the Data Requirements Review Board (DRRB). This committee was composed of expert personnel in management, logistics, value engineering, configuration management, product assurance, data management, and procurement and production. The ARRC/DRRB completed 19 detailed formal reviews during FY 1978 totaling approximately $34,374,337.

(U) Value Engineering (VE). Value engineering was an organized effort directed at analyzing the functions of systems, operations, maintenance, equipment, and integrated logistics support, to achieve the required functions at the lowest overall life cycle cost consistent with the requirements for performance, reliability, maintainability and schedule.

(U) During FY 1978, individual and group effort resulted in value engineering savings of $6.485 million. In the meantime, plans were completed for the conduct of the annual VE orientation for local agency personnel which was scheduled to be given early in the first quarter of FY 1979.

(U) Three Contractor Value Engineering Change Proposals were received in FY 1978, but were disapproved as not being beneficial to the Government.

Field and Liaison Offices

(U) Defense Satellite Communications System (DSCS). The AN/FSC-78 satellite terminal at Landstuhl, Germany, was installed and accepted by the Government on 1 June 1978. Two 500 KW generators, to provide backup power for the non-critical electric load for the terminal, arrived and were connected to the commercial power system. The European Field Office (EFO) coordinated many aspects of installation of the terminal with the contractor, personnel of the 58th Signal Company, and the action officers at 5th Signal Command.

(U) The satellite terminal AN/TSC-54 at Depus Papa was successfully installed and technically accepted on 23 August 1978 after several major technical problems and other minor problems were resolved. EFO assisted in the logistics aspects of getting the terminal into operational condition for acceptance. The terminal had not cut over to official traffic at the time of this report due to lack of a formal Host Nation Agreement (HNA) and assignment of permanent frequencies.

(U) Actions were taken by offices at 5th Signal Command and Engineer Division Europe during the past year to install an AN/MSC-46 in Berlin and an AN/TSC-54 at Augsburg, Germany. It is expected that contracts for site preparations were to be let in early October 1978.

(U) European Telephone System (ETS). During the past year there have been several official meetings between offices of the US and West German governments regarding the ETS.

(U) At the time of this report, discussions centered around a fair price for the use of Deutsche Bundespost (DBP) provided equipment. The EFO maintained contact with 5th Signal Command action officers to keep an overview of activities on the ETS and to provide support or action as required.

(U) Digital Subscriber Terminal Equipments (DSTE). Tobyhanna Army Depot (TOAD) continued to field highly effective depot level maintenance (DLM) teams toward the goal of providing DLM to each AUTODIN DSTE terminal at least once a year. The Logistic Support Plan (LSP) for AUTODIN DSTE's contained provisions for diverting these TOAD DLM teams to sites which were on a HAZCON or require emergency service. EFO did the coordination between TOAD; 5th Signal Command,

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the Communications Control Center, the site, and the TOAD DLM teams in-country when such a requirement arose.

(U) As the DSTE aged and traffic requirements increased, these trouble calls increased. During the past year practically every TOAD DLM team was diverted from at least one scheduled visit to a site to make an unscheduled visit to another site to resolve an emergency or HAZCON situation.

(U) Automated Multi-Media Exchange (AMME). Progress on the site preparation for the Heidelberg AMME continued. Information provided by the station engineer and the contractor indicated site preparation completion on 9 December 1978. Therefore, arrangements were being made to ship the AMME so as to arrive on site prior to that date. Also, discussions were continuing on the AMME sites at Vaihingen and Frankfurt, but no site preparation had been started.

(U) As a follow-up to previous site surveys made at the MATE and MART sites, a team from Fort Huachuca (USACSA-USACEEIA-contractor) made surveys at sites selected by 5th Signal Command. The EFO participated in these activities and provided support to the survey teams.

(U) An USACEEIA team arrived to inventory the BOM for the Heidelberg Patch and Test Facility (PTF) and begin installation at Heidelberg. The EFO assisted in coordinating the team visits to the AMSF and reducing delays in getting the BOM items to the site.

(U) Garlstedt Brigade 75. During mid-October 1978, USAREUR was to restation one mechanized infantry brigade in the vicinity of Garlstedt, Germany. The site selected was formerly a firing range, devoid of all facilities.

(U) Ground clearing and building construction got underway in August 1976 after the Federal Republic of Germany released approximately $68.5 million for the Garlstedt project.

(U) As construction of the Communications Building could not be completed by the German contractor on time, an interim/transportable communications facility had to be established to provide a communications capability for the Brigade advance troop party scheduled to arrive Garlstedt 1 October 1978.

(U) During this effort, the European Field Office provided intensive management and coordination with participating agencies (5th Signal Command, USACEEIA, USACEEIA-EUR and USAREUR elements) on all aspects of the project to insure that the objective was met.

(U) Interim communication services for the Brigade troop advance party was established on 15 September 1978. This was two weeks earlier than the scheduled IOC.

(U) The transfer of the communications to the final facility was to be undertaken by 5th Signal Command upon completion of the Garlstedt Communication Building, forecast for November 1978.

(U) Automated Multi-Media Exchange (AMME) - Korea. The last quarter FY 1978 saw the successful culmination of much effort by past and present members of the office. AMME with its collocated Modular AMME Remote Terminal (MART) was cut to live traffic on 29 August 1978, and dedicated 5 September 1978 by General Vessey, Commander UNC/USFK/EUSA.

(U) The Korea AMME thus became the first overseas AMME, and supported a tri-service headquarters and a soon-to-be-activated US/ROK Combined Forces Command.

(U) Modular AMME Remote Terminals (MARTS)- Korea. In addition to the MART collocated with AMME, 12 MARTS were to be installed throughout Korea during second and thir quarter FY 1979. Also, 10 additional MARTS were HIA for Korea; however, with all architectural and engineering designs completed, the office could, if requested, proceed rapidly with all installations.

(U) To assist on this project, the field office was represented on all site surveys, conducted power studies, chaired problem solving meetings, served as a conduit providing planning requirements to the 1st Signal Brigade/J-6, and worked closely with the Far East District Engineers to expedite site preparation efforts.

(U) 38th ADA Upgrade Program. The 38th ADA Upgrade Program included a reconfiguration of existing microwave systems, deinstallation of microwave links, and installation of cable to provide a reliable integrated communications system in support of 38th ADA Brigade. The inter- and intra-site cable project resulted in the installation of more than 220,000 feet of new multi-pair buried and aerial cable on 11 sites. Existing microwave equipments were deinstalled for rehabilitation, retuning, and reconfiguring for reinstallation as new radio links. Due to troop withdrawal plans in Korea, a decision was made to transfer most of the ADA sites to the ROKA. With approximately 70 percent of the project completed, the remaining work was terminated in first quarter FY 1978.

(U) Throughout the project, Field Office-Korea personnel were extensively involved in development of the cable installation procurement package, the solicitation, and the continuous monitoring of contracts and other project aspects.

(U) Changsan-Pulmosan-Chinhae Project. This program was undertaken to upgrade a marginal quality microwave link which provided the Chief of Naval Operations-Korea at Chinhaw, access into the worldwide military communications network via Korea Wideband Network at Changsan.

(U) The upgrade included addition of a high quality microwave system, a new battery plant and technical control facilities. Communications assets retrograded from Thailand were used to the maximum extent possible in this program after rehabilitation in Korea. The Reconfiguration and Test Facility activated for this purpose was subsequently used in the Northern Area Upgrade and was to be a continuing asset in Korea. Despite certain exceptions, the system was conditionally accepted into the Defense Communications System and cutover to traffic in May 1978.

(U) Northern Area Upgrade-Korea. This upgrade included installation of new cable near Panmunjon and at Camp Casey, installation of a new microwave system from Camp Casey to Camp Dodge, expansion of channel capacity from Yongsan to Camp Casey, and installation and expansion of associated patch and test facilities. To the greatest extent possible, equipment from Thailand and assets deinstalled from the 38th ADA microwave links were being used after processing through the Korea reconfiguration and test facility.

(U) To expedite this critical project, the Korea Field Office closely monitored project action and added emphasis where appropriate. Despite hazards associated with proximity to the Demilitarized Zone and coordination problems where US facilities were tenants on sensitive Korean installation, substantial progress was made.

(U) In the interim between project status reviews by the DPM, in-country activity was coordinated by Mini-PSR's conducted by the Korea Field Office. With continued field office emphasis, initial operational capability was expected by the end of 1979.

(U) Combined Forces Command (CFC) - Korea. Recent combined military exercises in Korea demonstrated the desirability of a permanent combined military headquarters. With the approval of Secretary of Defense Harold Brown, such a headquarters was established.

(U) At the end of FY 1978, the Korean Government was building the required facility at Yongsan in which the US Government agreed to provide necessary internal communications. Because of the magnitude of this communications undertaking, a three phase Subsystem Project Plan (S/PP) was developed.

(U) Phase I called for completion by 1 December 1978 of an administrative telephone system, key telephone systems, internal wireline distribution system, and external cable system.

(U) Phase II (FY 1979) was to incorporate projects which were necessary to fulfill command and control requirements. The initial portion of Phase II was to include rehabilitation of Yongsan-TANGO cable systems, installation of a bulk-encrypted closed circuit secure voice system between the CFC and TANGO, and WWMCCS support. The second portion of Phase II was to include activation of another wideband secure voice trunk between the Yongsan Command Post (YCP) and the Main Command Post (MCP) at TANGO, a facsimile system between the Yongsan and Main Command Posts, and installation of a slow-scan black and white television system between the YCP and MCP.

(U) Phase III (FY 1980/81) projects were to include a real-time color television system between the YCP and MCP, and installation of a 600 line electronic digital telephone exchange. The Korea Field Office had been monitoring the development of this project from its infancy.

(U) Wideband Secure Voice - Korea. The field office actively participated in the continuing expansion of wideband secure voice in Korea. A Seoul-Pentagon wideband circuit was activated in January 1978 necessitating additional New Equipment Training coordinated by the field office. Terrestial extensions to support the out-of-country circuits required by the DCA WBSV Network Extension Project were being developed via O&M command provided transmission media with terminal facilities expansion under USACSA management. Logistics support coordination by the field office involved the O&M Command, the AMSF-Japan, CERCOM, SATCOMA, and the USAF.

(U) AUTODIN Digital Subscriber Terminal Equipment (DSTE) Cross Reference ADP Listing. During FY 1978, a completely revised DSTE ADP listing was developed by USACSA Field Office, Pacific (PFO) personnel to provide the tri-service AUTODIN DSTE supply/maintenance personnel worldwide with a complete and accurate quick reference document which supplemented the repair parts lists contained in applicable DSTE technical manuals, technical orders, and NAVSHIPS publications.

(U) The DSTE cross reference document consisted of three machine printouts: the manufacturer's part number (PN) in alpha numeric sequence cross referenced to NSN; the national item identification number (NIIN) sequence cross referenced to item sequence, figure, and manufacturer's part number; and a cross reference listing of printed circuit boards (PCB). This listing identified all PCB's by location/logic position number, manufacturer's part number, NSN, and RPSTL item sequence number. This list also provided a simplified method of checking the interchangeability of each PCB in an individual device or configuration.

(U) Worldwide distribution was made with a self-mailer questionnaire. Response indicated a need for future updating and continuance of this document.

(U) Wideband Secure Voice Via Satellite (WBSVVS). In early FY 1978, PFO effected extensive coordination and convened a tri-service meeting to discuss interference (noise bursts) on two WBSV circuits between Hawaii and Korea, a matter of deep concern to DCA-PAC and CINCPAC. As a result of the meeting, a joint technical USACEEIA-PAC/USAF team was dispatched to Korea, and in two weeks the problem was identified and corrected.

Command and Control Systems

(U) The Deputy Project Manager for Command and Control Systems was responsible for managing projects which ranged from the acquisition of small items such as primary line voltage regulators, to the acquisition of major end items of equipment such as the DCS microwave radios and digital radio and multiplexer acquisition equipment.

(U) Projects managed by this deputy project manager involved various commands as well as other government agencies. Several programs required close coordination with NATO activities.

(U) The Deputy Project Manager for Command and Control Systems was located at Fort Monmouth, New Jersey.

(U) DCS Microwave Radio. The requirement for the procurement of the DCS Microwave Analog Radio was established by the Defense Communication Agency in 1970. This radio was a line-of-sight, space or frequency diversity, FM radio with a capability of variable loading up to 600 voice frequency channels.

(U) Since its inception, the scope of the DCS Microwave Radio contract was broadened to include modification of the analog radios to a three-level partial response (quasi-digital) capability.

(U) The original delivery order, which included First Article testing, logistics support and the procurement of 46 radios, cost $2.2 million. Subsequent orders increased the number of radios procured to 208. Total cost of the contract was $11.3 million.

(U) The original contract, awarded to Collins Radio Group, terminated in December 1977; however, at the request of the US Army Communications Command, the contract was extended for a period of two years to 29 December 1979.

(U) Digital Radio and Multiplexer Acquisition (DRAMA). The DRAMA program provided for the acquisition of common digital multiplexers and radios for use by the Army, Navy and Air Force in the Defense Communication System and non-DCS program. Three equipment specifications were coordinated with industry.

(U) A multi-year requirements contract was awarded to TRW, Inc. in July 1976 for the first level multiplexer, TD-1192, now nomenclatured the AN/FCC-98(V). This multiplexer accepted 3, 6, 12 or 24 channels of voice or data, and combined these into a single high-speed digital signal. Conditional approval was granted in June 1978 on First Article Tests conducted by the contractor, and delivery of the 538 items was to continue through April 1979.

(U) A three-year requirements contract for the second level multiplexer, TD-1193(P)/F, and the radio, AN/FRC( )( ), was awarded to TRW, Inc. in April 1977. Two option periods for the extension of the contract in two-year increments were priced and contained in the contract. The TD-1193(P)/F accepted up to eight AN/FCC-98 high-speed inputs and other high-speed data and combined these into a higher rate digital signal. Up to two TD-1193's could be connected to the radio which could accommodate 384 voice quality circuits. The radio combined these inputs with a digital orderwire and then modulated a radio frequency signal which was filtered and transmitted through the user-supplied waveguide and antenna system.

(U) Delivery of production equipment was scheduled to begin in September 1979 and will continue throughout the life of the contract. This equipment was compatible with the requirements of all three services and the National Security Agency.

Consolidation of Telecommunications Centers

(U) The Consolidation of Telecommunications Centers project provided for the development, engineering, procurement, installation, test and cutover to operation of a consolidated telecommunications center system to support communications requirements of the Joint Chiefs of

Staff and the Headquarters of the Departments of the Army, Navy and Air Force in the Pentagon, the Commandant of the Marine Corps and the Chief of Naval Personnel in the Arlington Annex, and other activities. Most of the work was to be performed in the Pentagon, the Forrestal Building in Washington, DC, and at Site R, Fort Ritchie, Maryland.

(U) A single integrated and automated system for record communications support to the Joint Chiefs of Staff and the Military Services was to be provided by the consolidated system. This system was to consist of four major elements: a central computer complex, an alternate central computer complex, four staff service centers, and remote terminals.

(U) The installation of an IBM 360/65 system was accomplished in June 1977. Phase I was to make available software capabilities in the present Army system. Provision of Phase I capabilities was scheduled to be completed in August 1979, Phase II in October 1980, and Phase III in October 1981.

(U) Transition to the O&M Command was to take place after each phase successfully passed test and acceptance which was scheduled for August 1979, October 1980, and October 1981, respectively. Termination of centralized management was expected to occur in October 1982.

(U) Estimated cost to complete the project was placed at $45.8 million.

Research and Development Systems

(U) The Deputy Project Manager for Research and Development Systems, located at Fort Monmouth, New Jersey, was responsible for the development and improvement of non-tactical communications equipments and systems. This involved project improvements in speed of service, reliability and maintainability, security, and the introduction of modern service features.

(U) Projects covered the breadth of the communications field -- from voice, message, data, facsimile and television terminal devices, through automatic branch exchanges and message centers, to transmission systems and switching centers.

(U) Adaptive Antenna Control System. The Adaptive Antenna Control System program had as its objective the development of an adaptive antenna system which was to maximize the received RF signal and minimize the effects of deep signal fading in diffraction and troposcatter radio links. This program will investigate the use of angle diversity

to replace frequency diversity as a means of reducing frequency allocation problems.

(U) A competitively negotiated contract was placed in June 1976 with Signatron, Inc., Lexington, Massachusetts for the design and fabrication of such a system. An advance development model had been built and was installed in an Air Force Tropo Test Link in December 1977. These tests were scheduled for completion in March 1979. Interim test results and the model were delivered to the government.

(U) Digital Tropo Modem MD-918 ( )/GRC. This project comprises the development, fabrication, test, and evaluation of development models of a digital Modem, MD-918( )/FRC, for the transmission of digital signals over DCS troposcatter transmission links.

(U) During the period January 1977 to July 1977, the Defense Communication Agency conducted tests comparing the MD-918 with an Air Force developed Modem using a NATO tropo link. The MD-918 met all its performance objectives and was shown to be superior to the USAF Modem. In fact, the MD-918 provided a two-to-one improvement in bandwidth conservation for tropo transmission compared to conventional analog technology.

(U) DCA identified a requirement for 12 MD-918( )/GRC units with initial operational capabilities starting in December 1980. The remaining portions of the RDTE program were to incorporate engineering changes into the eight engineering development models, to develop integrated logistics support, and to conduct further operational testing.

Switched Systems

(U) The Deputy Project Manager for Switched Systems was responsible for major communications-electronics projects primarily in support of the Defense Communications System. The projects usually required engineering, acquisition, installation, and logistic support.

(U) Additional projects involved the relocation of existing facilities, the acquisition of replacement equipment, the modernization of existing equipments or systems, the expansion of existing communications systems capability, or a combination of these.

(U) Most Defense Communications System projects assigned to this deputy project manager were tri-service projects for which the Department of the Army had been designated as the lead military department.

(U) This deputy project manager was located at Fort Monmouth, New Jersey.

(U) AUTODIN Memory/Memory Control Replacement Program. The overseas AUTODIN Automatic Switching Centers were fielded between September 1967 and April 1969, and were continually upgraded and enhanced to meet changing subscriber requirements.

(U) Primarily, the purpose of the AUTODIN Memory/Memory Control Replacement Program was to expand existing core storage capacity, increase speed of message processor by decreasing memory cycle time, eliminate software program restrictions imposed by the current addressing scheme, and reduce dependence on components which are reaching design and support obsolescence.

(U) The program has been separated into two phases. Phase I, completed in January 1977, procured the engineering design and program plan. A contract for Phase I was awarded to Ford Aerospace Communications Corporation in September 1976. Phase II covered in-plant engineering, unit and subsystem test efforts, and installation, test and acceptance of the Memory/Memory Control Replacement Program efforts at the Fort Detrick AUTOFAC, the Fort Gordon Signal School, and the eight overseas AUTODIN Automatic Switching Centers. A contract for Phase II was awarded in January 1977 to Ford Aerospace Communications Corporation.

(U) During this fiscal year the memory enhancement was installed and tested at the Fort Detrick AUTOFAC, the Signal School at Fort Gordon, and the three European overseas AUTODIN switches. Completion of the installation and testing at the four Pacific sites was scheduled by December 1978.

(U) Total cost of the program was put at $5.15 million.

(U) AUTODIN Upgrade Program - FY 1978/79. Initially, the primary objective of the FY 1978/79 AUTODIN Upgrade Program was to replace worn out, obsolete equipments with current state-of-the-art items to make AUTODIN Automatic Switching Centers supportable through 1985. The original concept was modified, however, to include the concurrent development of the OPS 12 software program with an integrated hardware/software approach. This approach was to enable the system to interface with AUTODIN II Packet Switching Nodes in the 1983 timeframe and be supportable through the 1190's.

(U) The upgrade program was separated into two phases. A contract for Phase I, the procurement of a Design and Implementation

Plan including requirements for technical data and life cycle support, was awarded in February 1980 to Ford Aerospace Communications Corporation. Phase II involved the test and acceptance of the software and hardware at the Fort Detrick AUTOFAC, the Fort Gordon AUTODIN Training Facility, and the eight overseas AUTODIN Automatic Switching Centers. A contract for Phase II was awarded in July 1978 to Ford Aerospace Communications Corporation, with the completion of the project scheduled for late 1980.

(U) Estimated cost to complete the modified objective is $15.59 million.

(U) Automated Transportable Communications Facility (COMFAC). The Automated Transportable Communications Facility was designed from a combination of basically non-developmental off-the-shelf militarized and commercial components. This facility was to handle and transfer large amounts of data over responsive communications systems.

(U) Two transportable communications terminal facilities were to be procured and fielded for the Intelligence and Security Command (INSCOM). The two facilities were to meet the current communications needs of INSCOM Control and Processing Companies in Europe.

(U) In September 1977, the contract for the two systems (with an option of up to four additional systems) was awarded to the ECI Division of E-Systems, Inc. Delivery of the systems was due in March 1979.

(U) Estimated cost to complete the project stood at $4.6 million.

(U) AUTOSEVOCOM I -- AN/FTC-31 (V) Enhancement. The AUTOSEVOCOM I System was designed to provide secure voice service to subscribers worldwide through 1977. During FY 1976, reports from the sites showed an average down-time of 45 hours per site a year or a reliability rate of 99.49 percent.

(U) Because spares to support the 11 AN/FTC-31 (V) sites were no longer available and the follow-on system, AUTOSEVOCOM II, was delayed and probably would not be implemented until after 1985. A survey was conducted in September 1976 to determine specific measures required to restore reliability and long-term support of the project.

(U) The approach chosen was to enhance the AN/FTC-31 switch by using state-of-the-art design criteria and components. This would achieve a mean-time-to-repair of 30 minutes and a switch failure rate of only one hour per year.

(U) Existing power, control logic, and regenerator-repeater subsystems were to be replaced with state-of-the-art subsystems. Hardware logic, for example, was being replaced with redundant microprocessors.

(U) A contract to accomplish these objectives was awarded to Ford Aerospace Communications Corporation in December 1977. Project completion was forecast for April 1980, and the total costs were expected to be $5.573 million.

(U) AUTOSEVOCOM I -- SECORD Wideband Trunk Applique Units. This project provided for the production engineering, fabrication, documentation, test and acceptance of 50 Secure Voice Switchboard (SECORD) Wideband Trunk Applique Units, initial repair parts, and publications.

(U) The new units, an improvement incorporated into the AUTOSEVOCOM I Program, were to be able to monitor wideband trunk signals at secure voice switchboards and provide status indicators and automatic supervision not presently available.

(U) A small business set aside, 8A program, was being used for this procurement. A contract for $343 thousand was awarded in September 1978 to West Electronics, Inc.

(U) Croughton Automated Switching Center 200 Line Expansion Project. The Croughton Automated Switching Center Expansion to 150 lines was completed in June 1977 to meet the increasing requirements of high band rate subscribers.

(U) A further expansion of the Croughton Automated Switching Center to 200 lines was begun in June 1978. Also, implementation was being accomplished in a manner similar to that utilized for the 150 line expansion effort. Cost to complete was estimated at $183 thousand.

Telecommunications Automation & Control Systems

(U) The Deputy Project Manager for Telecommunications Automation and Control Systems was responsible for the management of the Automated Multi-Media Exchange (AMME) and the Army portion of the Technical Control Improvement Program (TCIP).

(U) Collocating this deputy project manager with the Headquarters, US Army Communications Command and the US Army Communications-Electronics Engineering Installation Agency at Fort Huachuca, Arizona allowed for optimal management capability. Close working relationships could be developed on tasking, funding, program review, ADP software/hardware and engineering support peculiar to the AMME and TCIP projects.

(U) Automated Multi-Media Exchange (AMME). The Automated Multi-Media Exchange (AMME) Level Automated Telecommunications Center (ATCC) was a record communications system designed to replace and enhance existing systems at selected locations. It was designed to provide better writer-to-reader service. The system was to provide a store-and-forward message switching system between remote subscribers and AUTODIN; provide automated supervision of communications; and provide the capability to electrically interface with AMME and its remote subscribers with local Data Processing Installations.

(U) AMME-ATCC consisted of four subsystems: AMME subsystem, Patch and Test Facility subsystem, Remote Terminal subsystem, and Data Processing Installation subsystem. AMME facilities replaced manually operated semi-automated telecommunications systems at six sites - Oakland Army Base, California (activated October 1974); Redstone Arsenal, Alabama (activated August 1975); Software Support Center, Fort Huachuca, Arizona (activated 1975); Letterkenny Army Depot, Pennsylvania (activated July 1976); Bailey's Crossroads, Virginia (activated December 1976); and Yongsan, Korea (activated August 1978).

(U) Sites in the installation and implementation phase included Baltimore, Maryland (IOC scheduled for March 1979) and Stuttgart, Germany (IOC scheduled for June 1980). Sites at Atlanta, Georgia and Frankfurt, Germany were in the initial planning stages. The AMME contract allowed for the acquisition of 27 systems with an option to acquire eight additional systems.

(U) Total estimated cost of the Automated Multi-Media Exchange project is $116.8 million.

(U) Technical Control Improvement Program. The Technical Control Improvement Program (TCIP) was an ongoing effort in support of selected stations and systems upgrades throughout the world. Upgrades provided the technical control with the required overwire, wideband patch, subscriber low leveling, wideband secure voice, digital patch and test bays and uninterruptible power supply. Future upgrades will automate manual functions under an Automated Technical Control Program.

(U) The Technical Control Improvement manual program was begun in 1971 and included ongoing manual Technical Control Facilities and orderwire projects in various stages of completion. There were 107 projects tasked at 78 separate sites funded for $15 million.

(U) The DCS voice orderwire system provides for an integrated worldwide voice orderwire capability for DCS stations. This program was to involve 152 sites at a funding level of $3.08 million. Installation had begun in Europe.

(U) The Army portion of the Automated Technical Control Program consisted of 104 manual Technical Control Facilities which were to be changed to computer assisted operation in the areas of performance assessment, fault isolation, and reporting on circuits, equipment, networks, and links. These program facilities were to be funded for approximately $15 million.

Territorial Command Network - Spain

(U) The "Territorial Command Network (TCN) - Spain" project was a major telecommunications project in support of the Spanish Army and Navy. It required engineering, acquisition, and installation. All sites were located on the Spanish mainland and adjacent islands. This project was to provide the Spanish Army and Navy with a communications system to interconnect the Spanish High General Staff in Madrid with the Army and Navy General Headquarters and bases located throughout Spain. Further, the communications system was to provide telephone and teletypewriter service on both a dedicated and common-user basis. The transmission means was to be radio in the form of tropospheric scatter and line-of-sight microwave links.

(U) In March 1978 the United States government conditionally accepted Subsystem C. A Deputy Project Manager, with offices in Madrid, was attempting to correct minor deficiencies in the operation of the TCN system.

(U) Due to unresolved financial problems, it is not known at this time when termination of centralized management will occur.

Transmission Systems

(U) The Deputy Project Manager for Transmission Systems was responsible for direct support to improve the overall Defense Communications System by providing the latest state-of-the-art wideband commercial and military communications equipment available to enhance long-haul transmission system performance.

(U) These projects involved both terrestrial and satellite transmission systems. With few exceptions, the projects provide communications support to the entire Department of Defense community of users, the State Department, and the White House Communications Agency.

(U) Additionally, the Deputy Project Manager for Transmission Systems managed Foreign Military Sales and Military Assistance Programs, and was located at Fort Monmouth, New Jersey.

(U) Defense Satellite Communications System - Phase II, Stage 1C. The Defense Satellite Communications Program began Phase II in November 1971 with the launch of two equatorial orbited satellites to provide an uninterrupted and modern communications system.

(U) It was the purpose of the Phase II, Stage 1C Defense Communications Systems Program to expand and digitize the Worldwide Defense Communications System. When completed, Stage 1C was to consist of four operational and two standby new family of satellites and approximately 50 earth terminal complexes deployed throughout the free world.

(U) Installation had been completed at Fort Meade, Menwith Hall, Hawaii and Song-So sites, and vanized installation was completed at Camp Zama. Additional installations were scheduled for completion throughout 1978 and into the summer of 1979.

(U) Funds for this project total $35.3 million.

(U) European Wideband Communications Systems Link Improvement. This project was one of several time-phased and concurrent programs for the improvement of the US Defense Communications System in Europe. The link improvement involvedmicrowave and tropospheric scatter sites located in the Federal Republic of Germany and Belgium.

(U) The primary objective was to eliminate selected marginal performance line-of-site microwave and tropospheric scatter links and replace obsolete analog radio and multiplex equipment with newer state-of-the-art equipment.

(U) Installation had begun at many sites and was to continue through March 1981.

(U) Total estimated program costs are put at $18.64 million.

(U) Northern Area Upgrade - Korea. The Northern Area Upgrade project was to provide a reliable integrated, Defense Communications System from Seoul to Camp Casey, and was to reroute and upgrade communications to Camp Dodge and Panmumjom.

(U) Installation began in January 1978, and the project system cutover was scheduled for November 1978.

(U) Funds in the amount of $529,000 were provided for this upgrade.

(U) Northern Communications/Brigade 75 Project - Europe. Headquarters, USAREUR was to restation the 3rd Brigade, Second Armored Division (Forward) (previously Brigade 75) to Garlstedt, Germany, beginning in October 1978. The Brigade was scheduled to complete Force Closure by February 1979.

(U) A new base is under construction at Garlstedt to accommodate this Brigade. The Federal Republic of Germany had responsibility for base construction while the US Army had responsibility to establish base communications. Also, it had to provide access to the Defense Communications System via a microwave link between Garlstedt and the existing Bremerhaven communications facility.

(U) To meet the requirements for the last quarter 1978, establishment was begun of a transportable interim communications system at Garlstedt pending the completion of the construction facilities to house the permanent communications facilities. The interim system was to remain in operation until the end of May 1979 when the permanent system was to begin operation.

(U) Funding for the program was $4.113 million.

(U) Tehran Transmission Upgrade. The overall objective of the Tehran Transmission Upgrade project was to install three new microwave radio systems between US facilities in and near the city of Tehran, Iran, and replace the present radio equipment connecting the Embassy, the telecommunications center, and the transmitter and receiver sites.

(U) Installation was scheduled for September-October 1978 and initial operating capability was scheduled for November 1978.

(U) Funds were provided in the amount of $1.25 million.

(U) USA-USSR Satellite Direct Communications Link. This link was an upgrade of the existing communications link between Washington, DC and Moscow, USSR. The upgrade consisted of the establishment of a satellite communications system using two independent satellite subsystems and their respective terrestrial interconnect facilities.

(U) The Direct Communications Link was activated on 10 January 1978.

(U) Washington Area Wideband System. The purpose of the Washington Area Wideband System was to satisfy high priority, high speed digital data requirements between nine sites in the Washington, DC area.

(U) The project consisted of two segments: the digital pipeline between sites, and the Transition and Integration Plan which connected the users at each site to the pipeline.

(U) Implementation of the system was to have begun in October 1978 and continue through August 1979.

(U) Estimated funds of $30.1 million were projected to complete this project.

Equipment Management Office

(U) The Equipment Management Office was the centralized manager for minor Defense Communications System projects.

(U) This office had the responsibility for acquisition tasks which related to principal or capital end items of equipment that were individual projects or were acquisitions which supported Bills of Materiel (BOM) or Telecommunications Requirements (TELER) communications projects.

(U) The office was also responsible for acquisition of Test, Measurement and Diagnostic Equipment, and was located at Fort Monmouth, New Jersey.

(U) High Speed Digital Facsimile. The objective of the High Speed Digital Facsimile program was to standardize facsimile service throughout the Army by replacing present slow-speed, non-secure, analog facsimile terminals with high-speed, secure, digital facsimile terminals.

(U) Completed and operational, Phase I directed the installation of DACOM Model 412F Securefax at 30 locations utilizing the AUTOVON Network and other dedicated voice circuits. Phase II, which was to interface with AUTODIN, was undergoing systems definition and was to consist of approximately 90 terminals installed worldwide.

(U) In addition to these actions, a separate requirement was received to acquire and deliver five DACOM Model 412G Photo-Securefax Systems which interface with AUTODIN. These five systems were installed at USACC/7th Signal Command Communications Centers located at Fort Huachuca, Arizona; Fort Ritchie, Maryland; Fort Monmouth, New Jersey; Pentagon Telecommunications Center, Washington, DC; and 5th Signal Command, Worms, Germany.

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(U) Multiplexer Set - AN/FCC-97. The AN/FCC-97 was a specific configuration of equipment manufactured by Vidar Corporation, Mountain View, California. The equipment consisted of two TI-4000 Multiplexer/De-Multiplexers and a protective switch which provided for redundant operation.

(U) An earlier version of this commercial off-the-shelf equipment was used on the Frankfurt-Koenigstuhl-Vaihingen Link upgrade program. The link was implemented by the US Army Communications Command and became the first operational digital microwave system. It served as a pilot program for the installation of the Digital European Backbone project. The office was responsible for management of on-going actions and for all future acquisitions of AN/FCC-97 Multiplexers.

(U) In addition to the original tasking to procure 33 modification kits, another requirement for 60 more modification kits was formalized in December 1977. Field installation was planned for the second and third quarters of FY 1979. Modification kit instructions and updates to commercial manuals will be packed with each kit.

(U) Multiplexer Set AN/FCC for European Wideband Communications System (EWCS). In addition to the basic acquisition of the AN/FCC Multiplexers, tasking was provided in February 1978 for acquisition of 16 more multiplexers. This requirement was a follow-on implementation of selected link improvements within the European Wideband Communication Systems (EWCS) in Germany.

(U) It was anticipated that this project was to have terminated with the basic EWCS task, in December 1983. The estimate to complete the project was put at $478 thousand.

(U) Test, Measurement and Diagnostic Equipment. The consolidation of current Test, Measurement and Diagnostic Equipment for 58 tasks in support of user requirements in CONUS/OCONUS and MAP/GRANT AID equaled 720 line items for a total quantity of 6200 pieces of equipment. These items had a dollar value of $4,283,104, all of which appeared on the Preferred Items List (PIL) of either the US Army Communications Command or the Department of the Army.

(U) TMDE acquisition requirements originated from the following USACC mission responsibilities: to support new or modified communications-electronics (C-E) systems fielded by USACC; to support existing C-E systems added to USACC mission responsibilities; to perform periodic technical evaluation of C-E systems; to replace non-standard or outdated TMDE; to support training; for depots in support of USACC-peculiar C-E equipment; or to support MAP/GRANT AID/Foreign Military Sales.

(U) Ultra-High Frequency Ground Entry Station Site R. A contract was awarded on 21 September 1977 to Collins Government Telecommunication Group of Rockwell International to engineer, furnish and install a UHF ground-to-air radio with a 60 to 400 HZ converter for the UHF Ground Entry Station Site R, Fort Ritchie, Maryland.

(U) The AN/ARC-89 currently in use at Site R was the sole UHF multi-channel communications link between the Alternate National Military Command Center and the National Emergency Airborne Command Post. The high probability of failure of the currently installed equipment and the increasing difficulty in obtaining replacement components and parts, coupled with an increased concentration of the need for immediate availability of the ground-to-air communications service, has resulted in this Quick Reaction Project to acquire and place in operational status a replacement UHF ground-to-air communications facility at Site R.

(U) In May 1978, the contract was definitized. Installation was scheduled to begin in December 1978 and be completed in March 1979. Initial Operational Capability was scheduled for April 1979, after completion of training and Government acceptance of the system.

Chemical Demilitarization and Installation Restoration

Background

(U) In order to provide intensive management for the accomplishment of the chemical demilitarization program, a Program Manager for Demilitarization of Chemical Materiel was established on 11 October 1972. Ten major demilitarization projects involving expenditures of $119 million were completed through FY 1978.

(U) In the Spring of 1974, contaminants were found in water migrating from Rocky Mountain Arsenal (RMA) near Denver, Colorado. When the Army fully realized the nature and extent of the contamination problem at RMA, it became concerned that similar conditions possibly existed at other locations. This reasoning lead to the Army taking the forefront in the Federal Government by establishing an installation program to abate or contain any contamination that may have resulted from a wide range of past military-related chemical, biological and radiological operations.

(U) Historically, the Army dealt with contamination only as specific problems surfaced. However, several factors caused the

Army to direct comprehensive efforts to contamination problems in general. These factors included: the increasing public and national interest in the environment; the progressive encroachment of civilian communities to the borders of previously isolated Army installations; the clear tendency of the Army to consolidate its real estate and release land for public use; and the growing concern that known contaminants could be migrating steadily to installation borders and pose a potential environmental or health hazard to now adjacent communities.

(U) It was realized that a program to restore these installations to a point where they would be suitable for public use would be a technically complex and costly undertaking. The technology base was shallow and in many areas the state-of-the-art would have to be advanced.

(U) In recognition of the technical complexity, high cost, political visibility, and involvement of a wide range of Federal agencies, the Assistant Secretary of the Army for Installations and Logistics directed in March 1975 that the installation restoration effort be placed under project management control.[1] The mission of providing intensive centralized management for the installation restoration effort was combined with that of the existing Office of the Program Manager for Demilitarization of Chemical Materiel, which was redesignated the Project Manager for Chemical Demilitarization and Installation Restoration (PM CDIR).[2] The Secretary of the Army approved the new Project Manager's charter on 22 August 1975.

(U) During the 4th quarter, FY 1976 (July) the Department of Defense assigned tri-service responsibility for installation restoration technology to the Army.[3] The Project Manager was given this added task in FY 197T and was also assigned responsibility for the demilitarization of military incapacitating agents and munitions.[4]

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[1] Memorandum for the Director of Army Staff, ASA(I&L), HQDA, 11 Mar 75, Subj: Rocky Mountain Arsenal Clean-up.

[2] Ltr, DAMO-ODC, HQDA, 3 Apr 75, Subj: Project Manager, Chemical Demilitarization and Installation Restoration.

[3] Memorandum for Secretaries of Military Departments, Director of Defense Research and Engineering, 23 Jul 76, Subj: Installation Restoration Programs.

[4] Ltr, DAMO-ODS, HQDA, 16 Aug 76, Subj: Chemical Demilitarization and Installation Restoration.

(U) A revised Project Manager charter, reflecting these additional responsibilities, was approved by the Secretary of the Army on 29 April 1977.

(U) As the chemical demilitarization and installation restoration projects grew in magnitude and complexity, there was an increasing need for a formalized mechanism to systematically plan, execute, and manage the technical and resource aspects associated with missions of the office.

(U) Accordingly, in early FY 1977 efforts were directed to devise and develop a comprehensive management system that would effectively integrate technical program requirements and performance with resource requirements and utilization. In August 1977 the system concepts, policies, and procedures were promulgated in CDIR Regulation 5-1, 25 August 1977. The major components of the system includ planning, programming and budgeting, funding, reporting, and evaluation aspects for both the chemical demilitarization and installation restoration programs. The provisions of the Integrated Technical and Resource Management System (ITARMS) were officially implemented, effective FY 1978. They formed the basis for comprehensive planning and documentation of program objectives in coordination with field activities (performers), and had provided an incisive and effective means of performance measurement for assigned mission projects.

(U) At the conclusion of the reporting period, studies were underway to determine the desirability of redesignating the Project Manager's Office to a permanent Army agency.

Mission and Responsibilities

(U) The Project Manager for Chemical Demilitarization and Installation Restoration provided intensive centralized management for the timely and effective accomplishment of the lethal chemical demilitarization and installation restoration programs. Within DA, he was responsible for and exercised authority over the planning, direction, and control of demilitarization of hazardous chemical substances and munitions, including lethal, incapacitating, and other chemicals which were designated for disposal. The effort included design, development, and acquisition of special equipment and facilities.

(U) Another area of responsibility included the identification and containment and/or elimination of CBR contamination on Army properties, with emphasis on areas where contaminants were found to be migrating off Army properties in hazardous amounts and posed an

immediate threat to the public health and welfare of the surrounding community, or when properties had been identified for release or other use. Also, he was responsible for all operational aspects of chemical demilitarization and installation restoration programs and the post-operational validation that project objectives had been achieved.

(U) In addition, the Project Manager for Chemical Demilitarization and Installation Restoration was assigned the responsibility within DOD as the lead service for development of technology and standards for all DOD restoration programs involving CBR contaminants.

Staffing and Organization

(U) Colonel Frank A. Jones, Jr. was appointed Project Manager for Chemical Demilitarization and Installation Restoration on 10 June 1976 and reported directly to the Commanding General, US Army Materiel Development and Readiness Command. Mr. Charles Baronian served as the Acting Deputy Project Manager.

(U) Within the Office of the Project Manager, there were two major mission elements, an Assistant Project Manager for Chemical Demilitarization (Mr. R. Whelen, Acting) and an Assistant Project Manager for Installation Restoration (COL D. D. Wingfield).

(U) A Technical Support Office served to support both assistant project managers as did the Program Management Office. An Administrative Officer (Mr. R. Jackson, Chief) was also assigned within the Office of the Project Manager.

(U) The TDA, M1-W3V8AA, dated 15 March 1978, authorized 20 military and 85 civilian spaces which covered the spectrum of chemical, biological, and radiological disciplines.

Chemical Demilitarization

(U) All chemical demilitarization projects ongoing at the conclusion of FY 1977 continued through FY 1978.

(U) Shown below are the major chemical and biological demilitarization projects completed by FY 1978 and the ongoing chemical demilitarization projects with their scheduled completion dates.

COMPLETED TASKS

TASK	LOCATION	ACTUAL COMPLETION
Biological Stockpile	Multiple	October 1972
Leaking M55 Rockets	Johnson Island	November 1973
Bulk Mustard	Rocky Mountain Arsenal	March 1974
GB in Underground Tanks	Rocky Mountain Arsenal	November 1974
Agents in Concrete Drums (Phase I)	Edgewood Arsenal Aberdeen Proving Ground	August 1975
GB in Ton Containers	Rocky Mountain Arsenal	February 1976
Honest John Warhead/M139 Bomblets (GB)	Rocky Mountain Arsenal	August 1976
M34 Couster Bombs/M125 Bomblets (GB)	Rocky Mountain Arsenal	September 1976
Dugway Proving Ground Phase I (M55 Rocket GB	Dugway Proving Ground	September 1976
Dugway Proving Ground Phase II (M139 Bomblets GB)	Dugway Proving Ground	September 1977

CURRENT MAJOR TASKS

TASK	LOCATION	SCHEDULED COMPLETION
Carbonyl Chloride Sale (Status 30 Sep 78: Renegotiating sale contract)	RMA	FY 81
Chemical Agent Identification and Training Sets (ID Sets) (Status 30 Sep 78: Modifying facility per simulant testing results)	RMA	FY 81
Chemical Agent Munition Disposal System (CAMDS) (Status 30 Sep 78: Operationally ready; waiting for DPE)	TEAD	FY 85
Demilitarization Protective Ensemble (DPE) (Status 30 Sep 78: Conducting leve agent manned testing)	APG	FY 79

CURRENT MAJOR TASKS--Continued

TASK	LOCATION	SCHEDULED COMPLETION
Drill and Transfer System (DATS)		
Phase I - Fabrication and Pilot Test (Status 30 Sep 78: Testing and modifying system)	APG/DPG	FY 79
Phase II - Leaking Chemical Munitions (LCM) (Status 30 Sep 78: Planning operations for first site)	Multiple	FY 84
Phase III - Explosive Containment System (ECS) (Status 30 Sep 78: Developing concepts)	Multiple	To be determined
Incapacitating Agent BZ (Status 30 Sep 78: Developing concepts)	To be determined	FY 84
Laser Technology (Status 30 Sep 78: Testing feasibility)	APG	To be determined
Liquid Agent Disposal Process Optimization (LADPO) Technology (Status 30 Sep 78: Developing concepts)	APG	Continuing
Hydrogen Cyanide (HCN) Disposal (Status 30 Sep 78: Operationally ready; waiting plan approval)	TEAD	FY 79

(U) Program Budget. The budget status for the overall Chemical Demilitarization Program from inception to the end of Fiscal Year 1978 is shown below. As indicated, FY 1978 OMA fund availability was limited to $19.282 million which, when compared to the $29.269 million requirement formally submitted in the April 1978 Command Operating Budget Estimate (COBE), represented a significant budget decrement.

(U) The budgetary constraint significantly restricted the accomplishment of planned objectives. Every effort, however, was made to minimize the impact on the high priority projects, such as those at Rocky Mountain Arsenal (RMA) (Chemical Agent Identification and Training (ID) Sets and Phosgene); Tooele Army Depot (TEAD)

(Chemical Agent Munitions Disposal System (CAMDS)); and Chemical Systems Laboratory (CSL) (Demilitarization Protective Ensemble (DEPE)). Specific management actions taken to reduce the FY 1978 OMA budget requirements from $29.269 million to $19.282 million included the elimination of waste salt technology program, deferral of the planned write-off of the RMA AIF for excess M34 cluster spare parts inventory, reduction to the CAMDS equipment modification requirement, and narrowing the original BZ engineering support contract scope.

(U) In addition, demilitarization technology studies to enhance personnel safety and environmental controls and investigation of process improvements were limited. The continuing budget shortfall condition precluded the initiation of a comprehensive technology development program.

Chemical Demilitarization
OMA Program Budget Status

$ in Millions

Projects	FY 77 & Prior	FY 78
Rocky Mountain Arsenal	110.723	4.348
CAMDS	19.015	6.827
Dugway Proving Ground	7.354	-
BZ Demil	.263	1.776
ID and Training Sets (chemical neutralization system)	8.829	-
Demil Protective Ensemble	3.825	1.226
Biologicals	14.329	-
Drill and Transfer System	1.076	2.180
Recovered Chemical Material	.048	.561
Other	16.083	.942
Project Management	6.869	1.422
TOTAL	188.414	19.282

(U) Carbonyl Chloride (Phosgene) Disposal. Public Law 94-251 enacted by Congress, 29 March 1976, authorized the sale of approximately two million pounds of carbonyl chloride (phosgene) in 1,294 steel ton containers at RMA and the shipment incident to sale. On 6 August 1976, the final EIS was filed with the President's Council for Environmental Quality (CEQ). The Defense Property Disposal Service (DPDS), Battle Creek, Michigan, published an invitation for bids on the purchase of the carbonyl chloride in August 1976 (Sale No. 01-7700), and on 15 October 1976 a contract was awarded to Chemical Commodities, Inc., Olathe, Kansas, with transfer operations commencing in November 1976. However, the contractor experienced difficulties in meeting the removal schedule and the contract was finally terminated in March 1977.

(U) In May 1977 the DPDS published another invitation for bids on the carbonyl chloride, and on 23 June 1977 a contract was awarded to Arapahoe Chemical, Inc., Newport, Tennessee (Sale No. 01-7001). On 13 July 1977 Arapahoe Chemical began the first shipment from RMA, and on 7 September 1977 they initiated the return of the first batch of shipping containers. As of 30 September 1978, 196 full ton containers had been removed from RMA.

(U) Chemical Agent Identification and Training Sets (ID Sets). During FY 1978 work continued on the development, provisioning and testing of a facility at RMA to incinerate approximately 21,000 unserviceable and obsolete ID Sets located at 29 US military installations throughout the world. The ID Sets contained 11 different chemical agents with a maximum of five different agents in any one type of set. This program was being conducted in two phases: Phase I was the pilot disposal of 1750 ID Sets and Phase II was the disposal of the remaining sets.

(U) During the period of January - February 1978, the sets required for pilot testing were shipped to RMA. Subsequently, documentation was prepared and staffed for movement of the remaining sets.[5]

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[5]Final Environmental Impact Statement, Disposal of Chemical Agent Identification Sets at Rocky Mountain Arsenal, Colorado, Jan 77.
Operations Plant SETCON I, Disposal of Chemical Agent Identification Sets at Rocky Mountain Arsenal, Colorado, Jan 77.
Pilot Test Plan, Disposal of Chemical Agent Identification Sets at Rocky Mountain Arsenal, Colorado, Phase I, Pilot Testing, Jan 77.
Public Affairs Plant, Disposal of Chemical Agent Training Sets at Rocky Mountain Arsenal, Colorado, Phase 1, Pilot Testing, Apr 77

(U) A full scale simulant test of the ID Set facility was conducted during April 1978 which was intended to confirm previous indications that particulate and opacity emissions would exceed State of Colorado limits. Based on results of this test, it was determined that an electrostatic precipitator was required in the disposal system. This equipment was procured and installed.

(U) However, efforts by RMA during May thru August 1978 to inspect and regasket the Weteye bombs being stored there, as well as a substantial reduction in force, caused postponement of the pilot test until February 1979. Accordingly, Phase II was delayed until August 1979.

(U) All major process equipment was installed in the facility previously used for the demilitarization of Honest John GB rocket warheads at RMA. Items included a five-station disassembly glovebox, shrouded conveyors and charging cart system for decontamination of metal parts, new discharge conveyors and a new plant control system.

(U) Chemical Agent Munitions Disposal System (CAMDS). CAMDS was the prototype demilitarization facility which had been developed at the south area of TEAD, about 45 miles southwest of Salt Lake City. It originated as a transportable disposal system for GB-filled M55 rockets and was later expanded to include all nerve agent and mustard-filled munitions (less the Honest John warheads and Weteye bombs), and limited quantities of bulk stocks.

(U) The CAMDS prototype was to serve primarily to pilot the equipment and processes required to dispose of unserviceable chemical munitions, as well as the chemical stockpile, if required. Also, it was to be used to demilitarize approximately 120,000 unserviceable chemical munitions of various configurations stored at TEAD.

(U) Including the development and fabrication costs through FY 1976 plus engineering and test support, the total cost of the CAMDS acquisition phase totaled $43.3 million. The cost of the CAMDS systemization phase, involving engineering testing and test support costs in FY 1977, ran approximately $9.7 million. A $84.9 million operating budget was proposed to cover operations, engineering support and any further development/systemization costs from FY 1978 through FY 1985.

(U) During the past year, the date for the initiation of toxic operations, October 1978, was revised several times, due to the non-availability of the new demilitarization protective ensemble (DPE) required for CAMDS operations.

(U) During the period resulting from the deferred startup, significant efforts were expended on improving the productivity of the M55 system and the systemization of the Non-Burster Projectile System and Bulk Item Facility. This effort offset the major portion of the schedule slippage. The overall CAMDS operating schedule was effected minimally by the slip.

(U) Demilitarization Protective Ensemble (DPE). The DPE program was established to develop a NIOSH approved protective suit for use in industrial-type demilitarization operations such as those planned for CAMDS. Prior to FY 1978, CSL had, with contractor assistance, developed the new ensemble design and subjected it to a series of demonstration tests. In early FY 1978, CSL submitted the Human Use Review Committee charter to the DA Secretary for approval. It was approved and the committee met in late February 1978 and approved the protocol that was submitted through the DA Surgeon General to the Secretary of the Army. On 1 May 1978, the Secretary of the Army approved the test protocol for the manned 10 mg/m^3 best of the DPE but held approval of the manned 100 mg/m^3 test until the DA Surgeon General reviewed the data from the 10 mg/m^3 test. On 8 September 1978 CSL successfully completed the 10 mg/m^3 test and submitted the data to the DA Surgeon General. The Secretary of the Army was still reviewing the protocol to conduct the manned 100 mg/m^3 test with GB at the end of FY 1978.

(U) Drill and Transfer System (DATS). The development of a Drill and Transfer System (DATS) for the disposal of leaking chemical munitions (LCM) and recovered chemical munitions (RCM) continued.

(U) A requirement existed to dispose of some 60 RCM's recovered at Dugway Proving Ground (DPG), Utah. These items, previously designated as the DPG Phase V program were to be used to pilot test DATS (Phase I). Also, a requirement existed for the disposal of a growing inventory of LCM's stored at various other locations. Such operations were to be conducted on-site during Phase II of the DATS program.

(U) In addition to the known workload described above, known and suspended chemical munitions that would be recovered in the future from various test ranges and development centers, such as Aberdeen Proving Ground (APG) and DPG, were also to require demilitarization. Where compatible with the equipment, these items could be processed in the DATS.

(U) The LCM's, with their overpacks, were to be placed in a transportable glovebox, removed from their overpacks and drilled.

After verification and transfer into an approved container, the agent fill was to be stored for later transport to a detoxification facility. The munition body was to be chemically decontaminated to a XXX level, and explosively configured items were to be detonated.

(U) The pilot test was to be conducted at DPG in the third quarter, FY 1979 and processing of LCM's was to commence at Pine Bluff Arsenal in third quarter, FY 1980. The glovebox system was initially fabricated and tested at Large Caliber Weapon Systems Laboratory (LCWSL). After performing organization at LCWSL was disestablished in September 1978, the glovebox modifications were completed at the Chemical Systems Laboratory. Shipment of the glovebox and other support modules to DPG were to begin in January 1979.

(U) Explosive Containment System (ECS). The ECS program resulted from a significant change in the direction of the Recovered Chemical Material (RCM) program, which was established in FY 1977 to deal with the problem of recovery, assessment, and disposal of unwanted chemical surety material in the Edgewood Area of APG. Several hundred such items were in storage in the Chemical Agent Storage Yard (CASY) and in Old "O" Field, located on the Gunpowder Neck of the Edgewood Area. The suspect chemical munitions include 105mm and 155mm projectiles, 4.2 inch mortars, Stokes mortars, rockets and land mines. In addition, numerous items including projectiles, mortars, bombs, and storage tanks of various sizes were identified on the surface of Old "O" Field.

(U) Originally, the scope of the RCM program included the surface and subsurface recovery of munitions from the field. A significant task accomplished in FY 1978 was a surface sweep of Old "O" Field during which all suspect items on the surface of the field were flagged, and an inventory of those items was prepared. In March 1978 the first phase of the PM CDIR Installation Restoration (IR) Preliminary Survey of APG was completed.

(U) The results of the IR survey raised the question of organizational responsibilities as they related to Old "O" Field. In an effort to clarify those responsibilities, a Memorandum of Understanding was prepared by the PM CDIR in coordination with the US Army Test and Evaluation Command (TECOM) in which it was established that the recovery of munitions or other hazardous material located within the boundaries of a TECOM installation was the responsibility of the installation commander. The assessment of suspect chemical munitions was essentially to be a joint effort between the PM CDIR and the installation. Disposal of all suspect chemical items was the responsibility of the PM CDIR.

(U) As a result of the agreements reached between the PM CDIR and TECOM during preparation and staffing of the Memorandum of Understanding, the direction of the RCM program was drastically changed. The emphasis was changed from recovery and assessment of munitions at APG to the development of a disposal system that could safely dispose of recovered chemical material.

(U) At APG the only demilitarization system available for disposal of the munitions was the DATS glovebox. However, that system was designed to dispose of unserviceable chemical munitions with known fills. It was essentially a manually operated system, and could only handle liquid agents that were compatible with a charcoal filter. The munitions in storage at APG were badly corroded; the fills were unknown; and some munitions may have been unsafe to handle manually. Therefore, a requirement existed for a demilitarization system that could handle all possible agents, including unknowns; had a remote capability; and provided total containment. Because a requirement for such a system may not have been unique to APG, the system should also have been transportable.

(U) The concept that was selected to satisfy the above requirements consisted of detonating the suspect chemical munition inside a vessel capable of totally containing fragments and gases resulting from the detonation. Detonation products and the interior of the containment vessel were to be decontaminated, and the gases and vapors vented through an emission control system. The containment system consisted of a sealed steel cylinder (primary containment) placed inside a steel sphere, six feet in diameter. Each vessel would be capable of totally containing the detonation products of munitions up to and including 155mm burstered chemical projectiles.

(U) Major accomplishments in FY 1978 directed toward establishing feasibility of the ECS concept were the tasking of the US Naval Explosive Ordnance Disposal Facility, located at Indian Head, Maryland, with development and testing of the containment system; locating a six foot steel sphere and shipping it to Indian Head; and preparing an extensive test plan designed to prove out the containment system. In addition, two prototype primary containment vessels were designed and were to be fabricated and tested by the Naval Surface Weapons Center at Dahlgren, Virginia.

(U) BZ Disposal Program. During FY 1978, the BZ program focused on the development of a preliminary technical data base. This included the review of analysis and detection methodologies, completion of a problem definition study by the US Army Medical Bioengineering Research and Development Laboratory (USAMBRDL), and the

establishment of interim exposure guidelines. Preliminary laboratory scale incineration investigations were also completed which were to be evaluated for incorporation into subsequent development plans. Because little was known about the energetic condition of the stockpile munitions, a significant effort was directed towards defining the sensitivity of the munitions and assessing their transportability. Associated with the munition sensitivity investigations was a preliminary concept study of possible ways to inert the munition functioning system to improve its transportability and/or its in-plant processing.[6] To allow determination of the munition sensitivity and provide material for inerting and other investigations, the manual downloading of 25 M44 and eight M43 munitions from the Pine Bluff Arsenal (PBA) stockpile was accomplished. The services of an engineering support contractor, Battelle Columbus Laboratories, were also obtained and work was initiated in the areas of incineration, neutralization, munition technology, concept studies, and analysis/detection.

(U) Laser Technology Program. In FY 1975 and FY 1976 the Ballistic Research Laboratory (BRL) at Aberdeen Proving Ground, Maryland, demonstrated the feasibility of cutting explosives using a multi-mode laser beam extracted from a 3KW CO_2 laser. The ability to sever munition nose closures and fiberglass-encased M60 rockets (M55 rockets sans energetics and agent) was also shown at that time.

(U) In February 1977 BRL began the second phase of the laser technology program which involved a rocket feasibility study using live rockets filled with agent simulants. Little was accomplished during FY 1977 due to delays encountered in developing a laser test site at APG's Spesutie Island.

(U) During FY 1978 preparation of the laser test site was completed. Also, modified optics were installed on BRL's laser which improved beam quality and the laser's cutting ability. During the 4th quarter FY 1978, feasibility testing was initiated on the aft end (motor section) of the M61 rocket. Tests were scheduled to continue through FY 1979.

(U) Lethal Agent Disposal Process Optimization Program (LADPOP). This program was intended to improve the lethal agent demilitarization process technology by evaluation and adoption of safer and more cost effective process technologies. These improved process technologies were to eventually be applied to CAMDS and were to be available, if required, to demilitarize the lethal chemical agent stockpile.

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[6] Ltr, DAMO-SSC, HQDA, 31 Aug 77, Subj: Revised Concept Plan for Demilitarization of Incapacitating BZ Agent and Munitions.

(U) Specifically, process improvements in broad areas such as furnace effluent scrubbing, agent detoxification methodologies, and munition handling and processing technologies were to be evaluated. The PM CDIR approved the development management plan in September 1977 and efforts were initiated. The first task specified in the management plan was to identify and evaluate candidate scrubbing processes which potentially offered economic and/or safety advantages over the current NaOH scrubbing process used in the CAMDS furnaces. A contract was let with Battelle to evaluate alternate scrubbing processes as well as to evaluate energy usage at CAMDS. This contract potentially could result in the development of better scrubbing techniques and methods to reduce energy consumption.

(U) Alternate methods of agent destruction were also being investigated. A contract was let with Lockheed to investigate microwave destruction of agent. Also, investigations into chemical destruction of VX agent using Fichlor (sodium dichlorocyanurate) were begun. Preliminary results indicated that the resulting products were relatively non-toxic.

(U) Lethal Agent Detection and Monitoring Equipment (LADAME). Experience in chemical demilitarization highlighted the need for a quick response, low level agent alarm. Existing alarms responded quickly only to high levels of agent. Also, in recent years NIOSH and OSHA recommended the use of dosimeters capable of measuring the average concentration of toxics in a worker's breathing zone.

(U) A GB bubbler dosimeter system was developed and was to be evaluated at the start of CAMDS demilitarization operations. Also, solid sorbents for GB and mustard were identified and were undergoing laboratory tests.

(U) ACAMS completed laboratory evaluation and was to be tested during pilot demilitarization of the obsolete chemical agent ID sets. The latter presented a unique situation as several agents were to be disposed simultaneously. Monitoring for each agent individually at several locations with current methods of analysis required a large laboratory support effort. State-of-the-art instrumental techniques were capable of rapidly detecting, identifying and quantifying trace airborne contaminants in mixtures of contaminants on an automated basis, and offered the opportunity of greatly reducing manpower support requirements for atmospheric monitoring.

Installation Restoration (IR)

(U) Continuing installation restoration (IR) projects at the beginning of FY 1978 included records searches at various Army

installations; the containment/treatment of migrating contaminants at RMA; a preliminary survey of APG; a detailed survey and assessment of Weldon Spring Chemical Plant (WSCP), Missouri; contaminant abatement at Pine Bluff Arsenal (PBA); decontamination of Frankford Arsenal (FFA), Pennsylvania; and containment and cleanup of DDT contamination at Redstone Arsenal (RSA), Alabama. As a result of a records search of Hawthorne Army Ammunition Plant (HAAP), Nevada, in FY 1977, a preliminary survey of HAAP was initiated in July 1978.

(U) Records Search. In FY 1978, the historical records of 17 Government installations were scrutinized to uncover indications of contaminant migration. The installations included:

*Redstone Arsenal, AL
**Anniston AD, AL
Fort Chaffee, AR
**Louisiana AAP, LA
*Alabama AAP, AL
Milan AAP, TN
*Volunteer AAP, TN
*Lone Star AAP, TX
**Red River AD, TX
Kansas AAP, KS
*Iowa AAP, IA
*Joliet AAP, IL
**Twin Cities AAP, MN
**New Cumberland AD, PA
**Ravenna AAP, OH
**Newport AAP, IN
*Savanna AD, IL

(U) Follow-on field surveys were being performed, or had been recommended by PM CDIR at those installations marked with one asterisk. At the remaining ten installations, the records searches did not reveal indications of contaminant migration from past operations. In most instances, collection of water quality data was recommended to provide additional evidence to support the conclusion (identified with two asterisks).

(U) Rocky Mountain Arsenal (RMA). The major tasks associated with the RMA installation restoration project during FY 1978 included a survey to quantitatively define the sources of migrating contaminants; the development of standards to establish acceptable levels of contamination and emission; and the development of technology to include piloting of decontamination procedures and processes.

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(U) Groundwater samples were analyzed to identify and quantify the types of contaminants. Heavy contamination concentrations consisting of pesticides and their intermediates, heavy metals and certain inorganics, were found in the Basin A and Basin F areas. Basin F was verified as a source of pollution crossing the north boundary. Simultaneously, Basin A was being surveyed further to determine if this area contributed to the off-post migration problem.

(U) The analytical support laboratory established during first quarter FY 1977 was used extensively throughout FY 1978. Work continued on developing automated analytical methods for chemicals identified in RMA waters and establishing a quality control program to validate the data.

(U) Toxicology studies to develop a data base for environmental standards for diisopropylmethylphosphonate (DIMP), dicyclopentadiene (DCPD) and three organo-sulfur compounds identified in RMA groundwater were continued in FY 1978 in the standards development program. Interim guidelines of 0.5 parts per million (ppm) for DIMP, 1.28 ppm for DCPD, and 0.1 ppm of the three organo-sulfur compounds in drinking water were established. Other problem definition studies to identify toxicological data existing on 35 top priority compounds were completed. Also, research is underway on three additional compounds.

(U) Ecology work in support of the contamination survey involved the inventory and monitoring of plants and animals to determine contamination effects. Infrared photography of the Arsenal was conducted to outline a detailed vegetation map and surveys of various animal and plant species were underway.

(U) During FY 1978, work in technology development was directed toward the installation and operation of a pilot containment/treatment system at the north boundary of RMA. This pilot system was composed of a series of pumping wells, a bentonite clay cutoff barrier, a granular carbon water treatment facility, and groundwater recharge wells. Although testing of the system was to be completed in FY 1979, feasibility studies to control sources of migrating contamination were completed in FY 1978. Initiated in FY 1978 was the design of major Army construction projects scheduled for expansion in FY 1980 and FY 1981 of the pilot north boundary system, and for source control systems for Basin F and Basin A.

(U) Aberdeen Proving Ground (APG), Maryland. A records search effort at APG was completed in July 1976. Based on the findings of

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[7] Records Evaluation Report 101, Installation Assessment of Aberdeen Proving Ground, Office of the Project Manager for chemical Demilitarization and Installation Restoration, September 1976.

the search and evaluation, migration of chemical contamination from past operations was suspected in the Edgewood Area of APG (formerly Edgewood Arsenal).

(U) It was concluded that a preliminary survey (involving limited soil and water sampling and geohydrology studies) should be conducted at APG to either confirm or rule out the presence and/or migration of contaminants.

(U) A preliminary survey of the Edgewood Area was begun in November 1976. Three suspect areas were surveyed during FY 1977 with no confirmed migration being discovered. A survey of the remaining sections of the Edgewood Area was completed in FY 1978, and an evaluation of the data and the final report were to be completed in FY 1979.

(U) Weldon Spring Chemical Plant (WSCP). In third quarter FY 1977, a contract was awarded to Ryckman, Edgerley, Tomlinson and Associates of St. Louis, Missouri, for a detailed survey and assessment of alternatives for the disposition of WSCP, Missouri. Phase I of the contract, which called for preparation of detailed survey plans and of health physics and safety plans, ended late in fourth quarter FY 1977.

(U) The survey plans, Phase II, were executed during FY 1978 and 16,000 lists of data were compiled from analysis of soil, sediment, surface water, wells, buildings, equipment, air, animal tissue, and plant tissue.

(U) Phase III, the assessment of alternatives, was also completed in FY 1978 and the final report was expected in first quarter FY 1979. Additional plans and reports that were prepared during FY 1978 included a non-real property disposal plan, decontamination criteria for WSCP, and a natural disaster report. The reports and their proposed alternatives were being reviewed.

(U) Pine Bluff Arsenal (PBA), Arkansas. The IR program at PBA in FY 1978 essentially involved two activities, the adequate containment of residues from DDT manufactured at the Arsenal between 1948 and 1957, and the determination of other contaminant migration from the Arsenal as a result of past operations. From FY 1976-1977 PBA took actions to contain the residual DDT deposits which had acted as the source of surface migration through the Arsenal's drainageways, creeks, and into the Arkansas River. These source deposits, in crystalline form, were located at several scattered sites on post. The corrective actions consisted of excavation and burial of heavy

surface deposits, diversion of streams away from old DDT landfill areas, stabilization of the landfill, and construction of sediment retention basins in existing drainage streams. Late in FY 1977 and early in FY 1978, effort was directed to engineering studies of means to achieve a "zero" discharge level of DDT in Arsenal waters in accordance with standards established by the US Environmental Protection Agency (EPA). These studies included engineering methods of containing or diverting surface runoff from contaminated areas, and process techniques of removing DDT from residual discharge streams. The studies showed that total removal of DDT from surface water was technically and economically unfeasible because of the DDT content of the environment. In addition, contamination studies of fish in the Arkansas River indicated no human health hazard and no significant contribution of DDT contamination of fish by Arsenal runoff. This information was presented to Region VI of the EPA, and the Agency withdrew from its earlier position of insisting on zero discharge of DDT from Arsenal waters.

(U) By the end of FY 1978, the DDT program at PBA consisted of annual maintenance of the sediment retention basins; i.e., removal and encapsulation of DDT contaminated sediments, and a surface and subsurface water monitoring program.

(U) Other Contaminant Migration. In FY 1977 and 1978, extensive effort was devoted to a contamination survey of soils, groundwater, and surface water to identify any other organic or inorganic contaminants migrating from PBA. Metal contamination higher than environmental background levels was found in some stream sediments at the Arsenal boundaries, but water analysis indicated no significant levels of metals or organic contaminants being discharged from the Arsenal. These studies, along with analyses of groundwater samples taken from 36 wells at the Arsenal boundary, were to be completed in FY 1979 in order to reach a final decision regarding contaminant migration from PBA.

(U) Frankford Arsenal (FFA), Pennsylvania. A search effort was completed at FFA in July 1977[8] in which a team reviewed pertinent documents and interviewed present and former key employees. Information was also gathered from other government agencies, including Department of Defense Explosives Safety Board (DDESB), US Army Environmental Hygiene Agency (USAEHA), US Geological Survey (USGS), Defense Documentation Center (DDC), and the National Technical Information Service (NTIS).

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[8]Records Evaluation Report 115, Installation Assessment of Frankford Arsenal, Philadelphia, PA, Oct 77.

(U) The results of the records search revealed that approximately 102 of 212 buildings at FFA were potentially contaminated. In addition, six areas were identified where unexploded ordnance burial sites were suspected.

(U) A concept decontamimation plan[9] was prepared and briefed to ARRCOM, DARCOM, HQDA, and Assistant Secretary of the Army (ASA) for Installations, Logistics and Financial Management. The plan consists of three phases: Phase I provided for a detailed survey and alternatives assessment; during Phase II the methodology required for decontamination would be developed; and during Phase III the decontamination operations would be carried out.

(U) Initiated during first quarter FY 1978, Phase I evaluation was accomplished by a joint in-house/contractor approach. The Arsenal was divided into four areas, A, B, C, and D. Areas A and B were evaluated by an in-house DOD team to permit early release; statements of clearance were issued in November and December 1977, respectively.

(U) A contract was awarded to Battelle Columbus Laboratories in March 1978 for evaluation of areas C and D. Sampling and analysis was initiated in April 1978 and completed in September 1978, and a draft final report was expected in first quarter FY 1979.

(U) The results of the survey revealed that eight buildings had low level radiological contamination and 184 buildings had either heavy metal or explosive residue. Radiological contamination and heavy metal and explosive residues were also present in sumps, sewers, and vent systems.

(U) While radiological contamination would be reduced below standards using existing technology, there were no applicable published standards for heavy metals and explosive residues on surfaces.

(U) A briefing was being scheduled to request the ASA(IL&FM) to authorize initiation of Phase II, optimization of cleanup methodology and Phase III, decontamination operations.

(U) Redstone Arsenal (RSA), Alabama. Since its origination in the early 1940's, RSA had been the site of numerous chemical manufacturing, test, and storage operations, some of which resulted in environmental contamination. Between 1948 and 1971 a contractor using

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[9]Concept Plan, Installation Restoration of Frankford Arsenal, PA, Sep 77.

leased Army facilities for the manufacture of DDT for private commercial purposes created an environmental problem. Although the plant was demolished in 1971-72, DDT residues from the operations continued to exist on the Arsenal property and in parts of the Wheeler National Wildlife Refuge (WNWR), property owned by the Tennessee Valley Authority and leased to Department of the Interior.

(U) As a result of an Army survey of residual DDT contamination in the area late in FY 1977, a DDT migration abatement program was initiated by PM CDIR at the beginning of FY 1978. The program consisted of immediate corrective actions to control further migration of DDT in a major surface drainage ditch from the old manufacturing area to WNWR. This was accomplished by the construction of storm water diversion ditches and sediment retention basins in the existing surface drainage ditch, and partial stabilization of the contaminated manufacturing area.

(U) Longer range corrective actions were initiated in FY 1978 which were to assure final removal of DDT residues from the drainage ditch and the surface waters discharged from the Arsenal. These included operation of a DDT adsorption plant, excavation of contaminated sediments from the discharge ditch, and stabilization of old DDT landfills on the Arsenal. Pilot tests to support the water treatment plant were completed in FY 1978 along with procurement actions to acquire the plant under a one year lease. Engineering data was collected to support a new secure landfill for the future burial of contaminated sediments, and groundwater monitoring wells were constructed around the old landfills and in the new landfill area.

(U) Also in FY 1978, a records search of RSA operations since 1941 was completed to identify the potential for other chemical migration from the Arsenal. Based on this study, it was concluded that a preliminary contamination study was required. The plan for this survey was completed and the survey was to be initiated in fourth quarter FY 1979.

(U) Hawthorne Army Ammunition Plant (HWAAP), Nevada. Since 1940, HWAAP's mission had been receipt, loading, maintenance, storage and issuance of ammunition, explosives, expendable ordnance items and/or weapons, and technical ordnance material. Additional duties were weapons testing, and disposal of unserviceable and/or dangerous ammunition and explosives. After World War II, HWAAP was actively involved in the demolition of various types of ammunition.

(U) As revealed by the records search effort at HWAAP (July 1977), an area was identified where certain potential sources of contaminant migration existed. Explosive waste from loading and

demilitarization operations were dumped into the ground throughout the production area and there were indications that the groundwater and Walker Lake could be contaminated with these wastes. Waste materials reportedly discharged into this area included TNT, ammonium picrate, Comp A and B, RDX, PETN, UDMH, amitol, and various propellant and pyrotechnic compositions.

(U) As a result of this records search, it was recommended that a preliminary environmental survey be conducted to determine if contaminants were migrating, and presented a hazard to the off-post environment.

(U) The preliminary survey of HWAAP was initiated during July 1978. Sampling and analyses of the surface water and sediment samples from Walker Lake indicated that some of the sediment samples contained TNT. Groundwater sampling wells were installed between the production area and Walker Lake. This well drilling operation was to be completed in early November 1978 and the wells prepared for groundwater sampling and analyses.

(U) Below is the Army Installation restoration program for Fiscal Year 1978.

Installation Restoration Program
($000)

Project	Apprn	FY 1977 & Prior	FY 1978
Rocky Mountain Arsenal		(9988)	(4863)
	OMA	3784	2060
	RDTE	6058	2420
	MCA	146	383
Weldon Spring Chemical Plant		(655)	(91)
	OMA	620	91
	RDTE	35	-
Frankford Arsenal	OMA	46	679
Pine Bluff Arsenal	OMA	1369	317
Redstone Arsenal		-	(490)
	OMA	-	461
	RDTE	-	29
*Installation Assessment	OMA	2019	1445
General Technology	RDTE		400

Installation Restoration Program--continued.

Project	Apprn	FY 1977 & Prior	FY 1978
Project Management		(1576)	(1919)
	OMA	1521	1728
	RDTE	55	191
TOTAL PROGRAM		(15653)	(10204)
	OMA	9359	6781
	RDTE	6148	3040
	MCA	146	383

*Pine Bluff Arsenal and Redstone Preliminary Survey Effort included under Installation Assessment.

Munitions Production Base Modernization & Expansion (MPBME)

The Program

(U) The basic purpose of the PBM Program was to improve the industrial readiness of the ammunition production base to the point it could support the material requirements of the United States and selected allied armed forces in combat and with the desired responsiveness.

(U) Modernization was a comprehensive engineering and construction program that used the technology and resources of the materials handling, machine tool, chemical processing, computer and construction materials industries throughout the United States. The chief goal was to completely overhaul and modernize ammunition production facilities, which concerned officials in the late 1960's felt were inadequate to meet future needs. When the Vietnam conflict broke out, the country had only 26 government plants in the production base, down from a peak of 113 in World War II.

(U) These remaining World War II and Korean War vintage facilities were put to a hard test. During the 1950's most of the procurement budget was devoted to deterring nuclear war with little allocated to provide for the possibility of conventional war. Laid-away facilities required proper cleaning and preservation. With little money available, maintenance suffered. Available funds during the Vietnam era were used to acquire only those modern facilities essential to expansion, introduction of new items and replacement of

completely worn-out facilities and equipment which supported the conflict. As a result, production facilities had reached a point where equipment could not be reactivated without extensive rehabilitation or replacement after being laid away.

(U) The modernization effort had its share of problems. The base was obsolete in nearly every respect, making it necessary to modernize drastically in most instances. There was also a marked decline over the past 20 years in the number of people with ordnance related skills to operate the remaining usable equipment. Additionally, new developments in ammunition often required new production processes and equipment. Bridging the technology gap was a challenging task, particularly in those areas that had no civilian counterpart. There was no industrial counterpart for most of the propellants and explosives and load, assemble and pack manufacturing operations required for munitions.

(U) Management of the PBM program included development of the requirements for technology. This was often triggered by product requirements; the types and quantities of munitions required and procured for inventory and produced in the event of mobilization. These requirements were normally revised annually and often included a significant number of new items. An analysis was made to see whether the existing production base satisfied these requirements, both from capacity and process standpoints. If no capability existed or capacity had to be increased, a need for process technology may have existed.

(U) Once the need for process technology had been established, a manufacturing technology program was formulated. First, a technology assessment was made taking into account technology requirements, the state-of-the-art, and technology forecasts that include the probability of attaining the desired technology. The resulting technology assessment was used to generate technology guidance covering each specific commodity area and indicated in broad parameters the type of process technology desired. These technology guidance packages became the basis for detailed project proposals and submissions.

(U) Following project submission and prioritization, a computerized time-phased master technology plan was prepared. This plan included all required manufacturing technology projects, both ongoing and for a five year forecast period. Program priorities played a major role in this master plan. Funding limitations precluded the accomplishment of all projects in their earliest year of attainment. A critical evaluation was made of each project to determine relative importance or priority. Consideration was given to the technology project's relationship to a scheduled facility project. Individual

manufacturing technology projects and the management system represented state-of-the-art undertakings. It was a never-engint task of looking for new tools and techniques to improve the production of ammunition production factilities and the management of this critical, broad-based technology program.

(U) A review of the program revealed the magnitude of effort to support the current requirements. This is summarized in the Figure below.

PROJECTS UNDERWAY (as of 30 Sep 78)
$ Millions

	No. of Projects	Value
MFG Technology	196	$140.5
Design Criteria	68	903.1
Design	66	570.9
Construction	106	995.4
TOTAL	436	$2609.9

(U) A key to a successful accomplishment of the program was the completion of technology and engineering design work early enough so that the final facility design was available one year prior to the year in which the facilities contracts were to be awarded. The availability of the final design at that point in time was a Congressional mandate on this program.

(U) Proper scheduling and planning of the prerequisite engineering and design had been very important to the success. Projects which were crashed consistently caused problems through every step of execution and prove out. The Manufacturing Methods and Technology Engineering effort could have represented a few months or years, dependent on the complexity of the engineering required. As previously indicated, the engineering effort was closely managed/monitored by this organization because of its criticality to development of the facility project.

Organization and Manpower

(U) Organization. A major organization change was effected during the fiscal year. On 10 April 1978, concept approval was requested of DARCOM, in accordance with DARCOM Reg 10-1.[10] Approval was granted on 9 May 1978 [11] and the reorganization was implemented immediately thereafter.

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[10] DRCPM-PBM-PC ltr, Subj: Request for Reorganization Approval, 10 Apr 78.
[11] DRCPA-O 1st Indorsement to footnote 10.

(U) The primary purpose of the reorganization was to improve internal responsiveness and in turn to improve the PM's ability to respond to and assist higher headquarters and other PM's. It also significantly improved personnel utilization and overall organizational effectiveness. A summary of the organizational changes follow.

(U) The Special Staff which consisted of an attorney and a secretary was abolished. The legal function was to be performed by ARRADCOM in support of this office.

(U) An Industry and Technology Office was established as a separate office reporting directly to the PM. Staffing was provided by transfer of engineering personnel from the Technical Support Division. The office provided a single point of contact for relations with industry and technology transfer; served to strengthen our relationships with industry, enhanced technology transfer; and enabled overall improvement in production processes used in the manufacture of munitions.

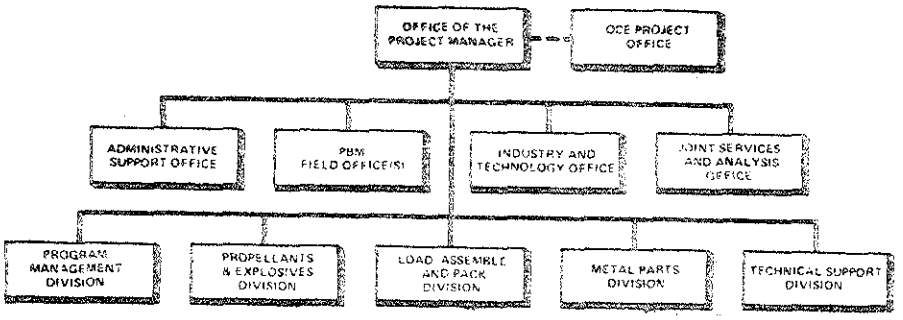
(U) The approved plan provided for abolishment of the Conventional Munitions and Fuze Division. Of the three branches, the Fuze Branch was transferred in tact to the Technical Support Division. The two remaining branches were integrated within the Metal Parts Division. This realignment provided for savings of two spaces from the division headquarters and provided a single focal point within the PMO for all projects involving metal parts production facilities whether they were located in Government-owned or contractor-owned facilities.

(U) The branch structure of the Metal Parts Division was realigned to accommodate personnel (11) from the Conventional Munitions and Fuze Division and is product (munitions family) oriented.

(U) A PM Field Office was established at Huntsville. This office consisted of one liaison officer with secretarial support. The element was established to provide on-site interface for reviewing and coordinating the projects being developed and executed by the CE in support of the PM.

(U) The Joint Mission Planning Office was redesignated as the Joint Services and Analysis Office. Change in the title was required to more accurately reflect the assigned mission of the element. The special studies function was assigned to the group which was to become the nucleus of the ITO. Staffing and work load related to the industry/technology program precluded their accomplishing the special study mission and forced the assignment of this effort throughout the organization on an ad hoc basis.

PROJECT MANAGER
for
MUNITIONS PRODUCTION BASE MODERNIZATION AND EXPANSION



(U) Personnel. Actual strength at the beginning of the fiscal year was 183 (14 military and 169 civilian). Military strength rose to a high of 17 at the end of the year. Civilian strength fluctuated between a low of 164 and a year ending high of 175. Combined military and civilian strength at the close of the fiscal year was 192.

(U) While the actual civilian strength increased from 169 to 175 during the year there was a turnover of 23 civilian positions during that period.

Joint Services and Analysis

(U) Single Management of Conventional Ammunition (Phase I). On 31 October 1977, Phase I of the SM for Conventional Ammunition was implemented. As a result of this implementation, the level of effort required by the JSAO in fulfilling its SM support role was increased significantly especially in setting policies and procedures among PM/SM and the Services. The JSAO has coordinated visits and briefings by PM briefings by PM personnel, including those of the PM GEN Egbert and Assistant PM, COL Polson, to the development centers of the services. In this regard, JSAO developed a briefing entitled "Bridging the Gap" which was provided by BG Egbert to the Navy at NAVSEA, Crystal City and to the Air Force Armament Development and Test Command, Eglin AFB, Florida. These briefings were well received and stressed the role of the PMO in the front part of the cycle; i.e., in Services R&D programs, to permit a smooth transition of facilities and product from the Services to the SM. The JSAO also established and implemented the Modernization Project Officer (MPO) concept within the PM to carry out coordination of discrete projects identified for transition. To assure the earliest possible PM involvement in the Services' life cycle development process, the JSAO, at the end of the report period, was in the midst of developing a systematic method for

gathering long range/short range data from the services relating to their projects and their production/facilities/manufacturing technology impact.

(U) Army Ammunition Plan. During January 1978, the Army's Deputy Chief of Staff for Research, Development and Acquisition established the Army Ammunition Plan Task Force. The group's task was to develop the first of a kind Army Ammunition Plan as well as an Army Ammunition Management System Description. Updated twice a year, the Army Ammunition Plan was to serve as the primary summary planning document used by HQDA to support the Program Objectives Memorandum (POM). After an intensive effort, requiring nearly seven weeks of duty at the Pentagon, a draft Army Ammunition Plan was published in April 1978. The JSAO expected that the almost continuous updating of the Army Ammunition Plan would represent a major future mission activity of the PM.

(U) Sustainability Study. Starting during early February 1978, and then again in July and August, several data calls were initiated by DOD (OASD-MRAL and OUSDRE) to obtain production base data in support of Phase I and Phase II of the DOD Sustainability Study. Support to these data calls, as well as intensive reviews as to how the data would be used, represented a major joint ARRCOM/PM effort throughout the year. The Sustainability Study was considered one of the most important studies DOD conducted in recent years. It was concerned with across-the-board weapons materiel acquisition and manpower support strategy based on the postulated demand for personnel and material in future conflicts of various duration. Since the production base played an important part in equipping the Services for both short and long wars and in providing sustaining support during longer conflicts, policies relating to base sizing, retention and modernization would be a prime output of the study which was scheduled for completion in January 1979. The JSAO coordinated all PM efforts and data input and support to the sustainability effort. This involved frequent contact with OASD-MRAL, Institute for Defense Analyses, ARRCOM, and other DA/DOD personnel.

(U) Rationalization, Standardization and Interoperability (RSI). During March 1978, DA published a draft RSI Management Plan which signalled the beginning of a period of intensive PBM effort in the formulation of RSI policies and initiatives, provision of PBM RSI resource requirements to DARCOM, and effort to further crystallize thought concerning the role of PBM in the RSI process. The JSAO served as the RSI focal point for PBM.

(U) This entailed coordination of RSI information within the PMO to develop an awareness of the program. Notable events in this process were the conduct of two RSI team meetings involving representatives from all PM areas and the showing of the film "NATO RSI - Price of Peace" by JSAO to all PBM personnel. In addition, JSAO conveyed the message of the PBM's RSI role to higher levels with the preparation and presentation of a briefing to the DARCOM sponsored RSI Accomplishments Conference in September 1978. This briefing, given to high level DARCOM/DA personnel, highlighted PBM's active role in RSI related activities past, present and future, especially in the area of technology transfer. At the end of the reporting period, JSAO also provided comments to DA for a major RSI effort entitled "Ammunition RSI Sustainability Initiatives." Acceptance of these consolidated ammunition initiatives by higher DOD levels and other departments of the US Government would result in a substantial ammunition RSI work load at the command and PBM levels.

(U) MOBEX 78. Beginning in late summer, the PBM Mobilization Officer, CPT Howard Lane, commenced preparation for MOBEX 78 (nickname, Nifty Nugget) to be conducted early in FY 1979. This worldwide exercise was expected to yield a significant amount of information concerning the readiness of the US in various emergency situations. It was also expected that the results could have a wide ranging impact on US defense policy relating to the production base and other ammunition areas. PBM preparation consisted of the following actions:

(U) a. Formalization of PBM mobilization activities as a part of the ARRADCOM War Emergency Plan.

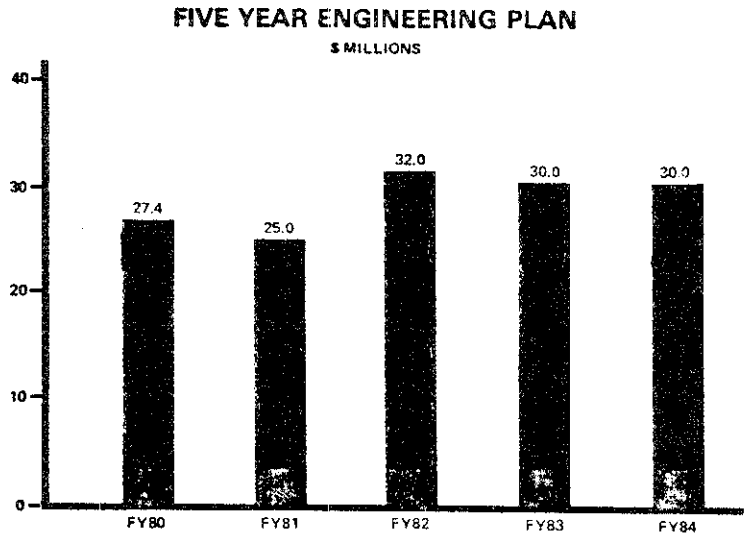
(U) b. Briefings by PBM Mobilization Officer to PBM key personnel regarding participation in MOBEX 78.

(U) c. Identification of personnel throughout PBM to work with the PBM Mobilization Officer as an Emergency Action Staff.

(U) d. Participation by PBM Mobilization Officer representing PBM in ARRADCOM War Emergency Planning conferences.

(U) Joint Conventional Ammunition Program (JCAP). This office had primary responsibility and served as focal point within the PMO for JCAP activities as they related to the M&E Program. During the reporting period, JSAO supported JCAP by participating in development of JOPP's associated with transitioning of conventional ammunition items from the services to the SM, as well as providing aid in developing the MPBME input to the Industrial Preparedness Planning JOPP. MPBME participation in the above JOPP formulation consisted of on-site meetings and reviews of these JOPP's at ARRCOM and at other service locations.

(U) Manufacturing Technology. The Figure below shows the requirements for MMT effort as of 30 September 1978. The funding profile was based on work load projected for MPBME facilities Modernization and Expansion Plan. The program is somewhat reduced as compared to that of FY 1977.



(U) The manufacturing technology effort was the prime driver for our facilities program, developed our advanced processes, reduced production unit cost, enhanced readiness and often reduced capital investment in facilities. An example of a successful, application oriented technology program was the Munitions Technology Program. It was considered critical to the success of our modernization program.

(U) 1978 Modernization and Expansion Plan.[12] During FY 1978 major changes occurred in the facilities planning area both in direction and methodology. Stress now was placed upon the next five years of planning with stratification of funding into Decrement, Base and Enhanced Cases.

(U) Each year had a Base Case designed to meet planned procurement, buy out 90-day AAO, and producing five NATO interoperability rounds. Trimming off the lower priority projects gave the Decrement Case, actually a funding reduction to the Base Case.

(U) For the Enhanced Case, the funding was much higher to allow for a base sized to the 180-day AAO and the MOB rate, Alternate II.

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[12]Modernization and Expansion Plan, Feb 78.

Thus, the stratification of the M&E Plan produced a minimum sizing of facilities in the Base Case by concentrating on IPF for new items, small expansions to meet planned procurement or the 90-day AAO level, and a balanced group of facilities to produce NATO interoperable rounds (RAP, ICM, and tank). Higher levels were achieved in the Enhanced Case by expanding to the 180 day AAO and MOB levels in the most important areas after the Base Case facilities were sufficiently underway.

(U) Major changes in requirements caused the shelfing of RDX and 105mm XM710 planning. New direction compressed the FY 80, 81, 82 Mississippi project into FY 1980 and 1981.

(U) The Five-Year Funding Plan at the end of the fiscal year is shown below. A comparison of the DA POM and the finally approved DOD Program Decision Memorandum denotes a sizable decrease of $436.4 million in the overall facilities plan. This decrease was significantly attributed to a change in DOD policy which limited facilitization to that required to support approved procurement. The deletions included the M509 and Center Core Propellant Charge projects in support of NATO interoperability and program deletions for the XM795 and XM711.

FIVE YEAR FACILITIES PLAN
Program Year Dollars, $ Millions

	FY 80	FY 81	FY 82	FY 83	FY 84	TOTAL
DA POM	293,1	305.6	273.3	286.2	316.9	1475.1
DOD PDM	302.3	285.8	103.3	190.2	157.1	1038.7

(U) The FY 1978 Program at the end of the fiscal year was comprised of 37 facility projects (released) valued at $288,829,000, and 51 MMT projects (released) $24,340,000, or a total of $313,169,000.

(U) At the end of the fiscal year 93.5 percent of the FY 1978 Program was obligated and 71.1 percent awarded. The break out was as follows:

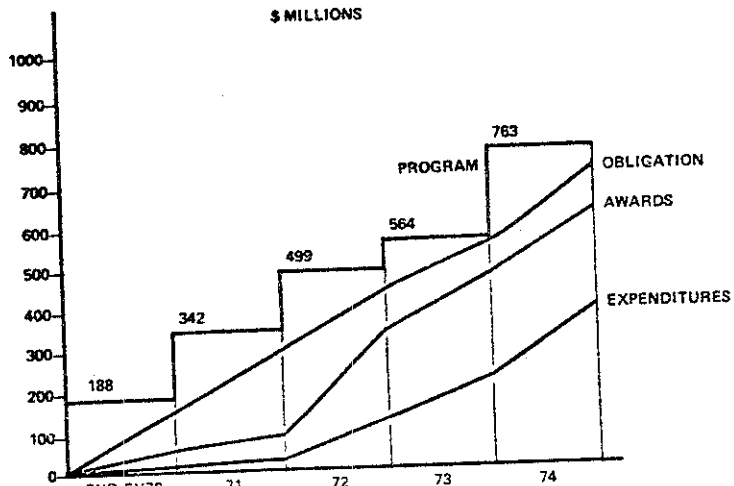
	OBLIGATIONS	AWARDS
MMT	$ 23,409,000	$ 23,409,000
FACILITIES	269,631,000	199,400,000
TOTAL	293,040,000	222,809,000

(U) Total obligations and awards accomplished during the fiscal year (FY 78 Program and Prior years carry-over) were as follows:

	RELEASED PROGRAM	OBLIGATIONS	AWARDS
MMT	$ 25,852,000	$ 29,569,000	$ 29,569,000
FACILITIES	293,423,000	306,082,000	286,236,000
TOTAL	319,275,000	335,651,000	315,805,000

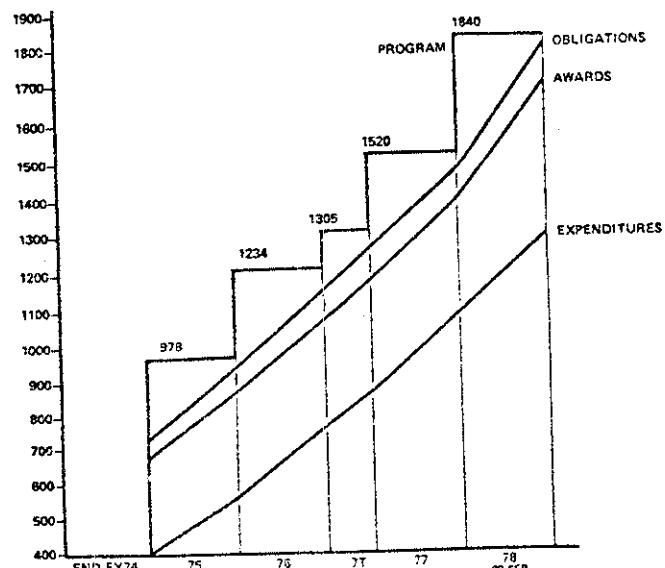
(U) Program performance for FY 1970-78 is shown below.

FY70 - FY74 PROGRAM PERFORMANCE



TYPE OF ACTION	END FY70 30 JUN	71 30 JUN	72 30 JUN	73 30 JUN	74 30 JUN
PROGRAM	188.5	341.8	498.9	564.1	762.8
OBLIGATIONS	178.9	315.0	479.1	555.8	721.3
AWARDS	70.0	95.1	363.9	499.4	667.1
EXPENDITURES	2.0	26.6	144.5	224.2	414.4

FY74 - 78 PROGRAM PERFORMANCE



TYPE OF ACTION	END FY74 30 JUN	75 30 JUN	76 30 JUN	77T 30 SEP	77 30 SEP	78 30 SEP
PROGRAM	762.8	977.5	1234.0	1304.7	1520.3	1839.6
OBLIGATIONS	721.3	956.4	1172.3	1253.6	1466.2	1801.8
AWARDS	667.1	897.7	1097.3	1176.3	1398.8	1714.6
EXPENDITURES	414.4	564.1	759.7	819.7	1040.0	1281.5

(U) The following charts show program summaries.

MM&TE SUMMARY

$MILLIONS

FY	ARRADCOM (PA)		ARRADCOM (FA)		ARRADCOM (EA)		ARRADCOM (HDL)		TOTAL		TOTAL	
	NO. OF PROJ	$	NO. OF PROJ	$	NO. OF PROJ	$	NO. OF PROJ	$	NO. OF PROJ	$	NO. OF PROJ COMP	$
70	15	3.9	5	3.3	2	8.3	0	0	22	15.5	22	15.5
71	22	9.3	5	4.2	2	2.9	0	0	29	16.4	29	16.4
72	17	14.5	7	6.1	1	.4	0	0	25	21.0	24	20.3
73	38	25.6	14	7.2	6	1.8	1	.3	59	34.9	55	23.2
74	43	24.8	20	9.8	4	2.5	3	.6	70	37.7	53	17.3
75	30	21.4	13	8.6	5	5.4	3	.6	51	36.0	32	15.2
76	36	23.0	16	8.0	5	4.3	4	.9	61	36.2	17	4.9
7T	16	4.7	1	1.3	2	.4	2	.1	21	6.5	7	1.1
77	31	16.8	11	7.5	3	1.1	3	.8	48	26.2	2	.3
78	35	17.8	12	4.9	2	.8	2	.8	51	24.3	0	0
79	35	22.5	12	3.9	3	.7	3	.8	53	27.9	0	0
TOTAL	318	184.3	116	64.8	35	28.6	21	4.9	490	282.6	241	114.2

FACILITIES SUMMARY

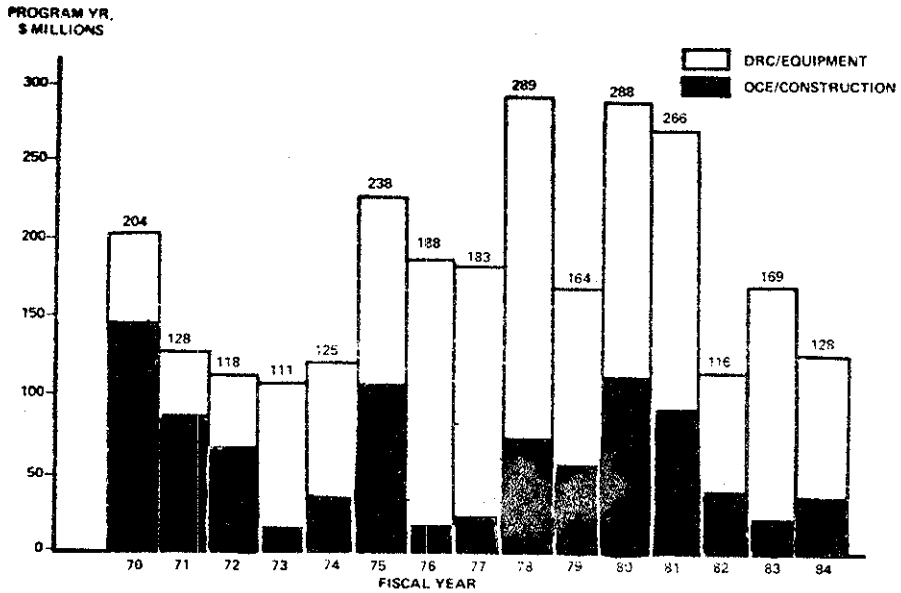
$MILLIONS

FY	NUMBER OF PROJECTS	SPT	IPT & SP	MOD	TOTAL*	RELEASED	OBLIGATED	AWARDED	EXPENDED
70	51	1.7	1.0	201.4	204.1	204.1	204.1	204.1	203.0
71	27	5.1	2.2	120.5	127.8	127.8	127.8	127.8	123.8
72	31	3.8	1.0	113.2	118.0	118.0	118.0	117.6	115.0
73	35	9.3	9.6	92.3	111.2	111.2	111.2	110.7	103.3
74	32	8.6	91.2	25.8	125.6	125.6	122.4	122.4	114.3
75	28	7.4	107.1	123.4	237.9	237.9	236.5	234.8	181.0
76	39	3.7	72.7	56.1	132.5	132.5	131.8	131.3	113.7
7T	11	5.5	6.0	44.6	56.1	56.1	56.0	51.0	24.4
77	23	0	111.9	70.9	182.8	182.8	170.8	161.9	59.6
78	37	6.3	208.0	74.6	288.9	288.9	269.6	199.4	28.1
79	18	10.6	134.4	33.5	178.5**	0	0	0	0
80-84**	54	12.7	784.0	242.0	1038.7	0	0	0	0
TOTAL	386	74.7	1529.1	1198.3	2802.1	1584.9	1548.2	1461.0	1066.2

* EXCLUDES COE OMNIBUS
** INCLUDES COE OMNIBUS

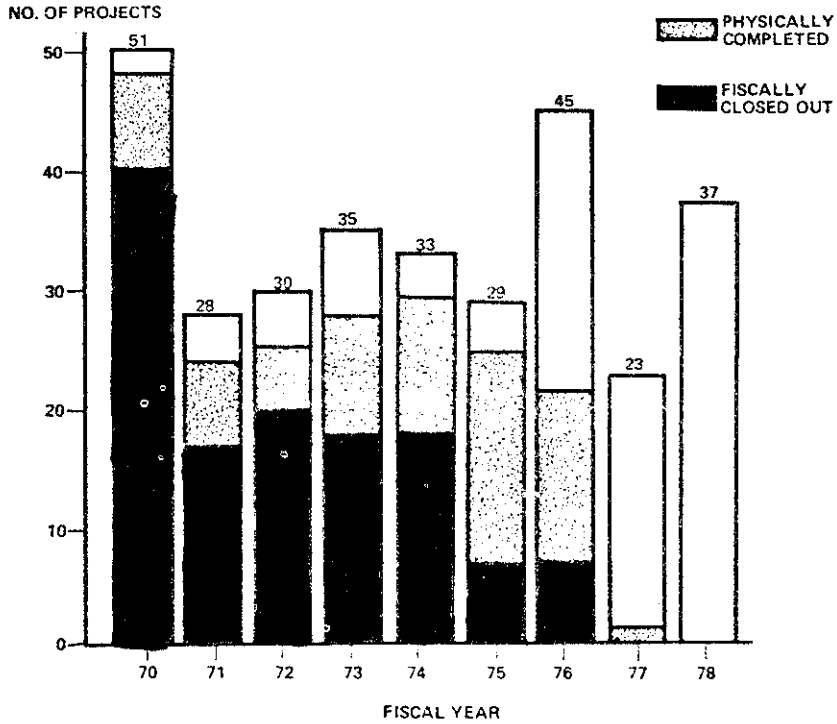
(U) Program Overview. During late FY 1978 a new look was taken at program performance. The Figure below depicts the relationship of funding level categorized by equipment (DRC) and construction (CE). The early program was construction intensive until FY 1973-75. After a significant reduction in FY 1976-78, current, budget and program years again showed an increase as the IPF phase of the program continued to grow. Construction funding averaged 35 percent in the M&E Program.

M&E PROGRAM, FY70-84
COMPARISON BY CATEGORY; DRC, OCE

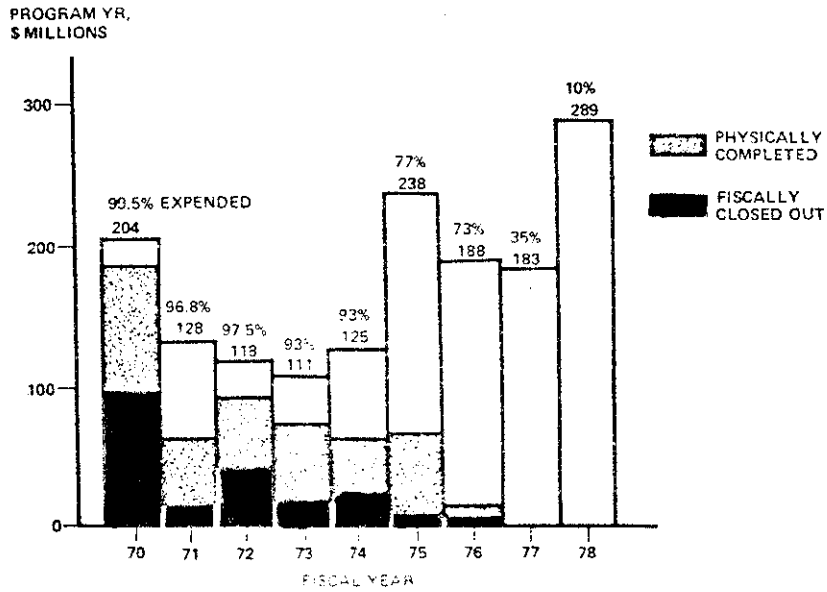


The status of project completions was looked at in two ways, by number of projects and by dollar value (program year dollars). The first Figure below shows a picture of the FY1970-78 project completion status by number of projects. As an example, there were 51 projects in FY 1970. As shown on the chart approximately 40 were fiscally closed out while almost 50 were physically completed. The next Figure shows project completion status by dollar value again, using FY 1970 as an example. The program value for FY 1970 was $204 million. Fiscally closed out projects amounted to nearly $100 million while the value of those projects physically closed out amounted to nearly $200 million.

M&E PROGRAM PERFORMANCE FY70-78
PROJECT COMPLETION STATUS

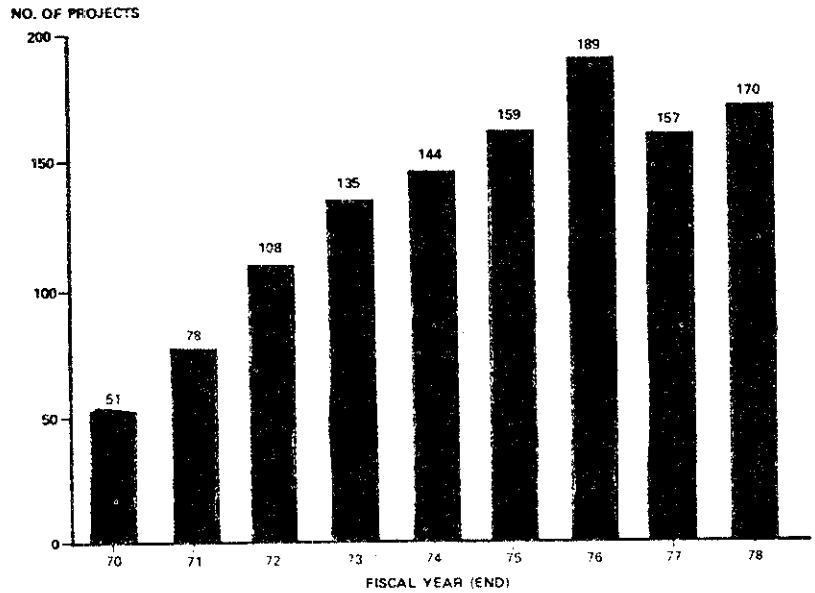


M&E PROGRAM PERFORMANCE, FY70-78
PROJECT COMPLETION STATUS

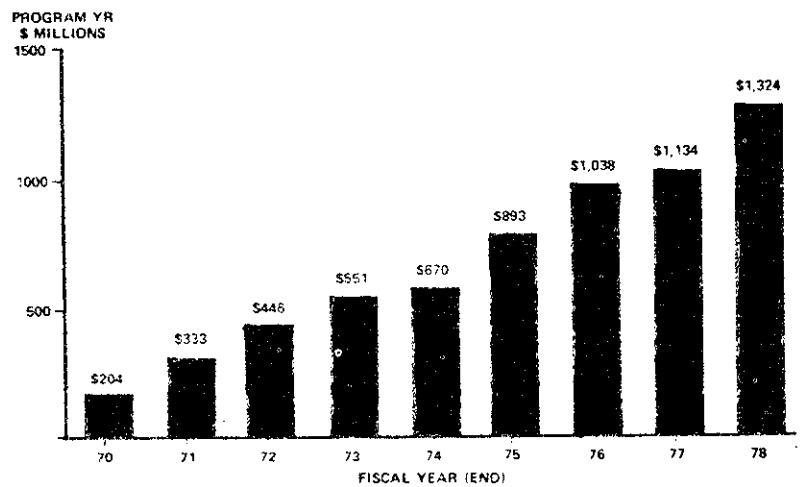


Examining the total number of active projects managed yearly from FY 1970-78 shows clearly that the M&E Program continued to grow. In addition to the 170 active projects at the close of the fiscal year, the FY 1979 program added another 16 projects for a total of 186 projects to be managed during FY 1979.

M&E PROGRAM PERFORMANCE, FY70-78
ACTIVE PROJECTS

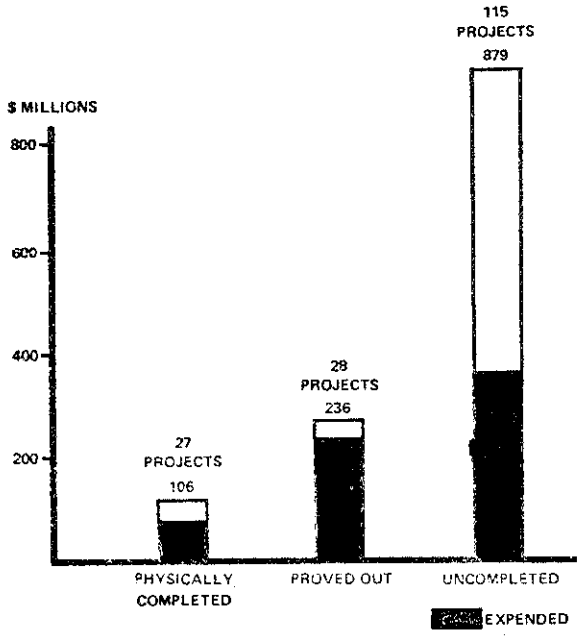


M&E PROGRAM PERFORMANCE, FY70-78
VALUE OF PROGRAM, ACTIVE PROJECTS



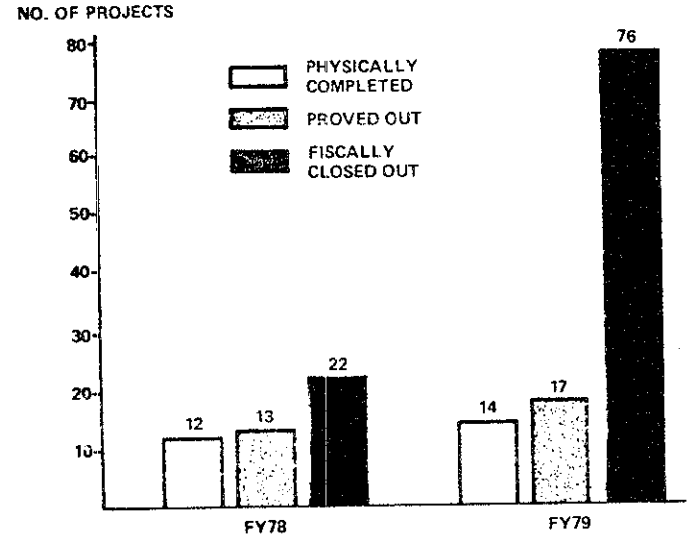
The preceding Figure expressed in program year dollars the total annual program for active projects. The same growth pattern in the program was apparent. On the last day of FY 1978 the total dollar value of the program managed was $1.2 billion, the highest in the Project's history.

M&E PROGRAM PERFORMANCE
STATUS OF ACTIVE PROJECTS



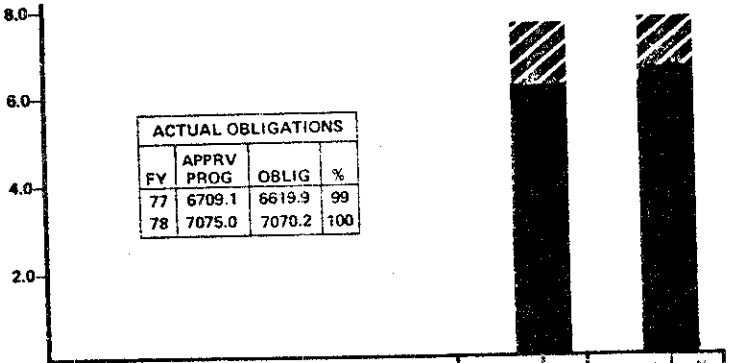
Twenty-seven of the 170 active projects were physically completed at the end of the fiscal year. These projects represented a dollar value of $106 million. Twenty-eight additional projects were both physically completed and proved out, at a total cost of $236 million. The remaining 115 projects that were not completed represented a program value of $879 million. The Figure below shows project achievements for FY 1978 and the forecast for FY 1979. During FY 1978 12 projects were physically completed, 13 projects were proved out and 22 projects were fiscally closed out. The plan for FY 1979 showed 14 projects that were to be physically completed, 17 that were to be proved out and 76 that were to be fiscally closed out.

M&E PROGRAM PERFORMANCE
PROJECT ACHIEVEMENTS FY78/FORECAST FY79



(U) O&MA Program. The internal operating budget of PBM was supported solely through O&MA funding. A profile of the O&MA program indicating actual data for FY 1977 and 1978 is shown below.

INTERNAL OPERATING BUDGET—O&MA



ACTUAL OBLIGATIONS			
FY	APPRV PROG	OBLIG	%
77	6709.1	6619.9	99
78	7075.0	7070.2	100

DATA DESCRIPTION	FY1977	%	FY1978	%
APPROVED PROGRAM (1st QTR - INITIAL)	$6200.0	92	$6588.0	93
INCR TO INITIAL APPROVAL	509.1	8	487.0	7
APPROVED PROGRAM (4th QTR - FINAL)	6709.1	100	7075.0	100
PROJECTED REQUIREMENTS	7075.0		7840.7	
% REQ'S MET BY APPROVED PROGRAM (FINAL)	87%		90%	
PERSONNEL END STRENGTH	169		175	

(U) Actual obligations against the approved program for each fiscal year are summarized as follows:

Budget Activity	FY 77 Obligations	FY 78 Obligations
Salary & Wage	$4,242,000	$4,369,400
Personnel Benefits	392,400	429,000
Host/Tenant Agreement	992,200	1,235,000
Other	993,300	1,036,800
Total O&MA Program	$6,619,900	$7,070,200
Other - Delineated		
Transportation of Things	$ 4,700	$ 7,800
Supplies & Materials	6,400	8,700
Contractual Services	19,600	500
Training	38,200	34,100
Equipment Maintenance	1,300	300
Equipment Buy	49,900	7,500
Equipment Rental	65,500	36,300
Travel	386,000	509,100
AIF Purchased Services	421,700	432,500
Total Other	$993,300	$1,036,800
AIF Purchased Services - Delineated		
Communications	$ 17,700	$ 21,700
Shared Time Computer	77,600	80,000
Facilities Services	27,000	12,600
Graphic Arts Services	299,400	271,600
Tech Data/Config Mgmt Svcs		46,600
Total AIF Purchased Svcs	$421,700	$432,500
Distribution of Budget Program		
AIF	$1,413,900	$1,667,000
NAIF	5,206,000	5,403,200
	$6,619,900	$7,070,200

(U) Year-End Certification of O&MA Fund Balances. DARCOM-R 37-2, 31 July 1978, Entitled: Reconciliation and Year-End Certification Procedures, specifically precluded a Product/Project Manager from delegating authority to the servicing comptroller for year-end certification of fund balances.

(U) Certification of fund balances at year-end FY 1978 became a problem because under the guidance of the regulation the PM was compelled to attend signings at ARRCOM and ARRADCOM on the same day and virtually at the same hours. Because of this wide geographic separation between the PM and his servicing comptrollers, this office obtained a waiver from the above provision for the FY 1978 reports.

(U) A permanent solution to this problem was being sought, through requesting DARCOM to eliminate this restriction from the regulation. PM's would then be allowed the opportunity to delegate authority for the year-end certification of fund balances.

(U) Omnibus Engineering Program. Omnibus engineering funds were provided to plants/other government agencies; i.e., HDL, ARRADCOM, US Navy facilities, and commercial plants, to accomplish preliminary work for future year projects prior to approval and availability of project funds.

(U) The Uniform Cost Accounting and Reporting System. UCARS was designed for the purpose of enabling valid comparisons between unit production costs at the various GOCO plants. Initially implemented at the Kansas AAP in October 1976, it was soon discovered that UCARS increased the total cost of nonproduction activities, particularly those which were labor intensive, such as MMT and layaway projects. In theory, this shift in costs should have had no impact since the total cost to the plant remained the same. In actuality, however, there was no known way to trade off production for nonproduction dollars unless they were "same year" dollars and the need for additional funds was recognized before the production dollars are exhausted.

(U) Since the impact on PBM was relatively modest at Kansas AAP (approximately $50,000), the potential magnitude of the problem was not fully recognized until UCARS was implemented at Radford and Milan AAP's (Jan 77), Holston AAP (Apr 77) and Indiana AAP (Jul 77). Although precise data were not available, there were indications that the cost growths on nonproduction orders ranged from 10 to 15 percent. UCARS applied to all on-going orders as of the date of implementation. Accordingly, almost automatic cost overruns could be anticipated until FY 1980, the first year for which apportionment P-15's, 16's and 17's were to be costed on the basis of UCARS.

(U) During FY 1978 Lake City AAP was validated (Jul 78). As was true at plants previously converted to the new accounting system, the overhead rate increased considerably on nonproduction orders.

(U) Erosion of project dollars was further exacerbated by interpreting CAS in a manner which made no distinction between production and nonproduction sales orders for purposes of distributing indirect expenses. There were strong indications that new guidelines were to be furnished during the second quarter of FY 1979 which was to redress the inequitable distribution of overhead between production and selected nonproduction orders.

Technical Support

(U) Fuze Group. At the end of FY 1978, a ten-year history of the fuze program showing the funding by project type and fiscal year was prepared by the Fuze Group of Technical Support Division. This historical summary is shown below:

FUZE PROGRAM SUMMARY

Units: $ millions

Type Project	Qty Projects	Released	Awarded	Expended	Status Active	Status Completed
Omnibus	7	.6303	.6303	.5071	3	4
Prove Out	2	.769	.769	.1424	2	0
Support	3	7.170	7.170	7.113	1	2
Mod	7	8.086	8.086	7.006	4	3
IPF	7	50.487	26.990	10.895	7	0
Expansion	9	47.765	27.686	4.446	6	3
MMT	56	15.266	13.351	11.540	19	37
TOTALS	91	130.173	84.682	41.650	42	49
FY						
68	2	.9235	.9235	.9235	0	2
69	1	.915	.915	.915	0	1
70	5	1.3401	1.3401	1.3401	0	5
71	4	2.631	2.631	2.627	0	4
72	2	7.937	7.937	7.937	0	2
73	5	1.356	1.356	1.297	1	4
74	17	3.343	3.343	3.3328	2	15
75	11	3.858	3.858	3.714	3	8
76	14	14.1978	14.1978	12.625	10	4
7T	5	11.725	11.621	3.448	3	2
77	9	19.7485	17.524	2.886	8	1
78	8	21.263	19.036	.605	7	1
79	8	40.935	0	0	8	0
	91	130.173	84.682	41.650	42	49

Load, Assemble and Pack (LAP)

(U) IPF, LAP, 155mm, XM795 - Louisiana AAP. Initial efforts at developing an Initial Production Facility (IPF) for the XM795 were conducted under Project 582X036 which initiated investigation of the conversion of the 105mm melt pour facility at Lone Star. In addition, Project 5812677 at Iowa originally included the capability to LAP

the XM795 along with the two RAP rounds: 155mm M549 and 8 Inch XM650. The LAP of the XM795 at Iowa was then considered as a separate proposal.

(U) Project 5800036 was initiated in June 1978 to establish an IPF for the XM795 with provisions made to include future conversion capability for production of the 155mm M549 and M107 and the 8 inch XM650, XM711, and M106.

(U) A site selection meeting was held at ARRCOM on 10-11 July 1978 to consider the Louisiana and Iowa proposals. A final site selection briefing was presented to General Harper on 18 August 1978 at which time Louisiana AAP was chosen as the site of the IPF.

(U) Prior to selection, considerable work was done by Louisiana. On-site reviews were held at Louisiana on 10-11 July and 1-2 August. The Project Development Brochure (PDB-1) was completed on 7 August and baselined on 14 September 1978. The site safety plan was submitted on 10 August. The P-15 was tendered by ARRADCOM on 16 August and PBM requested a design directive on 13 September.

(U) A message was received from DA on 7 September stating that funds for the facilities and procurement of the XM795 had been deleted from the POM 80-84. However, it was requested that design of the IPF be continued in the event the Army was successful in establishing a requirement for the round. As a result, the project was slipped to FY 1981.

(U) Expansion Loading of 60mm XM720 and 81mm M374A3 (Melt Pour). - Milan AAP. During the past year, execution of this project began. Funds were released from DARCOM in January 1978 and obligated to Milan AAP in March 1978.

(U) The Corps of Engineers (CE) received funds in March 1978. The CE contract bids were opened 1 June 1978, and the contract award was made on 12 June 1978 to Hardaway Construction Company of Nashville, Tennessee.

(U) The CE contract cost was $6,089,000, resulting in a Construction Work Estimate (CWE) of $6,853,778. ARRCOM received the difference between the original CWE of $8,522,000 and $6,853,778. Of these returned funds $430,000 was added to the Martin-Marietta scope at Milan AAP to provide for three pieces of equipment which had been deleted from the DARCOM SOW because of a shortage of funds in the DARCOM portion of the project. Another $1,300 remained at ARRCOM for the cost of shipping 8,500 60mm rounds to Milan from Riverbank to

support the acquisition of equipment. The remaining funds at ARRCOM were to be used to support other FY 1978 projects requiring additional funds. At the end of this fiscal year, CWE was $6.8 million and the DARCOM funds were $7.2 million.

(U) ARRADCOM conducted tests to support their concept design of the 36 nozzle pouring machines to support Project 5782709. It was envisioned that there would be 2-36 projectile pours with the 72 round pallet indexing twice under the pouring machine. The tests conducted indicated that the explosive level in the projectiles could be held, but that the rate of loading 44 rounds/minute could not be attained (thus 44 rounds/minute was the requirement for an expandable line to 924,000/month (462,000 x 2)). In order to attain the 44 rounds/minute rate, ARRADCOM proposed pressurization of the pouring machine. Tests of the pressurized pouring machine (with Milan AAP observers) were delayed because of problems with the pilot plant at ARRADCOM. It was expected that the tests were to be completed early in 1979.

(U) Execution of Project 5782709 was to continue through the next year with prove-out scheduled for April 1980.

(U) MMT Automated Inspection Device for Explosive Cast in Shell (AIDECS) - AMMRC/ARRADCOM. Funding was obtained in FY 1978 for the MMT effort for the development of the prototype AIDECS machine for the determination of defects in the 155mm M549 RAP projectile. The placement of the contract was delayed because of difficulties in the development of the engineering model. It was anticipated that a contract would be issued the next year.

(U) Work continued on the engineering model for the 105mm round defect detection. Financial problems were encountered; however, through the efforts of AMMRC and PBM, they were resolved. The contractor encountered difficulties with the manufacture of the concentric cones for the collimator, but these were resolved and the collimator was being assembled.

(U) It was expected that the contract for the inspection device for the M549 would be issued in the next year, the engineering model completely assembled, tested, and shipped to ARRADCOM for testing with high explosive (HE) projectiles.

(U) MMT Automatic X-Ray Inspection System Axis - ARRADCOM. During the past year work continued on the feasibility model to automatically read and interpret x-ray film for the purpose of detecting defects in the explosive casts in shell. The program has been

redirected to tank rounds with its use intended for the Milan central X-ray facility. A contract has been issued to Lockheed, the contractor who worked on the feasibility model, to develop a production prototype.

(U) MMT Application of Radar to Ballistic Acceptance Testing - ARRADCOM. This project provided for the development of a radar system especially designed for the ballistic acceptance testing of ammunition. The end result was to be a tested prototype system including radar, data collection and transmission equipment, and data handling computers. This project was the link between the modernization of the ammunition plants and the testing of the ammunition produced by these modernized plants.

(U) The project was initiated in FY 1970 and was continuing through FY 1978. Additional funds were provided in FY 1976, FY 1977, and FY 1978. It was hoped that the additional funds in FY 1978 would complete the effort. However, though the system units were completed, problems were encountered in the checkout and debug of the system so that its shipment to the proving ground was delayed. It was expected that additional funds were to be required to cover additional contractor and proving ground costs.

(U) It was believed that by the next report period, the ARBAT prototype system should be shipped to the proving ground, acceptance testing completed, and the project completed.

(U) Surface Launched Unit Fuel Air Explosive (SLUFAE) LAP Facility IPF - Hawthorne AAP. In March 1976, this office assumed responsibility for provision of a SLUFAE production facility. The SLUFAE was a rocket propelled mine field neutralizing round, and it offered a standoff capability for clearing mine fields. The round was under development by the Naval Weapons Center at China Lake and was funded through MERADCOM. Type Classification for the round was scheduled for first quarter FY 1980.

(U) The draft Equipment TDP submitted by the Naval Ammunition Production Engineering Center (NAVAMPROENGCEN) in December 1977 required extensive revisions due to equipment changes and redesign of the production line layout to comply with DARCOM safety requirements.

(U) In April 1978, Hawthorne AAP and Naval Weapons Center, China Lake, commenced design revision to the draft TDP and preparation of the Final Safety Submission. The MCA project design for site renovation in support of this project was completed by the Architect/Engineer (AE), and would require criteria changes as a result of the line layout redesign, prior to revision of the final design package.

(U) The Final Safety Review Submission was presented by Hawthorne AAP in May 1978 to ARRCOM for review and final approval. A substantial lead time for approval was expected, as the safety submission had to be forwarded through safety channels to the DOD Explosive Safety Review Board (DDESB) for final approval.

(U) In August 1978, approval of the Final Safety Submission was received from DDESB, conditional on incorporation of minor comments into the facility plan. During the end of August, a meeting was held among the Sacramento Office of the CE, the Architect/Engineer, Hawthorne AAP, ARRCOM, and this office, to present criteria and line layout changes to the Architect/Engineer for incorporation into the MCA project final design. The completed revision was expected within 60 days.

(U) MMT Modernization of Press Loading for Navy Projectiles. This project, originally submitted as a joint ARRADCOM/Navy effort, was resubmitted by the Navy in the latter part of FY 1977 after it was determined that the Army could not support their requirement for the project. In November 1977, the project was submitted as a late start FY 1978 project, but was deferred pending review of the entire late start program.

(U) During May 1978, the project was approved for late start funding. The project was to require approximately 20 months to complete following project funding.

(U) In July 1978, project funding was received by the Naval Ammunition Production Engineering Center (NAVAMPROENGCEN). The prototype design commenced immediately and was expected to be completed by November 1978, after which bids were to be solicited from private industry to fabricate the prototype equipment.

(U) MOD Utilities Water Distribution - Ravenna AAP. This project is approximately 95 percent complete. However, a delay was encountered in the physical completion of the project. Specifically, a slope failure occurred in the backfill area between the pump structure and intake crib. There was extensive settlement and movement of the material of the original backfill on the downhill side of the pump station in the direction of the intake structure. The contractor was directed to take corrective action in stabilizing the slope and to insure integrity at the pump structure. Physical completion of this project was expected by April 1979.

(U) MMT Development of Automated Equipment for LAP of 60mm/81mm Ignition Cartridges. The scope of work SOW for this effort would, upon completion, provide six equipment modules capable of automatically

loading and assembling 81mm mortar ignition cartridges. In addition, the project would provide a final design package for the tooling required to convert to the manufacture of the 60mm ignition cartridge.

(U) The designs for modules 2 and 3 were completed and FMC was projecting that design of all modules would be completed by February 1979.

(U) Financial reports from FMC indicated that a significant portion of the funds on contract were being expended in the design phase, and that a cost growth on the project was imminent. A reduction in the SOW for this project was a credible course of action to limit funding expenditures to the amount currently on contract. This action would impact Project 5803602, IPF - LAP 60mm/81mm Ignition Cartridges.

(U) MMT Continuous Automated Post Cyclic Conditioning Facility for Large Caliber Composition B Loaded Projectiles. The purpose of this single year effort was to develop controlled cooling procedures for TNT loaded and Comp B loaded 155mm, M549/XM795 and 8 Inch, XM650 projectiles. Also, this procedure would produce optimum cast quality and tightness, enhancing the effectiveness of subsequent heat treatment (cyclic conditioning) processes. The data generated was being utilized as a basis for production processes to be utilized in facility projects for these rounds at Iowa and Louisiana AAP's.

(U) Preliminary cooling process data for TNT-loaded M549, XM795 and XM650 Projectiles was established and was being utilized in the design of production facilities. It was demonstrated that nearly acceptable casts could be obtained using controlled MPTS preheat, explosive loading and projectile water-bath cooling procedures, without the use of heated probes normally required to TNT loading. A probe unit was being fabricated and a confirmatory series of tests conducted to verify cooling process parameters required for defect-free explosive casts.

(U) MMT Automated Pilot Line for Controlled Cooling and Processing of HE Loaded Projectiles. This continuing project (FY 74-FY 79) expanded existing melt-pour pilot plant facilities at ARRADCOM to include projectile processing work stations, a controlled cooling system and a material handling system for continuous processing of medium and large caliber projectiles under the control of a programmable logic controller. The controlled cooling system provided air and water cooling capability, explosive riser heating, variable speed processing, and automated control of air temperature, air flow rate, water temperature and water level. The facilities were to be used to establish process criteria for the modernization and expansion of large scale loading lines.

(U) During the report period, the construction effort was completed followed by installation and testing of the process equipment and controls. Construction was not completed as originally scheduled and the resulting facility had deficiencies which remained to be corrected. The protracted project schedule and the need to correct facility deficiencies necessitated that additional funding of approximately $400,000 be provided to complete the project effort. This was to be sought as an FY 1979 late start P-16.

(U) Reactivation of the melt-pour portion of the pilot plant was delayed due to deterioration that occurred during an approximate 18 month period in which the equipment remained idle without benefit of layaway or preservation procedures. In addition, rodent damage to control cables and other control system elements was experienced and repairs were made. As a result, total system operation using explosives had not been possible and was projected to require 30 weeks from receipt of additional FY 1979 funding.

(U) 105mm Melt Pour Facility - Lone Star AAP. Construction completion slipped due to adverse weather and field changes resulting in delayed Beneficial Occupancy Date (BOD). Building availability previously forecast for January-February 1978 actually occurred in June-September 1978. The completion of equipment work was revised from June 1979 to October 1979 to accommodate the construction delay.

(U) At the request of the Lone Star AAP, the VE-funded study to reduce the size of the explosive riser was transferred to ARRADCOM for completion. The study was forecast to be completed in January 1979 but testing indicated riser size would be reduced from 2.5 pounds to as small as 1.6 pounds per round.

(U) A hardened fire protection system, capable of functioning after exposure to explosive blast, was incorporated into the project in February 1978.

(U) In June 1978, a Construction/Criteria Review Team was established to review construction for completeness and conformance to design criteria. This activity resulted in identifying relatively minor areas requiring correction by construction contract modification or by ECP.

(U) The requirement for Lone Star AAP to complete a Total System Hazards Analysis was added to the contract SOW in August 1978. Although it was originally planned that ARRADCOM would complete the Hazards Analysis as an extension of their earlier related analyses of melt-pour equipment, administrative difficulties precluded that approach.

(U) In September 1978, the Demonstration Test Specification for system prove out was approved and forwarded through ARRCOM for contract implementation.

(U) 155mm, M549 and 8 inch, XM650 LAP Facility - Iowa AAP. The purpose of this project was to establish modernized production capability at Iowa AAP to LAP the 155mm, M549 and 8 inch, XM650 RAP at rates of 67,000/mo and 9,000/mo, respectively.

(U) Based on redirection by the Deputy Project Manager in August 1977, an intensive project reconfiguration was undertaken to include only TNT loading capability using proven, cost-effective design features within a specified cost ceiling. The resulting proposal was approved by the DPM and PM in November 1977. US Army Engineer Division, Huntsville, was requested to commence A/E selection and site surveys in November 1978 and ARRCOM was to provide site selection concurrence in December 1978.

(U) The process description was prepared by ARRADCOM and baselined in February 1978. Also, construction design criteria were reviewed on-site in January and July 1978. In late August 1978, the finalized version was submitted and was to be baselined in November 1978. Concept design had been requested in September 1978.

(U) The safety site submission was approved in May 1978, but it was not until July 1978 that all aspects of the site plan were completely resolved with DARCOM Safety.

(U) To continue engineering efforts through to design completion, $296,000 in FY 1978 Omnibus funds were released in August 1978 for Iowa AAP.

(U) Equipment Functional Criteria submitted by Iowa AAP in June 1978 were reviewed on site in September 1978. An edited version was to be baselined in December 1978, but both the Functional Baseline and Criteria Baseline were to be significantly modified in January 1979 due to revised requirements for X-ray inspection of the explosive cast and rocket motor assembly.

Tank Chemical & Nonballistic Munitions

(U) Modernize Propellant Charge Bag Manufacturing - Indiana AAP. This highly successful project provided automated sewing systems to manufacture propellant bags, flash reducer bags, and igniter pads. Ancillary equipment for handling and slitting cloth was also provided. All equipment was delivered, installed and operated except a high-speed printer. This equipment failed to meet its design requirement

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and the contract for the printer was terminated in November 1977. All work in the project was completed in January 1978.

(U) Application of Solar Energy for Boiler Feedwater - Lone Star AAP. This project was to provide facilities to preheat boiler feedwater using solar energy. The scope of work included the purchase and installation of solar panels and associated piping and controls. It will be the first solar energy project to be executed at any of the AAP's.

(U) The equipment functional criteria was baselined in February 1978. This project was to be executed by Lone Star AAP, and the CE was not to perform any of the work due to the small amount of construction involved. In May 1978, Lone Star submitted a proposal to include an access road and fencing for the solar facility. It was felt that this would make the facility more attractive to any VIP's that would be visiting the plant. Due to funding limitations, the proposal was rejected by this office. The contract SOW was developed during the fourth quarter and was expected to be approved in November 1978.

(U) Central X-Ray Facility - Milan AAP (Project 5792720). This project would provide the construction of a complete facility for X-ray operations and the procurement and installation of X-ray process equipment. The construction design was completed in November 1977. At apportionment submission, the cost of the project had increased to $6.1 million, a $3.4 million increase from the pre-budget submission. This increase was due to modifications that were made to the design to satisfy safety requirements. The contract scope of work was prepared and was to be submitted to the Scope of Work Review Board in November 1978.

(U) LAP of M739 PD Fuze - Milan AAP. This project was to provide production facilities at Milan AAP to load, assemble, and pack (LAP) the M739 point detonating artillery fuze. The Technical Data Package (TDP) for the fuze required that the fuze be loaded in an environmentally controlled atmosphere.

(U) The construction final design was submitted for review in November 1977. The design review meeting was conducted in March 1978 at which time the electrical adequacy of Line E was questioned by DRCIS-RI. The analysis performed by the designer indicated that the maximum demand/diversity factors were used to determine the electrical loads. As a result an Engineering Change Proposal (ECP) was submitted to verify the electrical adequacy of Line E. It was approved and the designer was tasked to perform the analysis. The approval of

the construction design was contingent on the results of this study. Submission was expected early in FY 1979. The Equipment TDP was submitted in June 1977 and baselined in May 1978.

(U) Rehabilitate and Improve Main Heating Plant - Iowa AAP. This project was to provide for the rehabilitation of an existing heating plant. The scope of work included the improvement of equipment such as the coal handling system, burner management system, feedwater system, and the central control system. This was increased to include a topping turbine as a result of the concept design. During the design phase the CE installed a new electrostatic precipitator on the existing boiler stacks. The precipitator was tested in November 1977 and it was found that the boilers would not operate with all the new controls and pollution abatement equipment. Subsequently this office requested that a study be performed to analyze the existing boilers. This study would verify that the SOW for this project was the correct course of action or it would recommend an alternate solution. During the project reviews in December 1977 the GAO felt the request for a study indicated that the design was incomplete and recommended that the project be deferred. The results of the study indicated that the boilers had surpassed their useful life and therefore recommended that new boilers be installed. To allow sufficient time to provide for redesign, the project was deleted from the FY 1979 program and rescheduled for FY 1981.

(U) MMT - Automated M55 Detonator Production Equipment. This project was developing automated ancillary equipment to augment the quad-tooled loader. The equipment included cup inspection, detonator inspection, packaging, improved lacquer, automated lacquer application, packaging material handling, and an improved vacuum system. During FY 1978, design and fabrication of prototype equipment continued on cup inspection, automated lacquer application, and the improved vacuum system. Contracts were awarded to MRC Corporation for design and fabrication of automated detonator inspection equipment, and to Sonobond Corporation to determine the feasibility of ultrasonically sealing the M55 Detonator. Proposals were received and were being evaluated for packaging. Award was expected in February 1979. The FY 1979 effort was to continue to develop, fabricate and install automated equipment modules, and was to accomplish equipment improvements to the quad-tooled loader. This project was expected to be complete in early FY 1981.

(U) MMT - Development of Automated Process for Fabrication of Grenade Ribbon Assemblies and Prepack of M42/M46 Grenades - ARRADCOM. The purpose of this project was to design and develop a system to automatically fabricate the ribbon stiffener assemblies, and automatically transfer these assemblies to the high speed continuous

motion M42/M46 Grenade/Fuze Assembly machine being developed under Project 5772005. In addition, a second machine was to be developed to prepack the assembled grenades into a ring along with the necessary inert spacers and keys for simple layer packing of grenades into the 155mm and 8" Projectiles.

(U) The Scope of Work (SOW) and performance specifications for both machines were detailed and a contract was awarded in September 1977 to MB Associates for execution of the development of both machines during Fiscal Year 1978. A prototype for the 30 part/minute ribbon assembly machine was forecast for completion in the 1st Qtr FY 1979. This machine was to compete with a VEF machine funded to Day & Zimmermann (Lone Star) to perform the same function. The machine, with the best demonstrated capability and/or the most economical, was to be funded under an FY 1980 project effort to supplement the existing lines at Lone Star, Kansas, and Milan AAP's in the M42/M46 Grenade/Fuze Assembly operations.

(U) Under this same effort, a similar machine was being developed to produce 90ppm ribbon assemblies to marry with Project 5772005 previously discussed. This combination of machines was scheduled for prove out in late FY 1979 or early FY 1980.

(U) The second effort, under this project, was to develop a machine to prepack the grenades from the grenade/fuze assembly machines along with the necessary inert spacers and keys for both the 155mm, M483 and the 8", M509 Projectiles. This effort was forecast to be completed in 2d Qtr FY 1979 for interface prove out with the tray/untray equipment or the grenade/fuze assembly machines.

Manufacturing Methods & Technology Engineering

(U) Improved Conventional Munition. Manufacturing methods and technology engineering (MMT) work concerning improved conventional munition (ICM) production was continued. The late start MMT project approved for inertia welding of rotating bands continued to show progress. Chamberlain assembled M483 rounds and were test fired with encouraging results. A production size machine was being procured for use in a production run. Also, M509 work had begun.

(U) The MMT effort to investigate alternate materials for Area Denial Artillery Plant (ADAP) submunition potting to shorten cure time continued. New materials were tested and a good candidate selected. This material could be cured by ultra violet reducing the cure time appreciably.

(U) Three alternate processes for the M42/M46 Grenades were reviewed and evaluated. Of these, two processes were selected to

continue in the program, with additional grenades manufactured under the two processes to be procured for additional evaluation.

(U) Conventional Munition. MMT work involving hot shearing was completed successfully, and was to be employed by Louisiana AAP. Also, work on aqua quench continued. Contracts for M483 and M509 trials were signed with Chamberlain.

(U) Engineering on tank Kenetic energy (KE) ammunition penetrator cores progressed. Work was completed on tungsten core manufacturing processes and information provided to support Government preparation of a description of manufacture.

(U) In addition, work was begun on the use of taper swaging to reduce cost and scrap metal. In this vein, a study concerning the reuse of scrap tungsten alloy material was started. If successful, this was to lower the cost as well as stretch the supply of virgin tungsten.

(U) The depleted uranium (DU) penetrator MMT effort was begun in the areas of the general process (rolling/extruding) and the formation of the buttress grooves using rolling in lieu of machining.

(U) MMT effort on X-ray diffraction of shaped charge cones for determination of spin compensation frequencies continued. Basic methodology and equipment requirements were defined. Confirmation of methodology developed was in process using cones fabricated via various manufacturing methods and tolerances. Techniques developed were to enable precise inspection of spin compensation frequencies.

(U) Small Caliber. Existing cupping equipment was quite old and production of cups was inefficient; tolerances of equipment varied considerably resulting in non-uniform blanks and cups.

(U) With the advent of developing modern equipment for manufacturing of 5.56mm ball ammunition, it was also decided to similarly develop modern process/equipment for the manufacturing of cups.

(U) Two MMT programs were initiated, Project 5776200 dealt with 5.56mm Cups, while Project 5786753 dealt with 7.62mm cartridge case production equipment. The engineering data assembled from those two MMT programs was to be used for follow-on facility projects for design and fabrication of new generation cupping equipment under Project 5793002.

(U) Cannon Caliber. The final phase for completion of the high speed fuze to projectile assembly machine was initiated. All work necessary to feed components, perform assembly operations, and inspect and remove finished assemblies was to be performed and the machine installed at Lake City AAP. Contractual efforts were started to acquire equipment to charge HEI mix into 25mm rounds. While the equipment was to be tooled for 25mm ammunition, the resulting technology could be applicable to other 20-40mm rounds. An MMT contract was signed with Honeywell to investigate improved methods to manufacture the 30mm HEDP Projectile and shaped charged liner and charge the HE mix.

Modernization and Expansion

(U) M483 Facilities. The first M483 facility at Chamberlain, New Bedford, Massachusetts, had been physically completed and proven at a rate of 47.6 thousand/month over a three-month operational period. A 15 thousand/month facility, a 60 thousand/month facility, and a 120 thousand/month facility were begun at Norris Industries, Vernon, Californis, Louisiana AAP, and Mississippi AAP, respectively.

(U) M509 Facilities. The first M509 facility at Scranton AAP, rated at 20 thousand/month, was about 70 percent physically completed; some production of R&D rounds was made on equipment from the new line. A second facility at Norris Industries, Vernon, California, was underway as a result of a 1977 contract. This was to be a 30 thousand/month facility when completed.

(U) M735 APFSDS-T Round Facilities. The four contractors for this item (Chamberlain and Flinchbaugh for the projectile MPTS; Kennametal and Teledyne Sterling for the penetrator) completed a major portion of their facilities. They each produced first article samples using the new lines and were expected to complete the facility efforts shortly.

(U) M735A1/XM774 APFSDS-T Round Facilities. A contract was awarded during FY 1978 to National Lead of Albany for a production facility to produce staballoy cones. At present, equipment was being purchased and production was scheduled to start during FY 1979.

(U) Facility efforts for FY 1979 were started for a second DU APFSDS-T facility for the M735E1 and XM774 as well as long range planning/design for 120mm KE and HEAT rounds.

(U) M42/M46 Facilities. The FY 1978 procurement added one new facility and modernized the three original producers. During this

period there were seven producers with a total capability of 21 million/month when expansion projects are completed.

(U) Facilities - Private Sector - 105mm. The three phase Modernization Program at National Presto Industries, Eau Claire, Wisconsin, successfully completed the scheduled demonstration test and prove out of the 105mm M1 Projectile MPTS production facilities, with a total of 146,000 acceptable projectiles. This plant had a capacity of 1.3 million 105mm, M1 projectile MPTS per month.

(U) VIPER Initial Production Facility. A contract was awarded to General Dynamics/Pomona Division to establish a production facility capable of producing 10,000 tactical and 40,000 trainer rounds per month. The effort commenced 30 September 1978. Major subcontractors included Brunswick Corporation for rocket motors and launchers, Atlantic Research Corporation for propellent loading, and Bulova for fuze MPTS. Equipment acquisition was to occur during 1979 with prove out being accomplished during first production in 1980.

(U) Small Caliber. By the end of 1978 over 90 percent of the SCAMP equipment for five lines for producing 5.56mm ball ammunition was installed and accepted; one line was integrated and successfully completed a ten-day demonstration test; and approximately 30 million rounds of ammunition were produced and accepted for stockpile. At the end of the year there were a number of equipment voids. Some of the equipment was installed but not debugged, some on order, some funded, and a number of unfunded items.

(U) The completed Small Caliber Ammunition Modernization Program (SCAMP) system was to consist of five each case submodules (SM), bullet SM's, Primer Insert SM's, Load and Assemble SM's, packaging SM's; one each automatic material handling system (AMHS), process quality control systems and specialized maintenance equipment. Most of key submodules were delivered prior to 1978. During 1978, four load and assemble submodules were delivered to complete the load and assemble procurement. One was tested and provisionally accepted. Two more were tested and acceptance was in process. The fourth SM was being tested and the fifth was to be tested in 1979. The automatic material handling system was installed, tested and accepted. Also, PQCS hardware was installed. Software delivery and debug was being performed, and was to continue during the first half of 1979. One cartridge case measurement system was installed and interfaced with case SM-1. Its inspection performance was very good; however, from maintenance viewpoint, improvements would be beneficial. Remington Arms Corp made initial modifications which enabled the equipment to operate consistently, and Battelle was authorized to

proceed with additional improvements. These were to be incorporated during the coming year. The Cartridge Measurement System (CMES) was accepted at Battelle, and awaiting delivery next year when interface modifications will have been incorporated in load and assemble SM2. Other ancilliary items to complete Line 1 were to be incorporated during the first half of 1979. During 1978, production continued from the previous year on case and bullet, and introduced into primer insert, load and assemble, and packaging. The AMHS transported product between submodules. The PQCS recorded and disbursed RAM data. Approximately 30 million rounds were produced on SCAMP equipment during the year.

(U) One line was integrated and ran as a system. A ten-day demonstration test was performed in November 1977 which demonstrated that the line could meet 5,000,000 per month peacetime rates while producing high quality ammunition at acceptable scrap rates. Initial studies showed that direct labor costs and scrap rates were steadily improving. As a result of the demonstration, ARRCOM ordered shutdown of conventional production of 5.56mm ball ammunition which was to be accomplished in Building 1 on the SCAMP line starting 2 January 1978. It was projected that SCAMP equipment was to produce at required mobilization rate by October 1979.

(U) Cannon Caliber. Modernization of case Lines A and B at AMRON was complete with the exception of two pieces of equipment. Modernization of Line C for 20-30mm production was on contract and purchase orders for equipment placed. The VE contract for impact extrusion of 20mm projectiles was underway and the result would influence Phase II for Line C. This VE effort was to be completed in the next fiscal year. An initial production facility (IPF) contract was signed with Honeywell for the LAP of 30mm AAH ammunition. The resulting facility would be capable of charging and loading 100 thousand of HEDP rounds per month and 200 thousand TP rounds. Phase I would result in facility and process design with equipment being acquired and installed during Phase II.

(U) Mines. Production was initiated on the IPF for the RAAM lithium reserve cell. While a second machine was required for placing a lithium rod in the ampules, capabilities of the remainder of the line will support forecast production requirements for this item. The electronic lens IPF was completed and the only open items were spare parts acquisition. A spin tester to check arming and non-arming of the S&A was placed on contract and machine components were ordered.

IPF's for components of the Ground Emplaced Mine Scattering System (GEMSS) had been held due to slippage of the item type classification. In the last quarter, efforts were renewed to prepare contract SOW's for all components. Due to changes in policy by PM SA, final selection of competitive versus sole source approach had lagged, resulting in numerous changes to the SOW. It was expected that contracts would be consummated in the last quarter FY 1979.

US Army Satellite Communications Agency

Background

(U) The United States Army Satellite Communications Agency (USASATCOMA), based at Fort Monmouth, New Jersey, was the focal point for military satellite communications. As Army Project Manager for satellite communications, the Agency was responsible for the earth environment of Department of Defense (DOD) satellite communications systems. The SATCOMA Project Manager also acted as the Army's agent for all international military satellite communications programs, represented the Army in special DOD satellite projects, provided the ground environments for the Global Positioning System (GPS) and exercised complete life cycle management and support for the Tri-Service satellite communications earth terminals.

(U) USASATCOMA was an integrated facility performing satellite communications system engineering, research and development testing and evaluation, and support functions for the Army under Headquarters, US Army Materiel Development and Readiness Command (DARCOM). From its Fort Monmouth Headquarters, the Agency also directed the operations of the 235th Signal Detachment (TACSATCOM), a Forces Command element, while it was in garrison at Camp Evans, New Jersey. This unit and the training area were employed in testing and demonstrating tactical satellite communications equipment.

Tactical Systems

(U) In January 1978 the updated 1974 Ground Mobile Forces Satellite Communications (GMFSC) Defense Program Memorandum (DPM) was approved by the Army Systems Acquisition Review Council (ASARC). The DPM provided for a two-phased, tri-service GMFSC program which embraced six GMF/TACSATCOM systems that were to be fielded from 1979 to 1988 and onward. With specific responsibility for program implementation assigned to USASATCOMA, the Army was assigned executive agency responsibility for the program. The introduction of a GMF satellite communications capability was to significantly improve command and control communications, and result in a substantial reduction of conventional radio equipment delivered to the field.

(U) A family of tactical satellite communications terminals, developed by RCA Government Communications Systems, Camden, New Jersey, successfully completed service test evaluation during FY 1976. Thirty-one terminals, in three configurations (AN/TSC-85(V)2, AN/TSC-93 and AN/TSC-94(Air Force)) were being produced at RCA under a Low Rate Initial Production (LRIP) contract award. These SHF Multichannel Initial System terminals were to be the first GMFSC system to enter the field. The AN/TSC-85(V)2 "hub" terminal could communicate with up to four AN/TSC-93 "spoke" terminals. All terminals were contained in an S-250 shelter, mounted on an XM 889 vehicle (Commercial Dodge W-300 truck). The vehicle towed a PU-619(M) Power Unit, modified to provide stowage for an 8-foot ground-mounted antenna during movement. Characterized by their ease of setup and high degree of transportability, maintainability, reliability, and low-cost production, the terminals would provide point-to-point and multipoint capabilities where conventional ground communications equipment cannot operate.

(U) Production of the TACSAT Control Terminal, AN/TSQ-118, also was underway at RCA under a September 1978 contract award. The control terminal was designed to increase the utility of satellite communications by organizing user access to the satellite and managing the radio frequency assets, including that portion of the DSCS satellite power assigned by the Joint Chiefs of Staff for tactical Army use.

(U) A contract was awarded to RCA in September 1977 for the Initial Production of the AN/TSC-86 Light Transportable Satellite Communications Terminal, a 2½-ton shelter mounted terminal which will interface with existing planned DSCS modem and multiplex equipment, usually as a contingency or short term user terminal in a temporary configuration. The AN/TSC-86 would utilize both a generic 8-foot and a 20-foot (G/T-26 dB) ground-mounted antenna for an increased communications capability.

(U) Pioneering the development of anti-jam (A/J) satellite communications, USASATCOMA awarded a contract to Harris Corporation (Electronic Systems Division), Melbourne, Florida, in September 1978 for the full scale development of Anti-Jam Network Control Modems. These modems would become an integral part of the GMF TACSAT terminals and would provide jam-resistant communications to selected critical links of its host TACSAT terminal.

(U) Delivery of the AN/PSC-1 UHF manpack terminal, via a contract with Cincinnati Electronics, Ohio, was accomplished in September 1977, and evaluation was completed in May 1978. Based on test deficiencies, retest was scheduled for FY 1979. These terminals

were developed for the Single Channel UHF Manpack System, the first of three single channel systems scheduled for fielding during the initial phase of the GMFSC program. The terminals were capable of communicating in a paging mode to the individual soldier in the field. When paged, the manpack terminal's 6 dB antenna was deployed and communications back to the base station initiated in the burst mode, although voice capability was available for high priority users. The base station, an AN/VSC-7( ) vehicular terminal, was an AN/PSC-1 with an added applique to serve up to fifteen AN/PSC-1's in a given net.

(U) A contract was awarded in September 1978 to Magnavox Government & Industrial Electronics Co., Fort Wayne, Indiana, for production of 200 non-developmental UHF AN/MSC-64( )(V)2 (Force Terminals). The AN/MSC-64, under the control of a joint Army/Air Force UHF non-developmental Combined Command Post Terminal AN/GSC-40, was to comprise the Single Channel UHF Special Communications System (SCS), the second single channel GMFSC system for fielding in the initial phase. In October 1978, the Command Post effort was tasked to the Naval Ocean System Center under an Army MIPR.

Strategic Systems

(U) The contract for the high capacity satellite communications heavy terminals AN/FSC-78/79 with Ford-Aerospace & Communications Corp. (Western Development Laboratories Division), Palo Alto, California, was completed during this period. Twenty-three terminals were produced under this contract, 18 AN/FSC-78's for the DSCS, and five AN/FSC-79's for the Fleet Broadcast program. The FSC-78's were operationally deployed by the Army, Air Force and Navy at Kwajalein, the Marshall Islands; Fort Detrick, Maryland; Sunnyvale, California; Wahiawa, Hawaii; Northwest, Virginia; New Boston, New Hampshire; Fort Meade, Maryland; Camp Roberts, California; Menwith Hill (Harrogate), England; Croughton, England; Offutt AFB, Nebraska; Finegayan, Guam, Marianas Islands; Elmendorf AFB, Alaska; and Landstuhl, Germany. Five FSC-79's were operationally deployed by the Navy at Stockton, California; Wahiawa, Hawaii; Northwest, Virginia; Naples, Italy; and Finegayan, Guam. The last terminal, the FSC-78 at Landstuhl, Germany, was accepted in June 1978. In addition, an FSC-78 Simulator was installed in the USASATCOMA Network Test Facility (NTF), and two FSC-78 Training Simulators were installed at the Signal School, Fort Gordon, Georgia.

(U) Concurrent fabrication, delivery and installation of Digital Communications Subsystems (DCSS) at DSCS earth complex stations around the world continued in preparation for the DSCS transition from analog

to primarily all-digital transmission in the 1980's. During this period, a total of 22 partial and complete subsystems were delivered to 15 sites and trainers were installed in the Signal School at Fort Gordon, Georgia.

(U) In December 1977, a contract was awarded to Harris Corporation (Electronic Systems Division), Melbourne, Florida, for production of medium terminal (MT) antennas (G/T-34 dB). MT electronics, common to those used in the FSC-78 high capacity terminals, were being procured from Comtech Labs., Inc., Smithtown, New York, under a contract awarded in March 1978. The 38-foot antennas, when used with these electronics, was to provide a Medium Terminal configuration, the AN/GSC-39(V).

(U) A contract for the production of light terminal (LT) antennas (G/T-26dB) also was awarded to Harris Corporation in December 1977. These 20-foot antennas were to be used with the AN/TSC-86 Satellite Communications Terminal to furnish a greater communication capability than the 8-foot antenna which was generic to the TSC-86. An optimum mix of DSCS traffic handling capacity and transportability were to be provided through the use of HT, MT and LT terminals.

(U) Of major significance to DSCS users was the award in September 1978 of a contract to Magnavox Research Laboratory, Torrance, California, for the production of the AN/USC-28. It represented a new generation psuedo-noise, spread spectrum equipment that was to provide capabilities for spread spectrum modulation access and time dissemination, in addition to inherent resistance to jamming.

(U) Development efforts to improve communications efficiency in the DSCS continued. Contracts for a dual contractor design and advanced development of a Burst Error Corrector modem were awarded in May and August 1978. A contract also was awarded in July 1978 for the advanced development of Low-rate Multiplexer modems. In September 1978 a two-phase design validation and advanced development contract was awarded for an SHF demand-assigned/time-division-multiple-access modem for use in the GMF Multi-channel SHF Objective System (MOSC), scheduled for fielding in the post-1985 objective phase of the GMFSC program.

Global Positioning System (GPS)

(U) Advanced development models of the first Global Positioning System (GPS) manpack/vehicular user equipment, developed by Texas Instruments and General Dynamics/Magnavox Research Laboratory under

dual GPS concept validation contracts, were accepted in September 1978, and were undergoing validation testing. For the initial design definition stage of the full scale development Phase II, four contracts were awarded by the Joint Project Office, SAMSO, to Magnavox Research Laboratory, Rockwell International, Teledyne, and Texas Instruments, for the parallel design of a family of user equipment. Two of the four contractors were to be selected to develop, field and test prototypes during Phase IIB.

Agency Internal Effort

(U) An RDT&E AN/MSC-61 terminal (later designated the AN/GSC-39(V)) was installed at the SATCOMA Integrated Test Facility (ITF) and integrated with the G/T-34 MT antenna. This terminal was one of four DSCS representative terminals comprising the Pilot Control System (PCS) network. The PCS program was geared to provide the basis for an automated DSCS control structure, the Real Time Adaptive Control Subsystem, which will permit efficient and economical spectral utilization by DSCS users. Engineering development models of the AN/TSC-86, delivered to the ITF in FY 1976, were integrated with the G/T-26 LT antennas in January 1977 and utilized for operational DSCS testing. Other in-house efforts included the extensive modification of first generation terminals for redeployment to DSCS sites.

235th Signal Detachment (TACSATCOM)

(U) The 235th Signal Detachment (TACSATCOM), a FORSCOM unit based at Camp Evans, New Jersey, since the Spring of 1978, continued to provide tactical satellite communications support of major exercises worldwide in response to DA and JCS requirements under the direction of USASATCOMA.

(U) In March and April 1977 two multichannel SHF TACSATCOM terminals were operationally deployed to USACC SATCOM stations in Korea and Camp Roberts, California by 235th Signal Detachment personnel in support of the 1st Signal Brigade during the Joint Training Exercise Team Spirit '77.

(U) In May 1977 six UHF satellite communication terminals, operated by 28 235th Signal Detachment personnel, provided an integrated system of voice and data communication circuits to elements of the XVII Airborne Corps during Exercise Solid Shield '77 at Fort Bragg, North Carolina and other locations in North and South Carolina.

(U) During July 1977 two AN/TSC-85(V)1 and AN/TSC-80 multichannel SHF terminals provided communication electronics support for the US Readiness Command exercise Brave Shield XVI at 29 Palms, California. From August to October 1977 63 members of the 235th Signal Detachment, six UHF and three SHF terminals were deployed to the Federal Republic of Germany in support of the 5th Infantry Division during REFORGER '77. Tactical satellite communications was provided to maintain continuity of command and control in a rapid, mobile environment. Over 1200 calls were placed between unit elements in Germany and their headquarters in the continental United States.

(U) In October and November 1977 support was provided to the 1st Corps Support Command at Fort Bragg, North Carolina, and Eglin AFB, Florida during Bold Eagle '77. In January and February 1978 the newest family of multi-channel SHF tactical satellite communication terminals, the AN/TSC-85(V)2 and AN/TSC-93, were deployed by the 235th Signal Detachment to Fort Drum, New York, in support of the Joint Training Exercise Empire Glacier '78. A 96 channel system was installed between Fort Bragg, North Carolina, Hancock Field, Syracuse, and Fort Drum, New York, for training and evaluation of joint operations in an Arctic environment.

(U) During March-April 1978 two AN/TSC-85(V)2's were deployed to Fort Irwin, California, and Nellis AFB, Nevada, by 14 235th Signal Detachment personnel in support of the US Readiness Command exercise Brave Shield XVII. In April 1978 three single channel UHF terminals supported National Guard and Army Reserve Signal units during Exercise Go Between Circuits.

(U) In May 1978 73 235th Signal Detachment members provided, installed, operated and maintained six multichannel SHF terminals, and six single channel UHF terminals in support of the Atlantic Command exercise Solid Shield '78 at Fort Bragg, North Carolina; Fort Stewart, Georgia; Shaw AFB, South Carolina; and Norfolk, Virginia.

(U) During August, September, and October 1978, three TSC-85 (V)2's and seven UHF terminals were deployed to Germany and the Netherlands to support the 1st Infantry Division during REFORGER '78. More than 1200 calls were placed between Reforger units and stateside posts. In September 1978 two AN/TSC-80 multichannel SHF terminals were deployed to the Federal Republic of Germany and Denmark to provide terminal training and communications support to the USMC Marine Wing Communications Squadron 28 during Bold Guard '78.

(U) The 235th Signal Detachment personnel continued to support various demonstrations and USASATCOMA displays throughout the continental United States.

Saudi Arabian National Guard Modernization

Reorganization

(U) On 26 October 1977 General Rasheed, SANG Director for Supply, Maintenance and Transport, Communications, and Weapons as well as the Commanders of the three Mechanized Infantry Battalions (MIB) were briefed on the Direct Support Maintenance Company concept to provide maintenance and supply support for the four modernized battalions which were developed by the Office of the Project Manager (OPM) and the Saudi Arabian National Guard (SANG). Sheikh Tuwaijiri was briefed by PM-SANG on 27 and 29 October. At the 29 October briefing Sheikh Tuwaijiri directed Mr. Qusai, SANG legal counsel, to prepare written orders to all Headquarters, SANG directors approving immediate implimentation in accordance with OPM-SANG schedule. The contract change order implementing the concept was forwarded to the Vinnell Corporation.

(U) PM-SANG briefed General Rasheed and Brigadier Wesh (British advisor to HQ SANG) on the Combined Arms Battalion (CAB) TOE concept which had been approved by Prince Abdullah. Following the briefing OPM-SANG prepared and distributed a detailed comparative analysis of the MIB and CAB organizations. At the request of Sheikh Tuwaijiri, PM-SANG submitted on 31 October a letter summarizing the comparative analysis along with the recommended schedule for implementation. This letter was to be used as a basis for Prince Abdullah's approval to implement reorganization.

(U) On 16 January 1978 Sheikh Tuwaijiri stated to the PM that during the next six to eight months Headquarters SANG would be reorganized and rejuvenated with younger and well educated Bedouins. The civilian side of Headquarters SANG was to be reorganized first and then the military side. Toward this end, in mid January 1978, the Council of Ministers appointed Mr. Abdul Aziz Tuwaijiri WAQUIL (deputy) for Financial and Administrative Affairs, and Mr. Abdul Rahman Abu Haymed WAQUIL for Technical Affairs. Both individuals are Bedouins in their early 40's, fluent in English, educated in the United States, and strong supporters of the modernization program. There were indications that Mr. Abdul Aziz Tuwaijiri was understudying Sheikh Tuwaijiri as his possible replacement in one to two years.

(U) Commander, SANG, directed the Assistant Deputy Commander, SANG, to implement immediately the reorganization of the MIB's to smaller Combined Arms Battalions (CAB). Also, the Assistant Deputy Commander, SANG, requested PM-SANG attend a SANG military committee meeting in March 1978 to finalize the order directing reorganization.

(U) However, the implementation of the reorganization of the MIB was delayed. The Office of General Rasheed had proposed an alternate TOE which retained three rifle companies of nine-man rifle squads, but which held the total strength from 820 to 850 men. Consequently, OPM SANG developed two alternatives at a strength of 856 each. Each TOE consisted of Headquarters and Headquarters Company; three Rifle Companies, and a FA Battery. The difference in the two lay in the distribution of the anti-tank assets. The first distributed all assets to the rifle companies while the second retained the 90mm MECAR systems in Headquarters and Headquarters Company. A final decision was expected early in April 1978.

(U) On 9 April Sheikh Tuwaijiri requested that the Project Manager and General Rasheed submit a written joint recommendation to Prince Abdullah for approval of the Combined Arms Battalion (CAB) TOE, and for approval to begin the reorganization of the MIB's. Joint recommendation was submitted on 10 April. On 16 April Prince Abdullah approved the joint recommendation, but requested the CAB TOE be reviewed by the MIB commanders prior to implementation. A joint memorandum (signed by General Rasheed, the MIB commanders, and Deputy PM-SANG (in PM's absence) stating review had been accomplished and all concurred) was submitted on 17 April to Prince Abdullah. On 29 April, written approval of CAB TOE and approval to reorganize the MIB's to CAB was received. The reorganization of the 3d MIB began on 5 May, and the 1st and 2d MIB's were to be reorganized during the first half of calendar year 1979.

(U) Following the completion of the English version of the detailed CAB TOE document, the Arabic version was completed in May 1978. The approved CAB TOE specified an authorized strength of 48 officers and 808 enlisted personnel for an overall strength of 856 personnel. The CAB organization had five subordinate units consisting of Headquarters and Headquarters Company (HHC); three combined arms companies, and one artillery battery. Each combined arms company had a headquarters platoon, three mechanized infantry platoons (three V-150's per platoon), and anti-armor platoon (TOW, 20mm, and 90mm V-150's), and a mortar platoon (three V-150's). Mechanized infantry squads consisted of nine-man squads. While the Vulcan ADA platoon was organic to the artillery battery, the reconnaissance platoon was organic to HHC.

(U) Of the four additional combat battalions that were to be organized under TOE, similar to CAB TOE, one was to be organized, trained, and equipped each calendar year, 1982 through 1985. For these units, a product improved V150 Armored car powered by a diesel engine and automatic transmission was to be the primary combat vehicle. The MECAR cannon on the V150 was to be replaced with the TOW missile system.

2d MIB Graduation

(U) The 2d Mechanized Infantry Battalion (MIB) graduation plan for December 1977 was completed and briefed to Sheikh Tuwaijiri and General Maashi was appointed as the SANG coordinator for graduation activities. After disapproving the date of 13 December, the King selected 20 December as the date for graduation of the Battalion.

(U) In the morning of 20 December the graduation ceremony was conducted in a professional manner by the 2d MIB and HQ SANG. It was attended by HRH Crown Prince Fahd, HRH Prince Abdullah, Ambassador West, the Council of Ministers, the MODA Joint Staff, CHVSMTH Saudi Arabia, and representatives of Middle East Division COE. Following the ceremony HRH Crown Prince Fahd and HRH Prince Abdullah visited the Vulcan Dome Trainer where they were briefed on its operation by SANG NCO's being trained to operate the Dome Trainer. In the late afternoon, the official parties of SANG and USG observed a live fire and maneuver training exercise conducted by the 2d MIB. The SAG official party was impressed by the capabilities demonstrated by the 2d MIB.

Modernization Program

(U) Sheikh Tuwaijiri approved the formation of a Joint Coordination Committee (JCC) for the modernization program. The Committee became co-chaired by General Rasheed and the Project Manager, SANG. Principal members included PGM-Vinnell, battalion commanders, BG Maashi and Mr. Quasi. JCC was intended to be the vehicle to HQ SANG to accept their responsibility in the supervision and support of the modernization battalions.

(U) A clarification of SANG's mission was provided during a discussion by Sheikh Tuwaijiri: "The first and last objective of modernizing the SANG is the maintenance of security and stability (within Saudi Arabia) and the defense of the vital interests within the Kingdom such as the oil fields, pumping stations, refineries, tank farms and others. The SANG will never, under any circumstances, become an aggressor force. At the same time, the SANG does not want anyone to aggress against it (or the Kingdom). If terrorists commit terroristic acts (or sabotage) within the Kingdom, the SANG will be committed to protect the Kingdom's interest."

(U) At Ambassador West's request, PM-SANG briefed Ms. Boudine, US State Department, on modernization program and possible follow-on program. Ms. Boudine indicated she believed that it would be difficult to gain approval for a request from HQ SANG to USG for only additional MIB's. PM-SANG stated that current OPM-SANG planning

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included a logistical support battalion. Ms. Boudine and US Embassy staff members accompanying her concurred with this approach.

(U) At the conclusion of the 2d MIB graduation activities, on 20 December, HRH Prince Abdullah with HRH Crown Prince's concurrence informed Ambassador West that he was to receive a letter requesting that the USG modernize additional battalions. On 24 December, Ambassador West requested PM-SANG to recommend to HRH Prince Abdullah that formal request for modernization of additional battalions be delayed until after Congressional visits in early-mid January 1978. HRH Prince Abdullah concurred in the recommendation.

(U) On 7 January, new contracts went into effect with Vinnell, Cadillac-Gage (CG) and General Electric (GE) for the final two years of the modernization program.

(U) PM-SANG visited CONUS, 15 March-4 April 1978 to update Command Groups, HQ DARCOM and DSAA on the status of current modernization program and to discuss follow-on program with key personnel in HQ DARCOM, HQDA, DSAA, and State Department. The position of the above agencies on the follow-on program was that the program should be funded under FMS master sales case approach and that it should be managed essentially the same as the current program.

(U) On 30 May 1978, PM met with HRH Prince Abdullah concerning follow-on modernization program planning. This meeting concluded an informal definition of the follow-on program. The follow-on program was to be divided into two phases:

(U) Phase I (January 1980-December 1981) - Organize, equip and train a logistics battalion; sustain modernized battalions; sustain OPM organization; and begin modernization of SANG training base.

(U) Phase II (January 1982-December 1985) - Organize, equip and train four combat battalions; organize, train, and equip a second artillery/ADA headquarters; complete training of logistics battalion and modernization of SANG logistics base; complete modernization of SANG training base; sustain modernized battalions; and sustain OPM organization.

(U) On 14 June 1978, PM and APM, met with SANG Modernization Committee chaired by Sheikh Tuwaijiri, SANG Deputy for Finance and Administration. The Committee approved the Logistics Battalion as the fifth battalion to be modernized and initiation of modernization of SANG military school system during the Phase I Follow-on Program (January 1980-December 1981). Essentially the approval completed definition of the Phase I Follow-on Program.

(U) At another meeting on 17 June the above group began the definition of Phase II of the Follow-on Modernization Program. The Committee expressed the desire for the following: Equip future combat battalions with a product improved (PI) V150 armored car (diesel engine and automatic transmission); replace the MECAR 90mm gun on the V150 with the TOW Missile System; replace the 90mm recoilless rifle with the DRAGON medium anti-tank missile system; retain the LAW light anti-tank missile system; procure a shoulder fired air defense missile system such as STINGER or REDEYE for use in combat battalions; retain the M102 105mm towed howitzer and procure extended range ammunition (decision was ILO request for 155mm howitzer); replace current 81mm mortar with an extended range 81mm mortar; and tentatively plan to use towed Vulcan Air Defense weapons with radar for air defense of military cities.

(U) A modernization concept paper which established the future modernization goal for SANG as a two-brigade force with appropriate SANG-operated logistics and training support was presented on 21 June 1978 to PM. One brigade would be a light armored brigade and the other would be a mechanized brigade.

(U) The light armor brigade (air transportable) was to be organized with three Combined Arms Battalions (CAB) equipped with V150 (PT) armored cars; one light tank battalion equipped with track laying light armored vehicles similar to British SCORPION light tank; one artillery battalion equipped with towed M102 105mm howitzers; one combat engineer company; one signal company; and one logistics support company. Proposed for the second combat brigade would be a mechanized brigade organized with three CAB's equipped with modern track laying armored personnel carriers; one tank battalion equipped with modern battle tanks; one artillery battalion equipped with 105mm or 155mm self-propelled howitzers; one armored engineer company; one armored signal company; and one logistics support company. Analysis of personnel requirements to support the two-brigade force proposed by the SANG Committee indicated that about 10,000 personnel would be required. PM believed that this was within SANG's current and future capability.

(U) On 18 July 1978, the PM, DPM, and APM's met with the SANG Modernization Committee to continue the discussions on the organization and equipment of SANG forces. The PM expressed his nonconcurrence to SANG's proposed acquisition of light tanks (similar to the British Scorpion) to equip a light armored battalion in the Follow-on Program. He based his view on a comparison of the capabilities of Scorpion and the product improved V150 and on SANG's present and projected difficulties in retaining trained maintenance personnel in service. HQ SANG and OPM was to submit a joint recommendation on the Follow-on Program to HRH Prince Abdullah for a final decision.

Training

(U) Headquarters SANG received written approval from the SAG Council of Ministers on 25 February 1978 to organize, equip and train four combat battalions, and an ADA and field artillery battalion as a follow-on to the current modernization program. HRH Prince Abdullah, Commander SANG, submitted a letter on 27 February to Ambassador West requesting training commence in January 1980. Further discussion indicated that SANG wanted the follow-on package to contain training of a logistics support battalion in addition to the other requirements.

(U) The composite FA and ADA battery organic to the CAB was to be retained for training purposes. FA and ADA Headquarters then being trained were to be used to control the fires of two or more batteries; provide technical advice and training for CAB batteries; and could be used as the nucleus of a composite FA and ADA battalion when CAB's deployed to a military city.

(U) On 19 June 1978 the Replacement Training Detachment (RTD), consisting of 38 SANG officers and NCO's trained by Vinnell Corporation as instructors, commenced instruction of 1st MIB soldiers. Training was being conducted in five military occupational specialties (MOS). This was the first time SANG instructors were planning and conducting formal instruction in technical skills associated with the modernization program.

(U) General Rasheed, Deputy for Operations, SANG, and his military staff initiated weekly training visits to MIB/CAB field training. One day a week was dedicated to field training visits. These visits proved to be an effective means to educate and train SANG military staff in command, control and support of modernized battalions.

(U) The 16th Regular Battalion stationed in Riyadh was deactivated 28 August 1978, and its personnel assigned to the 4th CAB. It was anticipated that the 4th CAB was to initially assemble on or about 15 September 1978 with a strength of 900-1000 personnel.

Inspection

(U) A joint HQ SANG/OPM-SANG inspection team, headed by BG Maashi, Director of Operations and Plans conducted an inspection on 14 May 1978 of the 2d MIB and its temporary cantonment area. Inspection results indicated that the 2d MIB was in a better overall condition than the 1st MIB, particularly in maintenance management and materiel readiness. The same apparent lack of concern for the welfare of the soldiers observed in the 1st MIB was observed in the 2d MIB.

Jordan Visit

(U) At the request of HRH Prince Abdullah, and with the approval of US Embassies, Saudi Arabia and Jordan, PM visited during the period of 6-8 June the Jordanian Army HQ, Infantry, Armor, Maintenance School Maintenance Facility, and Military Hospital in Amman, Jordan. The purpose of the visit was to determine the value of the Jordanian Army facilities for the possible future use by SANG.

(U) All facilities were found to be well organized, professional organizations, and were capable of providing cost effective refresher and on the job training. Doctrine and tactics were compatible with that being taught the SANG modernized battalions. Maintenance facility had rebuild capability that could be used selectively by SANG. LTG Shaker, CINC Jordanian Armed Forces, expressed interest in providing assistance if SANG requested it, and if they were to send personnel willing to learn. DCM US Embassy Jordan indicated embassy support, as did Ambassador West, US Embassy Saudi Arabia. The results of the visit were briefed to HRH Prince Abdullah.

Vinnell Corporation

(U) The Saudi Catering and Contracting Company (SCCC) agreed to sell the Vinnel Camp to the Vinnell Corporation under the terms of the current Vinnell lease agreement. Upon completion of the sale, the title was to pass from SCCC through the Vinnell Corporation to SANG. Vinnell was to purchase the camp for $4.8 million, using FMS sub-case WBN funds which had been set aside for that purpose.

(U) On 6 July 1978, Sheikh Tuwaijiri requested the creation of a SANG-Vinnell-OPM Committee to rule on procurement actions. In early August HQ SANG accepted OPM-SANG's recommended procedure for the formation of the tri-party committee to review and approve local purchases. In mid-August after the committee was operational, Sheikh Abu Haimed, Deputy for Technical Affaris, SANG, acting for Sheikh Tuwaijiri, requested that all procurement actions be translated to Arabic, prior to committee action. This request was considered unrealistic and impractical. PM was to discuss alternatives with Sheikh Tuwaijiri, Deputy for Finance and Administration, SANG, upon his return from Riyadh. In the meantime, contractor local procurement actions were continuing under close OPM-SANG scrutiny.

(U) Sheikh Tuwaijiri expressed continued concern regarding quality and qualification of Vinnell instructors. This concern was based upon a report he received in early August from an apparent informant he had placed within Vinnell. The Sheikh dictated the names

of 20-30 Vinnell instructors the informant considered not qualified to be instructors in the maintenance area. Three-fourths of the names were Jordanians, the remainder Americans. PM was to provide written responses to Sheikh Tuwaijiri.

(U) Throughout September 1978 Sheikh Tuwaijiri brought increased pressure, through PM SANG, on Vinnell Corporation to improve its performance in the areas of management, local procurement, leases, and training. This action was directly attributed to SANG's recognition that it must soon make a decision on whether to select Vinnell Corporation as sole source contractor for the Phase I Follow-on Program.

Senior British Advisor

(U) Early in September 1978, the United Kingdom withdrew its active duty British Brigadier from his assignment as Senior British Advisor to HQ SANG. The reason for this action was not known. Also, there were indications that he would not be replaced. UK mission was currently commanded by a British Army Colonel. OPM relations with the UK mission remained in good condition.

CHAPTER VI

MATERIEL READINESS

Introduction

(U) As DARCOM moved into FY 1978, it was as if it was in the jaws of a great vise. It was being squeezed to produce more at a time of continuing drawdown of its resources. The command was still feeling the effect of the period of the Vietnam War which had significantly shaped the materiel makeup of the Army force. During the war, funds for materiel development and maintenance of materiel were pared to provide resources for the forces in Southeast Asia. Over this extended period, the WARSAW Pact nations continued with their research, development and modernization programs, all at a time when the United States was forced to withdraw resources from Europe. Then as the Vietnam war came to a close, the 1973 war in the Middle East exploded and much critically needed materiel such as tanks, armored personnel carriers, and self-propelled artillery pieces were sent to the Israeli forces from our stocks in Europe. DARCOM was faced with the task of replacing these items and more. Continuous manpower cuts in DARCOM were making this task more and more difficult each year.[1]

(U) At the end of FY 1968, at the peak strength period of the Vietnam War, DARCOM (then AMC) authorized personnel strength was some 183,000. There has been a steady decline since to about 117,200 at the close of FY 1978. Viewed in relation to total Army strength that stabilized in 1975 to 785,000 personnel, the DARCOM strength continued to decrease, meaning that its ability to support the Army became more difficult since it had to do it with a lesser percent of the total manpower resources. During the manpower drawdown the requirements for DARCOM logistical support increased. First the Army expanded its force from 13 to 16 divisions and substantially increased their sophistication and modernization, moving from lighter divisions to heavier mechanized divisions. Also during the years since Vietnam, the DARCOM security assistance program has greatly increased with DARCOM becoming the executive agent for the program which was running about $3 billion per year which by the end of FY 1978 would reach a total of $25 billion since 1972 meaning that not only did DARCOM need to support new requests but it had to support programs of prior years. Each additional year added workload to the DARCOM logistics system and was impacting more and more on DARCOM materiel readiness activities.[2]

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1 Speech, Hon. Clifford L. Alexander, Jr. to Central Kansas and Fort Riley Chapter of the Association of the US Army, Fort Riley, Kansas 16 August 1977.

2 DARCOM Manpower Baseline Requirement, HQ, DARCOM, August 1978, Pp. 2, 3, 10. (Study compiled by MG R.L. Bergquist, DARCOM DCG for Resources Management).

(U) During FY 1978, in the areas of weapons and equipment, DARCOM was emphasizing early force readiness for meeting WARSAW Pact potential to launch a short-warning attack. The European POMCUS (Prepositioned Oversea Materiel Configured to Unit Sets) were being reconstituted and increased so that more troops could be air-lifted from CONUS on short notice. Also, DARCOM was concerned with shortfalls of War Reserve Stocks needed to support contingency war plans and deployment schedules. DARCOM, as well as the Army staff, was also concerned about real and potential shortages in munitions and secondary items for meeting not only POMCUS and War Reserve Stocks but also meeting current and future materiel requirements of the units of the total Army.[3]

(U) Other major events occurring during the continuous drawdown threatening the achievement of the DARCOM readiness goals included such things as DARCOM's implementation of the Direct Support System, the closing of oversea depots, the creation in CONUS of area oriented depots, the DARCOM implementation of the AMARC realignments, the DARCOM assumption of service single manager for conventional ammunition responsibilities, the fielding of numerous new materiel systems, and the acquisition of new missions and other mandated programs. In summary, continuing a trend set in motion years earlier, throughout FY 1978, DARCOM faced major manpower and money inadequacies for meeting its readiness goal of preparing the total Army for rapid transition to combat, fully capable of performing its wartime mission.

Materiel Readiness Plans, Doctrine and Systems

Organization and Mission

(U) The Directorate for Plans, Doctrine and Systems, organized in April 1976 under the Deputy Commanding General for Materiel Readiness, was given the mission to act as the principal logistic planner for the DARCOM Deputy Commanding General for Materiel Readiness (DCGMR); to provide policy and guidance covering logistic support plans, concepts, doctrine, and systems; and to develop wholesale logistic doctrine and automated systems which interface with the Army-in-the-field and other wholesale systems. In conformity with the DOD Materiel Distribution Systems (DODMDS) a further mission is to review military service and Defense Logistics Agency (DLA) materiel distribution systems and recommend alternatives to integrate, consolidate, and standardize functions and facilities.

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[3] Posture Statement, SECDEF Harold Brown before the Committee on Armed Services, US Senate, Feb 7, 78, p. 317 (Hearing Before . . ., Part I, Authorization, P. 325); see also DARCOM Commander's statement in the FY 1981-85 PARR (Program Analysis Resource Review) to the DA PBG (Program Budget Guidance) of October 1978.

(U) Within the Directorate, the mission of the Associate Director for Plans and Doctrine is: to provide policy and guidance for the DCGMR in support of contingency mobilization and emergency plans; to provide support for general mobilization requirements and stockage levels to include CONUS and oversea war reserves, operational projects and contingency stocks; to develop logistic support plans pertaining to supply, maintenance, transportation, services, and facilities, and to initiate improved techniques to incorporate doctrine in logistics manuals and into Army school techniques to incorporate doctrine in logistics manuals and into Army school techniques to incorporate doctrine in logistics manuals and into Army school curricula. The mission of the Associate Director for Systems is: to develop improved automated logistics systems in the areas of supply, maintenance, transportation, services and facilities; to establish policy, provide guidance and direction for Military Standard Systems less the Military Supply and Transportation Evaluation Procedures (MILSTEP); to direct, control and evaluate functional systems requirement for new or major changes to existing DARCOM ADP wholesale logistic systems, and assure proper interface and compatability with other wholesale and Army-in-the-field ADP logistic support systems; to maintain liaison with higher and lateral logistics headquarters in order to keep abreast of their logistics systems development; and to provide the DARCOM focal point for the Management of the Standard Integrated Support Management System (SISMS) and Integrated Weapons Support Management (IWSM).

(U) Depot Maintenance Mobilization Planning. Revision of Depot Maintenance Mobilization Planning Guidance was completed during 1978. This guidance included an automated procedure for the MRC's to develop requirements for secondary items and a more creditable formula for the computation of major item requirements. This guidance was to be implemented by MRC's, DESCOM, and the depots in FY 1979.

(U) Direct Logistics Support. During the year the Associate Director for Plans and Doctrine participated in the evaluation of the DLS pilot implementation at Fort Hood, Texas. The evaluation units included the III Corps, 2d Armored Division and First Cavalry Division. With the initiation of the pilot implementation effort, the staff responsibility for DLS was transferred to the Directorate for Readiness. The proposed DLS technical channels were tested as to the interface between the retail level logistics with the wholesale system. The final report was published January 1978, which recommended the DLS concept to be adopted.

Phase II - Study - Logistic Operations in the COMMZ

(U) A DA DCSLOG sponsored COMMZ study group became operational on 4 January 1977. It was composed of four DA, DCSLOG members and major command representatives from TRADOC, USAREUR, and DARCOM. MG (Ret) J. Pieklik served as a consultant. The purpose of the study was to

ensure that US doctrine adequately supported the operational needs of the COMMZ logistic organizations operating in NATO and to identify and recommend changes which would ensure a logistic capability for meeting wartime requirements and identify voids in both doctrine and procedures. The initial effort was devoted to identifying and refining some 33 separate objectives and 13 individual essential elements of analysis. These were ultimately reduced to six main issues and 22 concepts. The main issues were as follows: size, composition and structure of the GS base in the Corps.; Size, composition and structure of the GS base in COMMZ; management of war reserves; wholesale system's role in COMMZ; theater commander's role in a multi-national environment; and type of logistics support to be provided by host nation.

(U) On 30 May 1978, 21 concepts were approved by Department of the Army for use as a frame of reference in the development of logistic planning and doctrine. Concept 22, concerning host nation support (HNS) has since been superseded by the approved DA HNS Policy Statement, 8 May 1978. Participants have been cautioned by DA, DCSLOG that the findings and recommendations contained in the original report may no longer support the approved concepts/rationale.

(U) It was indicated that an in-depth study would be required to determine the impact and feasibility of DARCOM assuming new functions resulting from the study recommendations. The study would need to examine such items as the DARCOM structure, organization, personnel complement (military and civilian), potential DARCOM locations in Europe, and Command relationships. In essemce, DARCOM would need to determine what would have to be done during peacetime to be ready to assume the GS maintenance function in war.

Classes of Supply and Color Markings

(U) During the early part of 1978 the Associate Director of Plans and Doctrine developed and staffed within the Military Service and Defense Logistics Agency (DLA) a Standardization Agreement (STANAG) entitled "Classes of Supply and Colour Markings." The STANAG was submitted to the NATO Army Board, Military Agency for Standardization (MAS) for distribution to members of the Land Force Logistics Working Party for review and discussion at the 6th meeting of the working party to be held 11-15 September 1978.

(U) To support the need for ratification of the STANAG, Mr. George Marshall was designated by HQDA (DALO-PLO) as the US technical representative to the meeting of the Land Force Logistics Working Party. He presented a briefing covering the background and development of the STANAG. As a result of the briefing, it was learned

from the UK delegate that the current SHAPE Guidance for Stockpile Planning in ACE prescribes the use of the old five classes of supply thereby prohibiting the ratification of the STANAG which is based on the ten classes of supply structure instituted by DOD in 1968. The US delegation was instructed to convince SHAPE of the need for changing the Stockpile Planning Guidance from 5 to 10 classes of supply. Copies of the papers were to be furnished to all delegates so that the matter could be discussed at the 7th meeting of the Land Force Logistic Working Party to be held in September 1979.

DARCOM Readiness Evaluation System (DRES)

(U) During FY 1978 the DARCOM Readiness Evaluation System (DRES) was instituted throughout DARCOM. A test run of the DRES report was conducted by the development commands during the 3rd Quarter FY 1978. The draft regulation covering DRES (DARCOM Reg 700-14) was revised to accommodate certain recommendations received from development commands and the first formal DRES regulation was submitted for publication during the 4th Quarter FY 1978. With the publication of DRES, a significant milestone improving DARCOM's ability to analyze its readiness posture was attained. The DRES was well received throughout DARCOM subordinate commands as it provided Commanders with a set of standards for evaluating their readiness to perform their mission against both peacetime and mobilization workloads.

Total Army Equipment Distribution Program (TAEDP)

(U) TAEDP Phase I was used to analyze Prepositioning of Materiel Configured to Unit Sets (POMCUS) and provide alternatives for filling the POMCUS shortages, Supply Class 7. TAEDP Phase I was reprogrammed to distribute by Force Packaging Methodology (FPM). This effort caused approximately a three month slippage for the completion of Phase II. TAEDP Phase II development continued. The system was being designed to process both by the Department of Army Master Priority List (DAMPL) and required delivery date (RDD) priority. A sub task, Phased Equipment Modernization (PEM), was activated. PEM was to time phase the authorizations to meet planned/actual production/maintenance schedules.

Logistics Systems Integration and Control

(U) During the fiscal year, the composition, organization and functions of the Logistics Systems Review Committee (LSRC) were formalized in DARCOM Regulation 15-23. The regulation was first published on 17 November 1977 and was revised and republished on 28 March 1978.

(U) The LSRC conducted three In-Process Reviews of CCSS Release 54 during the fiscal year. The first was conducted at CERCOM, Ft. Monmouth, N. J. and was used to determine the suitability of the release

for prototype testing at CERCOM. The results of the IPR were inconclusive and its business was concluded at an LSRC meeting on 4-5 January 1978 at HQ DARCOM, at which time prototyping of Release 54 was approved. In addition a work plan for ALMSA for Fiscal Years 1979 and 1980 was reviewed and approved.

(U) On 22 and 23 February 1978, the LSRC conducted an IPR to determine whether or not the results of prototype tests of Release 54 indicated that the release could be installed at all other Materiel Readiness Commands. The committee decided that too many problems in Release 54 remained unresolved and delayed installation of the release until 17 March 1978.

(U) Two other LSRC meetings were conducted during the year. The first of these problems involved the system for initial provisioning or the provision of necessary repair parts to users of new equipment on or before the date the equipment is received. At the meeting seven key actions to improve the provisioning process were directed. These were aimed primarily at improving the initial provisioning requirements computation process and to make it easier for commands to procure requirements and track funds. At another LSRC meeting which convened on 26 June, progress concerning these directed actions was examined with written progress reports being furnished to each LSRC member.

Depot Maintenance Programming

(U) During FY 1978, several concept development Functional Coordinating Group meetings were held to lay down the parameters under which the Maintenance Data Management System (MDMS) for MRC use was to be designed. Subsequently, on 11 May 1978, the General Functional System Requirement was published. Five Work Groups were then assembled to begin the Detailed Functional System Requirement logic and documentation. The five functional areas covered were: Maintenance Management and Control (4M76); Maintenance Work Directives (4M20); Maintenance Financial Parameters (4M74); Contract PSR (4M41.1); Maintenance Support Services (4M41.2).

Standard Army Maintenance Systems Interface DFSR/EAUPDATE/OPP

(U) The wholesale portion of the total SAMS Detailed Functional Systems Requirement document was completed on 1 November 1977. Subsequently, errata sheets to that DFSR, a revised Economic Analysis and a revised Organizational Personnel Plan were produced and staffed within DARCOM and forwarded to DA on 22 September 1978. DA was advised that pending final approval by HQ DA of the DFSR and associated documentation, DARCOM was proceeding in the development of the system to meet the established 4th Quarter, FY 1980 milestone date for implementation.

Completion of DOD Materiel Distribution System (DODMDS) Study

(U) During FY 1978 the DODMDS Study Group completed the study of the DOD Wholesale Distribution System begun in 1975. The study analyzed the flow of materiel from procurement sources, through the wholesale distribution system (depots), to military activities around the world. The purpose of the study was to determine methods to improve the wholesale system by realigning supply patterns and missions among the 34 wholesale depots of the Army, Navy, Air Force, Marine Corps, and Defense Logistics Agency. The study group was composed of representatives of all the Services/ agencies concerned assisted by contractor personnel. The study effort combined state-of-the-art computer modelling with detailed analysis by experienced logisticians.

(U) The DODMDS Study Group completed its official actions on 15 August 1978 by publication of an Addendum to the final study report which had been published on 1 July 1978. The final report presented top management officials with numerous options for realignment of the wholesale distribution system. The addendum provided an additional analysis of mobilization considerations based upon updated information received from each military Service.

Readiness

Organization

(U) During FY 1978, HQ DARCOM Directorate for Readiness underwent various personnel changes. A POMCUS Task Force was established in March 1978 with Colonel Philip Haun, Executive Officer, assigned as the Chief. Lieutenant Colonel Keith E. Lundin, Acting Assistant for ILS Development and Deployment was assigned as the Executive Officer. Colonel E. Mason reported to DARCOM in July as the Associate Director for Force Status and Customer Assistance replacing Colonel J. J. Wilmes, who had been reassigned in June 1978. In September 1978, Major General Konopnicki, Director, was reassigned to DSCLOG DA and Lieutenant Colonel Lundin retired. Mr. H. J. Bukowski was assigned as the Acting Director and Colonel Haun was assigned the duties of Acting Deputy Director as well as the Chief of the POMCUS Task Force. Lieutenant Colonel Lark R. Murray, TMDE Project Officer was then assigned the additional duties of Executive Officer. The Readiness Directorate included, in addition to the POMCUS Task Force, three Associate Directors: Equipment Improvement, Force Status and Customer Assistance, and Integrated Logistics Support.

Equipment Improvement

(U) Modification Work Order (MWO) Improvement Program. As part of a continuing effort to improve MWO reporting, action to improve

DRCRE 303 reporting was initiated ly January 1978.[4] An updated schedule and improvement approach was implemented. MRSA, ALMSA, and the MRC's were tasked to revise Appendix C of DARCOM R-750-50, Modification of Materiel, and convert the DRCRE 303 report to a machine data processing system, ADPS 303 MODWORS. Since January 1978 the 303 concept has been developed and completed and key management data elements have been well defined. The general functional system requirement was approved in July 1978 and ALMSA has initiated preparation of the detailed functional system requirement. Prototype testing was expected to occur in FY 1979.

(U) FY 1978 and FY 1978 (Estimate) MWO Program Adjustments. During the 2d and 3rd Quarters of FY 1978 DRCRE 303 reporting and MWO/PIP program reviews were conducted at each MRC during March and April of FY 1978. Significant program adjustments occurred. For FY 1978, the original MWO/PIP program for kit application (OMA 2207 Direct Army Funding) was reduced approximately $27 million. The FY 1979 program was also adjusted downward approximately $25 million.[5] These changes were caused primarily by unrealistic PIP requirements and the unavailability of kits and assets for application. Further adjustments to these programs were expected upon completion of MRC and DESCOM reconciliation process early in FY 1979.

(U) Improvements in the Equipment Improvement Recommendation (EIR) Program. Improvements to increase the effectiveness of the EIR program in both DARCOM and the field have continued. To promote uniformity of reporting with all Governmental agencies/services and to greatly enhance ADP application through the use of a standard form, the use of SF 368 in lieu of DA Form 2407 for reporting of EIR was adopted. Appropriate revisions for reporting of EIR in TM 38-750 and AR 750-1 have been completed. The Equipment Improvement Associate Directorate together with the appropriate Quality Assurance people redrafted cell 3E28 of the CCSS program to provide a single input program for receiving all reports on SF 368 and providing multiple output reports for management and analysis. A similar concept has been applied to CCSS cell 1W32 used by Materiel Readiness Support Activity (MRSA) for reporting to headquarters. This ADP process has been targeted for implementation during the 1st Quarter FY 1980 which would enhance the statistical data base available on field materiel failures and equipment improvement recommendations. A related action underway was the revision of DARCOM (AMC) Regulation 750-3 to include all of the changes in policy and procedures.

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4 Ltr, DRCRE-E, 16 Jan 78, subj: Update of Implementation Schedule for MWO Program Improvement Approach.

5 Directorate for Readiness, HQ, DARCOM, 3d Qtr FY 78 Cmd Performance Indicator Review (CPIR) to CG Aug 78.

(U) Readiness Reviews. During the period, Readiness Reviews were conducted on fifteen systems. Eleven of the fifteen systems were new to the review process having not been reviewed through Systems Assessment or Red Team Analysis procedures. The systems were selected because of evidence of difficulties in meeting their average OR rate achieved over the last eight quarters. The reviews disclosed a variety of shortcomings in logistic support contributing to their degraded readiness posture. These included inadequacies in maintenance and supply manuals, shortfalls in quantity and quality of MOS trained personnel to operate and maintain the systems and the need for product improvement of certain components. Recommendations regarding these deficiencies were provided to Readiness Commanders where appropriate. MRSA also conducted a special study on the procedures and regulations governing the selection, training, testing and licensing of operators of Army equipment. The study was being reviewed with recommended changes to the regulations being developed for submission to the regulation proponents. In addition to the above, 42 System Assessments submitted by the Readiness Commands were reviewed with comments provided to DARCOM's Directorate for Quality Assurance. This included participation in six Disciplined Reviews.

Force Status

(U) Army Logistic Readiness Evaluation System (ALRES). In July 1977, DCGMR approved the implementation of ALRES which permits DARCOM a routine, systematic procedure to provide a monthly readiness analysis to DA, MACOM's and Materiel Readiness Commands. The system automated input from several readiness reports and enabled the Directorate for Readiness personnel to provide a comprehensive readiness evaluation. It has worked well and has enabled the analyst to quickly focus on readiness problems. Phase II was initiated in January of 1978. Phase II expanded the system to include Prepositioning of Materiel Configured to Unit Sets (POMCUS), Theater Reserve (TR) and the readiness of early deploying units. The first effort was restricted to units deploying during the period D to D+30, then incrementally moved to include the entire 180 day package.

(U) HQDA and DARCOM devised a proposed automated procedure which could ultimately eliminate the requirement for the Army in the field to submit the part II Materiel Assistance Designated (MAD) Report. The automated procedures do not require any action on the part of units failing to achieve readiness goals in equipment status but utilize the logistic intelligence file to learn which organizations qualify for submission of MAD report part II and generate at the wholesale level appropriate follow-up for repair parts (Document Identifier Code Alpha, Foxtrot, Charlie), the results of which would provide the same treatment as now given manually prepared Part II MAD reports.

(U) Chemical Defense Equipment (CDE) Program. On 29 May 1975 the Chief of Staff asked for the posture of Chemical Defense Equipment within the Army and the Deputy Chief of Staff for Logistics (DCSLOG) tasked DARCOM (AMC at the time) on 6 June 1975 to provide them the status of CDE in the wholesale system. In addition to providing the asset and procurement data, DARCOM was also asked to develop the factors to be used in computing the mobilization requirements. This was accomplished and the information was provided to DA. DA then included the requirements for CDE in the FY 1977 to FY 1981 Program Objective Memorandum (POM). DARCOM obtained estimated user requirements for FY 1977, 1978, and 1979 and monitored procurement and issues to assure that maximum issues in the Department of the Army Master Priority List sequence were made. Total requirements for some items have been satisfied while others lagged because of the long procurement lead time involved and unavoidable contractor problems.

(U) Logistic Support of Reserve Components. Under the current DA Military Priority List (DAMPL) approved by DA, 8 April 1976, designated Reserve Component (RC) roundout units were assigned a higher priority than certain active Army units. This action resulted in an increased quantity of Equipment on Hand (EOH) and Equipment Status (ES) for the RC. The Materiel Assistance Designated (MAD) reports received from the RC are processed routinely on a priority basis by DARCOM with positive actions then being taken to improve equipment availability dates consistent with the DAMPL priority. As a result of these actions and actions taken by the RC, the RC units for the period April 1976 through April 1978 reflected a steady improvement in percentages of EOH and ES; i.e., RC EOH from 49 percent to 61 percent and the RC ES from 59 percent to 66 percent.

(U) Reserve Components Dedicated Maintenance Program. Since June 1976, DARCOM has intensified the management of selected items in the Reserve Components Dedicated Maintenance Program (RCDMP) and accelerated completion dates for certain items. The RCDMP data are updated bi-monthly with efforts being expended to expedite the program completion dates. The initial RCDMP report June 1976 had 26 line items compared with the July 1978 report that indicated six line items remaining on the RCDMP. As of September 1978 the RCDMP was 77 percent complete.

(U) US Support to United Nations Peacekeeping Operations. The most current operations in which the United States Government (USG) has been involved were continuous support of the UN Forces in Lebanon and the Police action force sent to Nambia, South Africa to observe the elections and transition government action in preparation for their independence from the South African government. So far USG participation has been very limited in latter exercise, most of the logistic support coming from in country and/or from countries supplying the force personnel. As of 30 September 1978 approximately 820 requisitioned lines from UNEF Assist Letters had been processed by DARCOM since 1 January 1978.

(U) Readiness of Missile Systems Worldwide. USAREUR and EUSA continued to enjoy a high state of Missile Readiness but the AMBER rating of the Improved HAWK units were increasing as reflected in the Missile System Availability (MSA) reports. Programs were initiated in both USAREUR and EUSA to decrease the AMBER and increase the GREEN ratings. EUSA was experiencing shortfalls in the Readiness of Improved HAWK units. The shortfalls were attributed to shortages of vehicles which restricted the mobility of the units.

(U) Command Logistics Review Team/Command Logistics Review Team Expanded (CLRT/CLRTX). Force Status personnel participated in Command Logistics Review Team/Command Logistics Review Team Expanded (CLRT/CLRTX) visits conducted by major commands and the National Buard Bureau pursuant to provisions of AR 11-14, Logistic Readiness. During FY 1978 Force Status personnel provided Unit and Materiel Readiness reporting expertise during CLRTX visits conducted by FORSCOM at Ft. Bragg and Ft. Hood; also TRADOC conducted CLRTX visits to Forts Bliss and Sill. DA/DCSLOG conducted CLRTX visits to oversea commands, USAREUR and Eight-US Army, also Force Status personnel. DARCOM Materiel Management/CLRTX visits to TSARCOM and CERCOM included Force Status participation. Force Status also participated in CLRTX visits conducted by the National Guard Bureau to the States of Colorado, Louisiana, South Carolina, Arizona, Wisconsin and Ohio.

(C) DARCOM Readiness Evaluation System (DRES). Under the DRES concept, DARCOM has completed evaluating the first two DRES reports, 30 September 1977 and 31 March 1978. The first DRES assessment addressed only the Materiel Readiness Commands (MRC), DESCOM and associated activities. In the second assessment, the readiness posture of the Research and Development (R&D) Commands was included in the evaluation. As of 31 March 1978, it was determined that no appreciable change in DARCOM's Readiness Condition (REDCON) posture has transpired since 30 September 1977. DARCOM was assessed to have an overall peacetime readiness posture of C-2 (Substantially Ready) with a mobilization posture of C-4 (Not Ready). With resource limitation evidenced in the DRES reports, DARCOM was NOT READY to support its customers during mobilization. The major contributing cause for DARCOM's REDCON continued to be a deficiency in funding. Resource areas which were not ready were Personnel, Stock Availability, Industrial Preparedness, Facilities, ADPE and Capital Equipment. It was seen that if DARCOM was to perform the mission for which it was intended, additional funds would need to be provided to support the total force structure.

(U) Upgrade of TRADOC Service School Training Equipment. In compliance with DA direction and in coordination with TRADOC, action was initiated on 7 September 1976 to identify training equipment shortages, replacement, overhaul, modification and product improvements needed to upgrade the training base equipment to acceptable

serviceability standards. Supply and maintenance requirements were referred to the applicable DARCOM Readiness Commands (MRC's) for improved supply duties and maintenance scheduling. Ninety percent of the requisitions were either immediately filled, cancelled or scheduled for shipment by the end of FY 1978. Forty eight percent of 772 items identified for maintenance actions could be immediately replaced or included in the FY 1978 overhaul programs contingent on TRADOC coordination of their requirements with DARCOM MRC's .

(U) NIKE HERCULES Fire Control Components could not be scheduled for overhaul due to depot workload. TRADOC was requested to advise this headquarters of the minimum number of upgraded Fire Control Systems or components thereof that could accommodate their needs. Because of pending TRADOC organizational changes, and their impact on training missions, upgrading requirements had not been identified. During the upgrading effort, a problem was noted with the equipment distribution system in that replacement items were not available to the training facilities for use during equipment overhaul periods. To resolve and preclude recurrence of this problem,three courses of action were recommended: provide for selected maintenance float items and/or increased equipment authorizations; increase DAMPL priorities to assure early receipt of repair parts/components and equipment at the training facilities from the depot supply systems, PIP/modification and overhaul programs; and assure that the training facilities depot maintenance requirements are submitted annually to the applicable MRC for budgetary and scheduling actions.

(U) Logistic Assistance Program Organization Restructuring. The readiness and sustainability of the Army in the field are frequently impacted by factors outside the traditional logistic functions of supply, maintenance, transportation and services. Matters such as personnel, training, doctrine or funding are often the source of many problems that appear on the surface to be due solely to a deficiency in the logistic system. Recognizing the need to detect the existence of their problem areas and to react to them while they are still in a relatively correctable state a logistic assistance concept has been developed to force continuing consideration of the relationships of personnel, training, doctrine, and funding to functional logistics. The concept has as its overall objective the improvement of readiness and the sustainability of the Army in the field, with the most basic precept of detecting and resolving problems at the lowest level possible.

(U) To assume an organizational posture conducive to implementing such a concept and to realize the fullest benefit possible DARCOM developed an implementation plan on 12 December 1977 which was subsequently approved by DA DCSLOG on 4 January 1978. The implementation plan required changes in policies and procedures and in the

logistic assistance office's (LOA) organizational structure. The policy and procedural changes have been written into a revised AR 700-4, Logistic Assistance Program, which was to be promulgated approximately 15 December 1978. The LAO organizational structure changes have been oriented toward the oversea LAO's requiring them to establish subordinate LAO's or sub-offices at the Division and other appropriate elements within the oversea major command. Such an LAO structure basically existed with the CONUS Major Command to include FORSCOM and TRADOC. The subordinate LAO's/sub-officer became operational in FY 1978 and charged with the responsibility of orchestrating the activities of all DARCOM logistic assistance personnel operating in their geographical areas of responsibility. The structure was expected to assure a well balanced effort providing the greatest payoff in terms of improved or sustained user readiness.

Integrated Logistic Support

(U) ILS Activity on XM-1 Tank. The second ILS Management Team meeting was held on 9 November 1977 at the PMO, Warren, MI to discuss the overall ILS Program on XM-1 Tank. The Physical Teardown/Maintenance Evaluation (PT/ME) was initiated on 8 February 1978 and completed on 10 April 1978 at Anniston Army Depot. The PT/ME resulted in over 200 recommendations for engineering changes to improve maintainability and many more proposed publication changes to improve operation and maintenance procedures. ILS was involved in the evaluation of Maintenance Test Support Packages (MTSP) for DT II (beginning 15 March 1978) and OT II (beginning 15 May 1978), and ILS personnel participated in Test Integration Working Group (TIWG) meetings throughout the period. A Depot Maintenance Planning Conference was held on 15 August 1978 to discuss depot maintenance requirements and the need for capital equipment to support future programs.

(U) Integrated Logistic Support (ILS) Milestone Reporting System. DARCOM Regulation Number 700-13 was published with an effective date of 2 December 1977. This regulation established a reporting system that was to permit managers at all levels to assure that support was being developed and provided simultaneously with the end item being acquired. This reporting system was devised to provide a means of evaluating the ILS program performance.

(U) The LSAR Five Year Development Plan (FYDP). The Logistic Support Analysis Record (LSAR) is the working data base used in the development of a system's integrated logistic support and was being used throughout DARCOM and DOD. Because of the systems approach used in designing for logistic support, the LSAR was required to

interface with many technical areas. In addition, new and changing policies, coupled with improved understanding of the LSAR's capability, was expected to lead continually to new requirements. To meet these requirements, to assure proper interface with the technical areas, and to provide for the systematic evolution of the LSAR, the FYDP was developed during this past Fiscal Year. This plan has been maintained by the Materiel Readiness Support Activity (MRSA) at Lexington, Kentucky and identified all approved changes to the LSAR. In addition, the plan assigned responsibility and schedules for the completion of these tasks. At the close of FY 1978, about 25 percent of the tasks had been completed, 50 percent were underway, and the balance were not scheduled to begin until the out years of the plan. In support of the plan, OSAR workshops were held semi-annually to discuss the status of the tasks, establish new needs/requirements, and reassess priorities. The LSAR was updated yearly.

(U) Rationalization, Standardization, Interoperability (RSI) Study. A RSI study titled: Initiatives and Cautions in the Acquisition of Foreign Weapons, Chapter VII, Integrated Logistic Support (ILS) was prepared. It contains logistic supportability program requirements to be considered as an integral part of the weapon system evaluation prior to the procurement decision. Initial and sustaining deployment were included in the document.

(U) Integrated Logistic Support of Non-Development Items (NDI). A new policy directing that commercial items, items developed by other military services or Federal agencies or items developed by foreign nations be considered for procurement to satisfy Army needs created DARCOM requirements for additional Integrated Logistic Support (ILS) policies to guide such procurements. Initial acquisitions led to rapid delivery of commercial off-the-shelf items with inadequate support or delays while logistic support elements were delivered for shipment and issue with such materiel. To provide broad guidance in this relatively new acquisition area, a DARCOM ILS policy statement was prepared, fully coordinated and distributed in October 1977. This letter specified minimum requirements for equipment publications, repair parts stockage and logistic technical data. In February 1978, test, measurement, and diagnostic equipment requirements were incorporated in the NDI policy statement for ILS. In the same timeframe, NDI policy coordination with the Training and Doctrine Command (TRADOC), the Logistics Evaluation Agency (LEA), the Operational Test and Evaluation Agency (OTEA), and the Military Traffic Management Command (MTMC) was initiated. After coordination of documents and a series of meetings, agreements were reached on the procedures and minimum requirements necessary to procure and sustain NDI in the Army military environment. Information gathered helped to define Department of Army policy for acquisition and logistic support of NDI, both US and foreign.

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(U) Logistic Supportability Test and Evaluation. A project was assigned to AMSAA early in FY 1978 to develop a methodology for logistic supportability test and evaluation during development testing of new or improved materiel systems. As a result of workload and funding considerations, AMSAA was unable to undertake the project. Therefore, in January 1978, the project was assigned to the Logistic Studies Office (LSO) of ALMC with the understanding that necessary technical support would be provided by TECOM and AMSAA.

(U) The LSO-TECOM-AMSAA team undertook research, held joint meetings with the HQ DARCOM Project Advisory Group, and the Project Sponsor (DRCRE-I) and produced a "strawman" in June 1978. This draft was judged too general and broad to serve the intended purpose as a guide for TECOM and AMSAA and as a "hurdle" for the developer. Accordingly, the project was given new guidance in July 1978 to prepare measurement indicators, units of measure, and criteria for evaluation of logistic supportability based on data obtained from testing the following: end item; supply support/provisioning; support and test equipment; technical data/equipment publications; personnel and training; transportation and handling; and facilities. These seven elements were to be broken down into subelements for analysis and test and "folded back" for summation of measurement indicators and logistic supportability evaluation. The array of system elements and subelements for test and the indicators for evaluation were to be presented in a dendritic structure. The team was making progress on this challenging assignment at year's end. The narrative supporting the dendritic outline was to be written and coordinated by LSO.

POMCUS Task Force

(C) Accelerated Fill of Prepositioned Materiel Configured to Unit Sets. The entire DARCOM community became deeply involved in an effort to manage intensively the assets which were required to meet the VCSA initiatives concerning the accelerated fill of POMCUS. The VCSA directed goal was to bring the Equipment on Hand profile for the Reforger and 2 plus 10 POMCUS packages to the C-1 level (90 percent of RICC-1 line item numbers at 90 percent fill) by 30 June 1978 and the MR Logaeur and Medical Augmentation POMCUS packages to the C-1 level by 31 March 1979. To accomplish these goals, a special POMCUS Task Force was established under the Director for Readiness. The primary function of this task force was the tracking of assets required to meet the VCSA directed goals. This included the withdrawal of assets from CONUS based forces and some requests for out of DAMPL issue. Priority of emphasis was initially directed at the 30 June 1978 goal for the Reforger and 2 plus 10 POMCUS packages. This goal was met through extensive off-line efforts in coordinating Materiel Release Orders (MRO), Depot overhaul, and deport shipment and transportation availability. As of 30 June 1978, 92 percent of the RICC-1 lines in

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Reforger were 90 percent fill and 90 percent of the RICC-1 lines in 2 plus 10 were at 90 percent fill. This same effort of intensive management was being expended to meet the 31 March 1979 goal for the MR Logaeur and Medical Augmentation POMCUS packages.

(C) On a quarterly basis the Commander, USAREUR Materiel Management Center convenes a Theater Stock Report (TSSR) Review Board Meeting at Zweibrucken, Germany. During the meeting a detailed review is made of each POMCUS item, and action is taken to fill shortages from available USAREUR resources. Subsequent to the TSSR Review Board, a meeting is conducted between DA, USAREUR and DARCOM representatives to update the status of POMCUS fill. During the August 1978 meeting, a memorandum of understanding (MOU) prescribing management actions required to fill of the MR Logaeur and Medical Augmentation was signed by principals involved. To date two meetings have been attended by members of the POMCUS Task Force with plans to continue attendance at future quarterly conferences.

(C) The OSD Program Decision Memorandum, dated 16 August 1977, and Amended Program Decision Memorandum, dated 16 August 1977, directed the Army to add three additional Division sets of equipment to POMCUS in Europe. The first division set was to be in place by the end of FY 1980 (Phase I) with the two remaining sets in place by the end of FY 1982 (Phase II). A SECRET DA Plan received by this office in September 1978 further split the filling of the first division set into two separate goals. The first goal was to fill a brigade slide by the end of FY 1979 and the remaining two brigade slices by the end of FY 1980. Implementing instructions for this plan were provided the MRC's during the first week in October 1978. The DARCOM MRC's have been tasked to provide distribution plans, funding requirements, withdrawal candidates and to identify assets which must be fenced to preclude release to lower priority claimants pending receipt of POMCUS coded requisitions.

(C) In response to these requirements and additional requirements in the planning stages at HQDA, a request was forwarded to make the POMCUS Task Force a permanent office with a TDA strength of eight employees (two military, six DAC's). This request was approved and a study was underway to determine availability of position vacancies.

Procurement and Production

Programs - Army Appropriations (FY 1976-FY 1978)

(U) There were significant increases in the overall dollar value of the DARCOM procurement programs during the last four years. The Army Program has shown substantial growth during this period, from $2.9 billion in FY 1975 to $6.2 billion in FY 1978. The tabulation as shown below depicts the growth of the released program.

(UNCLASSIFIED)

PROCUREMENT PROGRAM, ARMY APPROPRIATIONS
DIRECT ARMY/REIMBURSABLE RELEASED PROGRAM
M OF $
FY 78

COMMAND 1/	2/	FY 75 2/	(15 months) FY 76/7T 2/	FY 77 1/	FY 78 1/
ARRCOM	ARMCOM	2413.2	2363.7	2034.2	2285.1
ARRADCOM	ARMCOM	--	--	224.3	406.3
AVRADCOM	AVSCOM	--	--	--	229.2
CERCOM	ECOM	443.3	561.0	759.7	418.3
CORADCOM	ECOM	--	--	--	299.4
ERADCOM	ECOM	--	--	--	223.0
MIRADCOM	MICOM	--	--	79.4	193.8
MIRCOM	MICOM	1649.7	1708.8	966.2	1010.0
TARCOM	TACOM	1064.7	2225.8	1853.1	1776.1
TARADCOM	TACOM	--	--	125.2	449.9
TSARCOM	TROSCOM	166.6	234.3	865.6	748.6
TSARCOM	AVSCOM	351.9	560.9		
Other Commands		51.0	145.4	81.8	152.6
TOTAL		6140.4	7799.9	6989.5	8192.3
ARMY		2945.4	4604.9	5162.4	6248.4
REIMBURSABLE PROGRAM		3195.0	3195.0	1827.1	1943.9

NOTES:
1/ Reorganization of DARCOM
2/ Prior to reorganization
Source: RCS CSGLD-1369(R1) Report

Chart 20

(UNCLASSIFIED)

Program Execution

(U) DARCOM established a dollar award goal of $6495.1 million for FY 1978. The overall award command performance exceeded the DARCOM goal by $258.5 million for a performance of 104.0 percent. This compares favorably over the DARCOM FY 1977 performance of 102.0 percent. The tabulations in the charts below reflect the accomplishment.

DARCOM
STATUS OF AWARDS AND FORECAST
FY 1978 PEMA Program RCS CSGLD 1369 (R1), as of 30 September 1978
($ Millions)
(FY 1976 - FY 1978)

		RELEASED PROGRAM	ACTUAL AWARDS	AWARDS CARRY OVER	AWARDS % of GOAL ACCOMPLISHED	END FY 78 $M GOALS
ARRCOM	DA	1487.7	1317.2	170.5	103.1	1278.1
	REIMB	797.4	674.1	123.3	116.6	577.9
ARRADCOM	DA	366.7	293.2	73.5	86.0	340.9
	REIMB	39.6	25.1	14.5	64.4	39.0
AVRADCOM	DA	229.2	202.1	27.1	100.5	201.1
	REIMB	---	---	---	---	---
CERCOM	DA	887.9	574.2	313.7	97.8	587.4
	REIMB	52.8	30.3	22.5	97.1	31.2
MIRADCOM	DA	148.0	134.9	13.1	102.3	131.9
	REIMB	45.8	41.6	4.2	115.9	35.9
MIRCOM	DA	514.7	483.2	31.5	103.8	465.6
	REIMB	495.3	452.3	43.0	105.9	427.0
TARCOM	DA	1386.7	1158.8	227.9	103.2	1122.8
	REIMB	389.4	316.0	73.4	108.3	291.7
TARADCOM	DA	423.3	384.8	38.5	100.3	383.6
	REIMB	26.6	.9	25.7	100.0	.9
TSARCOM	DA	651.6	520.4	131.2	101.4	513.2
	REIMB	97.0	71.0	26.0	106.1	66.9
OTHER COMDS (TECOM, MERADCOM, HDL, ETC.)	DA	152.6	73.5	79.1	--	--
TOTAL	DA	6248.4	5142.3	1106.1	102.3	5024.6
	REIMB	1943.9	1611.3	332.6	109.6	1470.5
GRAND TOTAL		8192.3	6753.6	1438.7	104.0	6495.1

Chart 21

STATUS OF FY 1978 DARCOM Released PEMA Program
As of 30 September 1978
PEMA Program RCS CSGLD 1369 (R1)
($ Millions)

COMMAND		RECEIVED BY FIELD	CONTRACTS AWARDED	CARRY OVER
ARRCOM	DAC	1236.0	1124.0	112.0
	DAP	251.7	193.2	58.5
	OCC	687.3	589.9	97.4
	OCP	110.1	84.2	25.9
	TOTAL	2285.1	1991.3	293.8
ARRADCOM	DAC	319.3	260.0	59.3
	DAP	47.4	33.2	14.2
	OCC	37.1	23.2	13.9
	OCP	2.5	1.9	.6
	TOTAL	406.3	318.3	88.0
AVRADCOM	DAC	214.9	194.7	20.2
	DAP	14.3	7.4	6.9
	OCC	--	--	--
	OCP	--	--	--
	TOTAL	229.2	202.1	27.1
ERADCOM	DAC	175.8	124.4	51.4
	DAP	46.1	28.2	17.9
	OCC	--	--	--
	OCP	1.1	.3	.8
	TOTAL	223.0	152.9	70.1
CERCOM	DAC	240.4	138.9	101.5
	DAP	126.3	84.9	41.4
	OCC	33.1	20.1	13.0
	OCP	18.5	9.8	8.7
	TOTAL	418.3	253.7	164.6
MIRCOM	DAC	450.0	427.0	23.0
	DAP	64.7	56.2	8.5
	OCC	442.7	405.4	37.3
	OCP	52.6	46.9	5.7
	TOTAL	1010.0	935.5	74.5
MIRADCOM	DAC	137.8	125.9	11.9
	DAP	10.2	9.0	1.2
	OCC	41.1	38.3	2.8
	OCP	4.7	3.3	1.4
	TOTAL	193.8	176.5	17.3
TARCOM	DAC	1150.4	1022.3	128.1
	DAP	236.3	136.5	99.8
	OCC	326.5	279.1	47.4
	OCP	62.9	36.9	26.0
	TOTAL	1776.1	1474.8	301.3

Chart 22

Chart 22--Continued.

STATUS OF FY 1978 DARCOM Released PEMA Program
As of 30 September 1978
PEMA Program RCS CSGLD 1369 (R1)
($ Millions)

COMMAND		RECEIVED BY FIELD	CONTRACTS AWARDED	CARRY OVER
TARADCOM				
	DAC	390.0	352.2	37.8
	DAP	33.3	32.6	.7
	OCC	26.0	.4	25.6
	OCP	.6	.5	.1
	TOTAL	449.9	385.7	64.2
TSARCOM				
	DAC	483.3	399.2	84.1
	DAP	168.3	121.2	47.1
	OCC	76.9	57.4	19.5
	OCP	20.1	13.6	6.5
	TOTAL	748.6	591.4	157.2
CORADCOM				
	DAC	192.2	120.5	71.7
	DAP	107.1	77.3	29.8
	OCC	---	---	---
	OCP	.1	.1	---
	TOTAL	299.4	197.9	101.5
OTHER COMMANDS (MERADCOM, HDL, TECOM, PM-TRADE, ETC.				
	DAC	90.7	26.9	63.8
	DAP	61.9	46.6	15.3
	OCC	---	---	---
	OCP	---	---	---
	TOTAL	152.6	73.5	79.1
DARCOM (ALL COMMANDS)	DAC	5080.8	4316.0	764.8
	DAP	1167.6	826.3	341.3
	OCC	1670.7	1413.8	256.9
	OCP	273.2	197.5	75.7
	TOTAL	8192.3	6753.6	1438.7

DAC - DIRECT ARMY CURRENT YEAR (FY 1978)
DAP - DIRECT ARMY PRIOR YEARS (FY 1976, 1977T, 1977)
OCP - OTHER CUSTOMER PRIOR YEARS (FY 1976, 1977T, 1977)
OCC - OTHER CUSTOMER - CURRENT YEAR (FY 1978)

(U) During Fiscal Year 1978 DARCOM undertook the automation of the management data base, including forecasts of obligations, reasons for not-forecast values, and reasons for monthly changes to forecasts. This action provided the capability to compare, for the first time, fiscal/program funding values with plans for their use. The result has been to greatly enhance the procurement program management capability at all levels.

Procurement Appropriations Program and Fund Control System (PFCS)

(U) As a direct result of the Secretary of the Army's Financial Management Advisory Committee recommendation to design a positive system to control the procurement appropriations program release and fund allocating process, the APARS control sub-system PFCS was developed and implemented during FY 1978. The system implementation was being coordinated under an agreement between the Director of the Army Budget and ASA(FM). This system which comprehensively controls and ties together the major Army elements managing the procurement appropriations has the specific objectives: to be the primary vehicle to manage and control the procurement appropriation program and funds allocation process within HQDA; to be the official program and fund control ledgers for the procurement appropriations. (The system records were expected to serve as the official program and fund allocation status for the Deputy Chief of Staff for Research, Development and Acquisition (DCSRDA), Comptroller of the Army (COA), US Army Finance and Accounting Center (USAFAC), and HQ, US Army Materiel Development and Readiness Command (DARCOM)); and to provide a new, more efficient, and affective method of communicating program and funding data to USAFAC, major Army commands, and make the official data totally available on a real time basis to all major involved parties. The new procedures were expected to provide a more controlled Department of the Army system that would be one step toward preventing violation of Revised Statute 3679 (Anti-Deficiency Act).

(U) The Procurement Appropriation and Fund Control System is intended to provide a common data base for COA, DCSRDA, DARCOM, and ACC to manage the overall apportionment, program release, fund allocation and reprogramming processes. This system was expected to provide the status of procurement appropriations program and funds released and a real time vehicle to manage the overall process in accordance with the policy of tying program releases and fund allocations together at the Army Headquarters level. The capability to manage the procurement appropriations on a real time basis has been a major requirement that has not been within the capability of existing systems.

(U) The Control Data Corporation (CDC) has developed the PFCS and is providing ADP support through their time-sharing service. The system was to utilize Control Data 751-10 display terminals and 755-10 impact printers. Three terminals for the system interface were installed in DARCOM; one with the Comptroller's Office, HQ, DARCOM, for receipt of program and fund release documents and system entry. One was in the office of the Director for Programs (DRCPP-P) for system inquiring and one placed at LSSA (Letterkenny AD) for reprogramming input and system inquiry. Each MSC has also received a terminal for the input/output of data.

(U) The PFCS was designed for implementation in three phases: Phase 1 - Direct Army and Reimbursable (Customer) program and fund release by HQ, DA to HQ, DARCOM; Phase 2 - Direct Army Program and fund release from HQ, DARCOM to major subordinate commands; and Phase 3 - Procurement appropriation Reimbursable Program and Funded Reimbursable Authority (Customer Program) release to MSC's by HQ, DARCOM. The status was as follows: Phase 1 - Implemented between HQDA and HQ, DARCOM for release of program authority and funds through PFCS, Direct Army and Customer Program; Phase 2 - Loading and testing being conducted at the MSC's. Implementation anticipated in about 18 months. Phase 3 - Reimbursable Program release to MSC's by HQ, DARCOM undergoing test with the implementation date not having been established.

Four Step Source Selecting Procedure

(U) In 1974, DOD proposed a new approach for awarding negotiated contracts requiring the performance of advanced, engineering, or operational systems development. This concept became known as the Four-Step Source Selection Procedure. For the past two years, DOD has been testing the use of the "Four Step" method of selecting sources for certain advanced development contracts. The special group recommended, in an impressive report, that the Four-Step procedure should be generally adopted for all over $2 million competitively negotiated acquisitions involving advanced research or development work which had progressed beyond the formulation of concepts. Excepted from the requirement would be acquisitions that: involve selecting a contractor from among competing demonstration and validation contractors, are negotiated under the exception which permits negotiation if the public exigency does not allow the delay incident to formal advertising, are solely for services, or are for architect-engineering efforts.

(U) On 31 May 1978, the Director of DOD contracts and Systems Acquisition announced to industry that DOD was considering the publication of the "Four Step Source Selection" procedures in the Defense Acquisition Regulation (DAR). According to DOD, the new regulations were "designed to focus attention on technical excellence, maintain

the integrity of each offeror's proposal while maintaining the visibility of discriminating features between proposals, reduce the opportunity of buy-ins, preclude the opportunity for the use of auctioning techniques and provide a disciplined and orderly process in the selection of contractual sources for research and development acquisitions."[6]

Commercial Industrial Type Activity (CITA)

(U) During FY 1978 the CITA program continued to lack a formal national policy and commitment to contracting-out under the program as envisioned by the Office of Management and Budget (OMB). This failure of commitment to CITA was causing a lack of standardized procedures and the program was operating with a lack of uniformity and much general confusion within DOD.

(U) A new OMB Circular A-76 was circulated for review and comments, as was a Pricing Handbook for firm bid procedures. The General Accounting Office (GAO) had been very critical of the issuance of these documents and had predicted that until a national policy was established confusion would continue to exist.

(U) DOD and the Army specifically, in attempting to comply with the philosophy of contracting-out commercial and industrial type activities wherever possible was required to commit more and more of its diminishing resources to the program, and the result as of the end of FY 1978 was viewed as possibly proving to be counter-productive.

Copper Impact Program

(U) To improve the Army's pricing capability through application of computer technology to the procurement/pricing process, in 1977 DARCOM implemented a data-producing, time-sharing system basically consisting of one or more computer terminals connected through the telephone system to a central computer operations facility. The terminal consisted of a keyboard used to select the desired computer program and to input data to the computer and a printer and/or cathode-ray tube to display the results of the computations and data collection.

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6 (1) Ltr, Director of DOD Contracts and Systems Acquisition, 31 May 1978, Subj: Four-Step Source Selection. (2) Defense Acquisition Circular No. 76-17, 1 Sep 1978. (Item XV of this circular incorporated Paragraph 4-107, entitled "Four Step" Source Selection Procedures, into the Defense Acquisition Regulation (DAR).

(U) During the 4th quarter of FY 1977, the General Electric time-sharing system was implemented at three DARCOM major subordinate commands. This action marked Army's entry into an overall system network that was being utilized by all the military services and DLA (DCAS filed activities.) Code named Copper Impact, the system was expanded during FY 1978 to 11 DARCOM major subordinate commands and one Army Plant Activity. In addition, at DARCOM request, DCAS implemented the program to insert the latest contractor labor rates and pricing factors, referred to as CONRATES (Contractor Rates Data), on a number of the Army's major prime contractors into the GE computer. This application permits the MSC's to obtain the current labor rates and pricing factors for validating proposed contractor's cost and pricing data.

(U) The commands using Copper Impact found the system highly beneficial and effective in analyzing and developing the Government's negotiation position and using the computer in contract negotiations. Both TSARCOM and CERCOM/CORADCOM were using portable terminals on Should Cost Studies to insert data directly into the computer and thus minimize preparation time for contract negotiations.

Procurement Management System (PROMS)

(U) The Procurement and Production Directorate initiated the DARCOM Procurement Management System, PROMS, in March 1976 completing full integration of the system into procurement management in July of that year. PROMS, as a management system for planning and control, outlined procedures for the development of objectives and measurements of performance against those objectives. Specific indicators were developed to assess progress against the objectives. Among the indicators selected for FY 1978 were: Percent of Intensively Managed Items delivered on time, Letter Contracts definitized, Reduction of Procurement Administrative Lead Time (PALT), Price Competition Awards as a Percent of Dollar Value of all Awards, Amount of Formal Advertising, and Total Dollars and Volume of Actions.

(U) Although fourth quarter results were not available for the latter three indicators results of the other indicators point to a favorable trend. The dollar value of letter contracts was reduced from $509.4 million at the end of FY 1977 to $184.4 million at the end of FY 1978. Letter contracts outstanding more than six months were reduced from ten to three.

(U) The target of eighty five percent on-time delivery was set for delivery against current schedule of intensively managed items. While the target goal was not reached, the percent on time delivery improved from 59.5 percent in FY 1977 to 61.8 percent in FY 1978, and averaged 61.8 percent for the year. Efforts to reduce Procurement

Administrative Lead Time during the fiscal year resulted in exceeding target in all but two categories. The goal is to achieve award of 85 percent of the Procurement Work Directives within the DARCOM Standards. This target was exceeded for both those items below and those above $10,000 in the Development Commands, the Depots, AMMRC and ARO. The target was not reached in the Readiness Commands.

Procurement Backlog

(U) Entering FY 1978, it was recognized that the backlog of procurement actions had seriously impacted materiel readiness. An analysis was undertaken which determined that the excess backlog of 14,515 procurement actions represented 501 manyears of effort. It was estimated that based on the number of procurement work directives in process, the excess backlog would reach 43,300 procurement actions, approximately 1493 manyears of effort by year end. Such an increasing backlog would adversely impact efforts to eliminate slippage in obligations against plan, especially in the procurement appropriation.

(U) Based on this analysis, the directorate was able to provide specific, detailed support for increased dollar guidance for FY 1979 and FY 1980. The increase was expected to enable central procurement offices to reduce the excess backlog to a level of 18,800, a 57 percent reduction from FY 1978. In addition to enhancing the Army's materiel readiness condition, this effort was seen to result in a more timely obligation of program dollars, better contracting procedures, and earlier deobligation for reprogramming through increased contract closeouts.

Automated Systems

(U) The following Procurement and Production Automated Projects were completed and incorporated into the Commodity Command Standard System (CCSS) during FY 1978.

(U) Contract Input Data Entry System (COINS). This new teleprocessing system was installed at the DARCOM MRC's. The system uses remote terminals located in the procurement offices. It accepts contract data for input to the CCSS system. COINS eleminates many manual transactions.

(U) Standard Automated Bidder's List System (SABL). This system which became operational in February 1978 provides an automated method of selecting sources of supply in conformance with the requirements of the ASPR. SABL was expected to give the registered potential bidder an equitable opportunity to bid on procurement requirements for hardware items.

(U) The following P&P Automated Projects were identified for incorporation into CCSS during FY 1979.

(U) Headquarters Management Information System (HQMIS). The HQMIS would provide the procurement and production managers the capability of assessing the status, effectiveness and efficiency of work. HQMIS basically consisted of performance indicators approved by DARCOM. As of 3 May 1978, the concept of PI's had been discontinued. In its place, but yet to be developed, would be data element retrievable programs by ALMSA. The data elements would be extracted by such programs and placed in a separate application. HQMIS would be able to extract the data elements and display them in quantitative terms or expressions of management information that measures, for example, any activity against DARCOM established objectives, targets, and goals. As of March 1978, HQMIS was operational for the RCS 127 Workload Report. The balance of HQMIS reports were expected to be ready for use by December 1978. The specific major objectives that HQMIS was being designed to meet were: reduce / eliminate hard copy and manual reports, optimize the "Man-Machine" dialogue, and provide a managerial diagnostic capability.

(U) Commodity Command Management Information System (CCMIS). This system was designed to provide management at the MRC's the capability of timely assessment of status, effectiveness and efficiency of their procurement operations. This system would be prototyped at MIRCOM and was expected to be operational in February 1979.

(U) Procurement Automated Data and Document System (PADDS). PADDS is the DARCOM mini-computer based system that would automate the procurement solicitation process, the contract award and modification process, and produce selected management reports. This system was under development and was expected to be installed at our MRC's by May 1979.

(U) Acquisition Planning and Tracking System (APATS). At the close of FY 1978, the CCSS was not programmed to accept the entry of data pertinent to acquisition planning and tracking prior to the issuance of a procurement work directive (PWD), funding document. Modification of the CCSS for this capability, under consideration, would provide the MRC's with the ability to develop planning milestone schedules and reporting procedures for use of management for selected items and also satisfy the various forecasting and report needs of the MRC's.

Procurement Management Reviews

(U) Iranian Aircraft Program. At the suggestion of the Deputy Director for Procurement and Production, HQ, DARCOM, a contract management review was scheduled and performed of the Iranian Aircraft Program

Project Manager Field Office located in Teheran, Iran. The review resulted in 20 recommendations and 23 suggestions to increase the efficiency of the operation and to assure that contracts performance proceeded in a timely, economic manner. The most significant of the review observations covered the need to: revise assigned mission and functions and the organizational structure to provide separate elements for both contract and program management; increase the contract administration function in the field office by expanding the administrative contractiag officer's authority to permit the negotiation and execution of contractual supplemental agreements; establish a field office surveillance plan which would provide means for evaluating contractor's progress against contractual requirements; and take action to more clearly delineate contract requirements for the financial management operation to include performance milestones and characteristics. Command emphasis and implementation of the foregoing and other recommendations was expected to further improve the efficiency in which the Army was carrying out its missions for the Government of Iran.

CORADCOM

(U) Due to a request from the Chairman, Armed Services Investigations Subcommittee to the Secretary of the Army, a special procurement management review was performed of the US Army Communications and Electronics Materiel Readiness Command. The review resulted in 30 recommendations and 7 suggestions to increase the efficiency and effectiveness of the acquisition operation. The most significant of the review observations covered a need to revise written procedures utilized on a competitive negotiated technique to be used only when adequate competition can not be determined; take immediate action to require that sensitive procurement information as to prices not be released to Government technical evaluation teams; make contract awards on a selection from initial proposals when they are priced competitively and the offerors are otherwise eligible for award; and correct deficiencies in the competitive negotiations technique to include alternate uses of the formal advertised method. This would incorporate the use of audits, cost analysis, and negotiations by cost element only when adequate price competition did not exist; cost and pricing data not requested when adequate competition was expected; and no elimination of offerors from price competition on a technical basis when responsibility was the issue.

Harry Diamond Laboratories

(U) A procurement management review was performed of the Harry Diamond Laboratory Office of Procurement of the US Army Electronics Research and Development Command located at Adelphi, Maryland. The review resulted in 28 recommendations and 15 suggestions for increasing

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the efficiency and effectiveness of the acquisition operation. The most significant of the review findings covered the need to (1) establish and use a formal Solicitation Review Board plus a separate Technical Review Board to review proposed solicitations and requirements for proposed sole source awards, (2) identify and recommend types of production items presently or previously procured which should be transferred for future procurement actions to appropriate subordinate readiness commands of DARCOM, (3) have written prenegotiations cost objectives prepared prior to the conduct of negotiations with offerors, (4) obtain approval from level above the contracting officer and prepare detailed rationale including consideration to be sought from contractor, prior to authorizing purchase of total material requirements and progress payments therefor, under contracts containing first article approval, and (5) prepare detailed rationale of the cost effect, benefits to contractor and Government, and consideration to be sought prior to authorizing contract deviations or revising contract required delivery dates.

Cost Performance Reporting

(U) C/SCSC Guidance. The following guidance activities were accomplished during the year: published change 2 to the Cost/Schedule Control Systems Criteria (C/SCSC) Joint Surveillance Guide; completed development of a joint guide relating to Cost/Schedule Management of Non-Major Contracts; developed more extensive policies with respect to C/SCSC Subsequent Application Reviews and guidance for conducting such reviews; and participated in the development of additional guidance pertaining to the application of C/SCSC to production contracts.

(U) Progress in Applying C/SCSC. The number of accepted implementations of the DOD Cost/Schedule Control Systems Criteria (C/SCSC), involving DARCOM-led reviews, increased from 90 at the start of FY 1978 to 108 at the end of FY 1978. There were 36 more applications of C/SCSC in various stages of the implementation process at the end of FY 1978. Of the 108 accepted implementations, 11 related to in-house activities and 7 to Government-owned/contractor-operated (GOCO) Army Ammunition Plants.

(U) Training and Orientation. The Associate Directorate for Cost Performance Reporting continued to support the four training courses conducted by the Army Management Engineering Training Activity (AMETA), Air Force Institute of Technology (AFIT), and the Defense Systems Management College (DSMC). This support involved soliciting and screening applicants, review and advice concerning course content, and presentations and panel participation during classes. Also provided were representatives to participate in industry/Government meetings and seminars on the subject of C/SCSC.

(U) Independent Assessment of Project - Managed Programs. Monthly independent analyses of cost/schedule performance and projections were

performed on the major contracts of the Army's "Big Five" programs. The DCGMD was briefed on the results. Also analyzed were other major acquisition contracts which received Cost Performance Reports from contractors.

(U) Relations with Industry. The Cost Performance Reporting Office actively participated in several meetings with an industry Ad Hoc committee relating to the application of C/SCSC to production contracts and conducted extensive coordination with industry relating to the development of the Cost/Schedule Status Report guide.

Industrial Preparedness

(U) DOD-Wide Review of Plant Equipment Management. The Office of the Assistant Secretary of Defense (MRA&L) established a Defense Logistics Agency study to review the management of plant equipment across the DOD to determine the potential for integrating the commodity management of that range of materiel identified as Industrial Plant Equipment (IPE) and identify the problems associated with the management of IPE, Other Plant Equipment (OPE), and Special Test Equipment (STE). Major data input for the study was obtained by visiting the Major Readiness Commands and the study was scheduled for completion early in CY 1979.

(U) PEP Upgrade. Significant steps were taken to upgrade industrial plant equipment in Plant Equipment Packages (PEP's) during FY 1978. Data available indicated that there remained approximately 20,000 items to be rehabilitated. This estimate comes from combining information contained in the Kaiser/Stetter Study, the Review of Army Mobilization Planning (RAMP), and a separate DIPEC report. With annual OMA funding of $4 million supporting an upgrading rate of approximately 500 items per year, the time frame for completing the mobilization upgrading backlog could take as much as 40 years. This rate of upgrading was based on production at the Army's two upgrading facilities, Seneca Army Depot and Lima Army Modification Center. Lima was now losing its upgrading capability as the plant's resources were being channeled totally into the XM1 tank production. This would decrease the upgrade capacity by approximately one half and has prompted additional study. The need for continued upgrade of the non-munition IPE was considered to be so important that it was the subject of a PARR special issue narrative submitted early this year.

(U) Machine Tool Industry Study. Early in 1978 DARCOM Headquarters was tasked by the Assistant Secretary of the Army (Research, Development and Acquisition) to examine various problems associated with the machine tool industry. These problems were the subject of letters written to the President and the Assistant Secretary of the

Army which expressed interest in DOD's involvement in the machine tool industry through its procurement function. Accordingly, Procurement and Production Directorate through the Industrial Base Engineering Activity began a study to determine the current status of the domestic machine tool industry. A report on the industry's ability to meet current private and governmental industrial machine tool requirements was required. The study was to be completed in 1st Quarter FY 1979 with the results of the study being briefed to the ASA(RDA).

(U) Energy, Diminishing Manufacturing Sources and Material Shortages (DMS/MS). Several committes were addressing these topics. DARCOM personnel were assigned to various areas of responsibility. Each committee identified problem areas and were examining a variety of potentials for resolution. A Joint Logistics Commanders (JLC) sub-panel identified the problem areas and established a procedure for the reduction and the processing of DMS/MS case problems. The issuance of individual service procedures was in process.

(U) Master Urgency List (MUL) Nominations. The MUL is a DOD list approved by the president of the United States on matters of the highest national priority, based on recommendations of the Secretary of Defense and the Assistant Secretary of Defense, Installations and Logistics. It is issued as a guide for the purpose of expediting materials, production equipment, and facilities for defense program requirements. The list includes the items and quantities of those items in the two highest urgency categories that require special attention. The DOD list is normally resubmitted and rejustified annually, upon request, or upon program urgency as determined by the major subordinate commands or program managers. The highest National priority rating is "DX" (Brick Bat) with a numerical sequence rating of "DO" (Cue Cap) utilized for DOD production priorities. During the part year, extensive analysis and technical review of the MUL nominations were conducted with the submitting DARCOM activities. A revised unclassified procedure for item/program nominations was issued during 1978.

(U) DOD Priorities and Allocations Program Guidance. In March 1978, the Joint Logistics Commanders approved the completely rewritten and updated DOD Directive 4400.1 - Delegation of Authority and DOD Manual 4400.1-M Priorities and Allocations Manual (PAM). This culminated in a major effort, which required over a year of extensive coordination between Army, Navy, Air Force and Defense Logistics Agency personnel. DARCOM (DRCPP-I) chaired this project. The final products were staffed through the higher echelons of each military service and provided to the Under Secretary of Defense (Research and Engineering) in June 1978. Publication by the Department of Defense was expected in the first half of FY 1979.

(U) FY 1978 Programs and Budget Team. During FY 1978 the Programs & Budget Team continued with management actions to better justify and defend the IPO program that was initiated in FY 1977. These actions included: the revision of PE 728011 performance factors were approved by DA and published in C1 to AR 37-100-79; and AR 700-90 was revised to require productivity measurement reporting. The report medium is the DRCPP 137 Cost and Performance Plan and Report. The first report was the year-end FY 1978 report. This report was to be used as the base from which to establish indices. The uses of these indices were seen as twofold: to provide productivity measurement to DA for Industrial Preparedness, and to program and allocate resources.

(U) Army Industrial Readiness Management System (AIRMS). In January 1978, ARRCOM was directed to initiate management improvement actions to factually justify and defend IPO resource requirements and to determine the condition of the industrial base. To this end, ARRCOM developed the Army Industrial Readiness Management System (AIRMS). This management system consists of ten interdependent subsystems or modules within the total system. The resources subsystem integrates all resource requirements to permit maximum readiness based on priorities and available resources.[7]

(U) OMA Project Formats. During FY 1978, individual project formats were used for the first time to support the FY 1979/1980 Command Operating Budget Estimate (COBE) on a location by location basis. The project formats were devised to justify the Army's needs in three separate areas of Industrial Preparedness Operations. The three areas were: maintenance of reserve industrial plants, maintenance of reserve plant equipment and special tooling/special test equipment, and performing various planning functions necessary to retain the Army's industrial base.

(U) These projects enabled the Army to justify an additional $15 million for FY 1979 and $12.5 million for FY 1980. Without this additional $27.5 million, significant portions of the Army's industrial base would have continued to deteriorate thereby seriously impairing the readiness of our Armed Forces to respond to hostile threats.

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7 Ltr, DRCPP, to Commander, ARRCOM, 3 January 1978, signed by LTG E. J. D'Ambrosio.

(U) OSD Sustainability Study. The Industrial Base Director served as the coordinator for the DARCOM input into the OSD Sustainability Study. The study, which was initiated in December 1977, was scheduled for completion by November 1978 and was directed toward providing a sound analytical basis upon which to structure policy decisions concerning the appropriate emphasis to be accorded combat sustainability in designing future Defense programs. The study examined the response capability of the existing production base for 29 ammunition items and 17 equipment items and concentrated on determining the level of resources associated with developing additional production capacity in response to a variety of hypothetical scenario-derived production demand levels. DARCOM supplied detailed study item analyses of the costs, time and efforts necessary to create a production capacity capable of responding to the "short war concept" requirements as well as possessing the ability to support the sustained conflict. The DARCOM input was considered vital in support of the Army's position that a strong industrial production base had to be retained and maintained to insure the combat effectiveness of US forces under any condition.

(U) Data Item Description for Industrial Preparedness Planning DI-P-7046. In May, 1979, the Associate Director for Industrial Base was tasked to develop implementing instructions for a new Data Item Description (DID) for Industrial Preparedness Planning (IPP). The DID was developed to provide a means to acquire IPP information on new major weapon systems at the earliest possible time in the materiel acquisition process. The DID allows the Government to reimburse the contractors for supplying IPP information as a required contract delivery item. The Program/Project Manager for the system, working closely with the appropriate Readiness Command, was to supervise the initial development of the Industrial Preparedness Plan for the system and, with continued use of the DID, monitor and update the data throughout the production phase of the weapon system.

(U) The new DID is unique to the Industrial Preparedness Program since it supplies comprehensive, contractor generated IPP data without the use of the often cumbersome and inaccurate "1519" planning process. Also, in the tightly constrained fiscal environment within which the Industrial Preparedness Program currently operates, the DID for IPP provides planners with a vehicle to maximize the return on dollars invested in the IPP program. The DID was designed to obtain a comprehensive, in-depth analysis of the total production base for all the complex new major weapon systems which would enter the Army's inventory within the next five-to-ten years. Complete implementing instructions for the DID were to be published during the 2d Quarter of FY 1979.

(U) US Army System for Automation of Preparedness Planning (ASAPP). The ASAPP is a totally integrated multi-phase Industrial Preparedness

Planning (IPP) automated data base which would be utilized initially to produce the Production Base Plan (PBP) and, in subsequent phases, to produce other reports which would enhance overall IPP management efforts. Maximum use was to be made of existing IPP information already available in automated format by utilizing a direct interface between the ASAPP and other existing automated data systems such as the SAMPAM (System for the Automation of Materiel Plans for Army Materiel) and CCSS (Commodity Command Standard System). The system was expected to reduce dramatically the manpower needed to produce the present PEP, while increasing the timeliness, accuracy and availability of all IPP reports generated by the system. The ASAPP was to be used to produce the first automated PEP in March, 1980.

(U) XM1 Facility (Lima Tank Plant). XM1 facilitization activity to support a planned production capacity of 150 tanks per month in 1984 is proceeding according to plan. This significant, critical effort includes a wide range of interelated tasks such as plant modification and modernization, machine tool acquisition, tooling design and fabrication, and production engineering. The many activities required to prepare the Lima Tank Plant to commence production in May, 1979, are on schedule within cost. Machine tools which will support initial production roll-off in February 1, 1980 have begun to arrive. Every effort has been made to keep the requirement for machines to an absolute minimum and to maximize use of machines available from government resources. The total cost of the overall XM1 facilitization effort is estimated to be $813 million.

(U) Modernization of the Cannon Base at Watervliet Arsenal. $20,500,000 was approved in the FY 1979 Military Construction Authorization Act for a four year construction program at Watervliet Arsenal. This construction program coupled with a planned $125,000,000 Equipment Modernization and Rehabilitation program over the next six years was expected to provide an efficient plant to respond to emergency, surge and peacetime procurements. The equipment modernization program was initiated with a $1,046,000 FY 1978 Late Start Production Base Support project. Initial relocations for demolition work were initiated in FY 1978.

Small Business

(U) Fiscal Year 1978 was another year of personnel turbulence in the DARCOM office of Special Assistant for Small Business. Mr. R. L. Coombs was replaced by Mr. J. W. Shepard as Special Assistant. Mr. Coombs left the office on 26 May 1978 and Mr. Shepard was appointed on 4 June 1978. Mr. J. Maiers, the only Small Business Office (SBO) action officer, was placed on detail 1 June 1978 to the Office of the Secretary of Defense in the Pentagon and was to be out the remainder of the calendar year. Mr. R. Arnold from Industrial Base was detailed

to Mr. Maiers' position in September 1978. Personnel and operational effectiveness of the field activities under the Small Business Office (SBO) continued to experience turmoil from the time that the AMARC recommendations for reorganization were put into effect in 1974. As a result of AMARC and the lack of proper manning levels in some of the field's SBO's, DARCOM fell behind in meeting some of its programmed commitments. Another important factor agitating the situation was increased administration emphasis and OSD goals on the Small Business and Minority Business Enterprise Programs.

(U) Recent program statistics show that DARCOM failed to meet its FY 1978 assigned goals for both the small business and Minority Business Enterprise programs. In the Small Business Program, DARCOM awarded 17.2 percent of its business dollars against a 19.2 percent goal. It is important to note, however, that the percent increase over that of the previous year was 8 percent higher than the increase in the same period. Also, the DARCOM Small Business goal was increased from 18.2 percent in FY 1977 to 19.2 percent in FY 1978.

(U) DARCOM awarded $74 million versus a $81 million goal in FY 1978 for the Minority Business Enterprise program. The $81 million represents an unequaled 50 percent increase in this program. Considering the fact that there was an increase of $17 million over FY 1977, it was thought that if the FY 1978 goal were more realistically obtainable, the DARCOM performance would have exceeded its commitment. Figures were not available on the Small Business Set-Aside Program; however, from data available at the close of FY 1978, it was estimated that DARCOM would meet or come close to its assigned FY 1978 goal of 4.8 percent. The combination of increased emphasis on small business programs, continual turmoil from the reorganization, and shortages of proper manpower to meet this new challenge had a negative effect on the Small Business Advisors' ability to execute the DARCOM small business mission.

Materiel Management

Introduction

(U) This report of major activities is a narration of events, developments, accomplishments and problems, with their causes and effects, which occurred in the Directorate for Materiel Management during FY 1978. Brigadier General Ernest A. Vuley, Jr. was Director of Materiel Management during this period. The only internal organizational change resulted from the transfer of operational control of the Electronic Materiel Readiness Activity (EMRA) to the Communications-Electronics Command effective 1 July 1978. Following this transfer, five personnel spaces were taken from the Programs and Projects Office

and assigned to other elements of the directorate. The authorized strength of the directorate remained at 156.

(U) Some of the challenges met by the Directorate during FY 1978 were as follows: DARCOM supply performance continued to decline in FY 1978 but some of the actions taken this year should help reverse this trend in the next; a new intensive management system was developed for depot maintenance; The Army and Joint Oil Analysis Program continued to grow in both size and effectiveness; in order to improve property accountability and control of Basic Issue Items and Additional Authorization List items, plans were implemented to add hand receipts to Technical Manuals; significant effort was devoted to improvement of the initial provisioning process; an independent study sustained the validity of our objections and recommendations concerning DOD Materiel Distribution System (DODMDS) report; work was begun on the Production Planning and Control Scheduling Model which will give depot supply managers the capability of integration workload and available resources, as a basis for planning, scheduling, and controlling work and resources at the level where the work is actually done. There were numerous actions designed to promote understanding of the benefits to be derived from the Care of Supplies in Storage (COSIS) program and thereby increase its chances for adequate funding. Implementation was begun on a semi-automated improved Over Ocean Cargo Forecasting System which would result in reduced transport charges and transit times. Plans were completed for upgrading of unserviceable toxic chemical munitions and agents. DIDSTOTAL, a major redesign of CCSS to permit effective use of processing efficiencies derived from the Defense Integrated Data Systems (DIDS), was successfully implemented in May 1978. The Component List Supply Catalog Simplification Program was undertaken to reduce the complexity and improve the accuracy of Supply Catalogs. The Wholesale Property Accountability Improvement Program was initiated to improve all aspects of accountability of wholesale assets. An item-by-item count began of toxic chemical munitions. Significant progress was made on the clean-up of Enewetak Atoll. Efforts on the Nonconsumable Item Program continued with the objective of developing joint service policies and procedures to eliminate duplicate wholesale inventory management of nonconsumable items. Intensive management of P7M Depot Maintenance Program was accomplished in order to provide support to the highest priority workload within available resources. A mission transfer of Conventional Ammunition was made from P7S to P7M. The Direct Support System (DSS) continued to expand. A study was conducted to determine the feasibility for worldwide remote terminal access to the Logistics Intelligence File. Effort regarding the Depot Maintenance Interservice Support Program was concentrated on study of new equipment as potential candidates for interservicing. Details of these items are discussed on the following pages.

Stock Availability

(U) Stock availability is measured as the percent of requisitions received for stocked items for which the entire quantity was available on the first computer edit against the National Inventory Control Point's asset record. The performance standard is 85 percent, measured monthly from the MILSTEP Supply Availability and Workload Report (DD I&L M-782). This standard is still retained by DARCOM as a key supply management performance indicator, although the Logistics Performance Measurement and Evaluation System (LPMES), from which the standard originated, was rescinded by HQ Department of the Army in January 1977 upon suspension of AR 11-20.

(U) From the beginning of FY 1975 through the end of the FY 7T period, 30 September 1976, DARCOM stock availability rose from 73 percent to 84 percent, measured on a cumulative basis, quarterly. The 84 percent rate of total fill remained constant through the 1st Quarter FY 1977. Stock availability as of 30 September 1977 was 79 percent, but then began to decline, losing 5 points by the end of FY 1977. This decline continued through 1st Quarter FY 1978 and then leveled off at 77 percent for 2nd, 3rd, and 4th Quarters. Disturbed by the downward trend, the Director of Materiel Management determined that intensive effort would be necessary to halt or reverse it. He formed a stock availability ad hoc group to investigate the causes of the decline and to form a plan of action to bring the rate back up.

(U) The ad hoc group, which included procurement as well as materiel specialists, found that each cause contributing to the decline had its own peculiar sets of circumstances, yet could interrelate with and have an effect on many others. These interrelationships made the task of determining corrective actions doubly difficult. For example, one of the most significant factors affecting stock availability rates was the late delivery of items being produced under current contracts. A prime cause for this was identified as a shortage of procurement and materiel management personnel among the materiel readiness commands. The personnel shortages were the result of both fund and personnel space limitations. Thus, while there were adequate funds to purchase needed items, there were not enough people to let contracts and administer procurement actions. A number of corrective actions recommended by the ad hoc group have been taken, others are continuing, and still others are planned for FY 1979.

Back Orders Outstanding

(U) The target for FY 1978 was to end the year with no more than 180,000 back orders outstanding. As of September 1978, back orders stood at 270,000, exactly 50 percent above the target.

(U) Again, the causes behind the rise in the number of requisitions on back order were complex and interrelated with many factors, not the least of which was the drop in stock availability discussed above. Another major factor was the continuing increase in number of requisitions received--up another 210,000 during FY 1978.

On-Time Requisition Processing

(U) DARCOM overall on-time requisition processing is measured on combined NICP and depot processing of all priority group requisitions which were not backordered (immediate issues). The target for FY 1978 was 89 percent. This indicator ended the year at 74 percent. The causes of the decline, however, were more easily identified than for stock availability and back orders. If we look at the performances of the NICP's and depots separately, we get our first clue:

NICP	End FY 1977	End FY 1978
ARRCOM	90%	90%
CERCOM	91%	91%
MIRCOM	90%	96%
TARCOM	94%	96%
TSARCOM	94%	96%

Depots	End FY 1977	End FY 1978
New Cumberland	77%	56%
Red River	82%	75%
Sharpe	88%	89%
Other Supply Depots	84%	93%

(U) The second clue is in knowing that in FY 1978 90 percent of the materiel release orders (MRO) processed by the DARCOM supply depots were handled by the three distribution depots--New Cumberland, Red River, and Sharpe. The final clue is found in the discussion of PE 721111 Supply Depot Operations funding elsewhere in this history which outlines the funding shortage that forced the depots to cut manpower. While these cuts were being made, workload (based on the number of MRO's processed) rose 11 percent at the distribution depots and 8 percent for all depots.

Depot Maintenance Selective Management Program

(U) Over the years several distinct and separate intensive management systems were established to control/expedite items undergoing depot maintenance. These included Get Well Lists, Hi-Pri Lists, Top Priority Programs, et al. At times items were included on more than one list. To check the proliferation of lists and programs, the Depot Maintenance Selective Management Program was developed. This program established a

single method of dealing with intensive management of items undergoing depot level maintenance at Army depots.

(U) The initial draft of the DARCOM Regulation which would establish the program was prepared by DESCOM in May-June 1978 and subsequently forwarded to the Director of Materiel Management for staffing. Publication and distribution of the regulation (DARCOM Reg 750-6) was to be accomplished in 1st Quarter FY 1979.

Command Logistic Review Team Visits

(U) In the FY 1977 Annual Historical Review, we discussed the evolution of the Command Logistic Review Team (CLRT) concept in DARCOM. In brief, CLRT visits to DARCOM Materiel Readiness Commands (MRC) were initiated in December 1976 to satisfy requirements of AR 11-14, Logistic Readiness, which prescribes that all MACOM's will conduct such visits as part of DA's Logistic Readiness Program. The objectives of the visits are to identify and resolve logistic problems that impact on the readiness of the Army and to provide a means for HQ DA and MACOM's to solve problems through a bottom-to-top analysis of the logistics system. DA/DCSLOG normally participates in DARCOM CLRT visits to follow through on problems uncovered during other MACOM CLRT visits which interface DARCOM's mission responsibilities.

(U) During FY 1978, HQ DA designated the Commander, US Army Logistics Evaluation Agency (USALEA), as the DCSLOG Executive Agent for all matters pertaining to implementation of the program at that level. While USALEA manages the operational aspects of the program, the DA DCSLOG retains authority for Policy and overall monitorship.

(U) After the first year of CLRT visits to the MRC's the Director of Materiel Management reviewed the results to determine whether we were getting maximum pay-off from the resources expended. The overall conclusion was that there were weaknesses and some changes were needed if we were to get full benefit from the potential of the CLRT program to improve logistics management. In March 1978, the Deputy Commanding General for Materiel Readiness (DCGMR) approved the changed procedures which included: identification of problems for review from the perspective of the senior logistic managers in HQ DARCOM, with emphasis on information that would be useful at their level; reduction of the team size from 22-26 personnel to 10-12 participants who would have the best expertise available to evaluate the problems selected for review; and follow-on briefing for the DCGMR and HQ DARCOM directors 60 days after each visit at which the command visited would review the status of problems and actions taken, including those actions that were the responsibility of HQ DARCOM, HQDA, and others. This briefing would permit face-to-face exchanges among all principals involved and thus enhance problem resolution.

(U) The first CLRT visit under the new procedures was to HQ DESCOM in May 1978. Although we were not able to get the HQ DARCOM and HQ DESCOM principals together for the follow-on briefing until October, we were much encouraged by the results of the new procedures and planned to continue to look for ways to increase the usefulness of these visits.

Army and Joint Oil Analysis Programs

(U) In 1961, after experiencing several internal problems in the helicopter engines and transmissions that resulted in the grounding of 350 of these aircraft, the Army entered the H23's in the Navy Oil Analysis Program. Due to the test reports received from the Navy, several components were disassembled and internal defects verified. As a result of these findings, the Army second laboratory was opened at the US Army Aeronautical Depot Maintenance Center (ARADMAC). Since that time five additional Army laboratories have been established to support an expanding Army Oil Analysis Program (AOAP). During the Vietnam era, the aircraft workload was initially processed at ARADMAC and Fort Rucker. Later, contractor-operated laboratories were established to provide on-site support to Vietnam-based aviation activities.

(U) From 1961 through 1966, participation by aviation units in the AOAP was voluntary. In 1966, the Department of the Army directed that the Army Materiel Command prepare a plan to make the program mandatory--the result was the first Army regulation[7] on oil analysis. The regulation[8] currently covering AOAP activities was issued 3d quarter, FY 1977.

(U) Nonaeronautical equipment was entered in the AOAP on a test basis in 1967 at which time samples from various items of equipment, such as M-578's and M-109's located in Alaska were brought into the program. During 1968, additional test programs on nonaeronautical equipment were begun in Korea, Germany, and in CONUS (Fort Hood) with the resultant findings of all the tests supporting oil analysis as a useful supplement to existing maintenance procedures. Further evidence supporting the applicability of oil analysis to nonaeronautical equipment was obtained during an M60A2 test conducted at Fort Knox in 1971. This test included the AOAP as part of a comprehensive program that required the engines of five tanks to be operated to failure.

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7 AR 750-13, Spectrometric Oil Analysis, 5 December 1966.

8 AR 750-22, Army Oil Analysis Program, 12 April 1977.

Both engines and transmissions were included in the Oil Analysis test, and although no transmissions failed during the test, the five engines did. All five engine failures were predicted in advance by the laboratories analyzing the samples. Despite these successes, nonaeronautical equipment was not entered in the AOAP on a routine basis until February 1975, at which time the Deputy Chief of Staff for Logistics approved entry of all AVDS 1790 series engines. In May 1976, combat and construction vehicles equipped with 6V53 and 8V71 engines were also approved for entry in the AOAP. Approval for inclusion of these engines was due in part to the Breakdown Maintenance Test conducted by the US Army Forces Command (FORSCOM). The AOAP participated in this test, and FORSCOM credited the AOAP with saving 89 engines and reducing engine replacement by 25 percent. Other types of equipment in the AOAP are locomotives, watercraft, generators, and wheeled vehicles.

(U) In April 1975, the GAO evaluated the Services' Oil Analysis Programs and stated that the objectives set forth in 1972[9] were not being met. To achieve the previously established goals and to insure that the three oil analysis programs act in concert, the GAO recommended a single manager at DOD to manage the Services' programs. The response to the GAO draft report did not concur in the single manager concept. As an alternative to the GAO recommendation, the Air Force Logistics Command, in coordination with the Army and Navy, introduced the Services; Oil Analysis Programs as a discussion item at the 18 July 1975 Joint Logistics Commanders' (JLC) meeting. At the 23 September 1975 JLC meeting, the JLC approved a revised joint agreement[10] which was later signed by the Assistant Secretaries, Installations and Logistics. The agreement established the Joint Oil Analysis Program Coordinating Group and approved a Joint Oil Analysis Program Technical Support Center (JOAP-TSC). The basic purposes of the JOAP-TSC are spelled out in their respective charters.[11 & 12]

(U) The US Army Aviation Systems Command was responsible for management of the Army program from its inception in 1961 until 1968. In 1968, the Army Materiel Command transferred this responsibility to the Army Maintenance Support Center, Letterkenny Army Depot. In 1973, responsibility for management of the AOAP was assigned to the US Army Maintenance Management Center (USAMMC), Lexington, KY. Policy, guidance, and program direction are provided by the Department of the Army, Deputy Chief of Staff for Logistics, and Headquarters, US Army Materiel Development and Readiness Command, Directorate for Materiel Management. The current staff for the AOAP management office, Maintenance Support Branch, Maintenance Division, US Army DARCOM Materiel Readiness Support Activity (MRSA), consists of four personnel.

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9 Joint Agreement for the Interservice Equip. Oil Analysis Prog, Oct 72.

10 Tri-Service Agreement for Joint Oil Anal. Prog, 5 Jan 76.

11 Charter for Joint AMC/NMC/AFLC/AFSC Cdrs JOAP-CG, 23 Sep 75.

12 Charter for the Joint Oil Analysis Prog. Tech Support Ctr, 9 Jan 76.

(U) During FY 1977, the AOAP continued its growth. Approximately 428,000 samples were analyzed from aircraft and nonaeronautical equipment during this period which represents an increase in workload over that of the previous year. Approximately one-third of the samples analyzed during this period were from nonaeronautical equipment. Program effectiveness for FY 1978 was vividly illustrated through the accuracy of the AOAP laboratories' predictions of component discrepancies. For example, the laboratories registered 394 "hits" (correct laboratory prognosis) and 27 misses (incorrect laboratory prognosis) for the year. This represented a laboratory equipment evaluation effectiveness of 94 percent with a resultant cost avoidance of $4,676,211. In May 1977, DA approved a FORSCOM staff study recommending the establishment of additional laboratories. New AOAP laboratories were approved for Forts Stewart, Polk, Ord, Riley, and Carson. The laboratory at Fort Riley was activated in March 1978 and Fort Carson in April 1978. Laboratories at Forts Stewart, Polk, Ord, Bragg, and Lewis were to be activated during FY 1979. Thirteen sets of physical property test equipment were delivered to our nine Army laboratories, the JOAP-TSC, Osan AB, Korea, and the proposed laboratories at Forts Lewis and Bragg. Five additional sets were scheduled to be delivered in November 1978 to projected new laboratories at Forts Stewart, Polk, and Ord, an additional set for Germany and for the Navy laboratory at Pearl Harbor, HI.

(U) In an effort to extend AOAP benefits to other items of equipment, several test programs were begun. One of these tests, to extend the hydraulic system oil change interval on the M578 Recovery Vehicle, looked very promising and action was to be taken to extend the program to all M578's Army-wide during FY 1979. This program alone had the potential to save 188,000 gallons of oil at a savings in excess of $1,300,000 per year. Successful conclusion of tests such as this could lead to extended lubricant life and resultant energy savings. New development equipment such as the XM1 tank and the BLACKHAWK aircraft also were entered into AOAP tests.

Essentiality Codes

(U) Historically, essentiality codes are data elements which designate the importance of every repair part to the operation of an end item. They are identified as essential to prevent deadline, essential for safety, legal or climatic reasons, deferrable or other. DA desires that essentiality codes serve an additional purpose; that is, to designate the maintenance level at which the parts are used. By this means, field units would be able to identify in the Army Master Data File (AMDF) all those parts which were essential at their level of maintenance, and could thus develop lists of repair parts needed for wartime operations. This action would support the DOD Retail Inventory Management and Stockage Policy (RIMSTOP) Program.

(U) An automated program was introduced in May 1978 to integrate the three existing systems of essentiality codes; the obsolete H, S, and L codes which would remain in the files until replaced by the Mil-Std 1552 numeric codes which were the codes accepted by all of the Services, and the Army alpha codes which generally track with the Mil-Std 1552 codes but add the level of maintenance at which the parts would be used. Since the bulk of transactions require them, all Army data files would be loaded with Mil-Std 1552 codes. The automated program would provide Army alpha codes in the AMDF and SLAC for use by field units.

(U) DCSLOG, DA initiated action to determine whether the Army alpha codes were acceptable to replace the Mil-Std 1552 codes. If the other DOD components would accept them, the numeric codes could be replaced and the use of essentiality codes would be greatly simplified.

Skilled Performance Aids (SPA) Program (Formerly ITDT)

(U) On 31 January 1978, a joint ITDT policy statement signed by CG, DARCOM and CG, TRADOC was published. This document provided basic direction in implementation of the ITDT program Army-wide and was the first policy guidance made available since the inception of the program in late CY 1975. Refinements and expansion of coverage to the program policy are under study and it was planned to issue DA documents in CY 1979.

(U) In the latter part of July 1978, Chief of Staff, Army, was briefed on the ITDT concept. As a result of the briefing, the Chief indicated that ITDT was the way to go in the future. The Chief also directed that the name of the program be changed from Integrated Technical Documentation and Training (ITDT) to Skill Performance Aids (SPA). In order to strengthen the Army position on the desirability of all-out implementation of SPA, the Chief of Staff directed that an assessment of the SPA concept be made by a board of retired general officers with wide experience in the training and logistics aspects of materiel support. This team was organized in early August 1978, and was comprised of LTG A. S. Collins, LTG J. M. Heiser and MG J. W. Pezdirtz. LTG Collins was designated head of the team.

(U) One of the principal features which distinguishes SPA technical manuals from conventional technical manuals is the extent of validation and verification afforded to the manuals. Currently, SPA requires 100 percent validation/verification of the maintenance procedures by 10 soldiers with eight successfully accomplishing each procedure. This mod was found to require too much manpower and too much time to be practiced; accordingly, the manpower requirements were reduced from eight out of 10 to three out of five. These new requirements also are proving too costly in time and resources for effecting

accomplishment of the program. In order to provide a solution to this problem, a study sponsored jointly by DARCOM and TRADOC was initiated and was underway. The main thrust of this study is the application of strict statistical theory to the validation/verification effort. The objective was to achieve maximum reliability of product with minimum expenditure of resources. It was expected that results of this study will be available by 31 December 1978 along with the assessment from the general officer team headed by LTG Collins.

(U) To strengthen the Army position on implementation of SPA, it was determined essential that a full-scale evaluation of SPA be conducted as soon as possible. In order to obtain an immediate indication of the potential benefits of the SPA concept to the Army, a short-range evaluation of the concept was conducted by the DARCOM Materiel Readiness Support Activity (MRSA). This evaluation consisted primarily of a review of efforts taken by Government agencies and commercial institutions to effect improvement in information transfer methods. It was concluded that the SPA approach (fully proceduralized; profusely illustrated) to technical manual development held great promise for yielding potential benefits to the Army of such a nature as to warrant continuing effort in implementation of SPA in the Army. These benefits consist of increased maintenance effectiveness, reduced spare parts consumption, improved operational readiness, and increased on-the-job training.

(U) To further substantiate the SPA approach in the Army and to provide quantified data on potential benefits that may accrue from this action, to provide for budgetary justification purposes, it was determined that a long-range in-depth evaluation of SPA products should be conducted after SPA materials have been in use by the field army. The matter of conducting the study under contract was up to the Chief of Staff, Army, for approval. In anticipation of approval of this action, funds were provided and the Request for Authority to use Contract Sources (RACS) was developed and was at HQDA awaiting final approval at the close of FY 1978.

Property Accountability Task Force (PATF)

(U) HQDA letter of 7 December 1977 directed DARCOM to include preprinted hand receipts in operators' manuals for BII and AAL and to develop a schedule for accomplishment. The objective was to improve property accountability and control of Basic Issue Items (BII) and Additional Authorization List (AAL) items through preparation of preprinted, reproducible hand receipts and to develop simplified definitions for BII and AAL. A meeting was held with DA PATF on 16 January 1978. This meeting resulted in an agreement to use the priority list

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of operators' manuals scheduled for revision under the reliability centered maintenance concept for the initial implementation of preprinted hand receipts. The list included 78 TM's. Also, it was agreed that DARCOM would develop, in coordination with TRADOC, the method for implementing the hand receipt concept for DA approval. Representatives of DALO-SML, PATF, TRADOC, and DARCOM met 22-24 February and developed an implementation concept which was approved by the PATF on 10 March 1978. The approved concept calls for a separate standard size, TAG-printed publication, containing the preprinted hand receipts and identified with the operators' manual by a corresponding number and an "HR" suffix.

(U) A 14 February 1978, HQDA (DALO-SML) letter requested that the review of BII and AAL definitions be made a part of the hand receipt program. DARCOM was tasked to develop simplified definitions and a phased implementation plan in a 31 March 1978, HQDA message. By 13 April 1978 message, DARCOM initiated staffing of revised draft definitions. The results of this staffing were compiled and revised, and simplified definitions developed. By message 191850Z June 1978, HQ FORSCOM requested consideration be given to extending the hand receipt concept to include the Integral Components of End Items (ICOEI). The PATF reviewed this request and directed implementation by DARCOM. An implementation plan for preparing ICOEI hand receipts was developed and implemented.

(U) A finalization meeting for MIL-M 63007 (TM), Preparation of Hand Receipts, was held on 22 September 1978. Representatives of the MRC's, MRSA and this office concurred in the final spec which is now being printed and published. The AR 310 series regulations are being reviewed and changes recommended to HQDA to reflect the additional publications requirement resulting from the development of the hand receipt concept. Chapter 2 of AR 310-2 would be affected, requiring a change in the TM numbering/designations. Changes in preparation and format would result in changes to AR 310-3 CH 8 and CH 9.

(U) The resources expended for the preparation of the 74 priority TM's were compiled at $1200/hand receipt publication totaling $88,800. Total resources required for the project are $3,844,378.

Revision of Provisioning Policy, Procedures and Systems

(U) Significant effort was being devoted to the improvement of the initial provisioning process through the revision of policy, procedures, Military Standards, and supporting ADP Systems in CCSS. Under review and revision are:

(U) Military Standards 1552 and 1561. These Military Standards prescribe the standard process and detailed procedures for the acquisition of provisioning technical documentation by all Services. They

were under review by all Services and industry and scheduled for revision by mid-calendar year 1979.

(U) AR 700-18. This is the key Army Regulation on provisioning within the Army. Extensive revision was being made to strengthen the policies and procedures governing provisioning evaluation, provisioning planning, the computation of provisioning requirements, cataloging, distribution of initial support, budget estimating, procurement and management of technical documentation and interface between the field and the wholesale during the provisioning process. Completion was targeted for January 1979.

(U) DARCOM-R 700-46. This DARCOM Regulation describes the DARCOM concept for management of initial provisioning within HQ DARCOM and the major subordinate commands. It also amplifies the provisioning responsibilities of the specific staff elements of HQ DARCOM. It was completed 21 February 1978.

(U) Essential Repair Parts Stockage Lists (ERPSL). This is a procedure that is under development by the DARCOM Inventory Research Office (IRO) that would provide justification for stocking non-demand supported mission essential repair parts in the field in support of highly important mission essential systems requiring high readiness availability. Interim procedure approved by DA 14 November 1978; additional requirements forwarded by DA would be completed 19 January 1979. Final approval was expected by July 1979.

(U) Revision of TM 38-715-1. This manual describes provisioning techniques used by the Army. The revision of this manual would take better than a year to complete. MRSA was tasked to do this job and was in the process of developing a work plan. A tentative estimate as to a completion date is June 1980 with individual chapters to be published for use as they are completed.

(U) Redesign of CCSS Provisioning System. For over a year ALMSA was working on a major redesign of the CCSS Provisioning System. Phase I and IA of the redesigned system were fielded in May 1978. These phases provide DARCOM with the capability of accepting provisioning technical data in standard DOD format and significantly facilitate joint Service provisioning projects. Phase IIA was fielded in September 1978 and provided automated review of the Provisioning Master Record (PMR) for update of the NSNMDR. The last phase (IIB) would provide automated update of the NSNMDR when the PMR was changed. It was scheduled for implementation in November 1979.

Storage

(U) DOD Materiel Distribution System (DODMDS). The DODMDS report was issued in March 1978 culminating three years of study by a JLC

Task Group. Major recommendations of the study involved elimination of wholesale supplies distribution missions from three Army depots (SHAD, LBDA, PUAD) and six DLA depots. The study also recommended joint stockage and eleven area oriented depot clusters. This Directorate prepared the DARCOM position on the report which objected to the data base, methodology and certain recommendations. This subsequently became the Army position. Navy and Air Force concurred without objection. An independent Defense Logistic Analysis office study in August 1978 sustained the validity of the DARCOM recommendations. In September 1978, an OASD sponsored study called the Materiel Distribution System Study was established to recommend realignment actions in 1979.

(U) DOD Standard Warehousing and Shipping Automated System. OASD efforts to implement a DOD-wide standard system continued. In November 1977, the Services and DLA with DARCOM Materiel Management leadership, prepared a common response to the September 1977 draft task order. OASD prepared a revised draft in April 1978 and announced a joint Air Force/DLA effort. Materiel Management prepared the DARCOM position on the task order which now involved only one issue--the right to reject a module not cost effective to us. In July, this Directorate participated in an Air Force/DLA meeting on their joint project. However, it was subsequently decided that we would not participate in the effort but would wait for the task order.

(U) Production Planning and Control Scheduling Model. With implementation of SPEEDEX and conversion to the AIF in the 1973-74 time frame, there arose a compelling need for greater communication between each depot and the central workloading agency. Periodic revisions to the AR 740-18 strengthened the procedural aspects that made this dialogue possible. As a result, DESCOM and the depots exchange information on a variety of valid management interest--program and budget development, resource requirements, and performance. However, very little was done from the point of view of giving depot supply managers the capability of integrating workload and available resources, as a basis for planning, scheduling and controlling work and resources at the level the work was actually being done--the work center.

(U) Care of Supplies in Storage (COSIS). COSIS involves taking care of what we store. Material in storage requires periodic inspection and corrective action if there was evidence of deterioration. AR 700-1 specifies how frequently to perform inspection. Since material in storage deteriorates at different rates depending on its storage environment, material in controlled humidity storage is inspected every five years, while material stored in open storage is inspected every six months. Shelf like items pose special problems from an inspection standpoint but essentially inspection cycles are based on the length of time material has been in storage.

(U) COSIS is a multi-million dollar segment of the P7S program that has not been adequately funded at DOD/DA levels. Support of the program has declined from about two-thirds of the requirement during the 1974-76 time frames to less than 4 percent by end of FY 1978. The DARCOM position has been that without adequate funding, the deficiencies cited by AAA in 1973 and by the GAO in 1978 would continue to exist and in all likelihood worsen. Action designed to sell the COSIS program, thereby increasing chances for adequate funding, were numerous during the year. For example, a methodology to quantify the program was finalized, and the benefits of performing COSIS while material was in storage rather than at time of shipment was fully documented. The case for COSIS investment in terms of economic and readiness grounds was surfaced to the personal attention of the Vice Chief of Staff, Army by the DARCOM Commander. Representatives from the GAO who were investigating application of the COSIS program in DARCOM depots were also briefed regarding the importance of COSIS.

(U) Storage Space in DARCOM Depots. At end FY 1978, there was slightly more than 60 million square feet of covered storage space on the depot system. This was a slight drop from the prior year. In addition, there were 42.5 million square feet of improved open space available. All DA and DARCOM goals for occupancy and net to gross were achieved through timely guidance and direction provided by elements within the Directorate for Materiel Management.

(U) Storage of POMCUS (Prepositioning of Material Configured to Unit Sets) in USAREUR. During the 1st Quarter FY 1978, Congress upheld the Presidential decree that POMCUS would be 100 percent reconstituted in Europe to support the NATO Forces. The task to determine how this material could be stored with minimal care and a high degree of protection, was assigned to DARCOM. An analysis of types and space required to support the POMCUS plan was prepared. Upon DA approval of the recommendations, the DARCOM Associate Directorate for Maintenance participated in the contracting and purchase of the facilities and shelters to store POMCUS stocks.

(U) Commercial and Industrial Activities (CITA) Program. OMB Circular A-76 provides guidance on participation in the CITA program. It has been and remains the DARCOM position, that wholesale depot operations should be exempt from contract considerations. Additionally, the OMB Circular provides no functional heading for wholesale supply operations and appears to be retail supply oriented. The DARCOM Directorate for Installation and Services was advised that a blanket exemption for depot operations should be pursued based on mobilization readiness.

Transportation

(U) Special Assignment Airlift Missions (SAAM's). As a result of coordinated transportation staff actions with Deputy Chief of Staff for Logistics, DA, DARCOM issued revised SAAM instructions effective 1 January 1978. These instructions delegated authority for ARRCOM, MIRCOM and TSARCOM, to arrange SAAM's directly with the Military Airlift Command (MAC) for those commands which exercise commodity management. This procedure has been very successful by shortening response times for SAAM requests.

(U) Over Ocean Cargo Forecasting. Guidance was provided to the Automated Logistics Management Support Activity (ALMSA) and the Logistics Control Activity (LCA) on implementing a semi-automated improved Over Ocean Cargo Forecasting System. Forecasts are used by the Military Airlift Command and the Military Sealift Command to provide timely efficient world-wide transport services. Several IPR's were conducted to clarify, task and guide the involved ALMSA and LCA functional and systems personnel. The revised forecasting system would reduce the overall deviation from 10 percent to approximately 3 percent and some air and sea channel deviations from 100 percent to approximately 3 percent. Improved forecasts would reduce transport charges and transit times.

(U) Third Transportation Control Number (TCN). One of the major shortfalls within the Logistics Intelligence File (LIF) at the Logistics Control Activity (LCA) has been the inability to relate the original document number to an intermediate consolidation Transportation Control Number (TCN). During the first quarter of FY 1978, an effort was initiated to include the intermediate consolidation TCN in the DSS documentation and the LIF file. This effort was to be completed during the second quarter of FY 1979.

(U) DLA/CCP Enhancement. A major effort was initiated in FY 1978 to automate the data exchange between DLA depots and the Army Consolidation/Containerization Points (CCP's). DLA depots will format the required DSS information for each line item and transmit it to the CCP's. When the material arrives, the necessary documentation is prepared automatically from an on-line file. This effort constitutes a major step forward in source data automation.

(U) STROM. During the 1st quarter of FY 1978, DARCOM in conjunction with ARRADCOM, ARRCOM and MTMC initiated a project called Safe Transportation of Munitions (STROM). This project was to develop means, methods and techniques to improve rail and water in-transit safety. Significant progress was made in identifying hazardous characteristics of DOD munitions, reviewing shipping regulations, and statistically analyzing rail accidents.

Packaging

(U) DOD Packaging Data System. Progress has been made in the development of a single DOD Packaging Data System. System requirements were formalized through the publication of MIL-STD-2073, land-2 and DARCOM has developed input data for prototype testing of the system in early FY 1979.

(U) LOGMARS (Logistics Application of Automated Marking and Reading Symbols). This effort was chartered by DOD to develop a standard machine-readable symbology for marking packages. Three major milestones were completed that developed a Project Master Plan to accomplish objectives; recommended specific data elements to be coded, and recommended the 3 of 9 bar code for prototype testing.

(U) Use of Automatic Marking. The objective of this task was to test bar codes to automatically sort packages in a depot CCP operation and to automate the receipt processing operation at a DSU. Concept testing was underway and results were to be evaluated to determine the feasibility for DARCOM-wide application.

Toxic Chemical Munitions

(U) Toxic Chemical Munitions Maintenance. Planning for upgrade of unserviceable toxic chemical munitions and agents was completed during FY 1978. Implementation began with minor maintenance operations at Umatilla and Pueblo Army Depot activities on one ton chemical agent containersand 4.2 mustard filled mortar ammunition. Funding for expanded operation in FY 1979 was obtained and approval to begin ton container maintenance at Newport Army Ammunition Plant was furnished.

(U) Toxic Chemical Movements OPLAN SETCON I. The third of a series of five large scale movements of toxic agent movements was completed in FY 1978. This involved movement of toxic chemical identification sets from both CONUS and OCONUS locations. The movement was completed on schedule without significant incident. Planning continued on OPLAN SETCON II, a large scale CONUS movement of these same ID sets; and OPLAN RMT a movement of WETEYE bombs from Rocky Mountain Arsenal to Tooele.

(U) Toxic Agent Security. During FY 1978, procedures for weighing, and securing the ends of, one ton containers was developed and forwarded to DA for final approval. Weighing operations began at Umatilla in conjunction with the maintenance program, based on tentative DA approval, and were to be completed in early FY 1979.

(U) Toxic Chemical Maintenance Facilities. The DARCOM Ammunition Center was tasked with redesigning a previously designed Standard Chemical Maintenance Facility into a minor maintenance facility tailored to the needs of individual installations. The object was to

reduce the cost from $38 million to below $10 million. Design work was still in progress at the end of the year.

(U) Toxic Chemical Rewarehousing Operations. Rewarehousing of all CONUS toxic chemical stocks into a two stack configuration to improve security was completed except for M55 rockets (the requirement to rewarehouse was waived) and some stocks at Tooele which could not be moved until new magazines were built. Construction work was begun on these new magazines.

(U) Toxic Agent Research Sample. Policy was changed directing CG, ARRADCOM to take responsibility for approving shipments of research quantities of toxic agents. The governing DARCOM regulation was being changed to reflect this policy change. Previously, ARRCOM had this responsibility but since almost all shipments were made by ARRADCOM a considerable reduction in administrative expenses was expected.

DLA/GSA Redistribution - Project "CNS"

(U) Based on guidance received from OASD in November 1977, DA was directed to discontinue project CNS. Accordingly, plans developed in late FY 1977 to extend CNS from a four installation pilot program to a CONUS-wide program were not implemented in FY 1978. Effective 15 December 1977, DLA again assumed normal disposition control of excesses held by Army intermediate level activities. Excesses held by Army at Sacramento and Letterkenny Army Depots remained under GMPA control for attrition through fill of demand supported requisitions or PDO actions through FY 1979.

Cataloging

(U) DIDSTOTAL (DID360). To meet the original Defense Integrated Data System (DIDS) implementation date, April 1975, the Army chose to utilize a converter processing interface technique. However, to effectively use the processing efficiencies derived from DIDS, eventual direct systems interface was considered necessary. The result, DIDSTOTAL, was a major redesign of the CCSS and was under development for 2½ years prior to successful implementation in May 1978. System Change Request DID360, which was a multi-service effort to conform with ILMD Recommendations, was implemented concurrent with DIDSTOTAL by Army. No major processing problems resulted from DIDSTOTAL (DID360) implementation.

(U) Component List (CL) Supply Catalog Micropublication Test Program. To determine the feasibility and user acceptability of CL Supply Catalogs on microfiche, DARCOM established the Micropublication Test Program in January 1978. Under this Test Program the DARCOM Catalog Data Activity (CDA) was tasked to convert to microfiche and field test seven CL Supply Catalogs. The test results indicating feasibility

of the micropublication techniques, and satisfaction of field operating personnel with the test microfiche were distributed by CDA in October 1978. Final determination as to the recommended method for producing and distributing CL Supply Catalogs on microfiche were to be made by DARCOM in December 1978. Acceptance of the microfiche medium for CL Supply Catalogs was anticipated.

(U) Component List (CL) Supply Catalog Simplification Program. As the result of the DAIG Report of Management and Accountability of Army Materiel, 6 October 1977, which stated that Supply Catalogs were too complex, contained data inaccuracies, and were inadequately distributed, DARCOM established the Component List (CL) Supply Catalog Simplification Program. Program actions included: (1) priority updating of 142 intensively used CL Supply Catalogs with accurate data in an improved format, (2) inclusion of a reproducible hand receipt with each CL for increased accuracy in tool accountability, (3) application of aforementioned improvements to the remaining CL Supply Catalogs, (4) continuation and implementation of recommendations derived from the CL Supply Catalog Micropublication Program. The completion of the priority updating of the 142 intensively used CL Supply Catalogs with format and data accuracy improvements was expected to be completed in December 1978. The review and improvement of the remaining CL Supply Catalogs would occur during FY 1979, 1980, 1981 in accordance with the Master Review Schedule for Sets, Kits, and Outfits. The related CL Supply Catalog Micropublication Program was underway with completion of the initial test phase expected in December 1978.

Inventory Accounting

(U) Wholesale Property Accountability Improvement Program. On 13 December 1977, DARCOM initiated a program to improve all aspects of property accountability of wholesale assets. The first meeting was conducted 1-3 February 1978, at which time 17 tasks were assigned for study and analysis to Materiel Readiness Commands, HQ DESCOM, depots, central design activities and HQ DARCOM. An in-process review (IPR) was held during 27-29 June 1978. Decisions were made at that time on several of the tasks which were completed. The next IPR is scheduled for 11-12 December 1978. At that time all tasks are expected to be completed and decisions will be made to implement the recommendations of the task group. The results of this program are expected to be better accountability of assets, more efficient research of adjustments, faster identification of record discrepancies, and more efficient utilization of inventory resources both at MRC's and depots.

(U) Item-By-Item Count of Toxic Chemical Munitions. DARCOM started an item-by-item count of Toxic Chemical Munitions (TCM) on 1 October 1978. The purpose of the count was to ascertain the actual quantity of TCM in stock through verification of the presence of the munitions in the containers. The count was scheduled over a 5 year

period, FY 1979-1983, was expected to cost $26.131 million and require 513 man-years of effort. The munitions were stored at six storage locations.

(U) Inventory Management Reviews. DARCOM conducts Inventory Management Reviews of Materiel Readiness Commands and depots in which inventory, receipts, issues, adjustments, catalog data and other related areas are reviewed. Activities which are reviewed reply back to HQ DARCOM on corrective actions taken to improve specific areas. In FY 1978 the following activities were reviewed:

McAlester Army Ammunition Plant
Hawthorne Army Ammunition Plant
Crane Army Ammunition Activity
ARRCOM Single Manager for Conventional Ammunition
Sacramento Army Depot
Seneca Army Depot
Tobyhanna Army Depot
Tooele Army Depot
Red River Army Depot

(U) DARCOM Support for the Enewetak Cleanup Project. The Enewetak Atoll is located some 2,700 miles southwest of Honolulu and 550 miles southwest of Wake Island. Enewetak Atoll is comprised of 41 small islands in a roughly circular pattern forming a lagoon with with a diameter of approximately 22 miles. The United States Government was committed to return Enewetak Atoll to the people of Enewetak after an extensive cleanup and rehabilitation program had been completed. In July 1976, Congress appropriated 20 million dollars to finance the cleanup project. The appropriations act required that feasible economies should be realized in the accomplishment of this project.

(U) In January 1977, the Military Services were tasked to provide full support for the Enewetak Atoll Cleanup Project. On 2 February 1977, the Army was given the overall responsibility and in turn, DA nominated the US Army Forces Command (FORSCOM) as the executive agent for the cleanup project. The actual work was being accomplished by personnel from the 84th Engineering Battalion, Honolulu. The plan called for the removing of nonradioactive vegetative undergrowth, debris, and structures which the population desires removed and the removal of all radioactive debris and soil which posed radiation or other hazards to human habitation. The cleanup project was planned to last thirty-four (34) months, ending in 1980.

(U) Significant progress was made in Calendar Year 1978 with the cleanup project of Enewetak Atoll and the project was on schedule.

During this calendar year, DARCOM continued to support the cleanup operation by providing repair parts support for the Army-owned equipments and by issuing replacement equipment for items which became unserviceable. New DARCOM initial issues consisted of two pre-fabricated refrigerator boxes and 10 compressor units. Also during the period, DARCOM provided assistance in planning for the orderly phase-out of equipment which would be used for the demobilization phase of the cleanup project.

Nonconsumable Item Program

(U) Under the direction of the Joint Logistics Commanders, the Interservice Nonconsumable Item Subgroup of the Joint Policy Coordinating Group on Defense Integrated Materiel Management continued in its efforts to develop joint service policies and procedures to accomplish the intent of DOD Management Objective 8, Action 6: Eliminate Duplicate Wholesale Inventory Management as it applies to nonconsumable items. Implementation of the program was being accomplished in two separate but related phases - I and II.

(U) Phase I accomplished the overall goal of establishing a single item manager, known as the Primary Inventory Control Activity (PICA), for procurement, federal catalog data submitter, disposal, and depot maintenance for national stock numbered items used by the military Services. This phase was completed and functioning operationally except for the interchangeable and substitutable items. The supported Service(s), known as the Secondary Inventory Control Activity(s) (SICA), was to continue to be responsible for determining its own requirements, budgeting and funding, maintaining accountability, storing and issuing, distributing and redistributing, and determining excesses. Cryptological, ammunition and nuclear items are exempt from this program and were to be addressed by the involved cognizant agencies/activities.

(U) Phase II, applicable to depot reparable components, would expand the materiel management functions assigned to the manager during Phase I. This would result in a single wholesale manager for each depot reparable component and a single wholesale stock for all DOD users. Also included were the budgeting for depot repair requirements, separate service funding (PICA - wholesale/SICA's - retail), and credit exchange. During CY 1978, actions were taken to reprogram The Commodity Command Standard System (CCSS) to accommodate the program. The Joint Service Publication (DARCOM-R 700-99) was revised to include Phase II procedures and was issued 30 March 1978. Estimates to date indicate that it would be late in Calendar Year 1980 before Army systems would be modified and fully operational.

Requirements and Resources

(U) PE 381011 Cryptologic Activities. The Electronic Materiel Readiness Activity (EMRA) provides materiel management, supply, maintenance and support functions for Federal Supply Classification (FSC) 5811 and provides engineering and technical assistance to strategic intelligence units. The Signal Intelligence and Electronic Warfare (SIGINT/EW) Research and Development Activity was transferred to DARCOM effective 1 October 1977 with operation control assigned to Electronics Research and Development Command (ERADCOM). The activity is responsible for the research, development, and acquisition of new and improved signals intelligence and electronic warfare equipment and systems to support operational missions.

(U) The following is a summary of the FY 1978 financing.

	(Dollars in Thousands)	
FY	Requirement	Financed
1978	$6,483	$6,483

The Signal Intelligence and Electronic Warfare Research and Development Activity was redesignated the Signals Warfare Laboratory.

(U) PE 393401 Communications Security (COMSEC). The COMSEC Commodity Manager at Fort Huachuca, Arizona, provides for the operation of the COMSEC National Inventory Control Point, COMSEC National Maintenance Point, and the Army COMSEC Central Point of Record. COMSEC Depot Operations at Lexington-Blue Grass Army Depot (LEAD), Kentucky, provides for the receipt, storage and issue of COMSEC materiel, maintenance, modification of COMSEC equipment/components and funds for Design Control Repair Parts.

Following is a summary of the FY 1978 financing:

	(Dollars in Thousands)	
FY	Requirement	Financed
1978	$9,741	$9,741

(U) P7M Depot Materiel Maintenance and Support Activities. FY 1978 required intensive management of the P7M program in order to provide resource support (dollars and manpower) to the higher priority items and commodity groups. The transfer of Conventional Ammunition from P7S to P7M without funding resources generated reprogramming action to support command priorities for overhaul of materiel. In addition, the limited personnel constraints resulted in a major problem for depot maintenance. Intensive management was required and actions taken to reduce the depot maintenance carry-over workload to the minimum level within the authorized personnel. With the inability

to obtain additional manpower spaces from DA, depot maintenance was authorized limited overhires within DARCOM's authorization which helped reduce the carry-over to some degree.

(U) The mission for maintenance of Conventional Ammunition (worldwide)was transferred to P7M from P7S without applicable funding resources. This action was implemented around mid year but retroactive to the beginning of FY 1978.

(U) DESCOM was authorized 500 overhire personnel spaces for distribution to the depots with the largest workload in order to assist in the reduction of the FY 1978 carry-over.

(U) Policy was established in FY 1978 that effective in FY 1979, the Materiel Readiness Commands would be the focal point for all P7M Maintenance Engineering (PE 738017) for Product Improvements (PIP's). This changes prior procedure whereas the focal points varied between Materiel Readiness Commands and Development Commands for different systems/equipments. Under the new procedure, the MRC's would budget and program for the total PE 738017 PIP requirements, in coordination with the applicable Development Commands, and the P7M funds will flow through these MRC channels. This change in procedure was to provide a better overall management capability for the PIP engineering requirements.

(U) DA directed a $5.0 million transfer from Maintenance Support Activities (PE 738017) to P7S which had an impact on high priority programs and increased the unfinanced requirements in maintenance engineering and publications. A DA directed $17.0 million reduction was made in PE 732207 Depot Maintenance (overhaul) in the last month of FY 1978 for transfer to P7S. This had a major impact on the depot maintenance workload (reprograming actions) and increased the FY 1979 unfinanced backlog. This $17.0 million reduction impact was further amplified with the limited FY 1979 depot maintenance funding limitation.

(U) PE 721111 Supply Depot Operations. This project provides for the receipt, storage and issue of assigned stocks in Army depots and arsenals. In FY 1978 programs expenditures were $301,951,888 against a requirement of $335,469,000 leaving $33, 17,112 unfinanced. In FY 1978 depots and arsenals received 2,068,689 line items and 1,203,566 short tons and shipped 6,277,342 line items and 1,502,238 short tons. The year-end unobligated funds within the DARCOM complex resulted in $2,570,000 which was placed on project orders. This in turn significantly reduced FY 1979 unfinanced requirements. At FY 1978 year-end the most critical unfinanced requirements were in the functions of COSIS, inventory and rewarehousing. In FY 1978 resource allocations to this PE continued to be extremely limited due to OSD/OMB arbitrary reductions which were made without regard to logistics readiness impacts. In the 1st Quarter FY 1978, the depot system was forced to sustain a manpower reduction in the workforce to meet reduced fund availability.

(U) PE 721112 Supply Management Operations. This project provides for the operation of CONUS National Inventory Control Points (NICP's), Service Item Control Centers (SICC)/Secondary Inventory Control Activities (SICA), including inventory control, cataloging, stock control and direct support functions. FY 1978 financing for this Program Element (PE) was $151.4 million. The FY 1978 COBE reflected a requirement of $150.7 million, of which $1.9 was unfinanced. This unfinanced amount together with an additional $.7 million recognized during execution of the program were financed.

(U) PE 728010 Second Destination Transportation. This project provides for Second Destination line haul and air transportation to transport troop support cargo of materiel after the materiel has been accepted into the Army supply system. The following is a summary of FY 1978 funding:

	(Dollars in Millions)	
FY	Requirement	Financed
1978	$40.0	$40.0

(U) The breakout of the FY 1978 funding of $40.0 million was as follows: $38.1 million for commercial line haul freight moved 450,212 short tons of materiel. $.7 million for air transportation moved 766 short tons. $.5 million for through bill of lading moved 3,741 short tons. $.7 million were expended for flyaway aircraft by TSARCOM.

(U) PE 728013 Overseas Port Units. The control of all MILVAN/CONEX container equipment was transferred from PE 728101, Second Destination Transportation, to PE 728013, Overseas Port Units at the beginning of FY 1978. The control of the container equipment, which was at Tobyhanna Army Depot, included the movement of containers and all relocations of equipment to meet military requirements worldwide. Following is a summary of the FY 1978 financing:

	(Dollars in Thousands)	
FY	Requirement	Financed
1978	$315	$315

(U) Army Stock Fund. During Fiscal Year 1978 the Execution of the DARCOM Division (Wholesale) Army Stock Fund continued to improve. The FY 1978 program was approved as submitted to OSD/OMB and $1,170.0 million was obligated for a 99.4 percent program accomplishment rate. This was attributed to a sound stock fund program for FY 1978 and management emphasis on program execution.

(U) Procurement Appropriation Army (PAA). Procurement Appropriations for Secondary Items also reflected marked improvements in program execution over the previous fiscal year. Procurement Appropriation, Army (PAA) financed spares and repair parts, was still

under close scrutiny by the OSD/OMB analysts concerning the "Repair Cycle" element of the requisitioning objectives of our National Inventory Control Points. Although our FY 1977 programs and budgets were not impacted, the Program Budget Directive for FY 1978, in effect, directed that the Repair Cycle elements would be reduced in FY 1978 and further reduced in FY 1979. Since this was a very significant element both from a dollar requirement and operating standpoint, procedures were developed and were being implemented to measure and streamline all actions that occurred in the Repair Cycle time period from the time an item manager made the decision that rebuild/overhaul of a quantity of an item was required until the hardware was picked up in a ready-for-issue status. This was an on-going effort which would continue into FY 1979.

Programs and Projects

(U) The Direct Support System (DSS)--Air Line of Communications (ALOC). The initial round of follow-on Technical Assistance visits to CONUS installations were completed in FY 1978. During this period two DA In-Process-Reviews were held; the extension of DSS to USAR units in First and Sixth Armies was completed. In addition, testing and limited extension of DSS to USAR units in the Fifth Army began during this period. Action was initiated to eliminate FM 38-725 and incorporate all the DSS policies and procedures in established DOD and Army publications. A refinement to DSS was the ALOC. Under ALOC, all but a few selected repair parts and heavy components are shipped by air to Europe. Most requisitions are electronically transmitted from Supply Support Activities (SSA) in Europe to CONUS. Army, DLA and GSA materiel for these SSA's is then processed through the DSS/ALOC Consolidation and Containerization Point (CCP) at NCAD for onward movement to Europe. The ALOC proved to be a faster, more efficient system for delivering critical repair parts to Europe. It has reduced service support manpower costs and shortened the supply pipeline. On 1 October DARCOM began an ALOC to Korea on a test basis.

(U) Logistics Support of Electronics Warfare and Signal Intelligence Materiel. During Fiscal Year 1977 the logistics support mission of the former Army Security Agency was transferred to DARCOM. Command and control of the Electronics Materiel Readiness Activity located at Vint Hill Farms Station, Virginia, was assumed in February 1977. A plan to improve the operating capability of the Electronics Materiel Readiness Activity was implemented in March 1978. This effort involved a series of actions which improved data processing services, increased availability of manpower for mission operations, and improved the effectiveness of materiel management operations by minimizing systems and procedural incompatibilities within the wholesale logistics environment. Command and control of the Electronics Materiel Readiness Activity was assigned to the Commander of the Communications and Electronics Readiness Command on 1 July 1978. This

organizational alignment consolidated the subordinate electronics readiness activities under one command.

(U) A study of the stockage criteria and requirements computation practices applied to electronics warfare and signal intelligence materiel was initiated in July of 1978. The initial study findings have indicated that significant gains in supply performance can be achieved by modifying the management techniques. The study will be completed early in Fiscal Year 1979.

(U) Phase I of the Army Communications Security Commodity Logistics Accounting and Information Management System was implemented at the Electronics Materiel Readiness Activity in September of 1978. This phase involves the Federal Catalog System and related processes. The second and third phases will be implemented during Fiscal Year 1979.

(U) The Logistics Control Activity (LCA). The LCA maintains a data bank, known as the Logistics Intelligence File (LIF), which was designed to monitor supply and transportation actions relating to Army sponsored requisitions placed on the wholesale supply system and report on performance of the total logistics pipeline. A study to determine the feasibility for worldwide remote terminal access to the LIF was conducted. HQ DARCOM identified 19 terminal locations within the US for AUTODON Query/ Response (Q/R) access to the LIF. The LCA was going forward with an AUTODIN full tie-in which would eliminate the USACC Communication Center currently located at the LCA. Beginning in December 1978 support agreements and AUTODIN Q/R programming would begin with implementation with the first terminal scheduled for March 1979.

Maintenance Interservice Support Management

(U) Under guidance of the Joint Logistics Commanders (JLC) and the Joint Policy Coordinating Group on Depot Maintenance Interservicing (JPCG-DMI), the Maintenance Interservice Support Management Office (MISMO), in conjunction with the other Service MISMO's continued to act as a strong advocate to achieve increased interservicing of depot level maintenance support among the Services.

(U) During FY 1978, the Service Interservice Liaison Officers (ILO's) resolved remaining problems in the study of postured items and have concentrated on achieving visibility of new equipment (DMI New Starts) for processing to the Maintenance Interservice Support Group, Central (MISG-C) for study and recommendation as to potential candidates for interservicing.

(U) The status briefing given to the Joint Logistics Commanders relative to the Depot Maintenance Interservicing Program progress and MISG-C in December 1977 was modified as directed by the JLC and provided in response to a formal request from OASD, that they be apprised

of the final results of the MISMO's joint studies, plus the status of results achieved by the MISG-C. The information was provided on 1 February 1978.

(U) In view of lack of adequate response by subordinate commands to previous directed actions, similar letters on new starts were developed for each commander (JLC member) to sign. These letters, directed to Service subordinate commands, emphasized the need for new start visibility, explained the role of the MISG-C and addressed the need for inclusion of a specific milestone in each services' acquisition process, requiring a depot maintenance interservicing evaluation. Such letters were issued as follows: Navy - Admiral Michaelis' letter of 3 May 1978; Army - General Guthrie's letter of 10 April 1978; Air Force - General Rhodes' letter of 31 January 1978; and AFSC - General Allen's letter of 28 February 1978.

(U) The MISG-C was fully staffed and operational as of March 1978 and had developed joint operating procedures and had gone through the usual learning curve associated with any new endeavor.

(U) As a result of OSD concern, the AIMS Altimeters, AAU-31/32, previously set aside by Army were reintroduced at an ASA request to the MISG-C for restudy as an interservice candidate. Such study resulted in their approval for inter-servicing to the Navy. On 20 April 1978, Brigadier General E. A. Vuley, Jr. (Army) assumed chairmanship of the JPCG-DMI. As a result, the Army provided program leadership for the DMI program throughout 1978.

(U) A program to effect reconciliation between DMI program records and DIMM/NIS efforts and records was initiated in May 1978, and joint action confirmed in June 1978 relative to the need to provide a suitable audit trail for related DMI-DIMM/NIS decisions. It was expected that this would be completed by April 1979. In conjunction with the reconciliation effort, the need for establishment of a current data base and the means for continual tracking of decisions and results of same in the DMI area of both past actions on postured items and new equipments (new starts) was officially recognized and action initiated to develop an appropriate system.

(U) Recognizing that a voluntary approach relative to the submission of DMI new starts as a result of the JLC letters would not get the response required, a decision was reached to follow it up with an aggressive lobbying effort. Therefore, a team, consisting of a representative from each service, was formed to assure that the JLC emphasis on new starts was followed through and a creditable input achieved by going out in person and explaining the importance of the program to the acquisition managers. This team, known as the DMI New Start Assistance Team, began in May 1978, and visited most

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Service acquisition offices and briefed over 300 people. The team visits considerably enhanced program visibility, displayed JLC commitment to the program, and provided a joint forum for criticism and discussion and was well received. As of the end of 1978, the MISMO/ILO/MISG-C JLC DMI effort had encompassed 625 maintenance decisions, reflecting 59.2 million dollars of potential interservice workload and $298.2 million of workload which is single serviced and no longer a candidate for study. In the new equipment area, some 71 decisions had been made which should yield a one-time potential cost avoidance of some 47.4 million dollars in depot level support equipment, software and training. There were some 128 projects registered at the MISG-C for study, 25 recommendations were completed, one project cancelled, and 102 still in process.

(U) In summary, progress was made during the past year in the area of Maintenance Interservice Support Management. A review of postured items and reconciliation between DIMM/NIS and DMI records was to be completed by April 1978. Efforts in the new start area were on the increase, and a better understanding of the complexity of the overall acquisition process and interface for evaluation for interservicing had been achieved. Establishment and full operational status of the MISG-C had been an unqualified success.

Security Assistance

(U) During 1978, the United States Army Security Assistance Center, a field command of the Army Materiel Development and Readiness Command, discharged its responsibility as the DA Executive Agent for Security Assistance through a variety of forums. These included the Security Assistance Directors' Conferences, the Semi-annual Country Management Reviews, the Security Assistance Seminar, the Command Performance Indicator Reviews, and other meetings and conferences.

(U) Reflecting upon 1978, it must be viewed as a year of significant change and activity. Areas of change ranged from the implementation of the arms ceiling management concept to the introduction of the Army Customer Order Control System. When viewing the year in perspective, a differentiation can be made between operational highlights and management highlights. The operational areas would include the geographic regions of Mid East, Africa, Americas, Europe, Pacific, and South Asia. The management areas would include systems, studies, hardware, and information systems.[13]

[13] The bulk of the material in this chapter is from Ltr, DASAC-SC (inclosure thereto) from MG Tom H. Brain, Commanding (USASAC) to DARCOM and Army Commanders, Subj: 1978 Security Assistance Highlights and the FY 1978 Annual Historical Review of the Security Assistance Center (DRSAC-SC), 2 January 1979.

(U) Security Assistance operations during FY 1978 may be depicted as an ongoing program as reflected in the following statistical data: During FY 1978, 1,815 new Foreign Military Sales cases were accepted. A total of 643,000 Security Assistance requisitions were processed through the supply system during FY 1978. At the end of FY 1978, there were 8,011 cases carried in an open status. The undelivered program value at the end of FY 1978 was $15.5 billion. Although the dollar value of new cases written during FY 1978 reflected a decrease from those written during preceding years, FY 1978 new business amounted to $2.73 billion as compared with $2.8 billion for FY 1977, the program continued at a high level of activity due to the deliveries that were being made on items ordered in prior years. Many of these items required a long leadtime for production prior to delivery to the customer. At the end of FY 1978, there were open sales cases with 84 customer countries and international organizations.

(U) On 1 November 1977 the US Army International Logistics Command (USAILCOM) was reorganized and redesignated as the US Army Security Assistance Center (USASAC) and was assigned to the US Army Materiel Development and Readiness Command with the mission to manage the DARCOM Security Assistance Programs. Also to serve as the DARCOM point of contact with other DA and US and foreign industries for security assistance matters.

(U) Included in the TASAPS (Army Security Assistance Program Study), were 62 recommendations for management improvements to the Security Assistance Program, DARCOM was tasked with resolving 21 of these recommendations. Twelve were completed and nine remained open. Of the open recommendations, eight were targeted for completion between the period March through October 1979. The final open recommendation, for the design of a replacement computer based system, was scheduled for completion in July 1980.

(U) Peat, Marwick, Mitchell & Company Study. Peat, Marwick, Mitchell & Co. was awarded a contract on 18 April 1978 to conduct a functions and procedures study of USASAC for the purpose of determining the best organization to conduct the Army's Security Assistance Program. The study was being conducted in three phases and will be completed by mid-December 1978. The first phase involved a functional review of USASAC, the second a procedural review and the third an organizational review. The first two phases have been completed and the study is on schedule. Also, a complete revision of Security Assistance Army Regulations for which DARCOM/USASAC was assigned proponency was undertaken. The work started early in FY 1978 and was scheduled for completion in March 1979.

(U) FMS Ceiling Management. As a result of the President's policy to limit transfers of weapons and weapons related items, a ceiling of slightly less than $8.6 billion was placed on these

transfers during FY 1978. The ceiling applied to all countries except NATO, Japan, Australia and New Zealand. Responsibility for overall program monitorship and operational control was assigned to the DSAA Comptroller, Ceiling Management Division. Implementation and control of the program necessitated several actions by the Military Departments, to include special reconciliations, expedited processing of Letters of Offer, constrained expiration dates and restrictions on the cases which could be accepted in FY 1978. Within the Army, the program was monitored and controlled by USASAC. For FY 1978, the program value was $8.587 billion. The President's policy for all transfers of weapons and weapons related items required that the dollar volume in new orders under FMS and Grant Aid in FY 1978 be less than the FY 1977 total, with the same policy to apply in succeeding years. The policy applied to all countries except NATO countries/agencies, Australia, Japan and New Zealand and includes weapons and weapons related items only. There are no ceiling restrictions on sales to the exempt countries or on non-weapons items for any country.

(U) Establishment of Army Customer Order Control System (ACOCS). In June 1977, the Assistant Secretary of Defense directed the establishment of a financial management system to effectively control Army appropriations. The ACOCS was implemented with the Comptroller Directorate in February 1978 to satisfy this requirement. The ACOCS is a computerized system which controls the request for, receipt, and issuance of DA foreign military sales (FMS) obligation authority (OA). It provides an effective method of updating and entering fund reimbursement authority data. The system includes financial data for logistical programs from various Army elements combined with financial data from the DOD Security Assistance Accounting Center. It merges data elements from a central data base, and provides an integrated accounting and financial control system covering each FMS case from initiation to closure. Total case value of FMS program was approximately $20 billion encompassing approximately 9000 cases.

(U) The Control Data Corporation (CDC) was contracted to program all Army system requirements pertaining to ACOCS. These requirements include the programming of all interface between ACOCS and the Army systems, e.g., Centralized Integrated System for International Logistics (CIS-IL). The target date for an addition of controls in ACOCS to encompass all categories of customer program relative to Funded Reimbursement Authority of procurement appropriation was October 1979. This extension of ACOCS will enable the system to generate and accept financial transactions to and from other Army financial accounting systems, international logistical systems, and DOD joint Financial Management Systems.

(U) US Army Security Assistance Materiel Data Book. The International Security Assistance and Army Export Control Act of 1976 resulted in the reduction of a number of Military Assistance Advisory Groups and Missions. These former activities were redesignated Office of Defense Cooperation (ODC) and are assigned not more than three members of the Armed Forces of the United States. The reduction of personnel has resulted in a corresponding loss of US military expertise. This fact, combined with the variety and complexity of modern equipment being purchased by International Logistics customers requires a source of information of US equipment to assist US personnel in in-country management of the Security Assistance Program. A major document which provides information required during the planning stages in Security Assistance Programs is the US Army Security Assistance Materiel Data Book. A review of the Data Book has been completed during FY 1978 to provide a publication which conforms with the latest Security Assistance policy. The Data Book now encompasses only items which can be made available to eligible foreign customers and eliminates all reference to use of the book for encouragement of arms sales. The publication is designed to assist US personnel in-country in their discussions with the host country representatives and incorporates a total package concept check list for easy reference by the personnel concerned. Publication is scheduled on an annual basis.

(U) Improvements in Automated Support for Security Awareness. Actions were underway to expand and improve automated systems in support of Security Assistance, both at USASAC and the Materiel Readiness Commands, USASAC's ADP capacity was expanded with the acquisition of a second CDC 3300 computer in September 1978. The long range goal for USASAC includes the design of a replacement system, making maximum use of avilable hardware and the latest in software design and management practices. The MRC Commodity Command Standard System (CCSS) is undergoing continuous improvement as System Change Requests (SCR's) are implemented. Additionally, action is underway to develop necessary General Functional System Requirements (GFSR) and Detail Functional System Requirements (DFSR) for the acquisition and development of a system to provide expanded Security Assistance support at the MRC's and USASAC under the distributive processing concept using minicomputers and remote terminals. Completion of this action has been targeted tentatively for late FY 1979 or FY 1980.

(U) TRADOC Washington Field Office. As a part of the reorganization and financial realignments resulting from TASAPS-77, HQ TRADOC established a three-man Washington Field Office collocated with USASAC. This office became fully operational on 25 September 1978 with the primary function of providing interface between the training and materiel communities for all aspects of Army Security Assistance Programs. Specified functions of the TRADOC Washington Field Office include providing training expertise in the total package approach, coordination of both training and material cases, acts as principal point of contact for HQ TRADOC with other Security Assistance agencies

in the Washington, DC area and provides for direct interface between the training community and Foreign Embassies.

(U) USASAC LOA Review Board. The need to insure that Letters of Offer and Acceptance (LOA's) and associated changes are both in conformance with established policy and are submitted to the foreign customer in a timely manner has resulted in the establishment of a USASAC Letter of Offer and Acceptance (LOA) Review Board. Since the inception of the LOA Review Board on 6 October 1977 through 30 September 1978, a total of 326 cases have been reviewed by the board. This board, which meets daily, reviews the most significant LOA's which major items of equipment or attain a $7 million case value threshold. The board conducts a complete review of the LOA to insure conformance to current instructions for case preparation and resolution of any discrepancies prior to release to higher headquarters. As an associated action to insure that the LOA's are submitted within established time frames, a review and analysis is made of each LOA submitted to a foreign customer to determine the elapsed time which is incurred at each stage of the processing cycle from preparation at the MRC to review at DARCOM and DSAA until final release to the foreign customer. This information is then compared with the total processing time of 60 days (45 days at MRC; 15 days at DARCOM and above) allocated by DOD for each case.

(U) Army Munitions Control Program. As a result of the Commander DARCOM being designated as the Department of the Army Executive Agent for Security Assistance and the disestablishment of the Coordinator for Army Security Assistance (CASA), USASAC assumed operational responsibility for the Army Munitions Control Program effective 1 November 1977. This program involves the development of Army position with respect to granting US Government licenses to private industry to export military items and technical data to foreign countries. License applications are received by USASAC directly from the Department of State and forwarded to OSD citing the coordinated Army recommendations. During FY 1978 USASAC processed 1147 license applications representing a total dollar value of $475,775,869. A review of these license applications processed through the system indicates that approximately 20 percent of the applications are for advisory opinions submitted prior to the actual application for export and approximately 20 percent are for temporary export of data or equipment for demonstration or feasibility testing. Average processing of these cases throughout the Army cycle approximated 22 working days. Included in these applications were approximately 250 cases which involved RSI consideration for export of goods/services to NATO countries, Australia and New Zealand.

(U) Semi-Annual International Logistics Status Report Co-Production Projects. Co-Production Program activity showed considerable increase during the fiscal year with particular application of the RSI program to future projects. The number of co-production projects showed a slight increase with new programs being initiated for the M-113A1 Armored Personnel Carrier in Italy and the DRAGON Missile System in Switzerland. Increased activity pertaining to NATO countries has been in evidence with applications projected for the Ribbon Bridge, MODFLIR, M109A2, Howitzer, STINGER, and General Support Rocket System. The total value of all co-production projects, active, under consideration, and those in a close-out or closed status has increased from $3.3 million to $3.9 million. The total number of those dollars estimated to be spent in the United States increased from $1.7 million to $2.0 million.

(U) Security Assistance Manpower Accounting System (SAMAS). General Research Corporation contracted with the office of the Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics to develop a system to account for and report all Security Assistance manpower. Included in this analysis would be all DOD military and civilian personnel providing full time or part time support for the Foreign Military Sales (FMS) and Military Assistance Program (MAP). The project culminated in the preparation of a proposed Department of Defense Instruction which prescribes policies and procedures for a Security Assistance Manpower Accounting System (SAMAS) within DOD. The manpower data provided through this automated system will support management of Security Assistance resources, budget estimates and justification, the Program Objective Memoranda, and responses to congressional inquiries. The Center had total DA responsibility for the Army input to the initial FY 1977 manual report in January 1978 and the FY 1978 report will be totally automated for the January 1979 cycle.

(U) Saudi Arabian Army (SAA) Two Brigade Mechanization Program. At the request of the Saudi Arabian Government (SAG), a DOD Survey Team visited Saudi Arabia in 1974 to evaluate defense requirements and make recommendations to improve their military defense posture. One of the important recommendations was to mechanize four infantry brigades. On 15 October 1975, Prince Sultan, Minister of Defense and Aviation (MODA), requested a complete offer for equipment to outfit two Mechanized Infantry Brigades. Based upon this mechanization recommendation and a SAG request, an immediate requirement for 13 Foreign Military Sales Cases referred to as the Urgent Requirements List (URL) was developed to provide major items of equipment to the SAA. In order to round out the two Brigades, the SAA requested an additional 533 materiel lines. By March 1976, requests for additional support equipment resulted in a total of 43 Round Out List Cases. These cases were implemented between 1976 and 1978. The total number of cases implemented to date is 56 with a program dollar value of $1.4

billion. Equipment deliveries began in 1976 and are scheduled to continue through 1981. A special project, referred to as ELO, was established to provide 10,536 lines of CSP and other equipment support for the initial M113 Armored Personnel Carriers and M60A1 Tanks which were delivered on an expedited basis to facilitate training for the initial SAA Brigade.

(U) Major items involved in the Two Brigade Mechanization Program are: M109A1; M60/M113; DRAGON; LAW and REDEYE. Mobile Training Teams (MTT), Quality Assurance Teams (QAT) and Technical Assistance Field Teams (TAFT), as applicable to the major items, are coordinated to equipment delivery schedules.

(U) The Mechanization Program is appraised every six months through Program Reviews attended by principal managers of major program elements from the following agencies: DA, DARCOM, USASAC, TRADOC, USAIMA, the MRC's (Materiel Readiness Commands) and in-country representatives from USMTM and DIVENGR. During 1977, two Mechanization Program Reviews were held at New Cumberland, PA (May 1977 and December 1977). The most recent Program Review (August 1978) was expanded to include representation by the Saudi Arabian Army. LTC Mohammed Bin Nasser (HRH), The Saudi Arabian Project Manager for the Mechanization Program was in attendance, and expressed his concerns regarding specific areas relating to equipment deliveries/availabilities (M60A1, AMMO, REDEYE). These concerns were addressed during a line-by-line review of each one of the 56 FMS Cases that constitute equipment being provided by USG to satisfy two mechanization requirements.

(U) The in-depth review during 28-31 August 1978 disclosed numerous areas where corrective action was necessary. As a result, USASAC tasked various attending agencies to take corrective action on 29 separate concerns and to provide status of progress to USASAC NLT 5 October 1978, 6 November 1978, and 4 December 1978 unless action is completed prior to those dates. The next two Mechanication Program Reviews were tentatively scheduled to be held in CONUS during the week of 8 January 1979.

(U) Jordan Program Review. A formal program review was not presented to HQDA during calendar year 1978. As of 31 July 1978 the program scope was as follows: FMS - total program 180 open cases valued at $670.4 million. Delivered $202.5 million. Undelivered $467.9 million. Grant Aid - total open program $87.0 million. Delivered $29.8 million. Undelivered $57.2 million. The significant undelivered items as of 15 September 1978 were: Howitzers M109A1B - 44 each; Howitzers M110A1 - 30 each; I-HAWK Batteries - 9 each; and Vulcan System - 64 each.

(U) A US-Jordan Joint Military Commission (JMC) Meeting was held at DSAA on 20 and 21 June 1978. The Army Working Group session

was attended by representatives from ODCSLOG, ODCSOPS and Commander, USASAC and staff members. The Jordanian Armed Forces (JAF) was represented by MG Majali (Assistant Chief of Staff, Plans and Operations, JAF), BG Khalid (Military Attache, Embassy of Jordan) and staff members. The Kuwait/Jordan I-HAWK Project Manager briefed the JAF on the I-HAWK portion of the Jordan Air Defense Program and an ARRCOM representative gave a briefing on the VULCAN portion. Briefings were also presented at the JAF's request on a number of new systems with the understanding that there was no commitment by US for release or sale of the systems to Jordan. Systems included VIPER, DIVADS, ROLLAND, TACFIRE and AN/TPQ-36/37 Radar. Based on prior request of the JAF, a number of agenda items were then discussed in detail. Included were: report to accelerate delivery of additional AN/TPM-23 and AN/MWM-3 Radar Test Sets for VADS; improvement in delivery of TOW and DRAGON Missiles and the DRAGON Tracker; better availability of 105mm HEAT ammo; accelerated delivery of 8" M110 Howitzers; releasibility of I-HAWK PIP's; replacement of 282 rounds of 105mm Ammo found defective by X-Ray process; replacement of TOW defective rounds; and price increase on M102 Howitzers.

(U) At the conclusion of the meeting, Commander USASAC recommended that monthly meetings be conducted to discuss each of the issues outstanding from this review and that other significant items be added to the agenda as they arise. Since the JMC, two meetings have been held with the Jordanian Attache. At the last meeting 25 separate issues were discussed. This monthly review has proved very beneficial in keeping the JAF informed on outstanding issues and solving problems.

(C) Jordan Air Defense Program. The Jordan Air Defense Program consisted of 14 I-HAWK Batteries, 100 Vulcan Air Defense Systems (VADS), training and services to include program management. The program dollar ceiling has been established as "not to exceed" $540 million dollars. The basic VADS case was accepted in August 1975 and implemented in January 1975 with the basic VADS training case being accepted in December 1975 and implemented in December 1975. Due to a delay in receipt of third country funding for subject program, a work stoppage was initiated on the I-HAWK portion of the program in April 1976. The problem was subsequently resolved and supply, services and training actions resumed in September 1976.

(U) Separate review of the VADS and I-HAWK Programs were presented to DSAA/HQDA staff in July 1978. The presentations reflected the current status and future plans for the program. An I-HAWK In Process Review was held with customer, Program Management Office and USASAC representatives in June 1978. The IPR resulted in some revised requirements and additional requirements for Letters of Offer (LOA) for roundout materiel/services. The PM, Kuwait/Jordan Missile Systems Office and a Raytheon representative briefed representatives of the Royal Jordanian Air Force (RJAF) on the I-HAWK Product Improvement Program (PIP) during

a visit to Jordan 27-31 August 1978. There were 39 cases associated with the I-HAWK Program of which 38 had been implemented with a total value of $386.9 million. There were 25 VADS cases of which 20 had been implemented with a total value of $105.8 million.

(C) The first 36 VADS were shipped in increments of 12 each beginning in November 1976 with the last increment being shipped in April 1977. The balance of 64 are being supplied from procurement with delivery scheduled for the first half calendar year 1979. The first shipments of I-HAWK support materiel and missiles were delivered during July 1977. Five I-HAWK Batteries have been delivered. The balance of nine were scheduled for delivery one each month October and December 1978; February, April, June and August 1979; January, March and May 1980.

(U) Zaire-Shaba Incident - Expedited Shipments to Zaire. DA tasked USASAC on 18 May 1978 to prepare for anticipated activity in support of the Zaire-Shaba attack. DA requested status of open requisitions for major/significant items on active FMS cases. In addition, USASAC was tasked by DA on 26 May 1978 with requirements for 900,008 rations, 3,000 batteries for the AN/PRC radio and assistance in obtaining transportation for commercial shelters and generators on an expedited basis.

(U) On 19 May 1978 the State Department informed the American Embassy in Zaire that any urgent request for rations was approved in advance. The original Zaire request was for 5,400,000 meals at an approximate materiel value of $7.8 million. Additional administrative and accessorial costs increased the total value to approximately $10 million. Execution required two C-141 planeloads of rations with the balance to be shipped by surface transport. USASAC questioned the large quantity of rations and received an amended request for 900,008 rations with a total value of $1.7 million. Priority shipping actions were accomplished with the two planeloads of rations departing by MAC Channel Air from Charleston AFB on 6 June 1978. The balance of rations was shipped via ocean transport on 26 June 1978 with arrival in Zaire 15 July 1978. One shelter, one generator, batteries and spare parts were shipped from Charleston AFB on 23 May 1978 with arrival in Zaire 25 May 1978. An additional shelter, one generator, and some repair parts were airlifted from Charleston AFB on 6 June 1978 arriving in Zaire on 8 June 1978. Other actions taken during the incident related to FMS cases already in being. Shipments of clothing were expedited from Europe as well as assistance in arranging for assignment of an Army officer to Zaire for 30 days TDY for augmentation of ZAMISH during the Shaba episode.

(U) Security Assistance Problems Relating to Argentina. As a result of human rights violations in Argentina, the Foreign Assistance Act of 1961 was amended by Public Law 95-92 on 4 August 1977. This law

provides that after 30 September 1978, no sales of defense articles or services may be made under the Arms Export Control Act, and that no export licenses may be issued to or for the Government of Argentina. The first impact of this law was felt in mid-December 1977, when Office of Munitions Control, Department of State, denied an Argentine request to export 17 Aluminium Floating Bridges, amounting to 931 measurement tons, which were free along side vessel at the Port of Baltimore. Because of pier storage costs and disruption in the loading of other cargo, the action was contested by USASAC, in coordination with DA, DSAA and the Maritime Commission. A reversal of the State Department action was achieved on 21 December 1977.

(U) In March 1978, non-lethal materiel in seven FMS cases started to accumulate in the freight forwarder's warehouse. This Center frequently contacted the Office of Munitions Control regarding denial of export licenses for this materiel. Each query resulted in the comment that the Secretary of State was awaiting evidence of improvement in the human rights situation in Argentina. By message on 8 June 1978, USASAC informed DSAA and the State Department that continued denial of export licenses was of mounting concern since the freight forwarder's restriction against export of this materiel could result in claims against the Army for transportation and storage costs. Another message was addressed to DSAA and the State Department on 5 July which pointed out that an additional major concern was the source of payment for potential contract cancellations of materiel in recently implemented FMS cases. Definitive guidance for resolution of these problems was requested.

(U) Subsequent messages were addressed to DSAA/DA during July and August which provided estimates of the potential financial impact on the US Army if export license requests continued to be denied. USASAC persistence in this matter resulted in the promulgation on 6 September of the State Department/DSAA/DA procedures for exporting materiel relating to Argentine FMS cases, i.e., (a) Argentine Air Force (AAF) freight forwarder in Maryland would also serve as their Army freight forwarder and would truck all materiel in Argentine-owned/leased vehicles to Andrews AFB for pickup and movement to country by AAF aircraft and (b) bulky items including two UH-1H Helicopters at the Bell Helicopter facility in Amarillo, Texas, would be picked up at source and moved to country by AAF cargo aircraft. Continued application of these procedures to all implemented FMS cases had been directed by DA.

(U) Territorial Command Network (TCN) - Spain. The conceptual origin of a Territorial Command Network in Spain (TCN-Spain) began in 1969. Initially, the Government of Spain (GOS) committed $5 million to the project and solicited bids on its own. Three corporations responded and GOS asked JUSMAAG to review these proposals.

JUSMAAG found all proposals to be substantially inadequate. Early 1970 the GOS asked US Army to provide system engineering and a proposed system. In early 1971 the US Army forwarded a proposal and began initial FMS case work.

(U) On 5 May 1972 representatives of the Spanish Army and US Army signed a Memorandum of Understanding under which the US Army would contract, in accordance with the US ASPR's with a US contractor to engineer, furnish and install the TCN. On the same day GOS accepted an FMS case (UKJ) which was to provide payment from GOS to the US Army for the TCN System. No cost was reflected on the basic case, only the authority for the US to obtain US contractor proposals. The costs and availability data were furnished in an amendment to the FMS case. Accordingly, in April 1974 the GOS accepted Amendment No. 1 for $26,148,639 and the US Army awarded a fixed price contract to Federal Electric Corp (FEC) for the TCN project. Additional TCN requirements resulted in two more amendments for which GOS accepted resulting in the TCN revised cost of $28.4 million. Over the past 2 years five modifications have been processed reflecting various changes to basic case scope which increased the TCN cost. The value of FMS case was $42.3 million as of close of FY 1978.

(U) GOS has refused to acknowledge any of these five modifications. The Spanish maintain that the provisions of the MOU override the terms and conditions of the FMS case and that their acceptance of Amendment 3 established a fixed price at $28.4 million. Conversely, the US Army position is that Spain is responsible to pay all costs relating to TCN, including approved contractor claims in accordance with the provisions of the FMS case; i.e., $42.3 million or higher. This position was highlighted to our Ambassador and to Spanish officials during OSD TCN briefings given in Madrid during February 1978. On-going Spanish/USG formal discussions at STATE/Defense level hopefully will resolve Spanish/US differences.

(C) Government of Greece Tank Modernization Program. During 1978, the Government of Greece continued the acceleration of their Tank Modernization Program. Under provision of several FMS cases having a combined value in excess of $4 million, technical assistance was furnished and capital equipment was delivered to Greece in support of their newly constructed Tank Track Shoe and Roadwheel Rebuild Facility in Northern Greece. Their new Tank Rebuild Depot in Valestinon was partially completed in 1977 and 1978 they performed a complete overhaul of approximately 800 of their M48 series tanks. Items reclaimed included final drive hubs, flanges, 1790 series engine crankshafts (chrome plating), final drive adapters, roadwheel arms, camshafts, torsion bar anchors, shock absorbers, etc., on the same level of proficiency as at ANAD. This effort was completed in June 1978 and on 1 August 1978, they began the conversion of 170 each M48A1 Tanks to the M48A5 configuration. The conversion kits are

being supplied under FMS having a combined case value of approximately $54 million. The first five M48A5 conversions were completed and tract tested in September 1978 and beginning in October, the schedule established was for 15 tanks per month until the total of 170 was completed. Due to the intensive management now being required for the converse program, an amendment to the basic case was being processed covering the establishment of a Greek M48A5 Tank Project Support Office at the TARCOM/M60 TPO. It was expected that this office would be in being by January or February 1979.

(C) In order to modify the balance of their M48 series tanks, the Government of Greece requested three additional Letters of Offer in June 1978. The first of these offers, FMS Case DA Greece WAJ, was forwarded to the customer on 12 September 1978. It covered 55 each conversion kits to convert the M48A1 Tanks to the M48A5 configuration and has a case value in excess of $17 million. Acceptance of this case was expected prior to 30 September 1978. The second of the offers, FMS Case DA Greece WAK, was forwarded to DA/DSAA on 19 September 1978 for processing and required Congressional action under the Arms Export Control Act. It covered 300 each conversion kits to convert the M48A1 Tanks to the M48A3 configuration and has a case value in excess of $73 million. The third offer, FMS Case DA Greece WAL, was under preparation and was to be forwarded to DA/DSAA for required processing and required Congressional action no later than 1 October 1978. It would cover 600 each of the conversion kits to convert the M48A1 Tank to the M48A3 configuration and would have a case value of approximately $140 million. Taken collectively, the foregoing FMS transactions were valued in excess of $314 million. As a separate action, Greece increased their Blanket Open End case coverage by $20 million and were in the process of purchasing Technical Data Packages (TDP's) on all US Army rounds of 90mm and 105mm Tank Ammunition, Projectiles, Charges, and Fuzes.

(U) XM1 Tank for the Netherlands. The Government of the Netherlands was studying tank replacement in the Netherlands Army. The prime candidates for consideration were the US XM1 Tank and the German LEOPARD II. The final decision as to which tank would be selected was expected by the end of the CY 1978. Some of the major considerations in the tank decision were cost, offsets, and delivery. Germany offered 100 percent offset and delivery beginning in 1981. The US Army, although competitive in cost, could not deliver prior to 1983. Offset could not be offered by the US Army and was being negotiated between Chrysler Corporation and Netherlands industry.

(U) One major difference between the German offer of the LEOPARD II and the US Army XM1 Tank was that the LEOPARD had the 120mm gun, whereas the US Army XM1 Tank offered has the 105mm gun. Although this

difference appeared to be great, it was not clear if the 120mm gun was really desired by the Netherlands as it would be increasingly costly to purchase ammunition concurrently with the tanks. The request by the Netherlands for a bid for the US tank caused many problems. Germany owns the rights to the 120mm gun and Congress had not given complete approval for the manufacture of tanks with the 120mm gun. Since the US Army did not yet have authority to offer the XM1 Tank with the 120mm gun, the bid was for the SM1 Tank with the 105mm gun.

(U) USASAC acted as a catalyst in the XM1 Tank negotiations. The bid from the Government of the Netherlands for the XM1 was presented to the CG, DARCOM. Since DARCOM did not have authority to offer the XM1 Tank for sale under FMS, it was necessary to obtain approval of the State Department, Department of Defense, and HQ, Department of the Army. It was necessary to obtain guidance regarding co-production and offset and pass it to the XM1 Project Manager since the XM1 Tank Project Manager was assigned responsibility to discuss co-production and offset.

(C) Switzerland Program Review. The Swiss Army, which consists of four Corps undertook an extensive upgrading and modernization program of its materiel assets. This effort was directed more toward armored vehicles and an anti-tank capability but there were indications that a purchase of BLACKHAWK helicopters was likely along with a growing interest in the XM1 tank. Two major Swiss programs were the DRAGON Missile purchase/co-production and a third buy of the M109 SP HOW, M113 APC and M548 Cargo Carrier. The first DRAGON case was accepted in September 1977 which provided for missile purchase plus a co-production effort for ancillary equipment. The second case was accepted in September 1978 and only provided for missile purchase. In all, Switzerland purchased 24,124 attack and 9,636 practice missiles. This was a purchase of M109 SP HOW's, with supporting tracked vehicles, which was the third Swiss purchase of this system. This purchase, however, was different because the Swiss desired a limited co-production authority. This portion of the request was being negotiated. Also, in mid-October it was learned the original request for between 74 and 146 of the Howitzers would probably be increased to about 200 of the vehicles. This purchase, when combined with the accompanying M113/M548 buy, was understood to constitute 70 percent of the Swiss military budget in 1979.

(C) Three new items of Swiss interest became evident within the past few months. These were the XM1 Tank, the BLACKHAWK Helicopter and the TOW Missile. The Swiss had been expressing an interest in viewing the XM1 for some time, primarily in connection with the development of a Swiss tank. Following a visit by a Swiss delegation in September in this regard, it appeared the XM1 was a contender, along with the LEOPARD, to compete with proposals to field a Swiss-designed tank in the mid-1980's.

(C) Regarding the BLACKHAWK helicopter, there was some message traffic in early 1978 concerning the possibility that the helicopter could be demonstrated. The Swiss were advised that a demonstration could be arranged in CONUS. Indications were that the Swiss were forming a BLACKHAWK Study Team which would probably result in a demonstration request being received.

(U) The TOW request, along with some expressed interest in the 60mm Mortar, was new and there was no background information available. These requests were received after the new MASM was published in August 1978 and the requests were being reviewed by the State Department. This was a new procedure as Switzerland was previously considered a Category A country and was able to forward its requests for military materiel direct to DOD.

(U) Iran - Aviation Program. In 1970, the Shah of Iran announced that the Imperial Iranian Ground Forces (IIGF) were to be supported by a modern Army Aviation force. The aviation program to support this decision includes the acquisition and delivery of helicopters/concurrent spares, instructor and pilot training, and construction of related facilities. Since 1972, the Government of Iran has purchased a total of 1427 helicopters - 584 under Foreign Military Sales, 443 on direct contracts with commercial sources and 400 from co-production. Delivery of all the helicopters purchased under FMS was completed in September 1978.

(U) In April 1974, two FMS service cases covering flight training, technical training and logistics department operations were signed by the Government of Iran (GOI). Sole source procurement from Bell Helicopter International (BHI) was directed by the GOI. Both cases were for a four year period starting in April 1974 with a scheduled completion date of April 1978 at which time the GOI would assume the management and operation of the Imperial Iranian Army Aviation Training Center and Logistics Center.

(U) In September 1977, the two FMS service cases were extended through September 1981 and another service case was accepted for additional field tactical and logistics support with a completion date of September 1981. During the March-May 1978 time frame, a Requirements/Cost Validation Study was conducted by TSARCOM to determine what would be needed to complete the Aviation Logistics Program. The recommendation was that a turnkey operation could be completed in March 1983 for an additional cost of $487 million. The Government of Iran has made the decision to terminate the FMS portion of the Aviation Logistics Program in December 1981. An FMS case for a total of $200 million which extended the Aviation Logistics Program through 30 June 1980 was in-country awaiting authority to release to the Government of Iran. It was anticipated that a follow-on case of $200

million would be required for the completion of the FMS portion of the Aviation Logistics Program in December 1981.

(U) Iran Air Defense Program. In July 1972, Iran Air Force purchased 10 complete batteries of I-HAWK. Subsequently, 92 FMS cases associated with I-HAWK were accepted. The program included 37 batteries-TO&E equipment, 1811 missiles, 7 AN/TSQ-73 Battery Control and Coordination Systems, I-HAWK On-the-job Training (maintenance) conducted by Raytheon Educational Systems Company (RESCO) and pending acceptance, On-the-Job Training for the AN/TSQ-73 System (Litton). The program was valued at $803 million. Iran planned to use two batteries for training and three for maintenance float. The remaining 32 batteries and AN/TSQ-73 Systems were tactically deployed to permanent and/or temporary sites or were in storage. All I-HAWK shipments were package shipments including a complete set of battery hardware, support equipment, and spare parts equipment. Additionally, a Quality Assurance Team was provided with each shipment. The program includes in-country operator/maintenance training of approximately 3,000 Iranians. During early 1978, plans for the development of an expanded I-HAWK depot maintenance capability became firm and an FMS case was under development with an estimated value of $250 millions.

(U) The I-HAWK Project Manager (at MIRCOM) had overall responsibility for program implementation. In-country program management was provided by the Peace Shield Program Manager with a staff of various specialties. MRC's with case manager responsibility included CERCOM, ARRCOM, TARCOM, TSARCOM and USASAC (NCAD) as well as MIRCOM. Program monitorship/supervision was being provided by USASAC with DA ODCSOPS having primary responsibility for in-CONUS training and TAFT support. The program was originally scheduled for completion by December 1979. However, the conclusion, because of additional requirements for training, follow-on support, and the proposed depot, was that the program would not be completed until December 1985.

(U) Iran Program Review. Prior to 1978, the Iran Foreign Military Sales Program reviews were chaired by DA DCSLOG and the Coordinator of Army Security Assistance (CASA). These reviews included MAAG representation, DA major commands, and DARCOM major subordinate commands. Due to the reorganization of Security Assistance Activities in 1978 and the new role of USASAC, the Commander, USASAC assumed the responsibility of chairing these reviews. The first review chaired by Commander, USASAC was held on 14-15 February 1978. Attendees at this review included representatives of the MAAG, Iran, the Iranian Aviation Program, and I-HAWK Program Field Offices in Iran, the Security Assistance Accounting Center, DARCOM Readiness Commands, TRADOC, Department of the Army, and the Defense Security Assistance Agency.

(U) The review was considered highly successful and identified several areas of concern for resolution prior to the next review. Responsible agencies were identified for each of the areas of concern to insure continuing efforts toward the resolution of each item. Due to an extensive changeover of key personnel in Iran during the summer of 1978, a firm schedule for the next Program Review had not been established.

(U) Transfer of EUSA Equipment to the Republic of Korea. Transfer of Eighth US Army Equipment to Republic of Korea forces, to compensate for planned withdrawal of US forces stationed in Korea, was continuing on schedule. Preliminary work had been done to identify precise items, by Army unit and incremental transfer date, to establish each end item's general age and condition; to establish equipment prices; to develop procedures for controlling transfers; to establish ADP programs to process and record transactions; and to provide status reports to DA and DSAA. USASAC was the designated DA agency responsible for controlling, monitoring and reporting progress on this transfer.

(U) A 1974 Secretary of Defense Program Decision Memorandum directed that equipment and missiles for six NH batteries be turned over to the ROK Army. These batteries were in the US Eighth Army inventory. The Army Master Data File value of this materiel was originally $45 million. However, due to the age of the system, and resultant application of reduced pricing, the value of the FMS case which was developed for transfer of this materiel was $6.2 million. Implementation of the case occurred on 17 June 1977 and where-is, as-is transfer was completed on 1 July 1977.

(U) Routine actions were underway at MIRCOM, DSAA, SAAC, and USASAC to reconcile transfer of documents with financial and accountability records. The transfer of NH was otherwise complete. The last three launchers were turned over to the ROKA during June 1978. Several requests for Letters of Offer were received from the ROK which called for NH missiles, antenna masts, director stations, and other items which complement or support items which were transferred. The ROK has also taken greater interest in the future of the system by participating in cooperative efforts to insure that continued operation would be practical (e.g., the NH Cooperative Engineering Services Program, NATO Maintenance Activity Supportability Study, and Sierra Research Corporation range and angle encoder modifications). For these reasons, this program was expected to continue to generate FMS business for some time.

(U) The first US Army-ROK Security Assistance Review (SAR) was held in Seoul, Korea 1-12 May 1978. Approximately 130 actions were documented based on SAR discussions. These have become a focal point for follow-up coordination between the US and the ROK. A monthly report on the status of these actions was being published by USASAC. A mini-SAR

in Korea was planned in January 1979 to review progress on resolving problems which were identified during meetings in May, and to pinpoint areas for additional action.

(C) Korea - Improved HAWK Program. In their defense planning priorities, the Republic of Korea places their air defense program second only to their armor and armor defense capability. The HAWK has been a vital part of this program. The effort to upgrade ROK Basic HAWK (BH) battalions to Improved HAWK (IH) and to increase the number of HAWK Battalions from three to five was the ROK's highest valued US Army managed FMS program. At the time of projected program completion in 1982, the total value was expected to exceed $220 million. As planned, the BH to IH conversion program would provide the ROK with five IH battalions by the early 1980's. This included a conversion/procurement/transfer plan which could be summarized as follows: Basic HAWK major equipment for the first Improved HAWK battalion was converted in US depots. This equipment, plus IH missiles, contractor services (primarily from Raytheon Corporation), and new equipment training was furnished to the ROK during early 1977 and the last battery of this battalion reached operational status 23 December 1977. Battalions two and three were to be converted in Korea through use of an in-country depot level maintenance complex. The Letter of Offer for conversion kits, concurrent spare parts, training, and other support materiel and services had been accepted and was implemented 20 September 1977. Due to item lead times up to 33 months, conversion of these battalions was expected to occur from late 1979 through early 1981. Battalions four and five were to be established through missile and equipment transfers from US assets in country.

(U) There were several areas of concern in the ROK IH program. Among these are the shortages of ROK IH trained personnel; the readiness of support facilities, including the missile maintenance depot; the impact on US forces of possible diversions or outright transfers from US assets for battalions two through five; and the availability of secondary and other items to provide initial support loads and maintain battalions in an operational status while the skills and supply pipelines are being developed. These areas of concern would continue to require careful planning and close coordination between USASAC, MIRCOM, HAWK Project Office, JUSMAG Korea, and others involved in this program. The ROK HAWK Program was one of the topics discussed during the US/ROK Security Assistance Review held in Korea during May 1978.

(U) JCS proposed in their 212149Z September 1978 message(s) to CINPAC that the transfer schedule for two I-HAWK battalions (originally scheduled for transfer from EUSA during June 1980) be changed so that one battalion would be transferred in 1980 and the other one in

1981. The JLC proposal would ease the stringent training requirements needed to complete both battalions. EUSA concurred in the JCS proposal.

(U) Republic of Korea (ROK) Artillery Manufacturing Program. The ROK fabricated prototypes of the 155mm Howitzer, 105mm Howitzer, 4.2" Mortar, and 106mm Recoilless Rifles using Technical Data Packages obtained by Foreign Military Sales (FMS) transactions. During field use of these in-country fabricated weapons, a number of serious defects became apparent. In January 1976, a four man team of specialists from ARRCOM visited country to explore and evaluate the Artillery Manufacturing Program. The team attributed defects encountered to materiel type problems such as precision machining of components, and imperfect rifling of cannons. As a result of recommendations made by the Survey Team, the country requested a FMS case for training of indigenous technicians in US facilities. Since the items for which training was required were not currently being fabricated in the US, DARCOM recommended that USG technicians visit country to assist in the program and prepare FMS Case URW for this transaction. Total value of this case was $32.55 million.

(U) Two teams of technicians, one from Watervliet Arsenal and one from Rock Island Arsenal visited Korea for a total period of five months during CY 1977 to assist the ROK in their artillery manufacturing program. These teams indicated that several aspects of their program needed to be improved in order to produce quality weapons. The teams made several recommendations in this area which included acquisition of additional equipment and update or modification of equipment on hand. The teams indicated that the greatest problem was not the lack of equipment but lack of basic machining skills which would require at least two years to develop. The most significant problem in machining the parts IAW US specifications was that when country converted US prints into their own language, they rounded off all dimensions and tolerance. Other problems concerned the non-availability of gages, tools, and blueprints in the hands of machine operators. Adequate quality control was lacking as well as expertise in inspection procedures and supervision. Recommendations were made with regard to resolving above problems. During visit by the Chief, Pacific Division USASAC to the ROK in November 1977, progress in the artillery manufacturing program was in evidence as the test firing of the ROK produced 155mm Howitzer proved to be very successful.

(U) The ROKG requested and the State Department has approved indigenous manufacture of 15 each 81mm mortars for sale to a third country. FMS case VRX was being prepared to provide an administrative mechanism by which Korea could reimburse the USG for royalty fees for this transaction.

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(U) Korea - Aviation Program. The Republic of Korea was supplied observation, utility and trainer fixed wing aircraft. They have received 160 UH-23 or UH-1 model helicopters. The US Army/ROK FMS Aviation Program was evolving toward greater use of rotary wing aircraft, including those with a heavy lift capability. There were two significant programs. Program one included 49 UH-1H helicopters, concurrent spare parts, general support equipment, and supplemental items. Twenty-two aircraft, plus all related items and equipment were on an FMS case which was implemented on 6 December 1977 at a value of $20.8 million. The remaining 27 aircraft were being supplied through Grant Aid funds which became available when the US Navy could not furnish the ships for which these funds were originally earmarked. This was the only current US Army managed ROK program which included supply of defense hardware based on Grant Aid funds. The Grant Aid portion was valued at $20.1 million. The first UH-1H helicopters were expected to be supplied in early 1980. Program two consisted of six CH-47C helicopters on an FMS offer, valued at $40.1 million. This case had completed the Congressional Review period, however, the ROKG requested the case be suspended until 1 January 1979. This request was referred to DSAA for a decision. As of 15 September 1978, the DSAA had made no decision on the ROKG request.

(C) Korea - Tank Upgrade Program. The ROK inventory of tanks included 421 M47's, 140 M48's and 280 M48A2C's. The M47 tank could not be logistically supported after 1980 due to repair part obsolescence. A Foreign Military Sales case was established which provided for the purchase of 421 M48A1 tanks in "as is" condition from the US Government. This quantity was increased by six tanks to provide for training within the ROK Ordnance and Armor Schools. The M48A1 tanks were to be converted in Korea to the M48A3 configuration (90mm gun), with the exception of 40 each were converted to M48A5 (105mm gun). The A5 conversion program was completed on 8 September 1978. Thirty three (M48A5's) were to participate in the ROK Armed Forces Day Parade on 1 October 1978. The M48A3 production schedule runs from September 1977 through December 1980. The monetary value of the Phase I program was approximately $140 million.

(C) The tank conversion program in-country was being accomplished through contract with HYUNDAI Heavy Industries. Phase two and three of the tank program were to convert 140 M48's and 280 M48A2C's to the A5 configuration. The A5 production schedule for Phase II and III had not been determined because of budget allocations and restraints. Monetary value of Phase II and III was expected to exceed $150 million.

(C) Republic of Korea Indigenous Tank (ROKIT). Under the Mutual Defense Assistance Agreement of 1950 between ROKG and the USG, the ROK requested the US to provide technical and managerial advisory assistance in the design and development of a modern tank to be produced in

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Korea. The USG and the ROKG agreed on a Memo of Understanding (MOU) for the ROKIT program. The MOU was signed by the Secretary of Defense on 16 June 1978. The objective of this program was to design, develop and fabricate with USG technical support, two ROKIT prototype tanks. This program was to be accomplished mainly through commercial contracts between a Korean Prime Contractor and US sub-contractors. The USG was to provide the ROKG with advice and guidance in testing, evaluating and source selection of the prototype tanks. US Army Test and Evaluation facilities were to be utilized on a reimbursable basis.

(C) A US/ROK Field Office for ROKIT/TANK UPGRADE Programs was being established within the US Army Security Assistance Center, on a reimbursable basis through an FMS case. This office was responsible for planning, directing, evaluating, monitoring, and executing the Korean Tank Programs. Phase I of the ROKIT Program which was termed the competition phase, involved an in-depth concept and engineering study by two US sub-contractors which would result in the production of a "MOCK-UP" tank. This phase was in progress with a tentative completion date of November 1978.

(C) Republic of China (ROC) FMS Program - FY 1978. The Republic of China had 79 open FMS cases in FY 1978 with a total value of $141,349,005, a delivered value of $7,680,413 and an undelivered value of $133,668,592. A Government-to-Government Agreement in July 1966 provided for co-production of 18,352 general purpose vehicles over a 12 year period. This project was valued at approximately $122.2 million and was covered in part by $50 million FMS Credit Agreement. ROC had co-produced 1/4, 1 1/4, and 2 1/2 ton vehicles with FY 1978 activity in the 1/4 ton area.

(C) The ROC has six SSA's to provide repair parts support. The SSA's for the contract period of 1 January 1978 through 31 December 1978 were as follows: (TOTAL $25.4 million)

Chemical	$ 508,200
Engineering	1,433,942
Missile	9,578,874
Ordnance	6,623,100
Communications	2,334,140
Transportation	4,913,309

(C) Credit Agreements (Tri-Service and Commercial) were as follows:

No.	Value	Expiration Date
753	7 million	30 April 1979
754	7.8 million	30 April 1979
771	35 million	29 June 1979

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(C) Significant FMS cases in FY 1978 were as follows: (Total value $245.1 million)

Theater Readiness Monitoring Equipment (TRMF) - FMS Case DA China XLV implemented 3 April 1978; values at $451,562.

Processing of I-HAWK through TRMF - FMS Case DA China XLU implemented 3 April 1978; valued at $698,205.

100 M48A1 Tanks - FMS Case DA China XMQ implemented 27 February 1978; valued at $8.2 million.

30 I-HAWK missiles - FMS Case DA China XMT implemented 26 September 1978; valued at $11.8 million.

Calibration Equipment for I-HAWK Missiles - FMS Case DA China XMZ implemented 19 June 1978; valued at $1.5 million.

11,060 2.75" Rockets - FMS Case DA China XMS implemented 4 October 1977; valued at $2.1 million.

20 Chaparral Missiles - FMS Case DA China XNC implemented 17 March 1978; valued at $1.6 million.

5865 Rocket, 66mm, HEAT - FMS Case DA China XNF implemented 26 October 1977; valued at $619,509.

4830 Rocket, 66mm, HEAT - FMS Case DA China XNG implemented 26 October 1978; valued at $510,367.

100 Howitzers, 155mm, M109A2 - FMS Case DA China XQU implemented 21 September 1978; valued at $75.4 million.

25 Howitzers, 8" M110A1 - FMS Case DA China XHR implemented 21 September 1978; valued at $16.8 million.

5 Battery Sets of I-HAWK Missiles - FMS Case DA China XRO; valued at $125.4 million; forwarded to ROC for acceptance 23 October 1978.

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CHAPTER VII

HIGHLIGHTS AND TRENDS

Overview

(U) Speaking to a group composed largely of American industrialists, just days before the close of FY 1980, GEN Guthrie, who had that week returned from a survey of NATO installations and US Army troops in Europe, assured his listeners that what he had seen left him with two primary impressions concerning the state of the Army readiness: "We've come a long way baby, but we've got a long way to go." DARCOM commanders had habitually inspected the frontiers of DARCOM logistics support not only in Europe but in other areas of the world to make judgments regarding the adequacy of logistics operations.[1]

(U) GEN Guthrie noted that the state of European forces had improved since he had visited previously in 1971 during an earlier tour of duty with the DARCOM predecessor, the US Army Materiel Command. He saw improvements, not only in respect to equipment, his major concern, but also in size, military organization and effectiveness, training, morale, discipline and professionalism. Yet he cautioned that because of the "vastly multiplied Soviet and Warsaw Pact threat, we (the United States Army forces) are behind in many areas both quantitatively and qualitatively. The Soviets have long held a numerical advantage in most respects, but in the last few years they have also been able to reduce or eliminate our technological edge in many areas."[2] It was in this area of the technological edge that DARCOM plays its greatest role and the decline of United States technical superiority was of great concern to the DARCOM commander. For DARCOM, and for its predecessor, it had been a continuous struggle through the years since the Vietnam War to justify the securing and/or retaining adequate resources--money, people, and property--to combat the threat to technological superiority. In fact, as recent as the last half of FY 1978, under the direction of GEN Guthrie's Deputy Commanding General for Resources Management, MG R. L. Bergquist, DARCOM had completed a major review aimed at learning requirements necessary for DARCOM to achieve both peacetime efficiency and an authorization level upon which mobilization could be based and to assess the state of DARCOM's readiness condition in light of the findings. General Bergquist's review confirmed convincingly what had long been known, that DARCOM did not have the resources to provide total US Army logistics readiness.[3]

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1 Speech, GEN John R. Guthrie, Commanding US Army Materiel Development and Readiness Command to the American Preparedness Association, Dover, NJ, 25 Sep 78. (Among holdings of the Archives in HQ DARCOM Historical Office).

2 Ibid. p. 8.

3 See Chapter I and VI for a full discussion of the DARCOM Manpower Baseline Study.

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(U) The review revealed what GEN Guthrie referred to as the erosion of the wholesale logistics base or a loss of technical expertise in both DARCOM and within industry generally. No matter the reasons--retirement, funding shortages or whatever--the declining numbers of skilled, scientific, and highly trained technical personnel was a continuing and growing problem for DARCOM and one that particularly worried the DARCOM commander throughout 1978. It was a problem impacting on the DARCOM mission all across the board. Declining monetary and personnel resources were compounded by increased workloads in the materiel readiness area. For example, DARCOM was looking ahead to 1984 or to an expansion in the US Army from 13 to 16 divisions with increased mechanized battalions by 12 percent and an increase in the number of self-propelled artillery units by 3 percent and in aviation battalions by 28 percent.[4]

(U) Instead of settling for a decline in quality of equipment for the increased support demanded, GEN Guthrie sought ways to combat and solve the problem of increased work demands placed upon his declining resources through better management both internally and in relationships with outside agencies. Two things GEN Guthrie saw as imperatives to first rate management were integrity in stating requirements and accuracy in assessing the state of materiel posture and capabilities so that proper decisions might be made to protect vital materiel interests. Addressing the US Army Chief of Staff priorities stated in 1977 pertaining to improve readiness now, modernize in the mid-term, and long range stability of the total forces. GEN Guthrie indicated that since all three of these were priorities by right and needed to be accomplished simultaneously, and because this was not possible, then in materiel terms, there needed to be trade-offs. The trade-offs had to be between materiel readiness now, product improving and fielding new systems within the next five years, and the research and development which would produce the new and improved systems for the late 1980's and beyond. Replying to his own question--how do we achieve this balance?--the DARCOM commander offered: "by thoughtful, hard-nosed decisions which look to the current threat, the available technology, the production base, the progress of various research and development programs, and the dollars and people available to do the job."[5]

(U) GEN Guthrie believed that DARCOM was making real strides in near term readiness in that the POMCUS situation was stabilizing and war reserves were increasing. For the mid-term he projected the fielding of some 50 new or improved systems over the next five years.[6] He

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[4] Op. Cit., Guthrie Speech, p. 10.

[5] Op. Cit., Guthrie Speech, p. 12.

[6] The charts are reproduced from: (1) The DARCOM Manpower Baseline Requirement, August 1978, (2) Data On Activity Trends in DARCOM, FY 1978, Comptroller, MR&A Division, US Army Materiel Development and Readiness Command.

saw the biggest challenge as sustainability, which he said involved two things: (1) continuing loss of personnel, and (2) maintenance of the production base which involved refurbishing or replacing aging plant and equipment in the face of funding shortages in the OMA portion of the budget which was also contributing to a growing backlog of maintenance. The DARCOM Commanding General was concerned about not being able to maintain facilities in an acceptable readiness condition for mobilization as he saw more and more plants and equipment being laid away and as labor, materiel, and utility costs continued to climb. This was a pretty dismal trend as pictured by GEN Guthrie. He called it a challenge to the DARCOM management ability requiring skill, dedication, and perseverence from the entire DARCOM civilian and military forces plus the private industrial sector. The charts shown on the following pages depict the trends in resources, workloads, and performance during FY 1979 that brought GEN Guthrie to this conclusion.

(U) In a majority of areas where performance in FY 1978 could be measured against FY 1977, as the following charts show, performance actually declined.

PERFORMANCE INDICES

PERFORMANCE INDICATOR	FY 1978 PERFORMANCE	FY 1977 (BASE PERIOD)	IMPROVEMENT/ SLIPPAGE
PART I — DEVELOPMENT			
DEVELOPMENT & ENGINEERING			
Technical Objectives	65%	77%	DOWN
Test Performance Completions	70%	81%	DOWN
MANUFACTURING TECHNOLOGY			
VEP's by Command	121%	135%	DOWN
VEP's by Depot	104%	98%	UP
VECP's-Contractor	90%	97%	DOWN
PART II — READINESS			
MATERIEL MANAGEMENT			
Stock Availability-Total and MRC's	77%	81%	DOWN
Stock Availability NORS-Total & MRC's	74%	82%	DOWN
Materiel Obligations Outstanding (Back orders) Total	270 Thous	191 Thous	DOWN
Materiel Obligations Outstanding (Back orders) over 90 days-Total	53%	46%	DOWN
Materiel Obligations Outstanding (Back orders) NORS - over 90 days	33%	26%	DOWN
Requisition Processing Immediate Issues: Total Supply Source	76%	85%	DOWN
NICP	94%	92%	UP
NORS	83%	84%	DOWN
NORS (NICP)	92%	89%	UP
MRO Processing	72%	82%	DOWN
MRO Processing (NORS)	80%	87%	DOWN

PERFORMANCE INDICES

PERFORMANCE INDICATOR	FY 1978 PERFORMANCE	FY 1977 (BASE PERIOD)	IMPROVEMENT/ SLIPPAGE
Materiel Release Denials	1.4%	1.7%	UP
Depot Maintenance-Units Completed	98%	92%	UP
Depot Maintenance Program Changes-Per 100 PRONS	61	70	DOWN
Transportation Hold & In-Transit, CONUS only	79%	81%	DOWN
MATERIEL READINESS			
Equipment Improvement Report Processing	84%	88%	DOWN
PROCUREMENT AND PRODUCTION			
Contract Obligations	104%	102%	UP
Price Competition	25%	26%	DOWN
Small Business Awards	17%	18%	DOWN
QUALITY ASSURANCE			
Customer Complaints Per Thousand Lines Shipped	.11	.09	DOWN
PART III — RESOURCE MANAGEMENT			
Comptroller			
APA, Direct	81%	78%	UP
APA, Reimbursable	78%	76%	UP
RDTE, Direct	96%	99%	DOWN
RDTE, Reimbursable	85%	83%	UP
OMA, Total	99%	98%	UP
Wholesale ASF	99%	95%	UP

PERFORMANCE INDICES

PERFORMANCE INDICATOR	FY 1978 PERFORMANCE	FY 1977 (BASE PERIOD)	IMPROVEMENT/ SLIPPAGE
PERSONNEL, TRAINING & FORCE DEVELOPMENT			
DARCOM Total Personnel Strength	115.8 Thou.	113.4 Thou.	UP
DARCOM HQ	1.4	1.4	N/C
Commands	67.7	64.4	UP
DESCOM (Depots)	38.4	37.9	UP
PART IV – STAFF ACTIVITIES			
EQUAL EMPLOYMENT OPPORTUNITY			
Minorities in Workforce			
Women	31.8%	25.8%	UP
Minorities	13.8%	14.9%	DOWN
SAFETY	4th Qtr FY 78		
Civilian Personnel Injury Rates	2.22[a/]	1.6	DOWN
Active Army Personnel Injury Rates	29.71[b/]	26.50	DOWN
Contractor and Other Personnel Injury Rates	0.98[a/]	1.33	UP
Army Motor Vehicle Accident Rates	1.94[c/]	2.00	UP
Aircraft Accident Rates	3.35[d/]	1.80	DOWN

NOTE: a/ Injuries per Million Man-Hours
b/ Injuries per Million Man-Days
c/ Accidents per Million Miles Driven
d/ Accidents per 100,000 Flying Hours

(U) The following chart similarly demonstrates the deteriorating situation by measuring specific areas of DARCOM performance against specified goals.

PERFORMANCE AGAINST GOALS

FY 78

PERFORMANCE INDICATOR	OBJECTIVE/ GOAL ASSIGNED	FY 1978 ACHIEVEMENT
PART I — DEVELOPMENT		
DEVELOPMENT & ENGINEERING		
Technical Objectives Completions	100%	64.9%
Test Performance	85%	70.0%
PRODUCT IMPROVEMENT PROGRAM		
Technical/Milestones Completion	100%	56.6%
PART II — READINESS		
MATERIEL MANAGEMENT		
Stock Availability-By Command	85%	77.4%
Stock Availability-NORS	90%	74.1%
Materiel Obligations Outstanding (Back orders)	180.0 (Thous)	269.7 (Thous)
(Back orders over 90 days old)	40%	53.2%
(Back orders over 90 days old)-NORS	20%	32.9%
Requisition Processing Immediate Issues: Total Supply Source	89%	76%
NICPS	90%	94.5%
NORS	95%	82.6%
On Time MRO Processing DESCOM (Depots)	89%	71.9%
DEPOTS-NORS	95%	80.2%
Requisition Processing On Time Reporting	90%	85%
Stowage	85%	75%
Distribution Effectiveness	85%	81%
Materiel Release Denials	1.5%	1.4%
Hold and In Transit CONUS Only Processed On Time	83%	79.1%

PERFORMANCE AGAINST GOALS

FY 78

PERFORMANCE INDICATOR	OBJECTIVE/ GOAL ASSIGNED	FY 1978 ACHIEVEMENT
PROCUREMENT AND PRODUCTION		
Contract Awards Price Competition	23%	24.8%
Contract Awards Small Business	19.2%	17.2%
On Time Delivery	85%	61.8%
PART IV STAFF ACTIVITIES		
SAFETY		4th Qtr FY 78
Civilian Personnel Injury Rates	1.70	2.22
Army Personnel Injury	29.0	29.71
Contractor & Other Personnel Injury Rates	1.5	0.98
Army Motor Vehicle Accident Rates	1.86	1.94
Aircraft Accident Rates	5.4	3.35

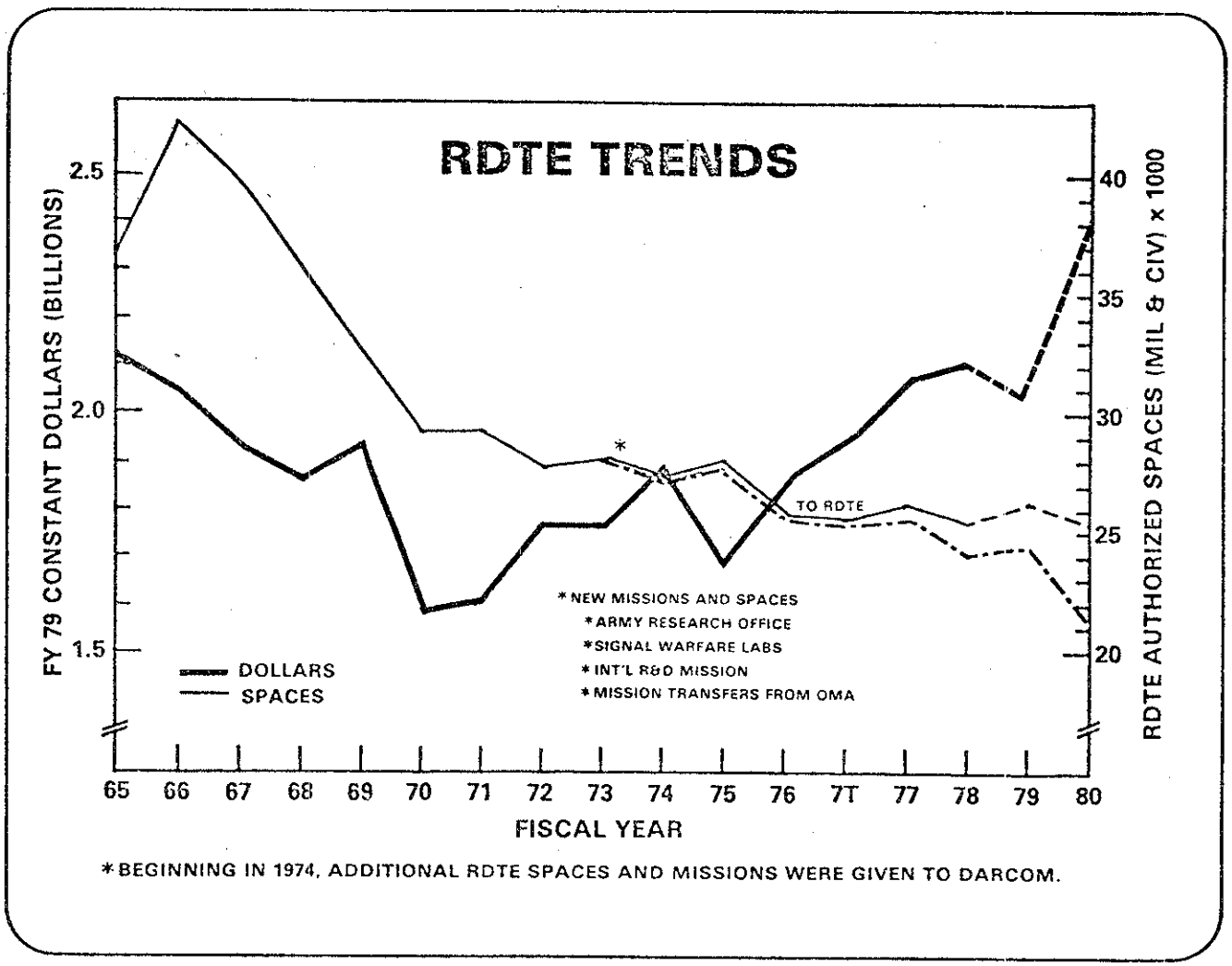
Specific Areas of Activity

Development

(U) At the same time that the necessity and capability of DARCOM to expand its efforts in materiel development have increased, the constraints and pressures limiting those efforts have also increased. Significant among these pressures have been the erosion of financial resources by inflation, the acquisition of new missions, and a growing backlog of projects and maintenance requirements for the resource base materiel necessary for the development program.

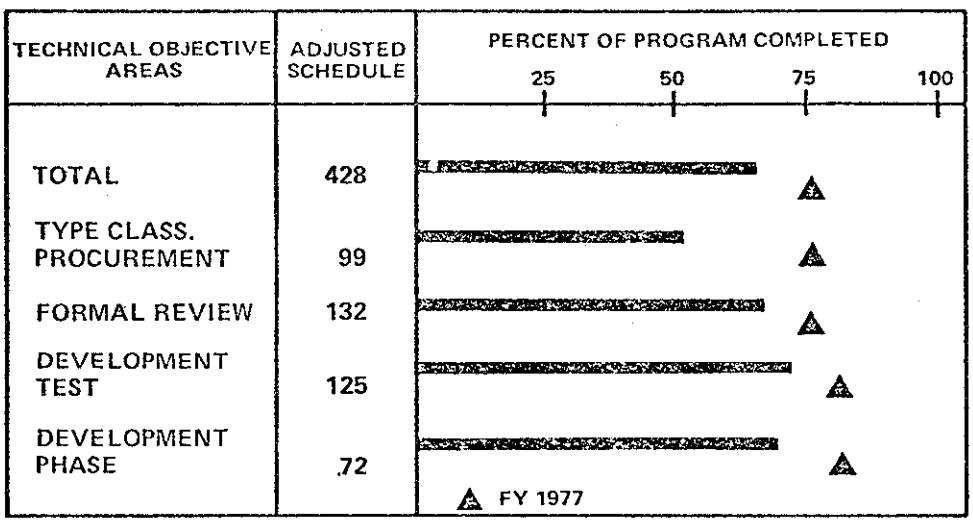
(U) Development and Engineering. The DARCOM RDT&E effort does not lend itself to easy and broad measurement; but some definite and precise indications of the progress of the program and some of the major contours of its changing nature can be noted on the following charts. One of the pre-eminent trends concerns the overall RDT&E posture. Despite presently increasing amounts of money used on the program, new missions were also received and personnel resources dwindled since 1966 and 1967. In addition, the changing nature of RDT&E has itself influenced the effectiveness of the program. The increased emphasis on contractual agreements rather than in-house performance of RDT&E assignments had held broad implications. These implications included first the increasing need for high level technical and scientific personnel to participate in the formulation and definition of the project to be contracted and then to monitor its progress, and secondly, the loss of an in-house capability for advancing technology. Finally, the important area of TECOM testing indicated a substantial weakness resulting from a backlog of maintenance and repair obligations combined with new requirements and an increasing need to modernize the TECOM inventory.

(U) The DARCOM RDT&E community had been in a steadily declining posture from the early years of the Vietnam War. Although the trend appeared to have leveled out since 1975, the real decline had continued. The leveling occurred as a result of new missions and spaces being added. At the same time that personnel resources were declining, the RDT&E dollar line had been increasing at a rapid pace. Our RDT&E effort was driven in large part by the Threat. To keep this analysis unclassified, the Threat data were excluded, but are available as a classified addendum.



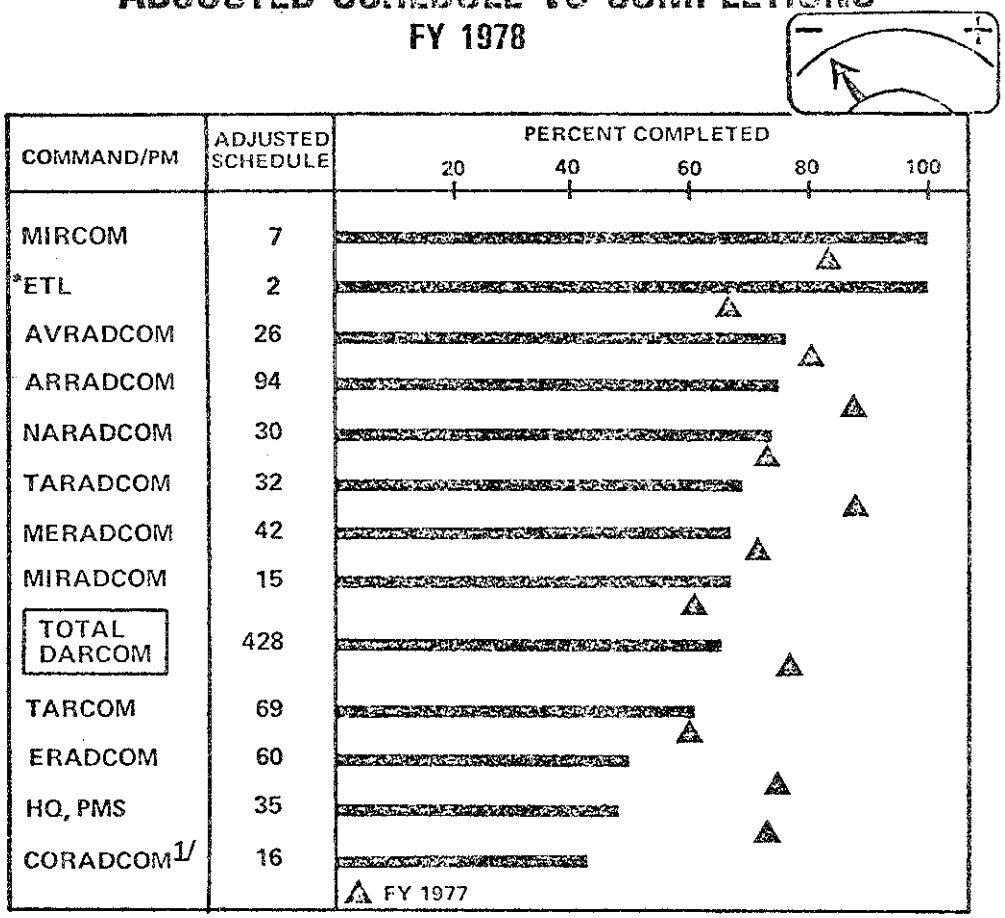
* BEGINNING IN 1974, ADDITIONAL RDTE SPACES AND MISSIONS WERE GIVEN TO DARCOM.

DARCOM RDT&E TECHNICAL OBJECTIVES COMPLETIONS STRATIFIED BY TECHNICAL OBJECTIVE AREA FY 1978



(U) In the above chart, measuring RDT&E performance, all categories reflected a decline in the percent of program completed when compared with FY 1977 performance. A contributing factor for declining performance was funding constraints.

DARCOM RDT&E TECHNICAL OBJECTIVES
ADJUSTED SCHEDULE VS COMPLETIONS
FY 1978



1/FY 1977 DATA NOT AVAILABLE

SOURCE: RCS DRCPA-301

*CORP OF ENGINEERS — PROJECT DARCOM FUNDED

(U) With the exceptions of MIRCOM and Engineering Tropographic Labs (ETL) most commands indicated decline in performance accomplishments when compared with FY 1977. Contributing factors to performance decline were funding constraints coupled with uncompensated inflation costs.

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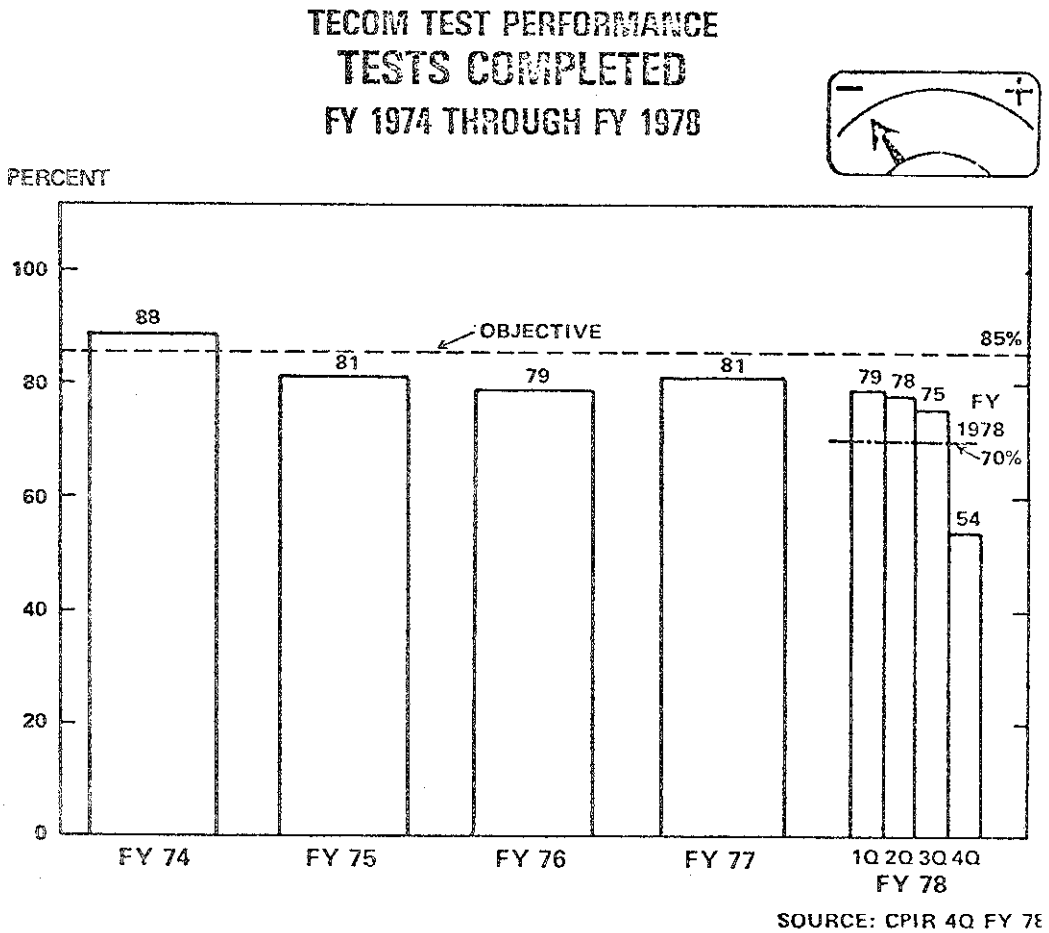
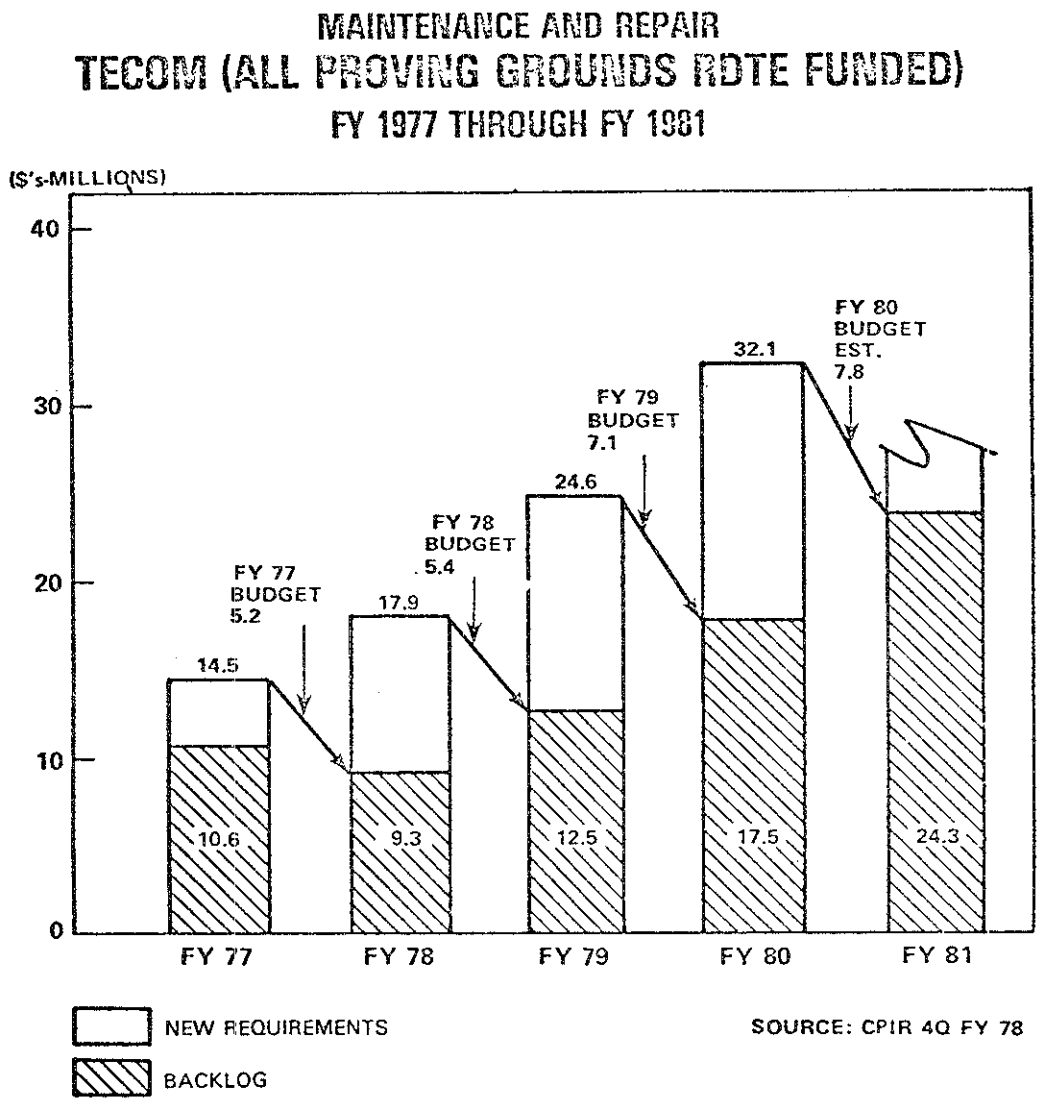
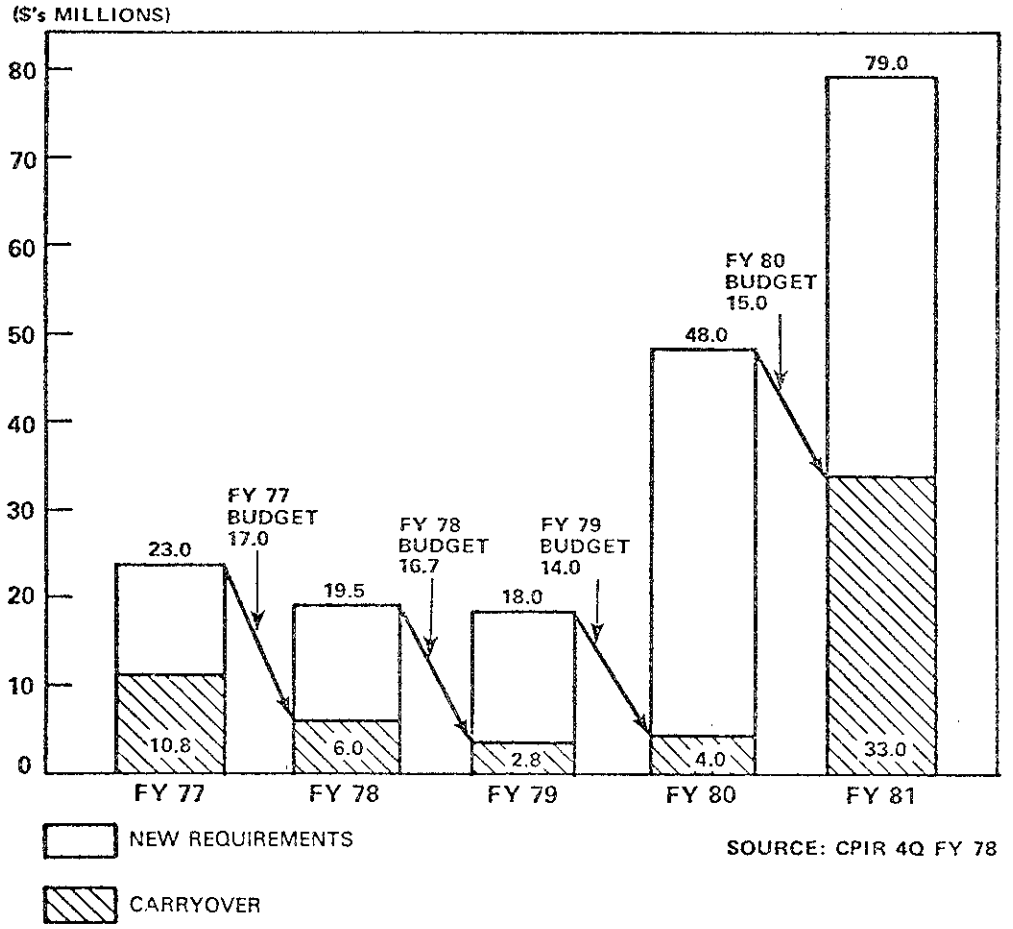


(U) The percentage of TECOM tests completed on schedule during 4th Quarter FY 1978 declined considerably, bringing the average performance for FY 1978 to 70% against an 85% objective. The drop is attributed to the increased emphasis placed on testing major and designated non-major systems, which comprised only 9.5% of the active projects but absorbed more than 38% of all direct labor in FY 1978.

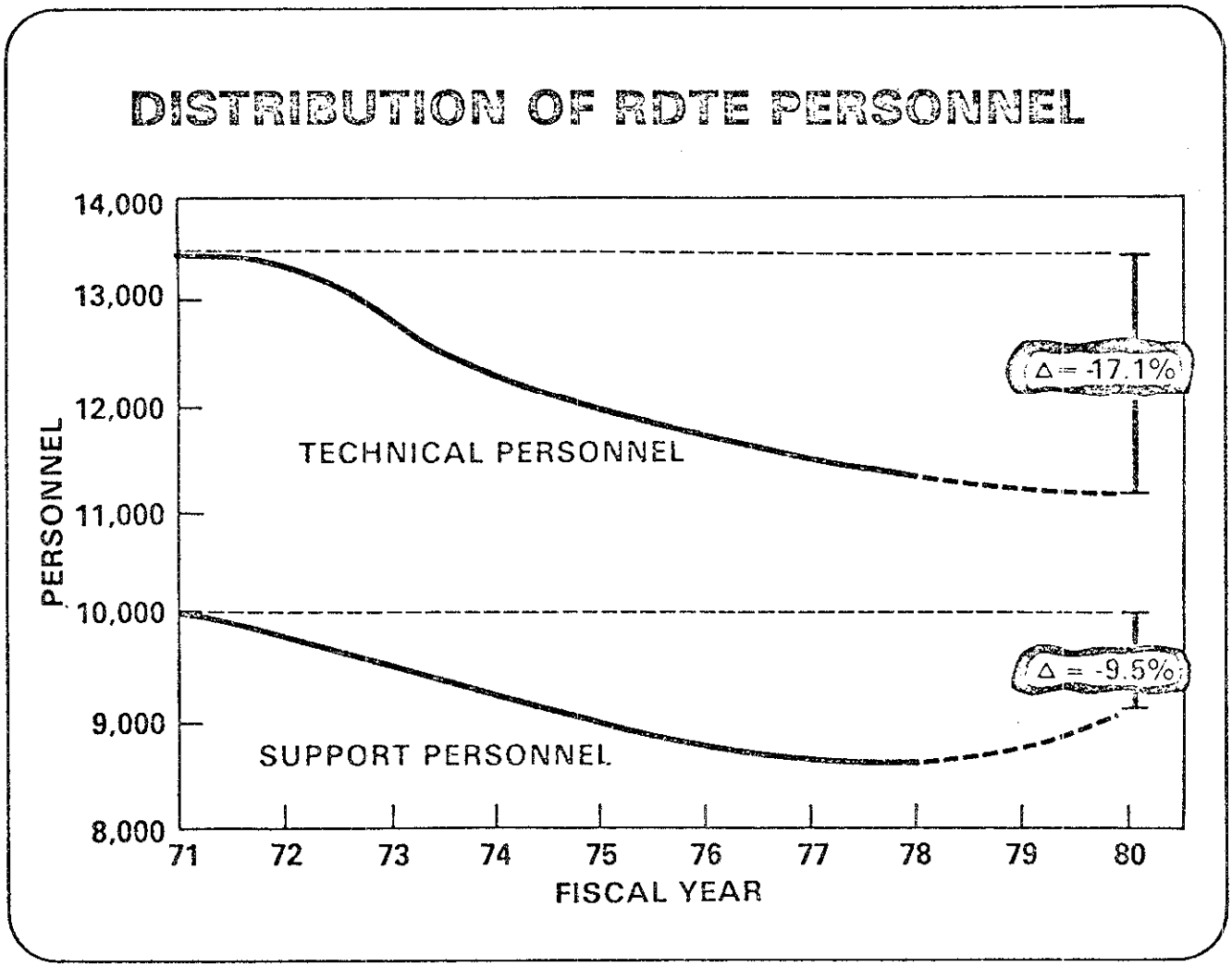


(U) The chart shows a continuing increase for new funds for maintenance and repair along with paralleling carryover of backlog. Significant is the buildup (more than is accomplished annually) of backlog.

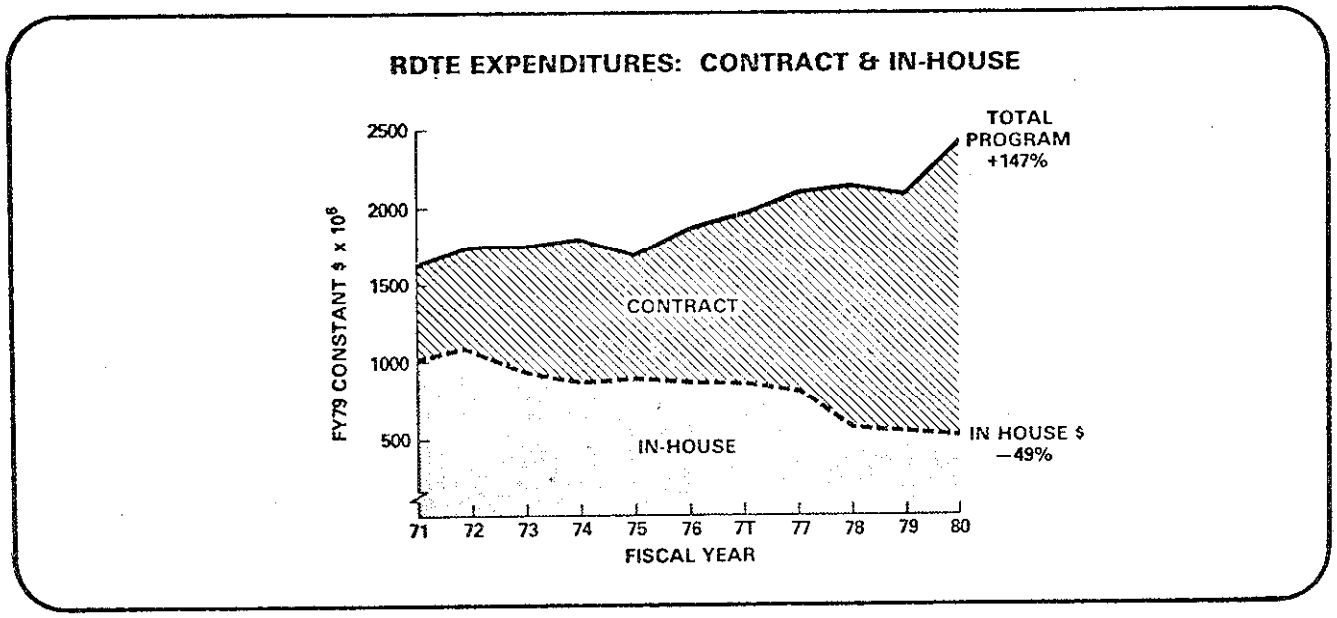
TECOM
IMPROVEMENT AND MODERNIZATION
FY 1977 THROUGH FY 1981



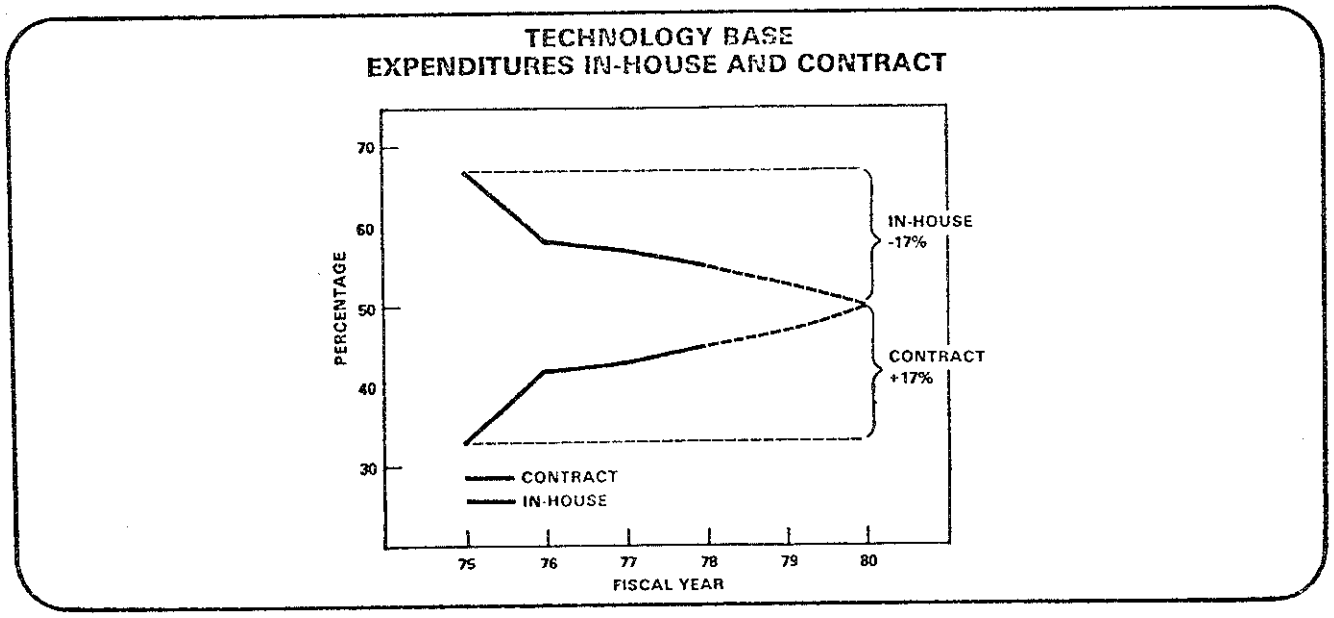
(U) The chart shows increasing need to modernize, replace and automate TECOM's basic inventory. New requirements will increase sharply beginning in FY 1980 primarily because of a buildup at Yuma Proving Ground (YPG) for the tank antiarmor range and the integration of the range through the range command and control network. Further, White Sands Missile Range (WSMR) needs expansion of its drone formation control system and improvements in altitude and event measurement capabilities through a major increment of the Distant Object and Altitude Measurement System (DOAMS).



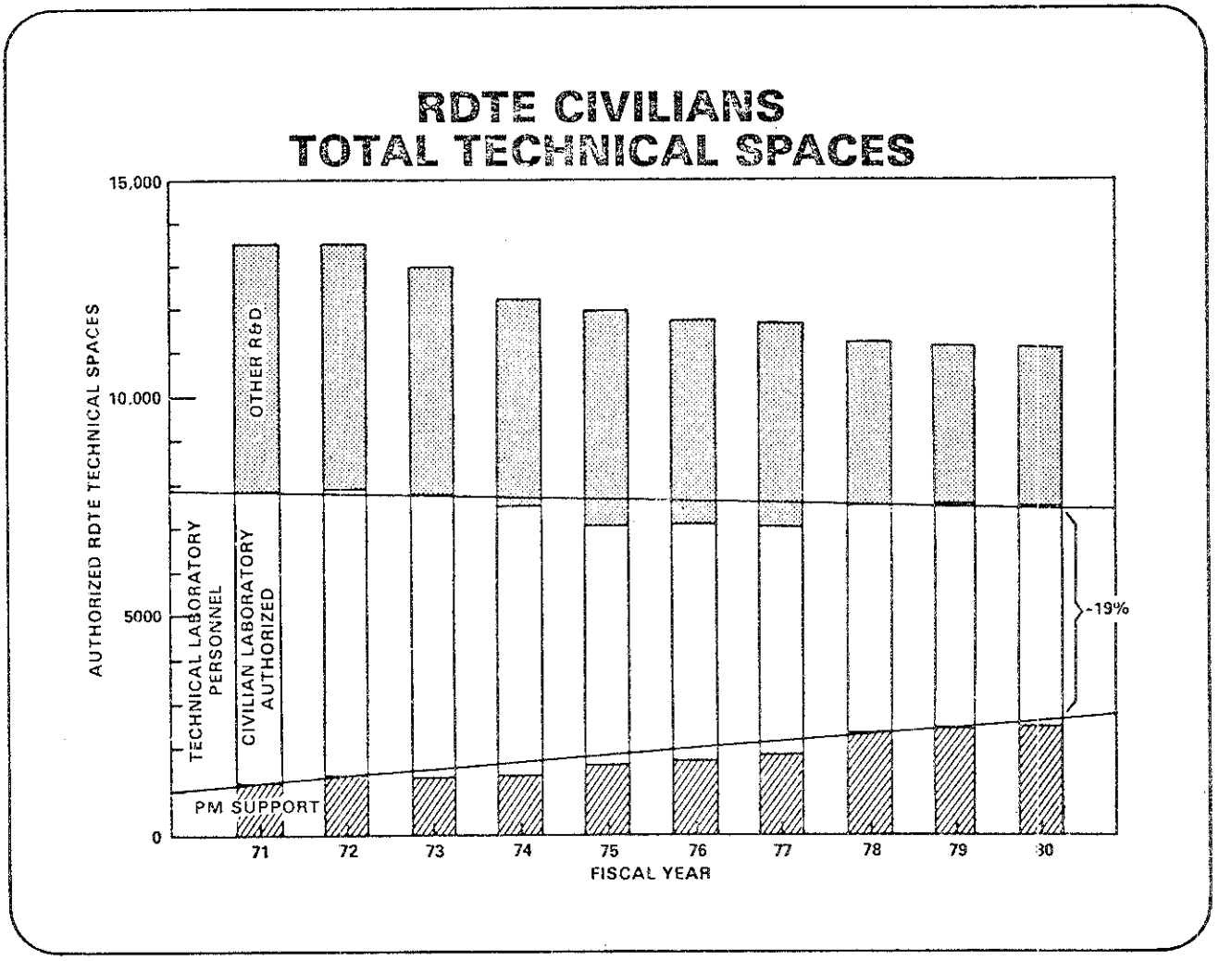
(U) The above chart depicts the trend in RDTE technical and support personnel. While the trend in technical personnel levels off in the FY 1978-1980 period, after a 17.1% drop, support personnel are increasing during this timeframe. This phenomenon is consistent with the shift to out-of-house contracting which drives up the number of technical and support people required to assist contracting personnel during negotiation and to administer and monitor the contracts--but also results in a corresponding reduction in technical personnel available for employment on in-house R&D.



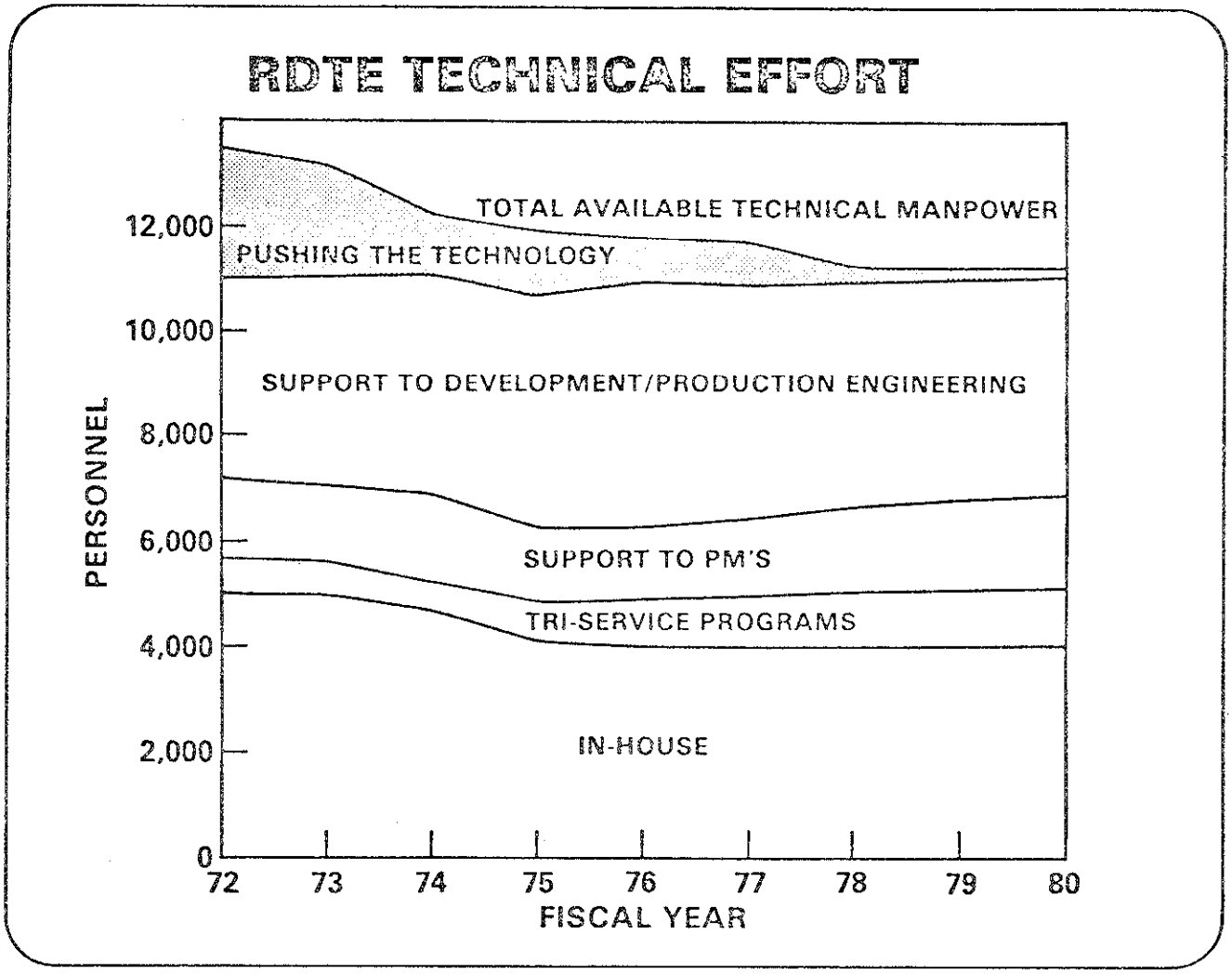
(U) The above chart reinforces the trends displayed on the previous chart. Though the total program has increased 147%, in-house work has decreased by 49%. Of particular concern is the impact on our in-house Technical Base.



(U) The above chart confirms the trend to more contracting out of our technology base program. Though there is no DA established optimum ratio, our current in-house/contract ratio is 57% to 43%.



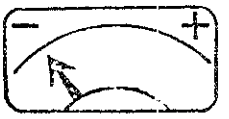
(U) Technical support to PM's contracts/contractors, development/production engineering, and to other non-laboratory efforts, in combination with a decrease in scientific and engineering personnel, has reduced the population of technical personnel working in our laboratories and devoted to pushing technology. This undesirable squeeze will result in 19% fewer technical laboratory personnel dedicated to the tech base in 1980.



(U) The above chart graphically summarizes the three preceding charts. The fact is that we are losing our in-house capability to advance technology.

(U) Manufacturing Technology. Measured against FY 1977 performance, manufacturing technology represented a serious weakness in some instances. Nonetheless, DARCOM subordinate commands overall exceeded the projected goal for FY 1978 Value Engineering Proposals In-House. The Army depots exceeded both the target level and FY 1977 levels of VEPS. The most substantial increase in VEPS came in areas under Project Managers but even in the number of Value Engineering Change Proposals--Contractor, which reached 90 percent of the VECP goal and fell 6 percent short of FY 1977 performance, a savings in excess of $42 million could be seen. Together the proposals represented more than $170 million in savings.

VALUE ENGINEERING PROPOSALS (VEPS) IN-HOUSE
SUBORDINATE COMMANDS
AS OF 30 SEPTEMBER 1978



COMMAND	NO. VEPS RECEIVED	PERCENT OBJECTIVE ACHIEVED (20 40 60 80 100 120 140 160)	ESTIMATED DOLLAR SAVINGS (THOUS.)
ARRCOM	394	303.1	37,336
ARRADCOM	122	203.3	35,741
DARCOM	853		101,630
AVRADCOM	18		3,146
TECOM	42		4,508
TARADCOM	30		4,697
NARADCOM	26		3,194
CERCOM 1/	41		366
MIRCOM	57		8,146
MIRADCOM	40		2,192
TARCOM	42		592
ERADCOM 1/	10		38
CORADCOM 1/	7		0
TSARCOM	22		1,527
EMRA 1/	2		147
MERADCOM	0	30 SEP 77	0

SOURCE: RCS DRCMT-306

1/ 30 SEPTEMBER 1977 DATA NOT AVAILABLE

(U) The above chart shows that overall DARCOM subordinate command performance as of 30 September 1978 was 121 percent of the 703 Value Engineering Proposals (VEP) target goal which was 14 percent lower than that achieved for FY 1977. The objective was to improve the effective use of resources which in the area of VEP's was to achieve dollar savings and cost avoidance. FY 1978 overall VEP estimated dollar savings for subordinate commands was $101,630 million.

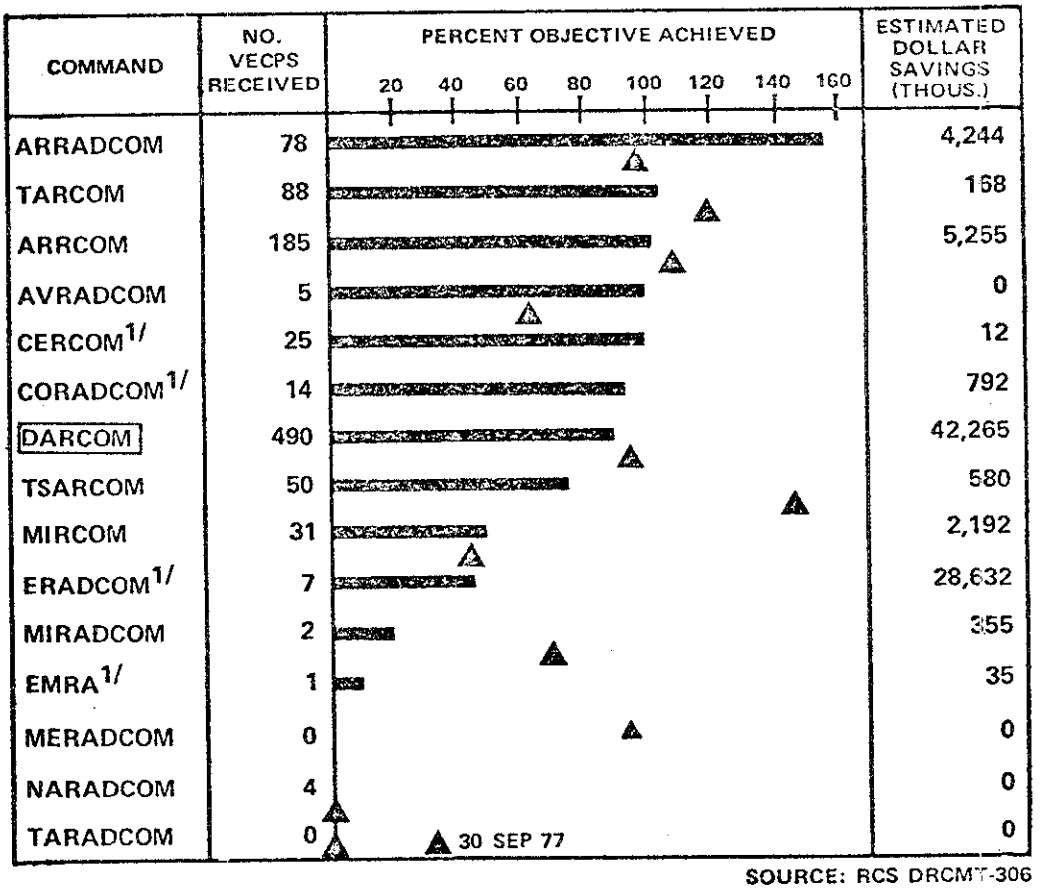
VALUE ENGINEERING PROPOSALS (VEPS) IN-HOUSE
ARMY DEPOTS
AS OF 30 SEPTEMBER 1978

COMMAND	NO. VEPS RECEIVED	PERCENT OBJECTIVE ACHIEVED (20 40 60 80 100 120 140)	ESTIMATED DOLLAR SAVINGS (THOUS.)
NEW CUMBERLAND	76		1,914
SENECA	18		154
TOBYHANNA	83		1,804
SHARPE	16		264
ANNISTON	68		1,776
DESCOM	650		19,346
CORPUS CHRISTI	83		2,315
LETTERKENNY	103		3,208
TOOELE	66		2,550
RED RIVER	70		3,166
SACRAMENTO	65		1,952
SIERRA	2		243

▲ 30 SEP 77

(U) In the above chart it can be seen that overall DARCOM depot performance as of 30 September 1978 was 104 percent of the 625 VEP goal. Performance for FY 1978 was 6 percent higher than that achieved for FY 1977. FY 1978 estimated dollar savings for depots was $19.3 million.

VALUE ENGINEERING CHANGE PROPOSALS (VECPS)-CONTRACTOR SUBORDINATE COMMANDS AS OF 30 SEPTEMBER 1978



SOURCE: RCS DRCMT-306

1/30 SEPTEMBER 1977 DATA NOT AVAILABLE

(U) Indicating the size of the program, while overall DARCOM subordinate command performance as of 30 September 1978 was 90 percent of the 543 Value Engineering Change Proposals (VECP) goal and 6 percent less than that achieved for FY 1977, FY 1978 estimated dollar savings were $42.3 million.

VALUE ENGINEERING PROPOSALS (VEPS) IN-HOUSE
PROJECT MANAGERS
AS OF 30 SEPTEMBER 1978

PROJECT MANAGER	NO. VEPS RECEIVED	PERCENT OBJECTIVE ACHIEVED 1/ (50 100 150 200 250)	EST. DOLLAR SAVINGS (THOUS.)
CHEM DEMIL	9		2,933
NUC	9		683
BLACK HAWK	7		281
AAH	4		51
TOTAL PM's	67		7,694
MPBME	24		3,220
SMOKE	12		403
FVS	1		25
PATRIOT 2/	1		98

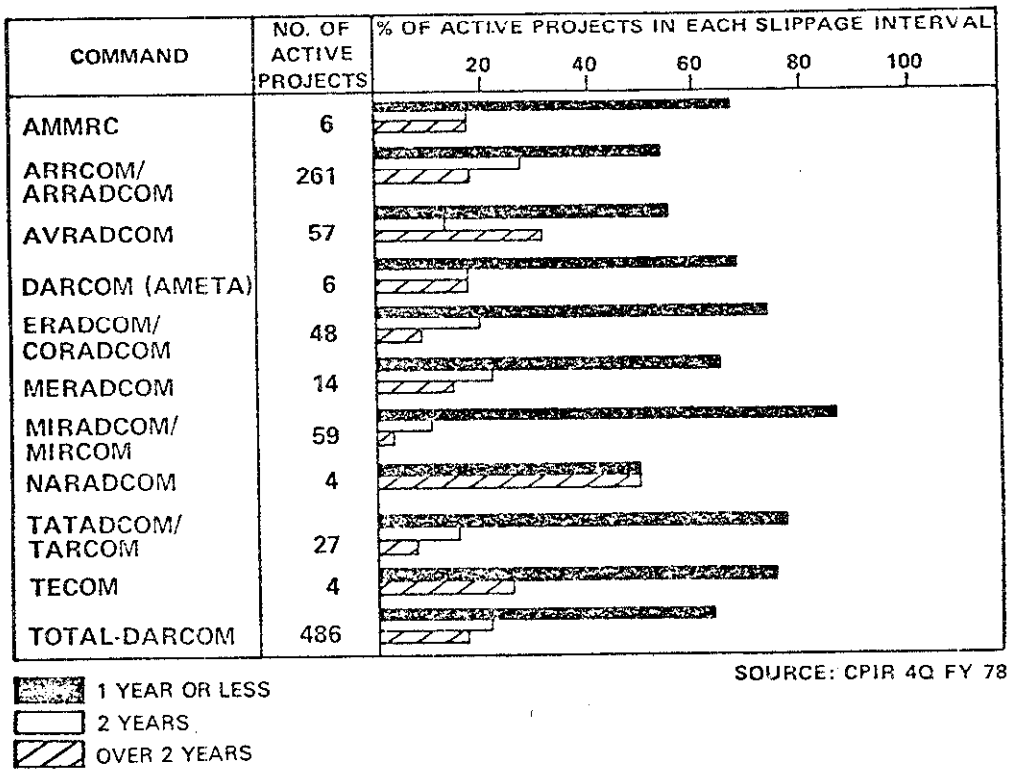
1/30 SEPTEMBER 1977 DATA NOT AVAILABLE

SOURCE: RCS DRCMT-306

2/OBJECTIVE NOT ASSIGNED

(U) Overall performance of DARCOM Project Managers (selected PM's reporting directly to HQ DARCOM) as of 30 September 1978 was 117 percent of the 57 VEP goal. FY 1978 estimated dollar savings for PM's were $7.7 million.

MANUFACTURING METHODS AND TECHNOLOGY
PROJECT SLIPPAGE PROFILE
AS OF 30 SEPTEMBER 1978



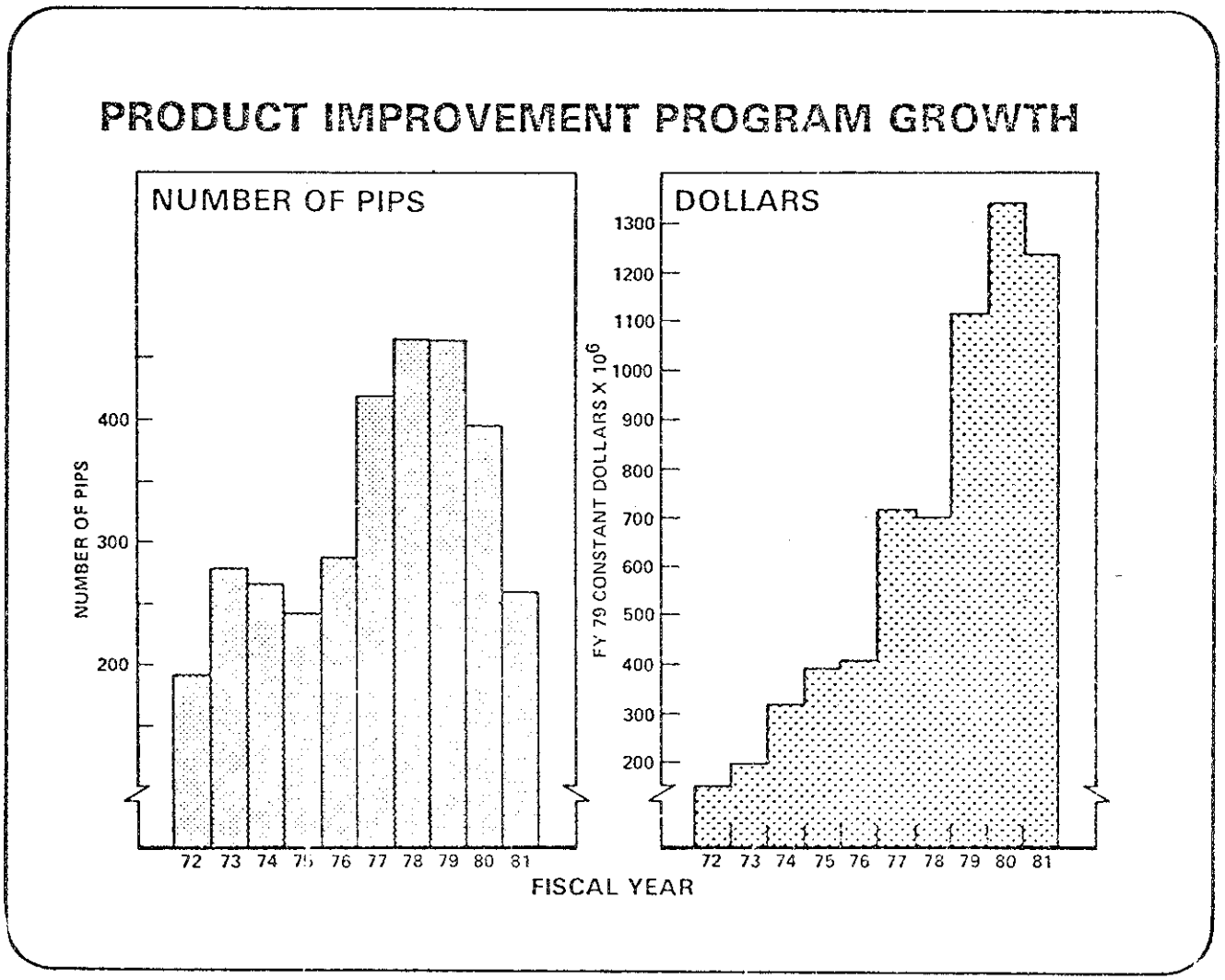
SOURCE: CPIR 4Q FY 78

(U) The objective of the manufacturing methods and technology program was to establish and/or improve manufacturing processes, techniques, or equipment required to support current or projected programs.

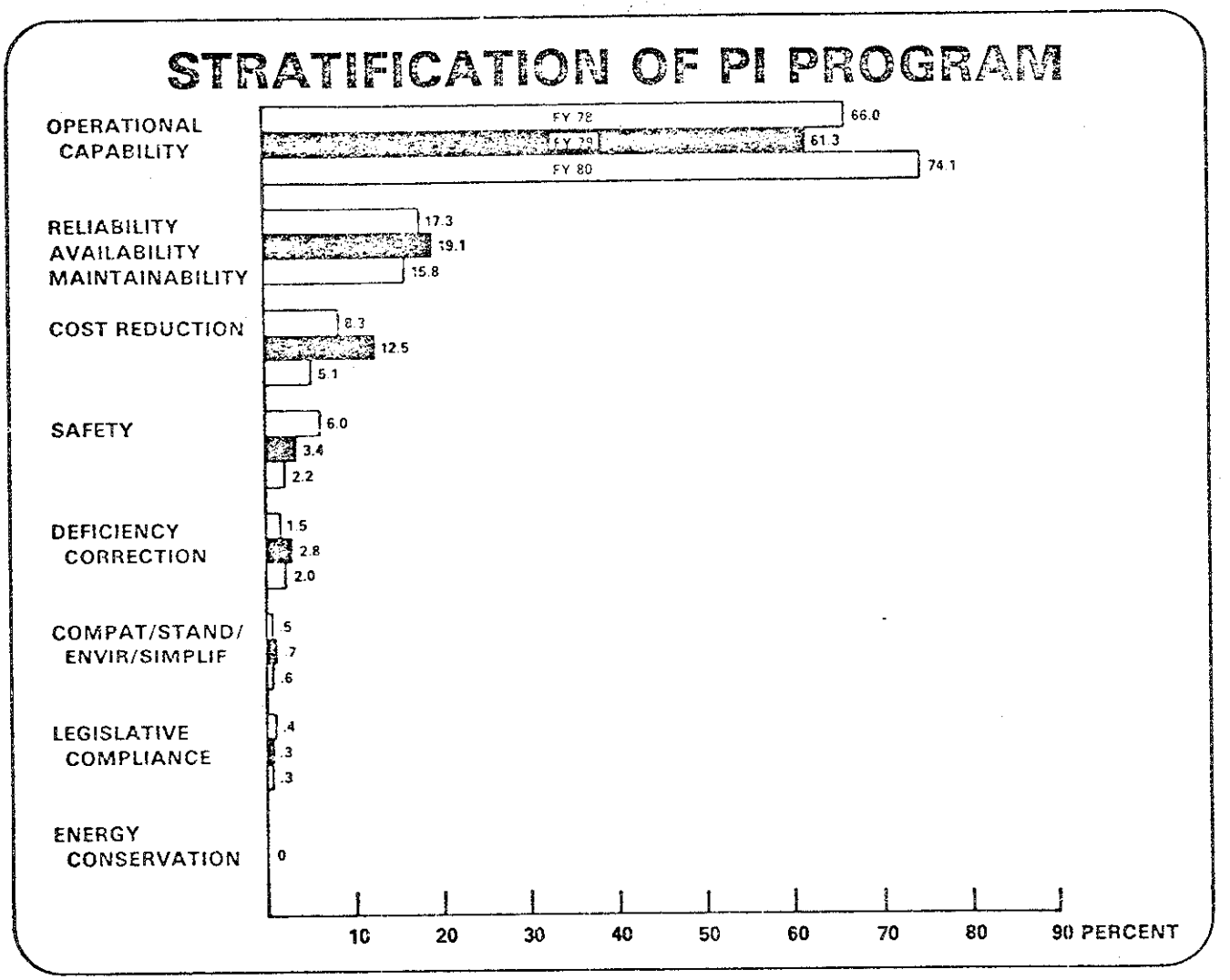
(U) Project slippage was measured by the time differential between the projected completion date on the first status report, and any subsequent semi-annual status report completion date. The chart above depicts a slippage profile as of the end of 4th Quarter FY 1978. As of 30 September 1978, overall slippage for 486 projects was 62.8 percent for 1 year, 21.2 percent for two years and 16 percent for over two years.

(U) This command was stressing a reduction in project slippage through performance targets published in the DARCOM FY 1979 program plan (Nov 1978).

(U) Product Improvement. The Product Improvement Program has expanded considerably in the last five years with most attention going to improved operational capability and to reliability, availability and maintainability of equipment. A hefty minority of the effort was directed toward reducing the costs of equipment as well. The successes of these efforts indicate the greater success of the R&D commands in achieving milestones.



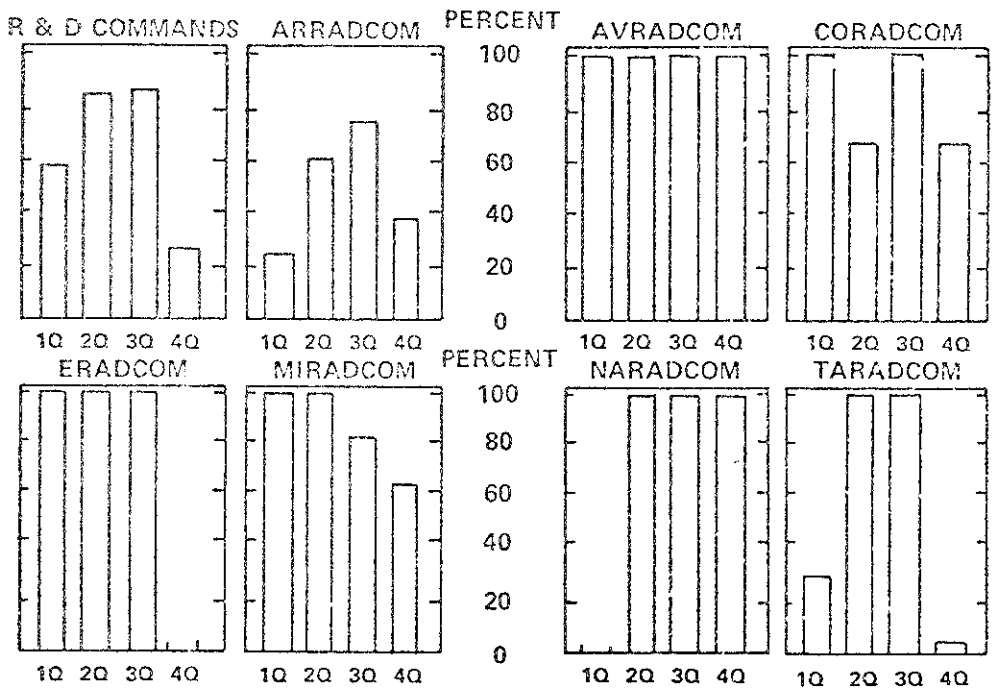
(U) The DARCOM Project Improvement Program (PIP) has increased dramatically since 1972. The dollar value of the PIP has increased accordingly. (To place the PI program in the proper perspective, see note X on the next page, and then follow with this chart.)



(U) As the above chart shows, the majority of the current PI's are concentrated in two areas: (1) improvement of the equipment's operational capabilities, such as extended range, reduced vulnerability, increased firepower and improved fire control; (2) improved RAM.

NOTE X: To place the PI program in the proper perspective (in relation to the overall RDTE manpower decline), it should be understood that the PIP effort consumes only about 12 percent of the total RDTE funds and proportional numbers of direct labor Scientific and Engineering (S&E) manpower.

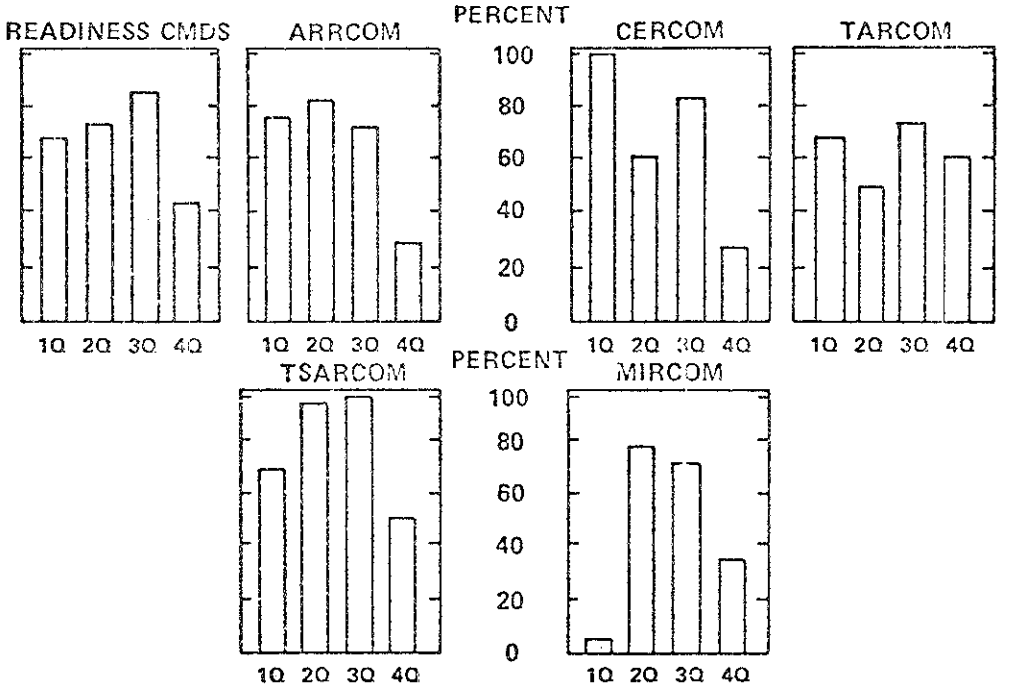
PRODUCT IMPROVEMENT PROGRAM
TECHNICAL MILESTONE COMPLETIONS
RESEARCH & DEVELOPMENT COMMANDS
FY 1978



SOURCE: DRCPI

(U) During the first three quarters of FY 1978 the commands were measured comparing milestone accomplishments to the current plan. The 4th Quarter accomplishments were compared with the prediction made during the previous quarter, hence the lower performance during the last quarter of the year.

PRODUCT IMPROVEMENT PROGRAM
TECHNICAL MILESTONE COMPLETIONS
READINESS COMMANDS
FY 1978



SOURCE: DRCPI

(U) During the first three quarters of FY 1978 the commands were measured comparing milestone accomplishments to the current plan. The 4 th Quarter accomplishments were compared with the prediction made during the previous quarter, hence the lower performance during the last quarter of the year.

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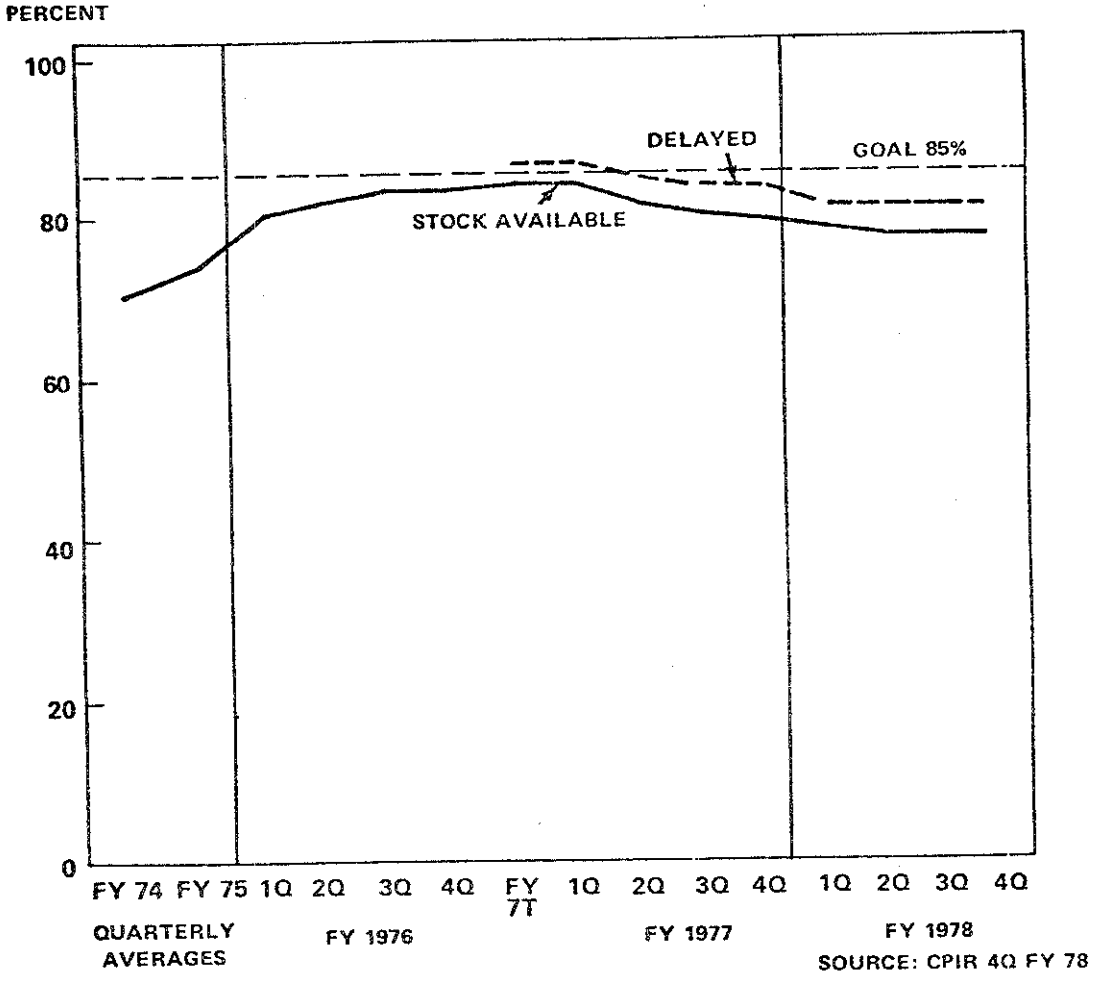
Readiness

(U) As with Development responsibilities, certain forces operate within Readiness activities to generate significant shortfalls in performance at precisely the moment when that performance needs to be enhanced. Ironically the pressure for such greater performance sometimes even seems to cause those shortfalls. Given not just the conflict inherent in the circumstances of greater demand and declining resources but the more precise necessity of sacrificing intensity of effort in some areas to facilitate mission accomplishment in other areas, the weaknesses of the Readiness effort increased in almost geometrical progression, and certainly so when viewed in the larger, integrated, structured perspective. For example, a decline in the personnel available in the depots might mean a sacrifice of inventory and rewarehousing effort in order to expedite shipping and processing. That sacrifice, though, would be a sacrifice of efficiency as well as time. Not only would backlogs and the time for processing backorders both increase but accuracy of inventory location would suffer. The combined effect would be a significantly larger shortfall in unit readiness (and an increase in NORS beyond necessity) than simply the delayed availability of the materiel would imply. Or to consider another example, as inflation increases the number of high value contracts, those contracts then require 37.5 times the resources to process them as had been the case when they fell below the high value category. Because of the great complexity and interrelated structure of the Readiness effort, a short fall in one area is bound to generate shortfalls in other areas.

(U) Maintenance Management. Just such an array of conflicting forces had operated to reduce readiness in the area of Maintenance Management; it has also, and perhaps more seriously, served to reduce the capability to achieve that readiness. As stock availability has continued to decline (itself a partial function of shortfalls elsewhere in the system) and as personnel have decreased, the demands for the stock have increased, thus generating more backorders, longer processing times for backorders, and finally increased NORS deadlines at the unit level. In all aspects of depot supply activities, performance suffered. This includes the receipt of goods from contractors, reporting receipts, stowing materiel, and processing requisitions. In spite of this, however, distribution effectiveness continues to improve, although sacrifice elsewhere sometime provides the resources.

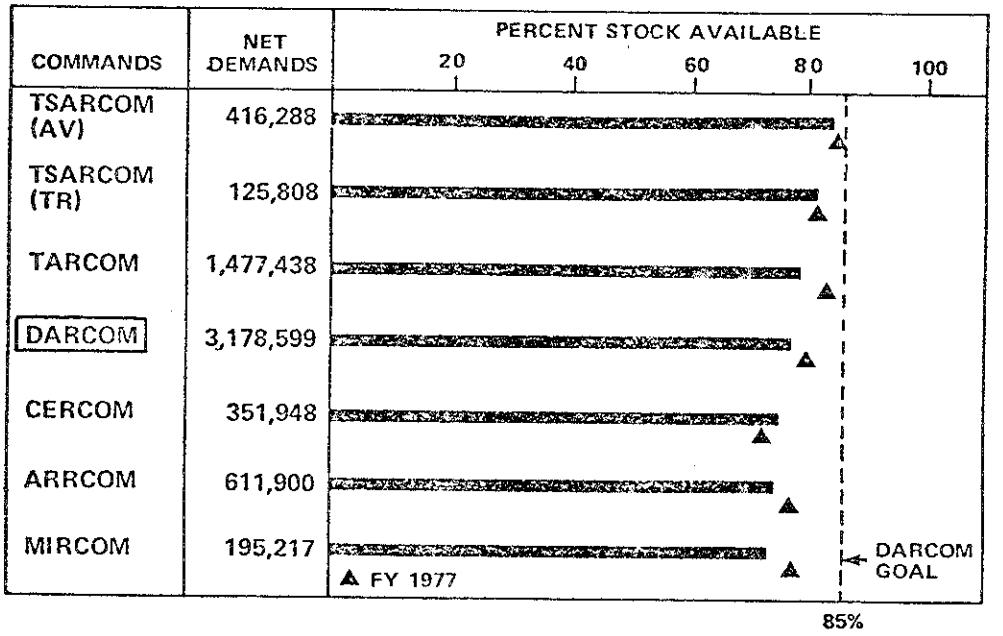
(U) A similar situation exists in depot maintenance. While some of the decrease in personnel can be compensated for by contracting-out the maintenance, this is simply inappropriate for some commodities. Also such contracting efforts themselves require additional personnel for letting and processing. The problems involved in this area were that much more important when it is considered that depot maintenance had enormous advantages over new acquisition.

STOCK AVAILABILITY RATE – DARCOM
FY 1974 THROUGH FY 1978



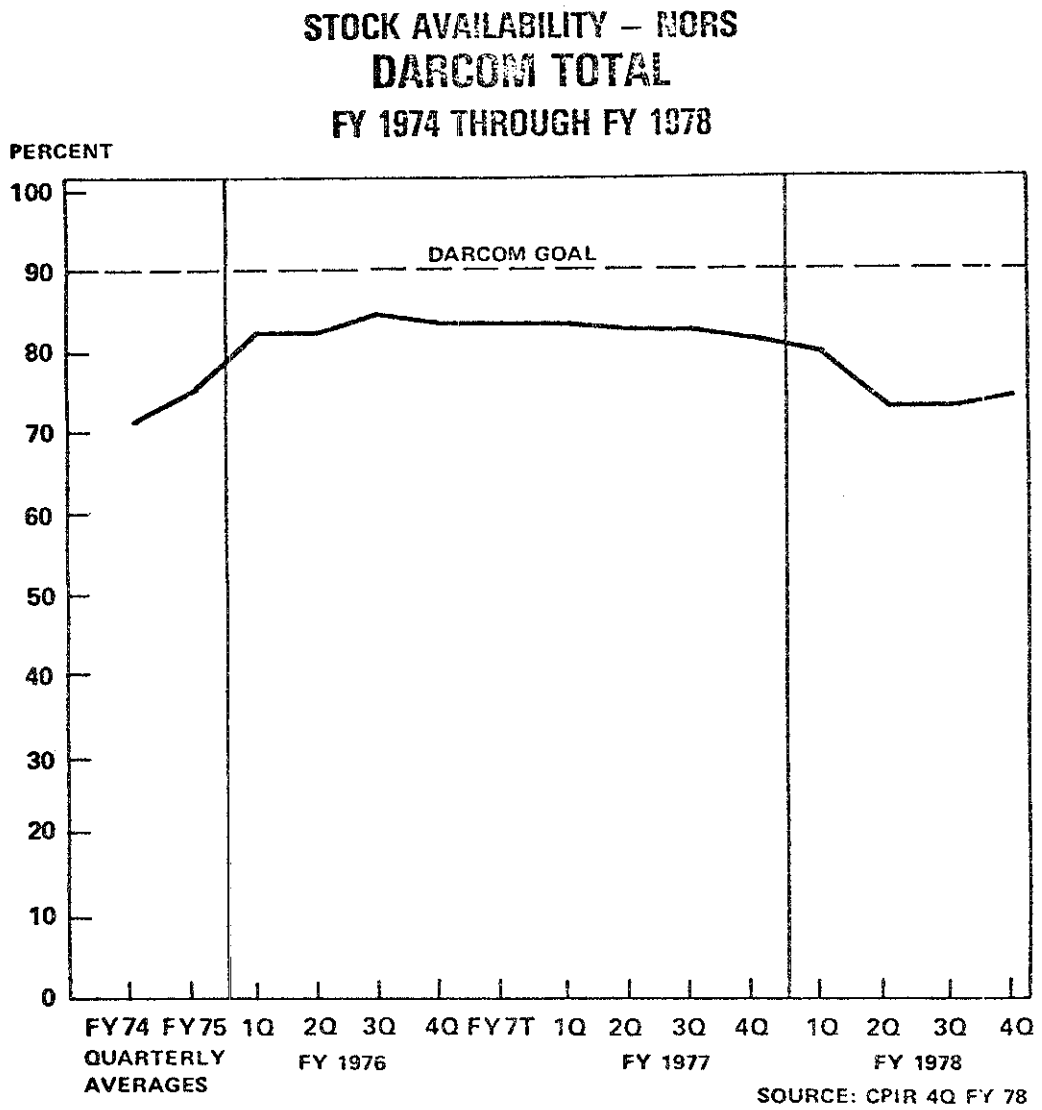
(U) Stock availability continued its downward trend. The DARCOM goal of 85 percent has not been achieved within the last four years. Problems resulting from the declining availability rate are shown on the Materiel Readiness Command availability charts.

STOCK AVAILABILITY
TOTAL AND BY MATERIEL READINESS COMMANDS
FY 1978



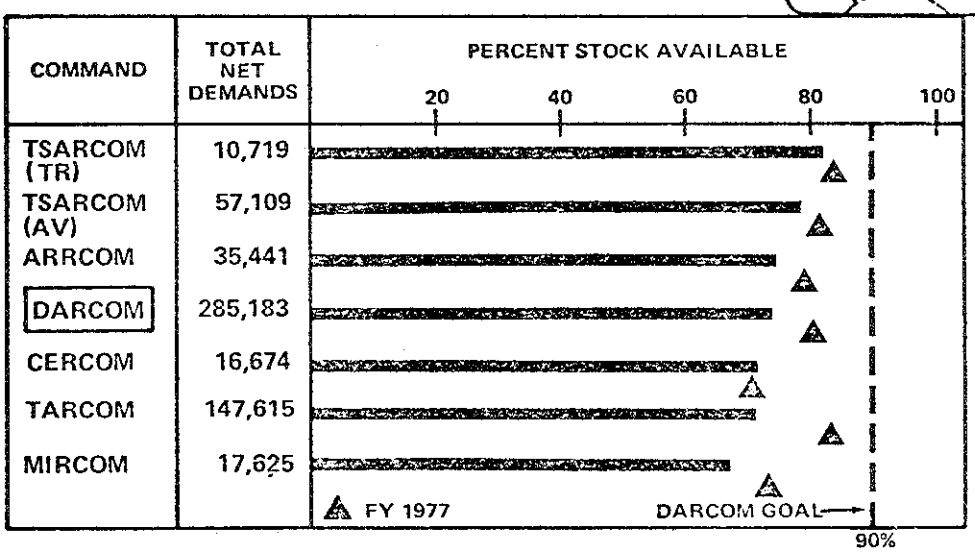
SOURCE: RCS DD-I & L 782

(U) No command achieved the DARCOM goal of 85 percent. Compared with FY 1977, performance continued to slip (80.6 percent in FY 1977 versus 77.4 percent in FY 1978). Causative factors for poor performance were increased demands, delinquent procurement deliveries, personnel shortages, and 7S funding constraints.



(U) The percent of availability for fill of NORS requisitions has continued to drop over the past three years and as of 30 September 1978 was 16 percent below the DARCOM of 90 percent. A breakout by commands and depots follows.

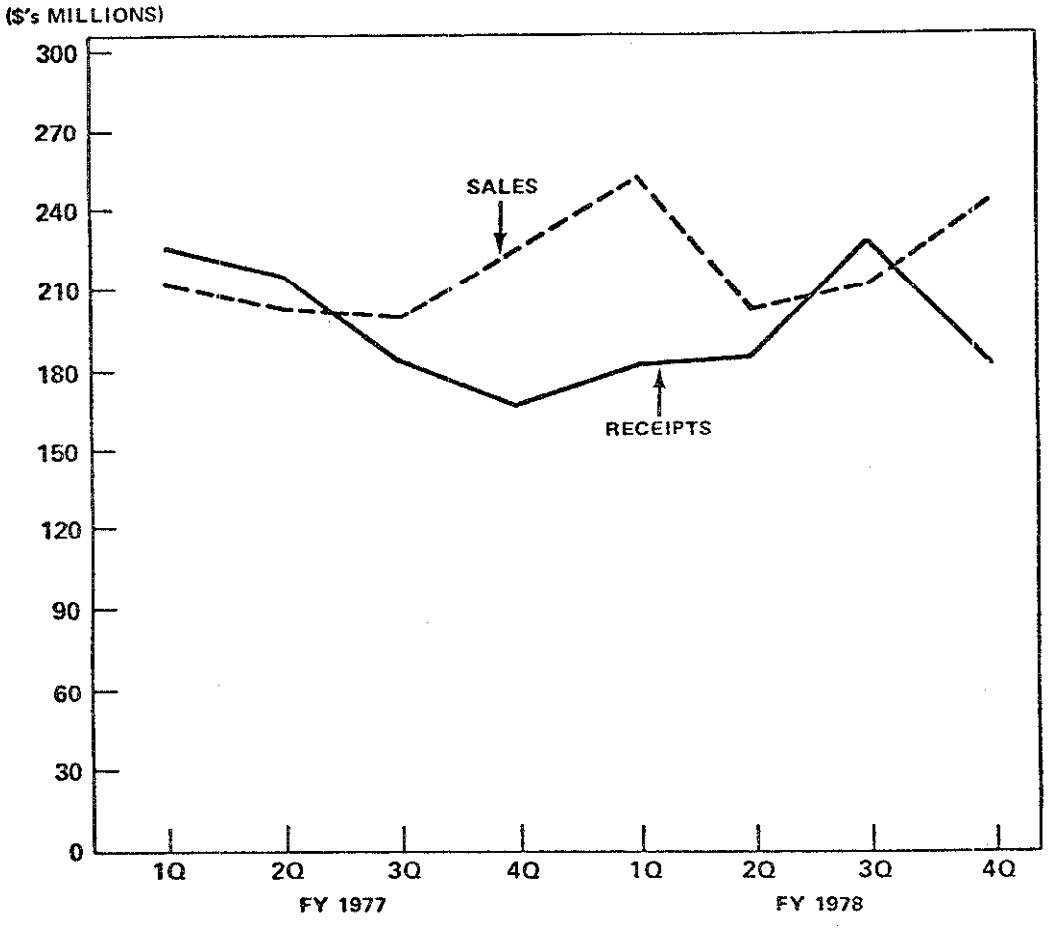
STOCK AVAILABILITY
NORS
DARCOM TOTAL AND BY MATERIAL READINESS COMMANDS
FY 1978



SOURCE: RCS DD-I & L 782

(U) No command achieved the DARCOM goal of 90 percent. In comparison with FY 1977, DARCOM performance slipped from 81.9 percent to 74.1 percent or 16 percent below the goal. TARCOM, with the bulk of the demands, removed its protectable levels which permitted stocks to be issued to zero balance, regardless of priority, with a resulting decline in NORS Stock Availability. The protectable level procedure was reinstated at TARCOM during November 1978. When compared with FY 1977, only CERCOM showed improvement.

STOCK FUND SALES AND RECEIPTS
FY 1977 THROUGH FY 1978



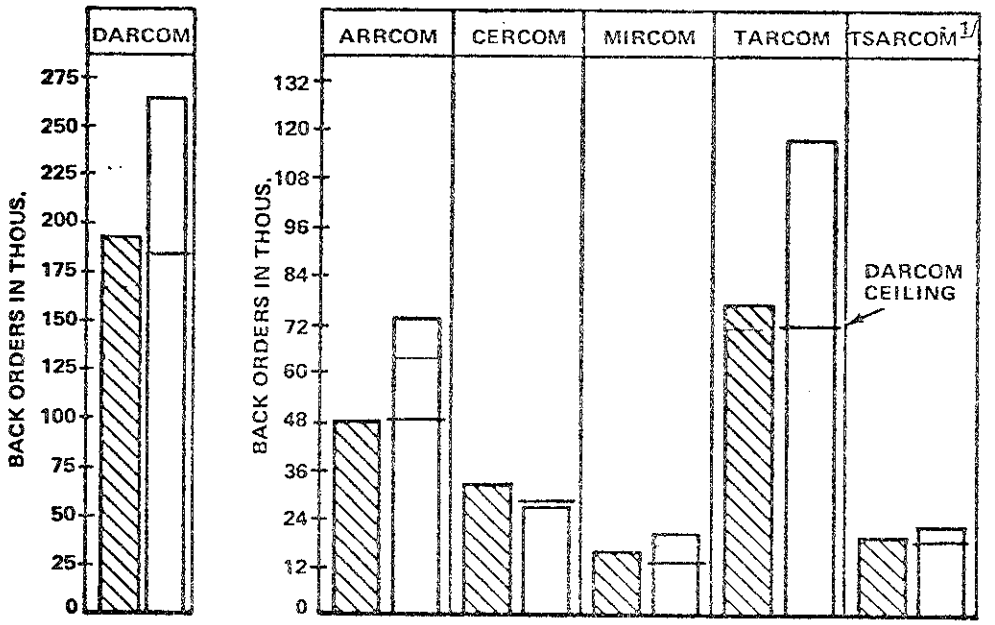
SOURCE: CPIR 4Q FY 78

(U) The declining trend in receipts and the increasing trends in sales which was drawing down inventory, is one of the many reasons for increased backorders and poor stock availability. As of 30 September 1978, receipts were $183 million while sales were $242 million.

MATERIEL OBLIGATIONS OUTSTANDING (BACK ORDERS)

REDUCTION OF TOTAL BACK ORDERS

(TOTAL STOCKED ITEMS) AS OF 30 SEPTEMBER 1978



NOTE: CHANGE IN SCALE

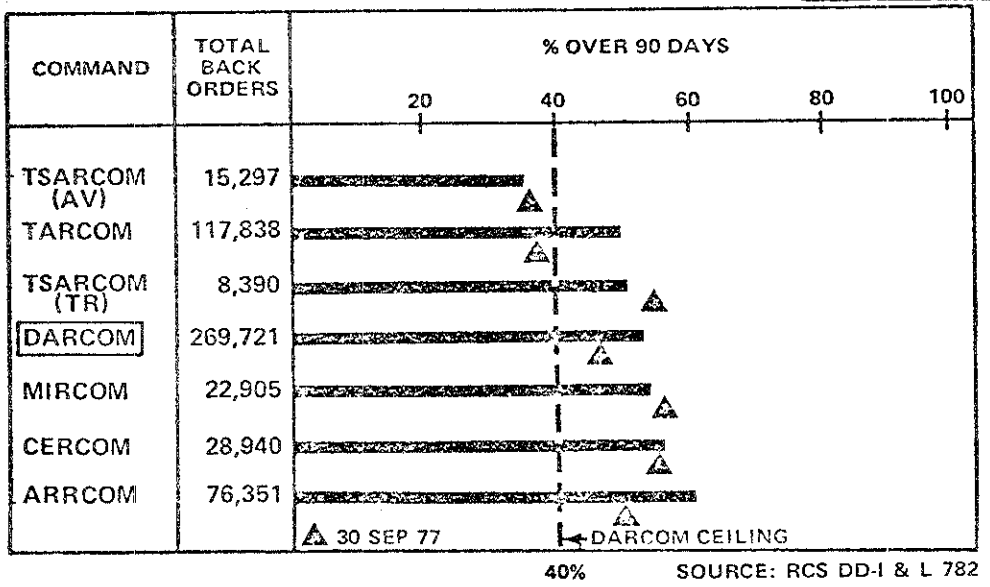
SOURCE: RCS DD-I & L 782

1/INCLUDES AVIATION AND TROOP SUPPORT

30 SEPTEMBER 1977 BACKORDERS OUTSTANDING
30 SEPTEMBER 1978 BACKORDERS OUTSTANDING

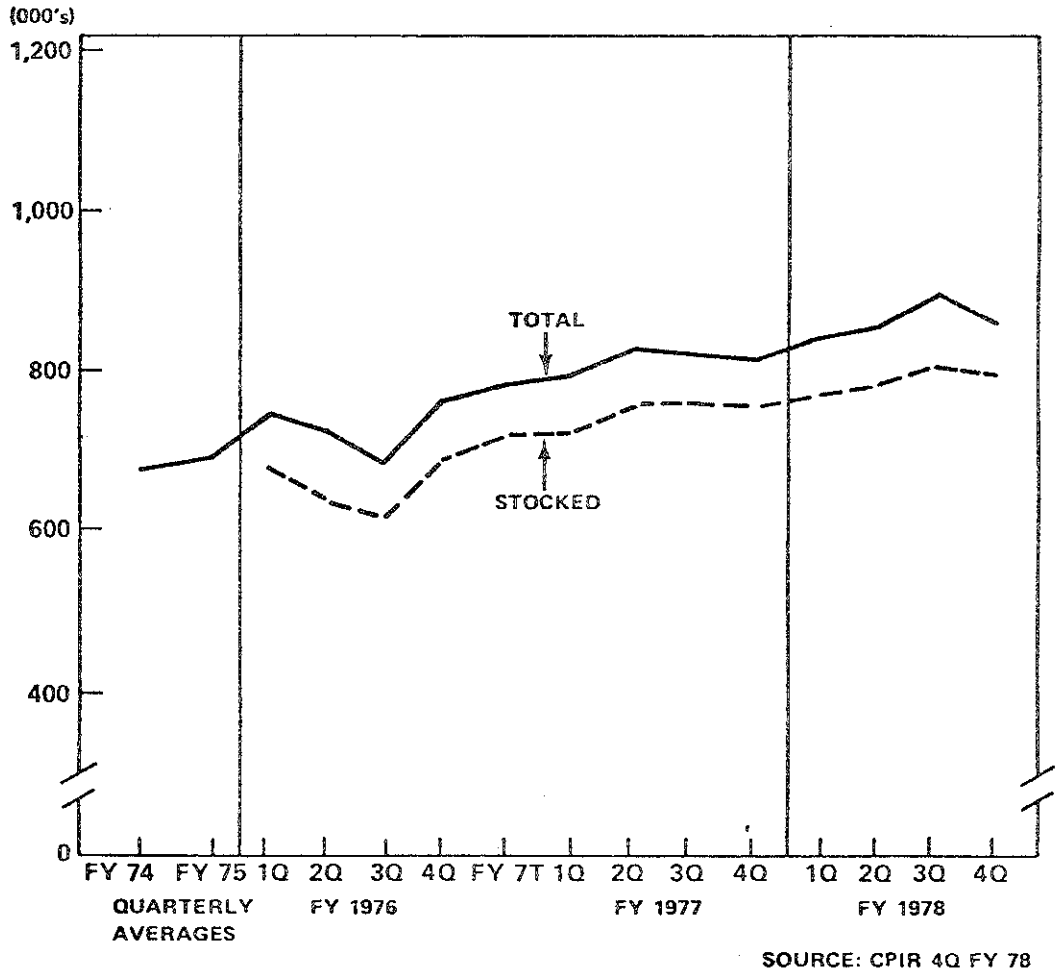
(U) Backorders outstanding at the end of FY 1978 were above the DARCOM ceiling. With the exception of CERCOM, all commands exceeded ceilings. TARCOM showed one of the largest increases with 39 percent over its ceiling. The reasons for the backorder increases were increased demands, declining stock availability and delayed procurement deliveries.

MATERIEL OBLIGATIONS OUTSTANDING (BACK ORDERS)
% BACK ORDERS OVER 90 DAYS
(TOTAL STOCKED ITEMS)
AS OF 30 SEPTEMBER 1978



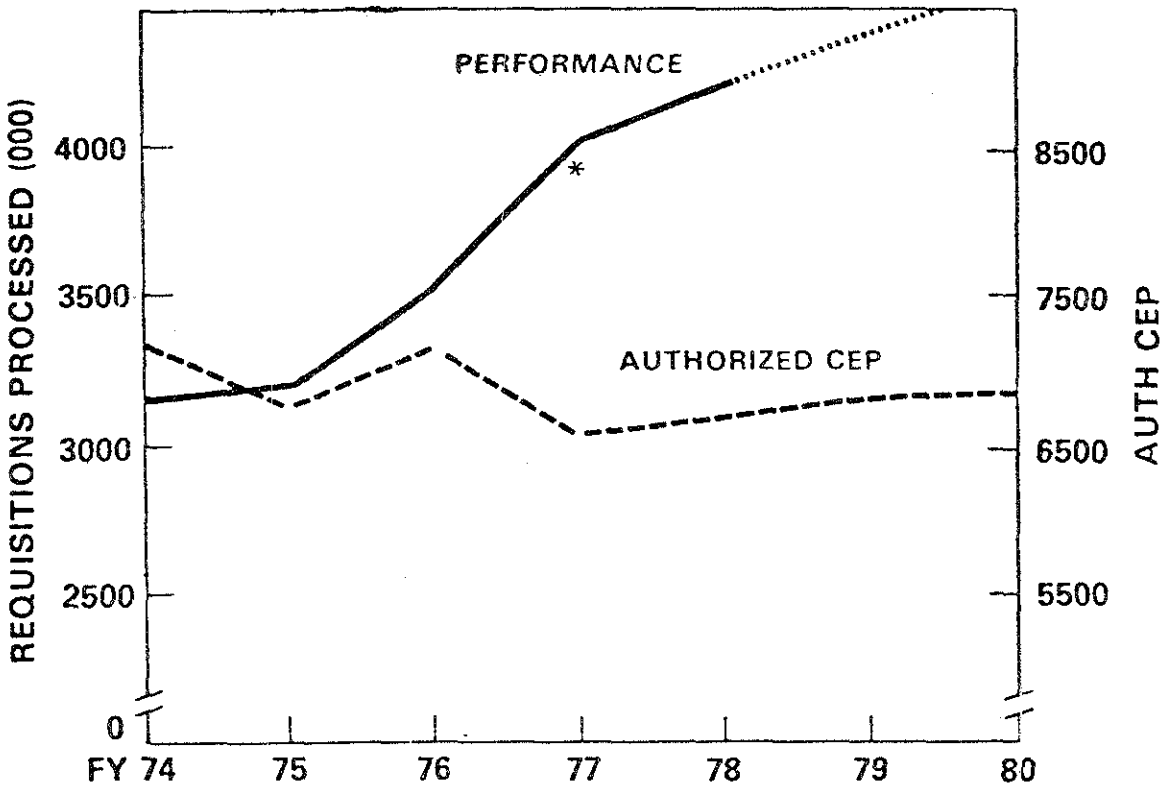
(U) Overall DARCOM backorders over 90 days old continued to increase and remained above the established ceiling of 40 percent with the exception of TSARCOM (AV). The reasons for the increase in requisitions over 90 days old were declining stock availability and increased procurement delays.

REQUISITIONS RECEIVED – DARCOM
FY 1974 THROUGH FY 1978



(U) Requisitions received show a "rising trend," reaching a peak in the 3d Quarter FY 1978. Requisitions for stocked items account for 92 percent of the total requisitions received.

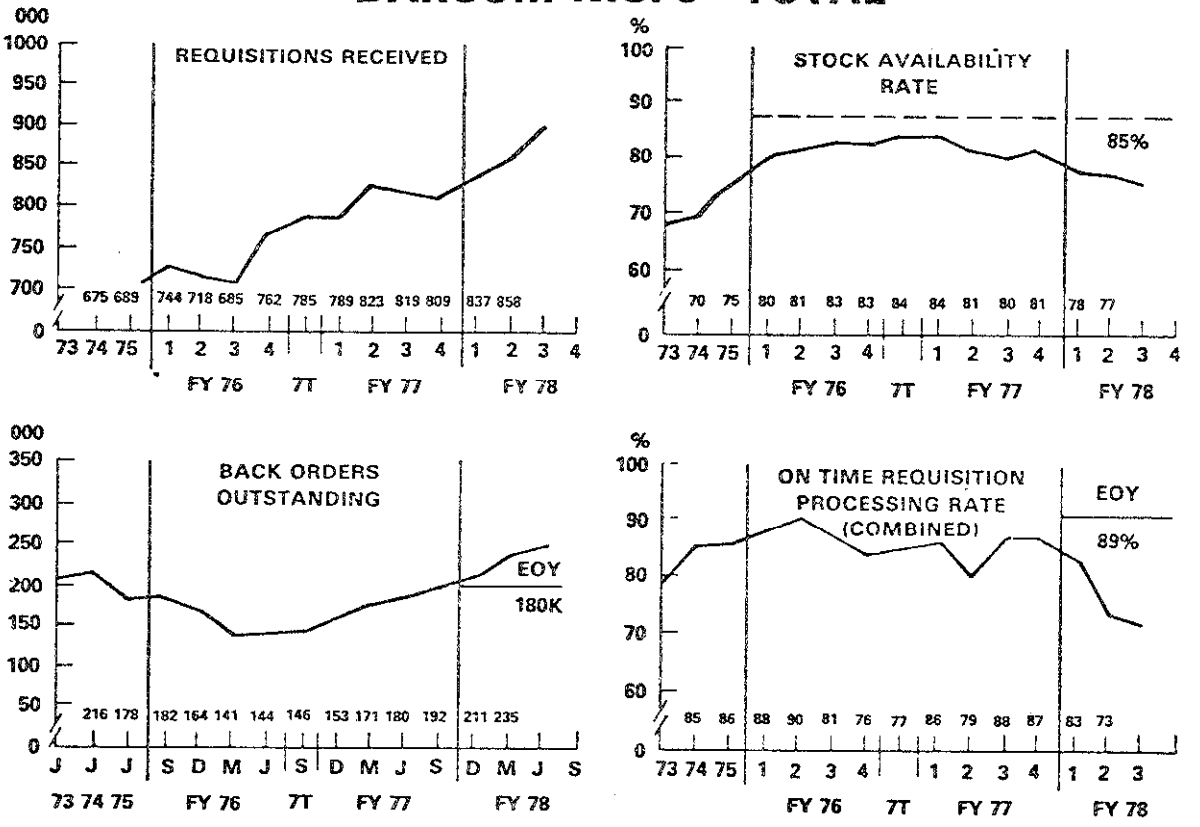
REQUISITIONS PROCESSED/AUTH CEP



* PERIOD OF HEAVY INTER-DEPOT TRANSFERS IN SUPPORT OF AOD CONCEPT

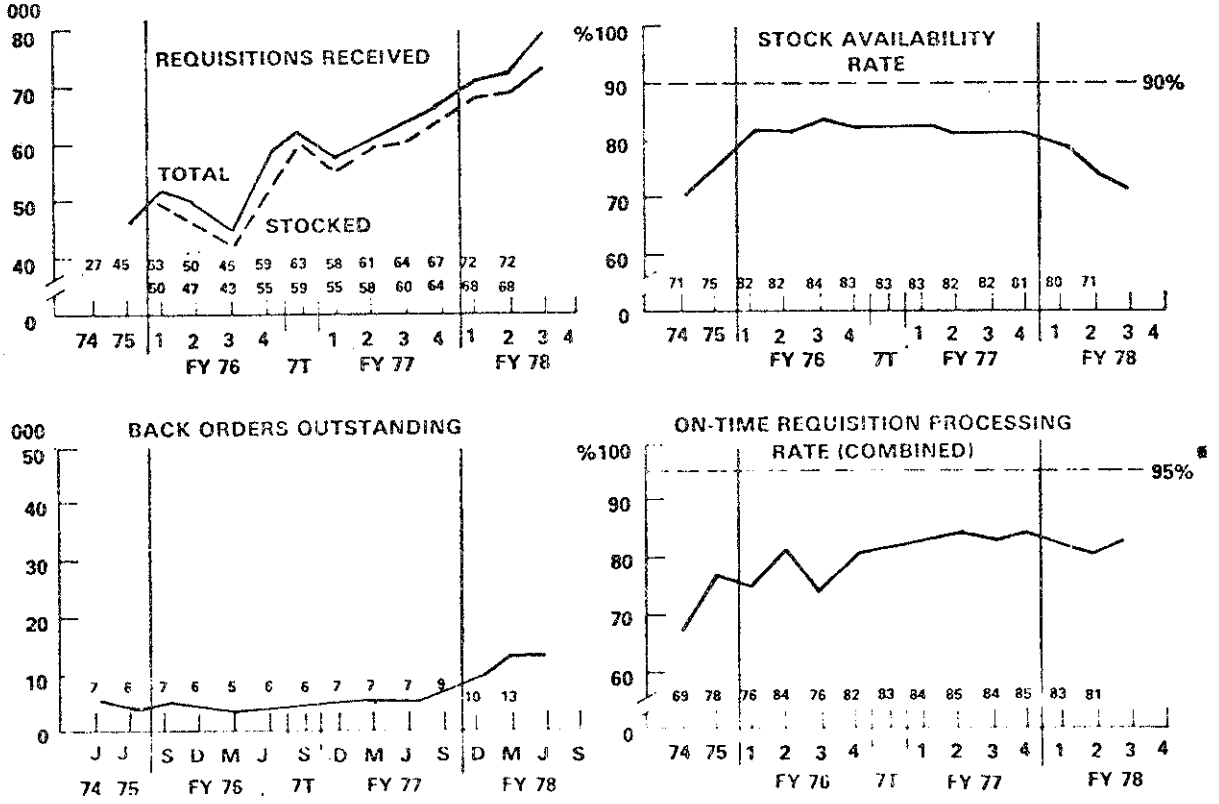
(U) Requisitions processed show a dramatic increase with a slight decrease in personnel. Here we note the presence of DSS, new FMS requirements, and of course, the increase in line items managed. New line items, increased requisitioning activity, and new weapon systems also affect the procurement activity of our Readiness Commands.

SUPPLY PERFORMANCE TRENDS— DARCOM NICPs—TOTAL

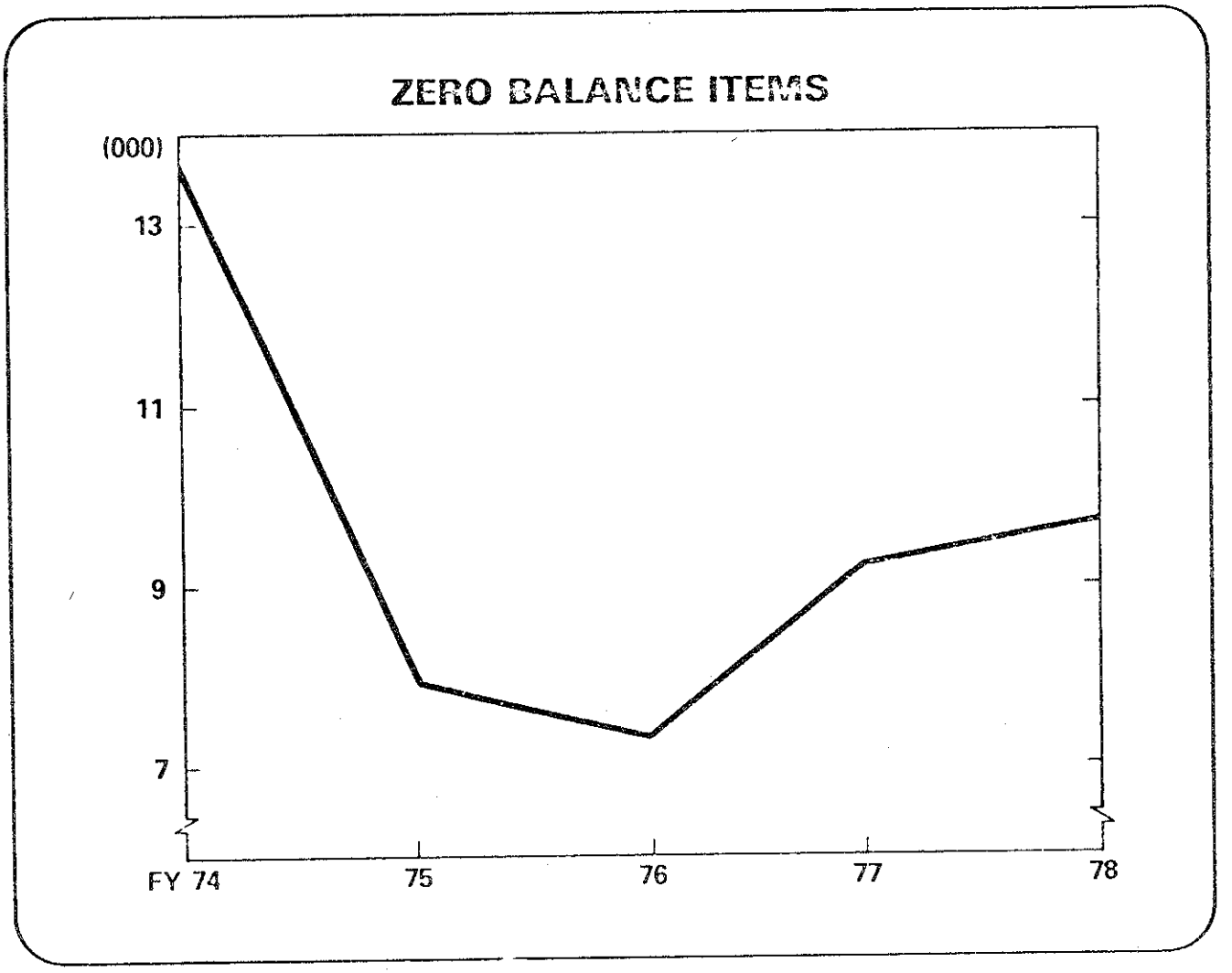


(U) We now face a decrease in receipt of new inventory from contractors, increased demands from the field for more inventory, and fewer personnel in our NICP's and Depots. The obvious result is that: requisitions received are increasing; stock availability is declining; back orders are increasing; and on-time processing of requisitions has fallen below established DA goals.

SUPPLY PERFORMANCE TRENDS — DARCOM NICPs — NORS

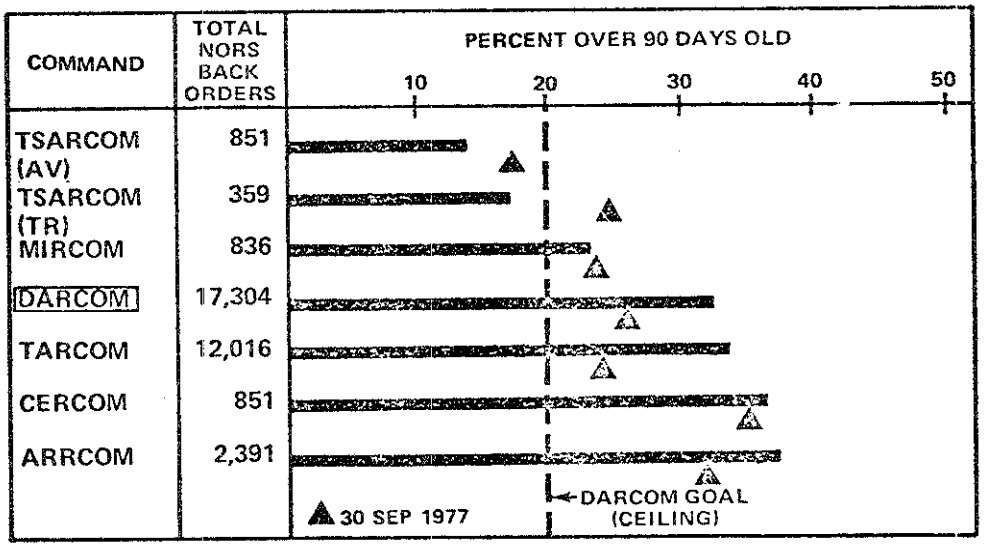


(U) A similar trend is noted in Not Operationally Ready--Supply (NORS) requisitions. NORS demands are up, both for stocked and non-stocked items. This is a direct indicated that field equipment deadlines are increasing. DARCOM's ability to reduce field NORS is also declining, as shown by the other three graphs.



(U) As one might expect, line items in a zero balance condition are also increasing. Note the decline in zero balance items during the FY 1974-1976 time frame. This was a direct result of DARCOM's more effective management during the FY 1972-1974 period when we had sufficient manpower and dollar resources, and experienced a drop in IOE.

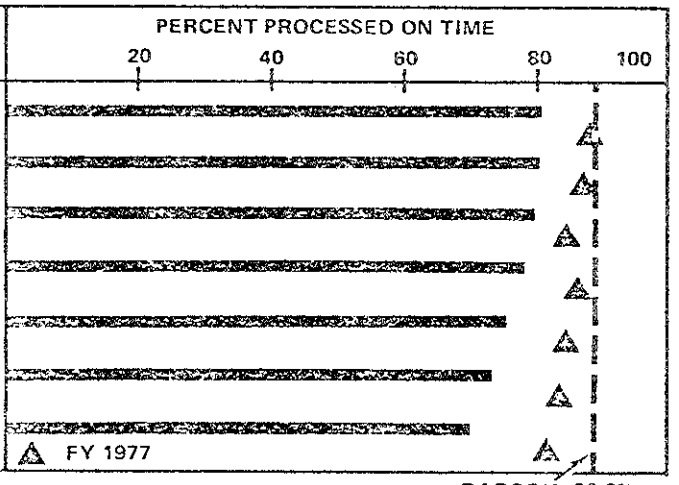
MATERIEL OBLIGATIONS OUTSTANDING (BACK ORDERS)
NORS
% BACK ORDERS OVER 90 DAYS
AS OF 30 SEPTEMBER 1978



(U) Overall DARCOM continued to exceed the ceiling of 20 percent of NORS backorders over 90 days old. With the exceptions of TSARCOM (AV) and TSARCOM (TR), all commands exceeded the DARCOM ceiling. In comparison with FY 1977, growth in backorder aging occurred at all commands except at MIRCOM. Contributing factors for increased backorders are increased demands and increased procurement lead time. In the case of TARCOM the larger number of backorders was due to the removal of protectable levels which permitted stocks to be issued to zero balance, regardless of priority.

REQUISITION PROCESSING
IMMEDIATE ISSUES
TOTAL SUPPLY SOURCE (ALL IPGs)
FY 1978

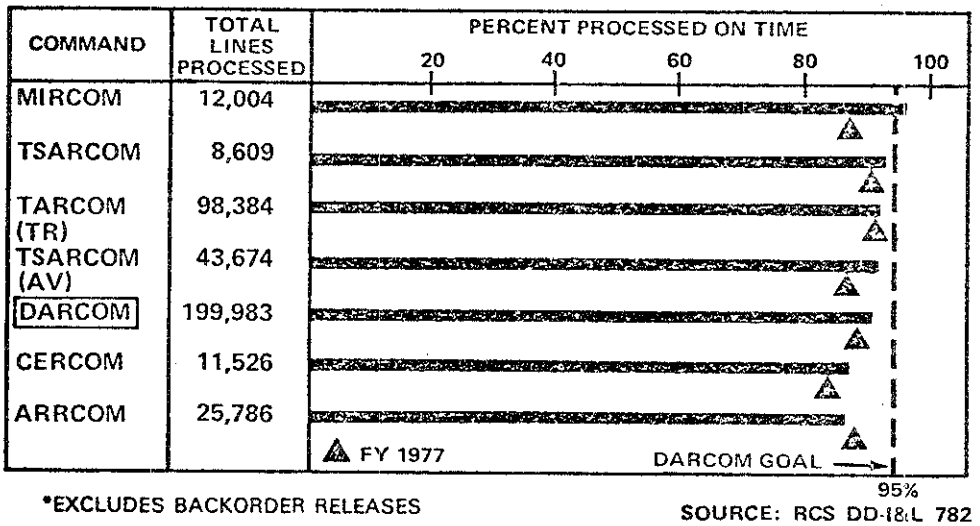
COMMAND	TOTAL LINES PROCESSED
TSARCOM (TR)	93,473
TSARCOM (AV)	326,070
MIRCOM	115,675
CERCOM	237,113
DARCOM	2,149,676
TARCOM	1,003,272
ARRCOM	374,073



SOURCE: RCS DD-I&L 782

(U) All commands failed to achieve the DARCOM goal of 89 percent in processing immediate issue requisitions on time. When compared with FY 1977, performance deteriorated further. The decline in depot on-time MRO processing, discussed on a separate chart, was the primary contribution to the supply source shortfall. All NICP's met or exceeded the NICP target as shown on the next chart.

REQUISITION PROCESSING
IMMEDIATE ISSUES*
NORS
TOTAL AND NICP (ALL IPGs)
FY 1978



*EXCLUDES BACKORDER RELEASES

SOURCE: RCS DD-I&L 782

(U) All commands improved over FY 1977 except ARRCOM which remained the same level as the previous year. With the exception of MIRCOM, however, no command met the 95 percent on-time NORS goal for FY 1978.

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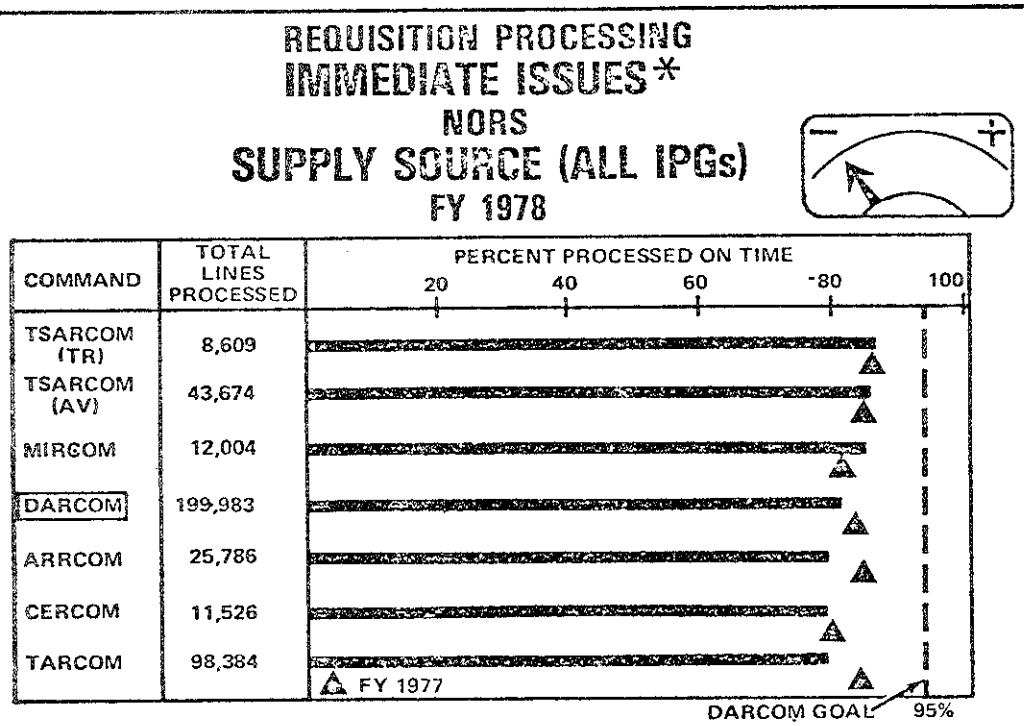
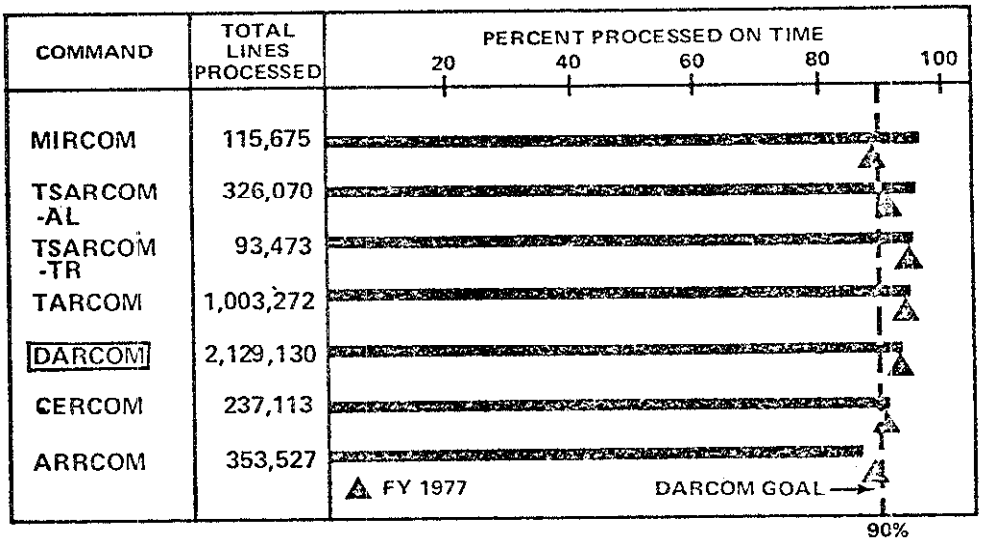


*EXCLUDES BACKORDER RELEASES

SOURCE: RCS DD-I & L 782

(U) All commands failed to achieve the DARCOM goal of 95 percent processed on time performance for Not Operationally Ready Supplies (NORS). In comparison with FY 1977 performance DARCOM experienced a decline although some improvement occurred at TSARCOM(TR), TSARCOM (AV), and MIRCOM. The distribution depots were the primary contributors to the performance shortfall for reasons indicated on the on-time MRO processing chart.

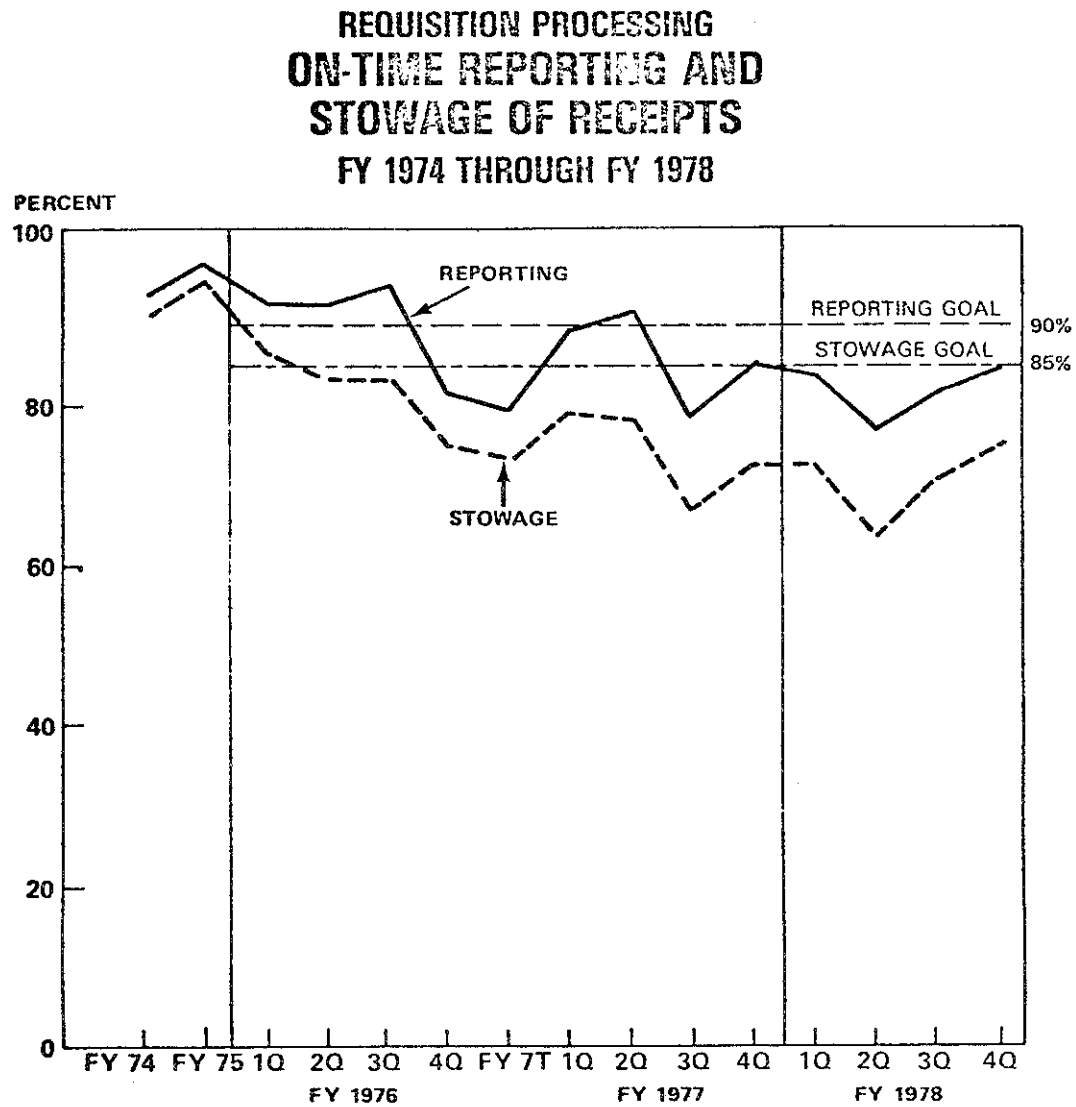
REQUISITION PROCESSING
IMMEDIATE ISSUES
NICP (ALL IPGs)*
FY 1978



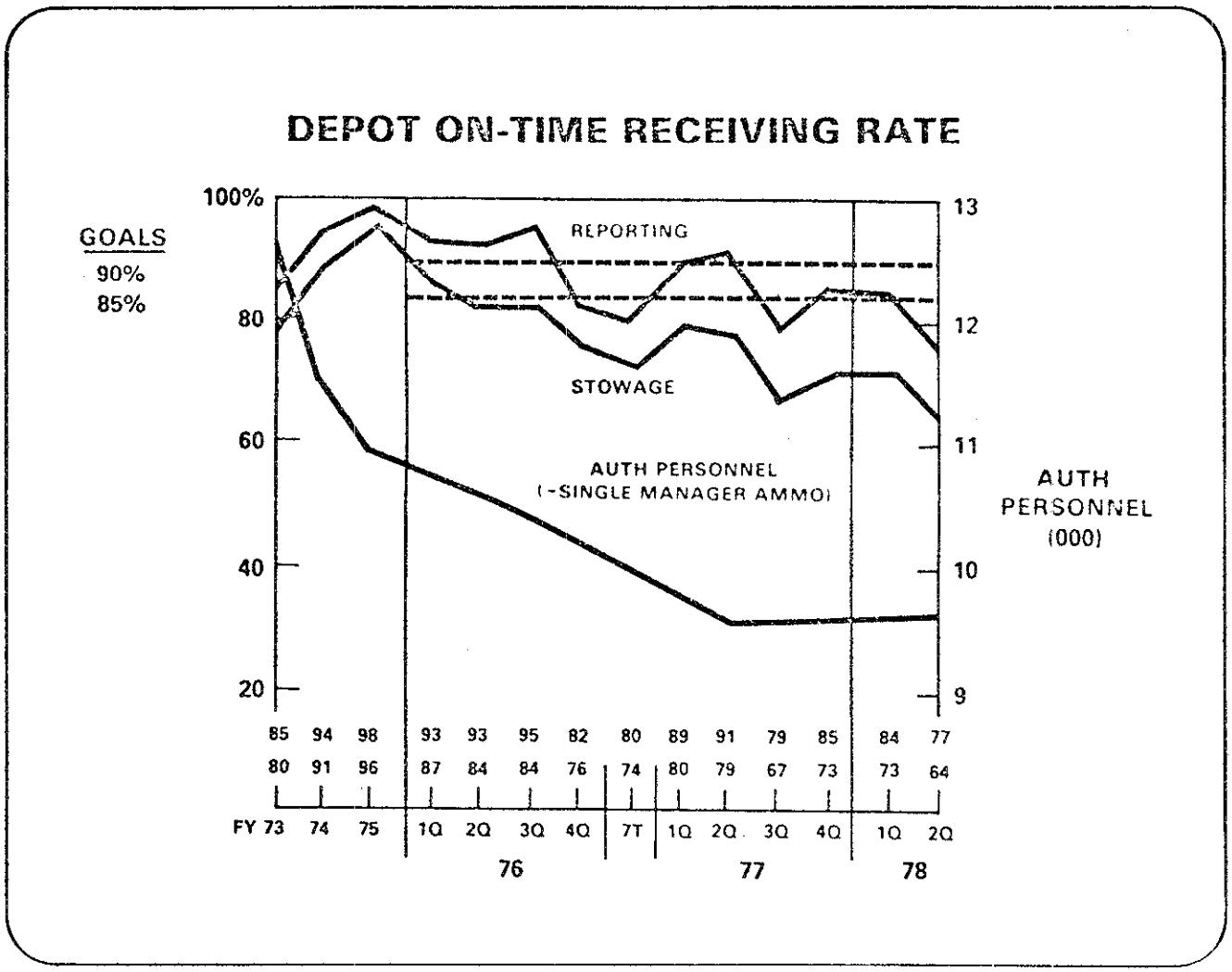
*EXCLUDES CLASS V

SOURCE: RCS DD-I&L 782

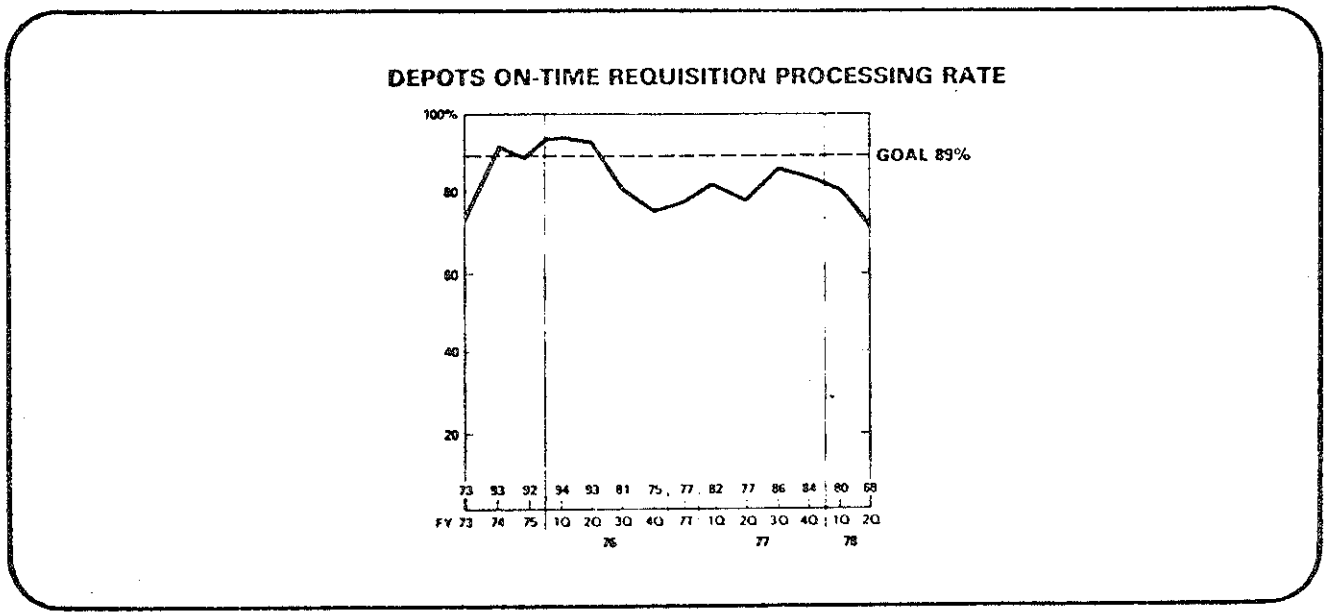
(U) All commands exceeded the DARCOM goal of 90 percent and represented improvement of 2.1 percent over FY 1977 performance.



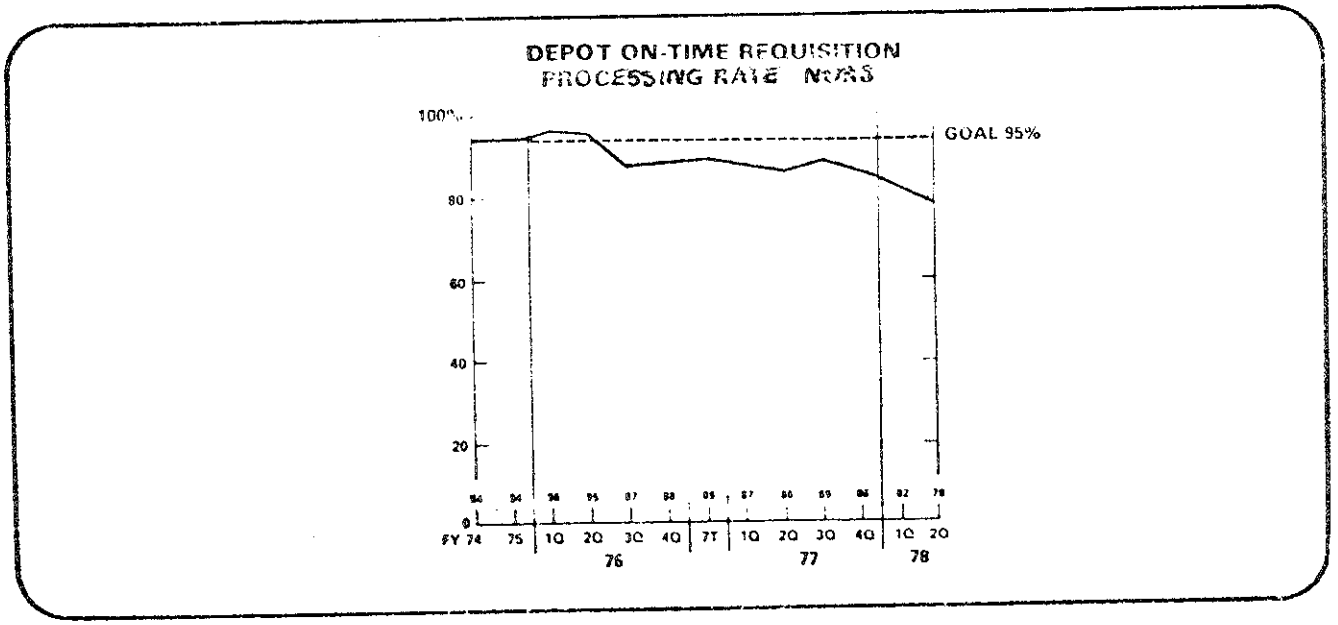
(U) On-time reporting and stowage of receipts failed to meet the established DARCOM goals primarily due to increased workload and funding constraints at the three DARCOM distribution depots.



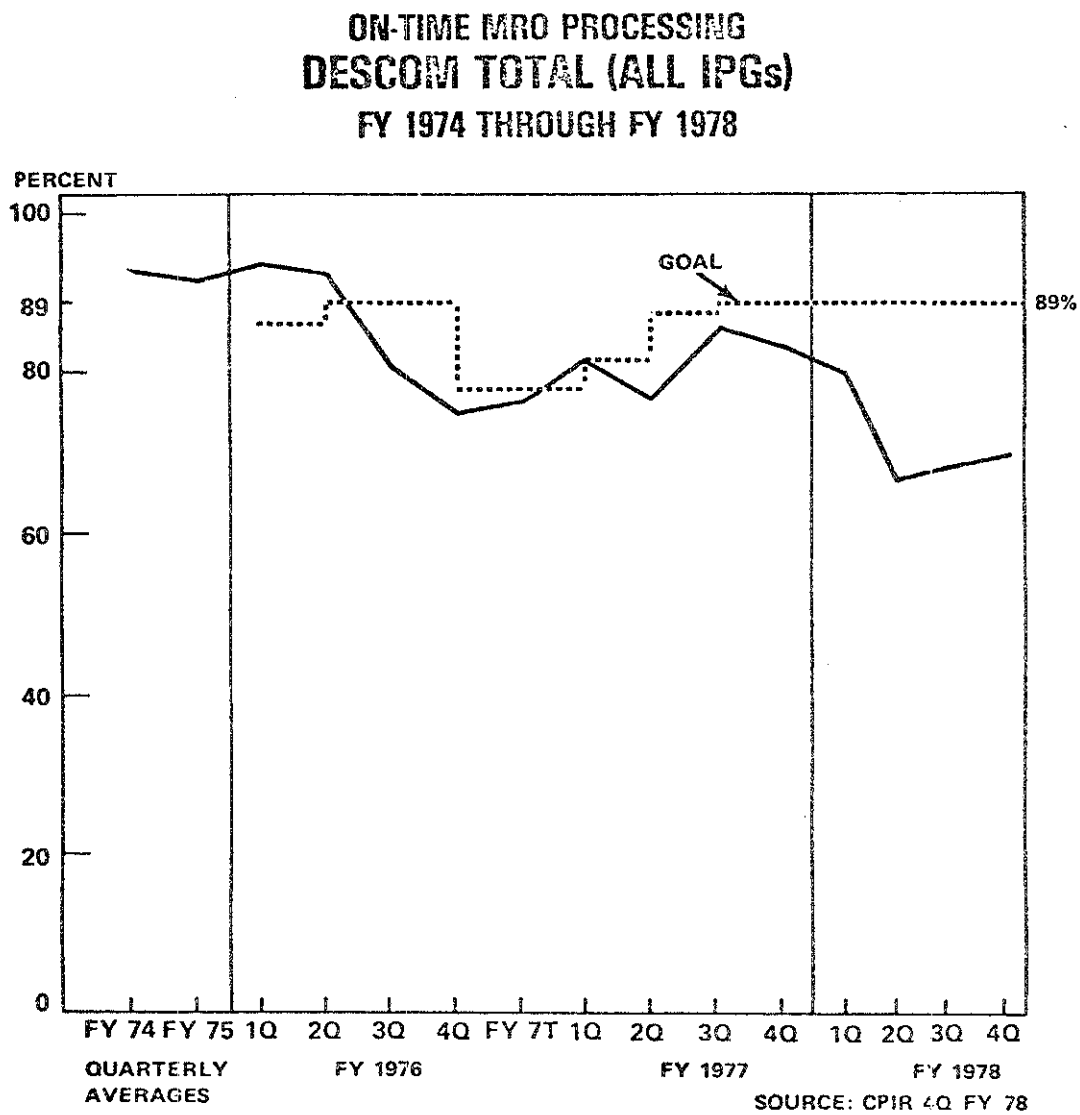
(U) As depot supply personnel have been reduced, so has the performance related to receipt of the goods from contractors (and field returns) for storage and issue. Note the decline in performance in reporting receipts to the accountable NICP and placing the materiel in storage.



(U) It takes the depots longer to process a requisition now.

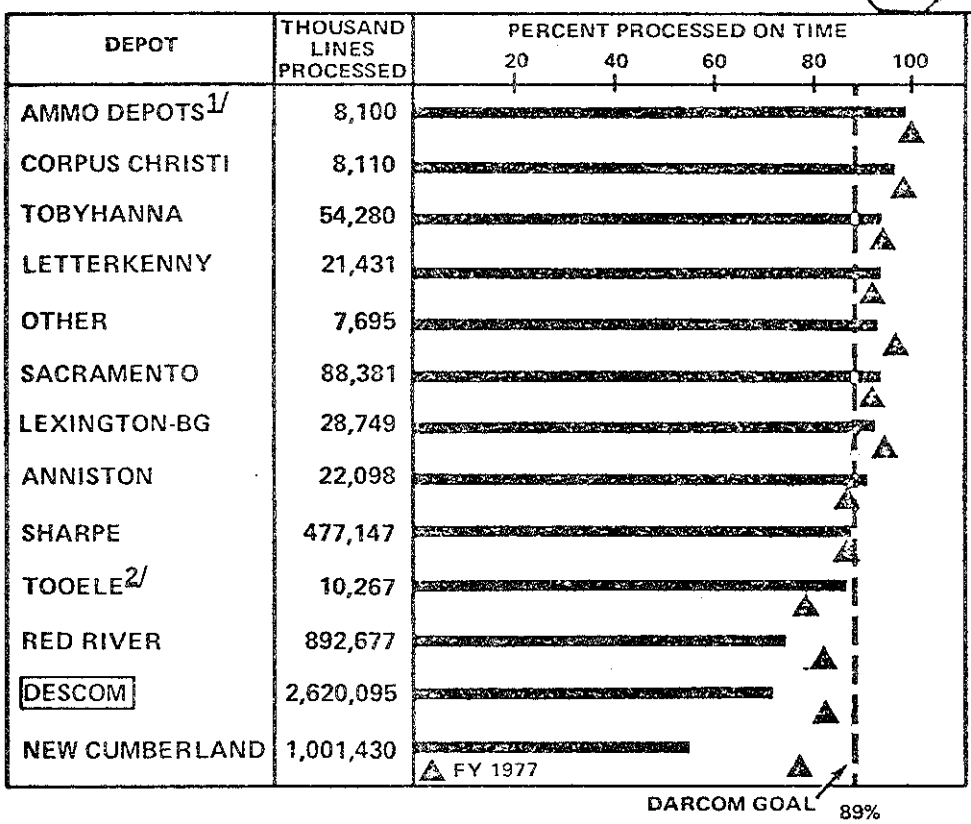


(U) The same condition exists for NORS requisitions.



(U) On-time processing of MRO's at the depot level for FY 1978 continued its downward trend. As of 30 September 1978, performance was 71 percent or 18 percent below established goal.

ON-TIME MRO PROCESSING
DESCOM TOTAL AND BY DEPOT (ALL IPGs)
FY 1978



1/INCLUDES SIERRA, SENECA AND SAVANNA
2/INCLUDES PUEBLO AND UMATILLA

SOURCE: RCS DDI&L 782

(U) Overall depot performance for FY 1978 failed to achieve the DESCOM goal of 89 percent or improve over FY 1977 performance. All three distribution depots, Sharpe, Red River, and New Cumberland, which have the bulk of the workload, failed to meet the goal. Increased workload, coupled with resource shortages, are the primary contributing factors.

REQUISITION PROCESSING
NORS
DEPOT (ALL IPGs)
FY 1978

DEPOT	TOTAL LINES PROCESSED	PERCENT PROCESSED ON TIME (20, 40, 60, 80, 100)
CORPUS CHRISTI	3,636	
OTHER	179	
LETTERKENNY	3,667	
LEXINGTON-BG	720	
TOBYHANNA	2,305	
SHARPE	43,911	
RED RIVER	92,051	
TOOELE[1/]	1,124	
SACRAMENTO	2,966	
ANNISTON	3,868	
DESCOM	250,684	
NEW CUMBERLAND	96,318	

FY 1977

DARCOM GOAL 95%

SOURCE: RCS DD-I&L 782

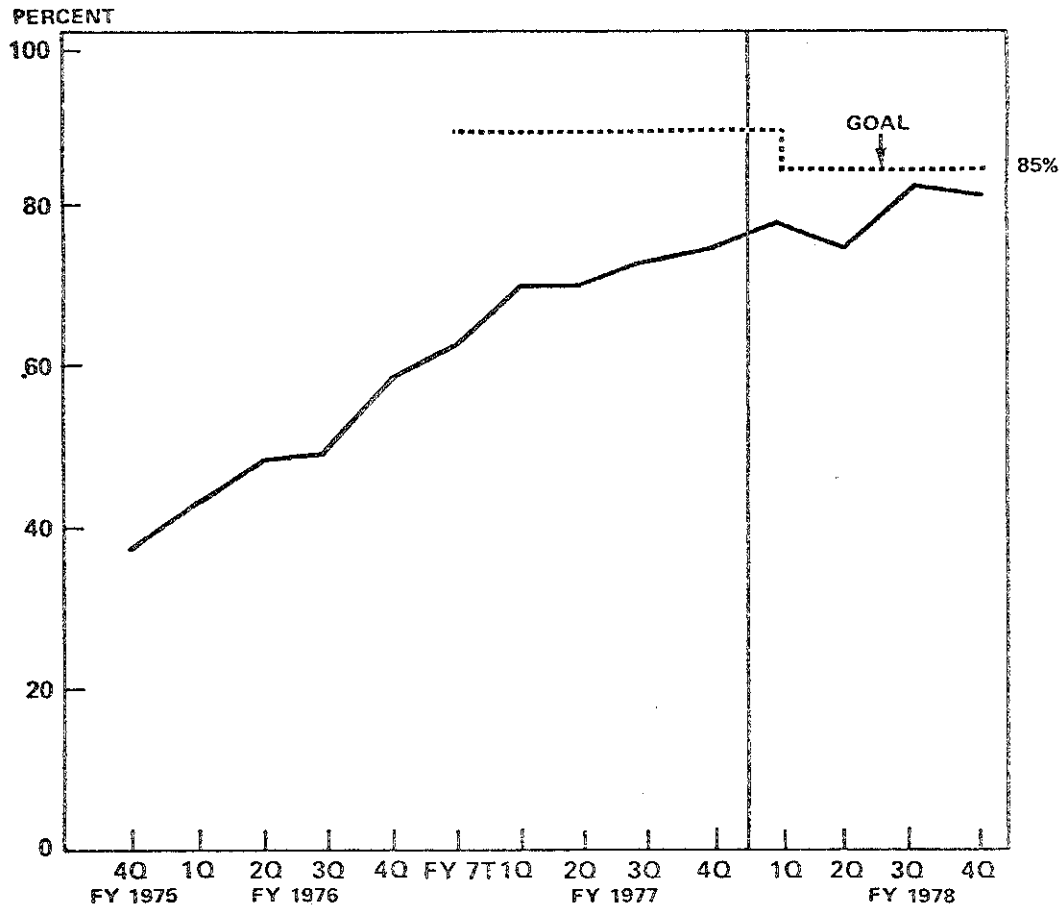
1/INCLUDES PUEBLO

(U) With the exception of Corpus Christi, all depots failed to meet the DARCOM goal of 95 percent in comparison with FY 1977 performance; most depots slipped further away from the goal. The problem at most depots is funding constraints which have necessitated workforce reductions and curtailment of weekend work and overtime. In addition, workload has increased, particularly at the three distribution depots.

REQUISITION PROCESSING

DISTRIBUTION EFFECTIVENESS-DARCOM (ALL DISTRIBUTION DEPOTS)

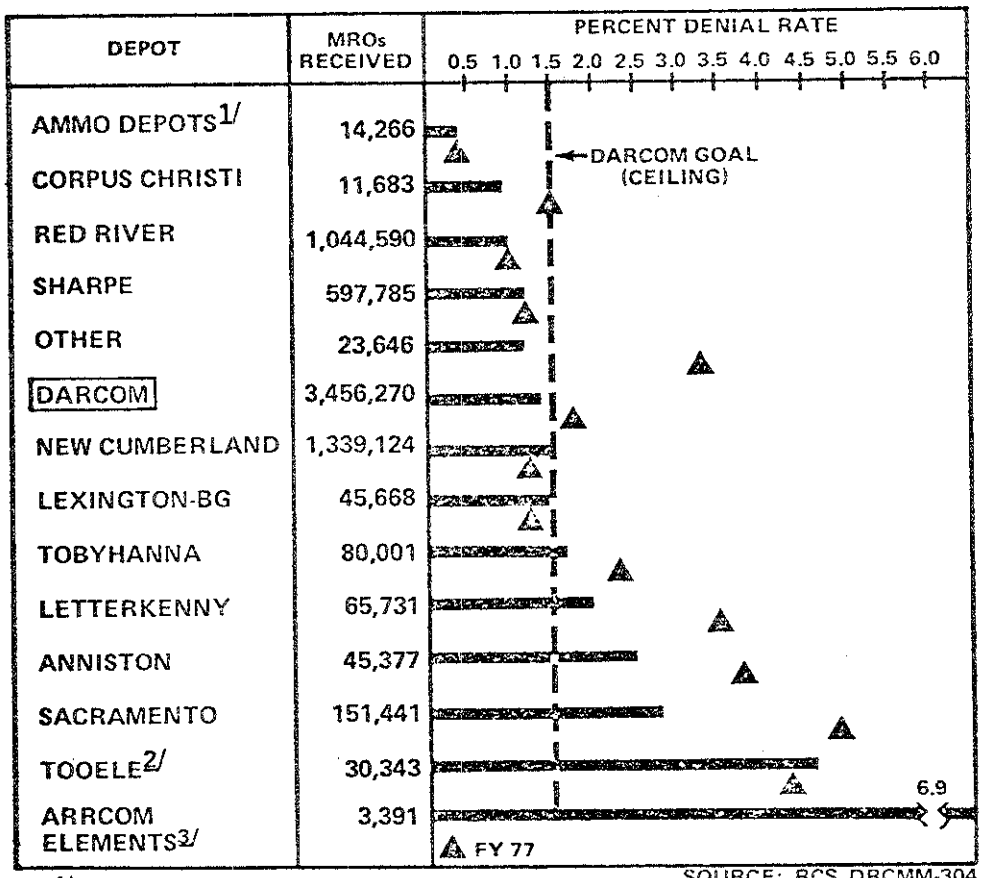
4TH QUARTER FY 1975 THROUGH 4TH QUARTER FY 78



(U) Progress in implementing the revised DARCOM secondary item distribution system is shown on this chart as the percentage of shipments processed by the distribution depots supporting each area (distribution effectiveness.) Distribution effectiveness continued to improve; however, the DARCOM goal of 85% for FY 1978 was not attained.

MATERIEL RELEASE DENIALS — ARMY ONLY

FY 1978



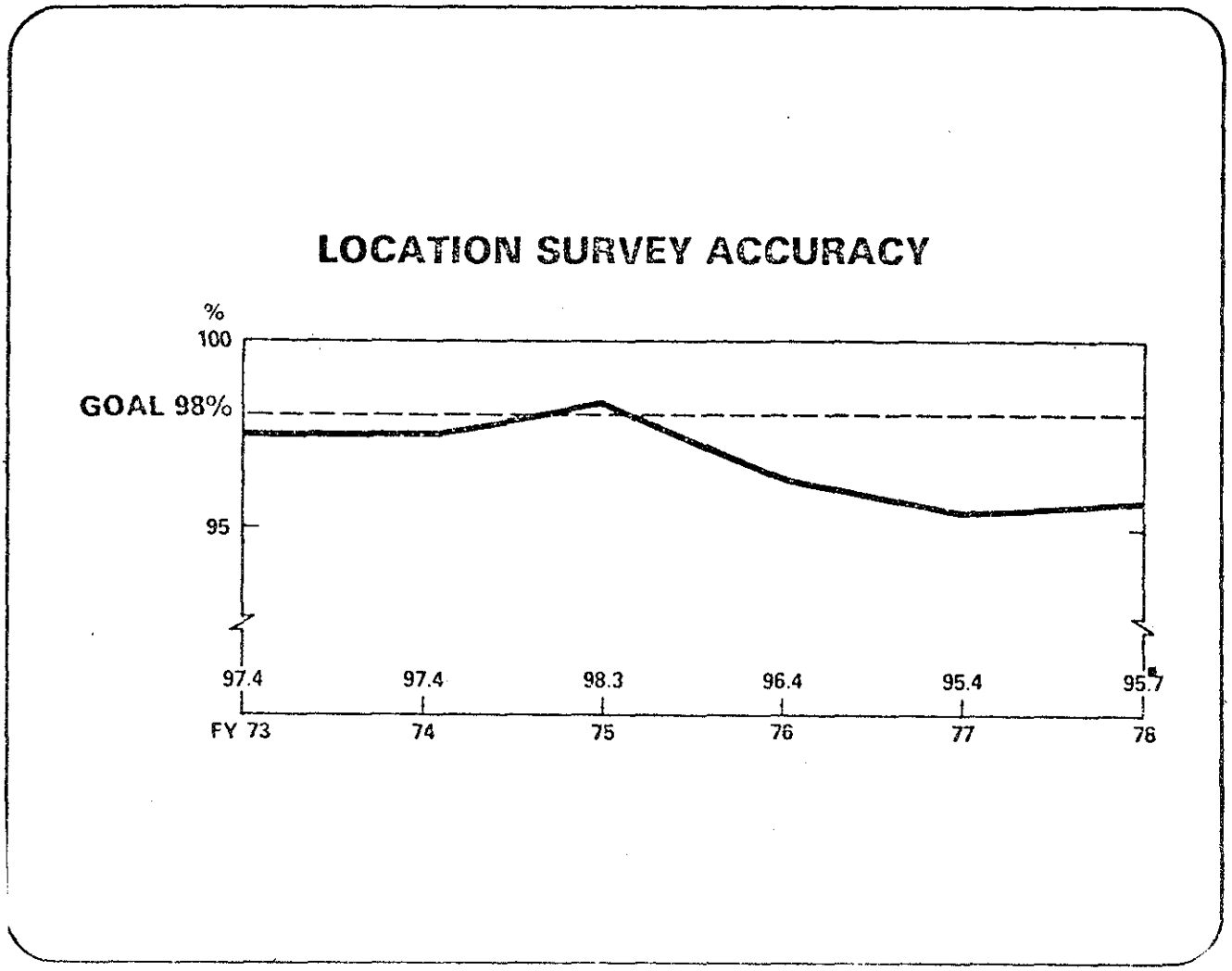
SOURCE: RCS DRCMM-304

1/ INCLUDES SIERRA, SENECA AND SAVANNA

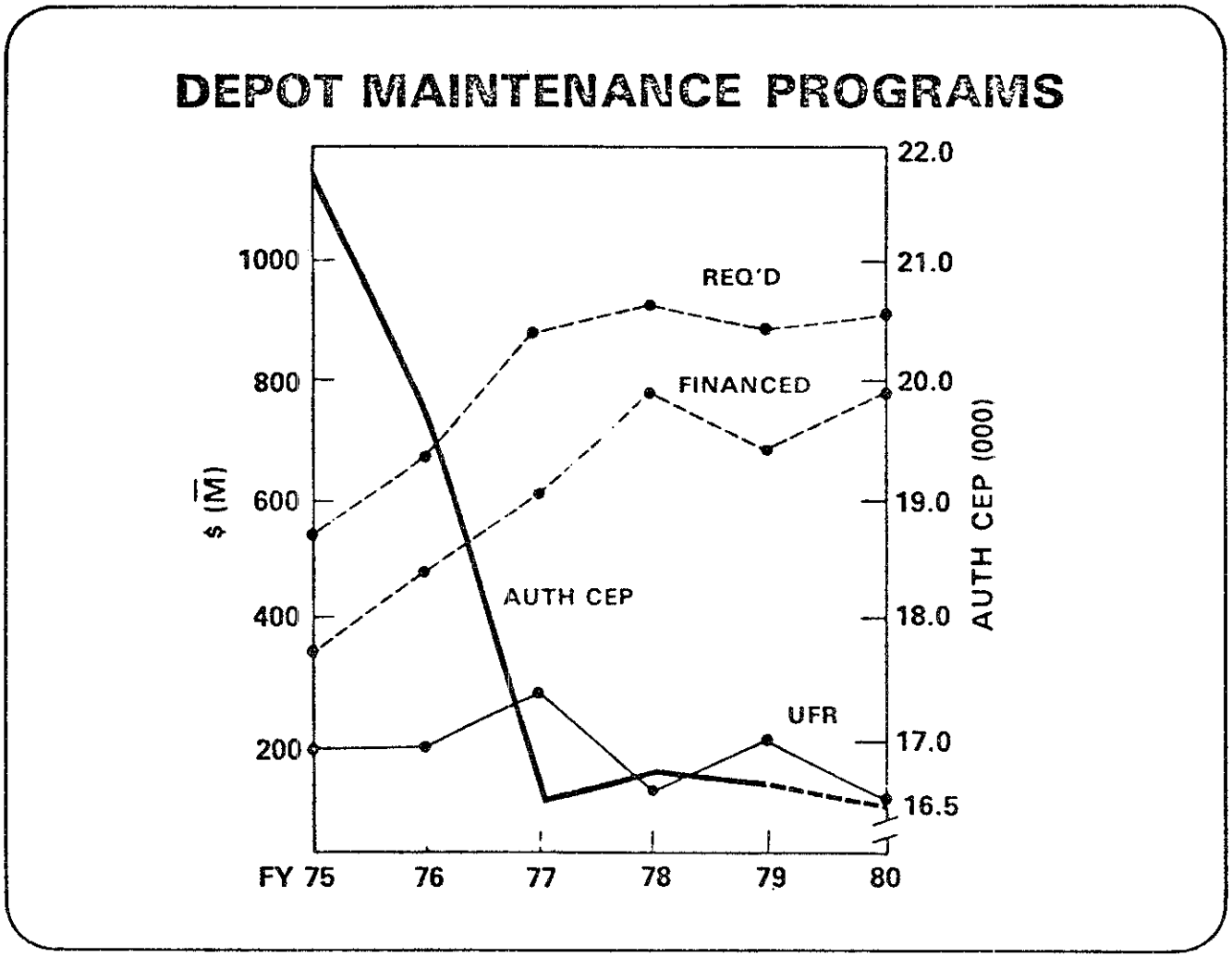
2/ INCLUDES PUEBLO, NAVAJO, FT. WINGATE AND UMATILLA

3/ FY 1977 DATA NOT AVAILABLE

(U) Overall, the denial rate for DARCOM of 1.4 percent was below the DARCOM ceiling of 1.5 percent. In comparison with FY 1977 performance, there was considerable improvement. The depots which have exceeded the DARCOM goal experienced 7S resource shortages. In the case of Tooele, the change over to single manager for ammo had also caused problems.



(U) As a result of sacrificing the effort required for inventory and rewarehousing in favor of shipping and receiving, one out of twenty depot inventory locations is inaccurate. This is a contributing factor to the fact that 23 out of every 100 requisitions becomes a backorder.

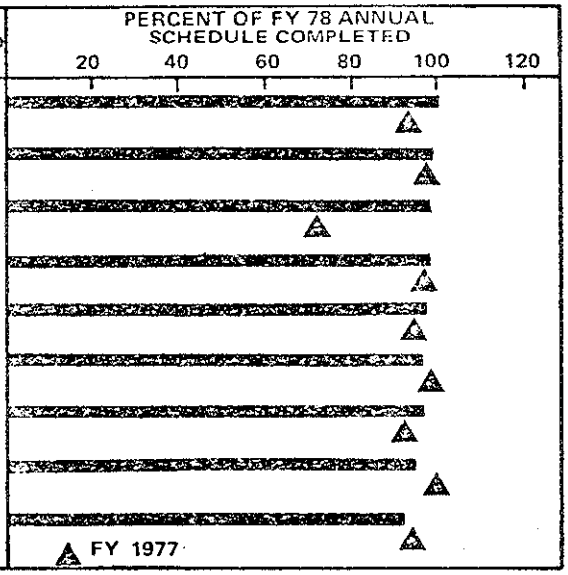


(U) With the rapidly increasing cost of new materiel acquisition, it is imperative that increased emphasis be placed on depot maintenance. Large cost savings are achieved in depot maintenance when contrasted with new buys. An example is the comparative cost of overhaul vs. new acquisition of the major components of the Improved Hawk weapons. The acquisition cost for nine major components of the I-Hawk system was approximately $6 million. Overhaul costs were $826,000--about 12 percent.

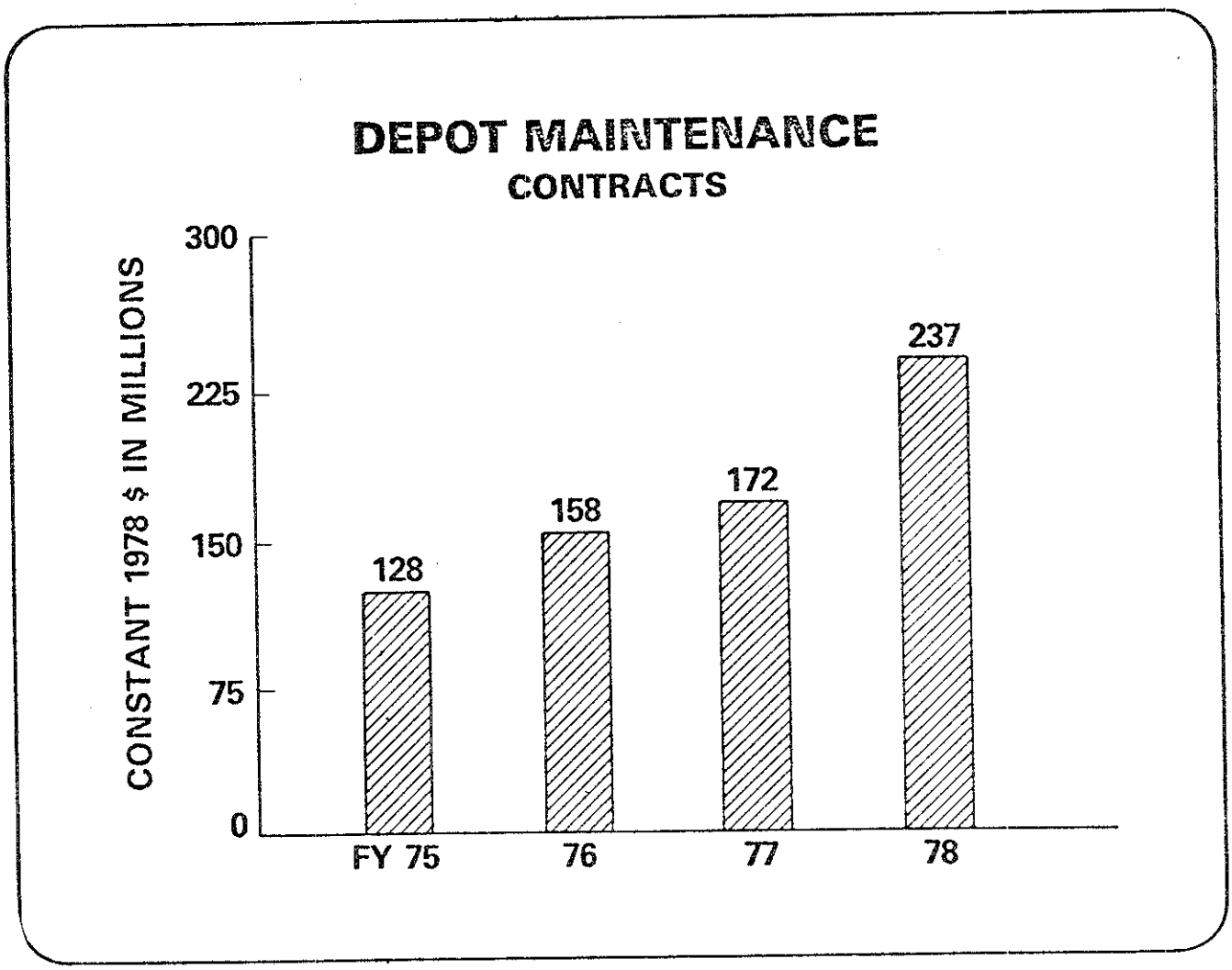
(U) As in supply, maintenance has also suffered a decrease in depot personnel. The above chart shows a sharp depot maintenance strength decline at a time when requirements and financed programs are increasing. This trend had to be arrested if DARCOM were to satisfy the Consolidated Guidance requirement of getting the depot maintenance backlog down to the management level by end of FY 1981.

DEPOT MAINTENANCE PROGRAM
% OF UNITS COMPLETED
AS OF 30 SEPTEMBER 1978

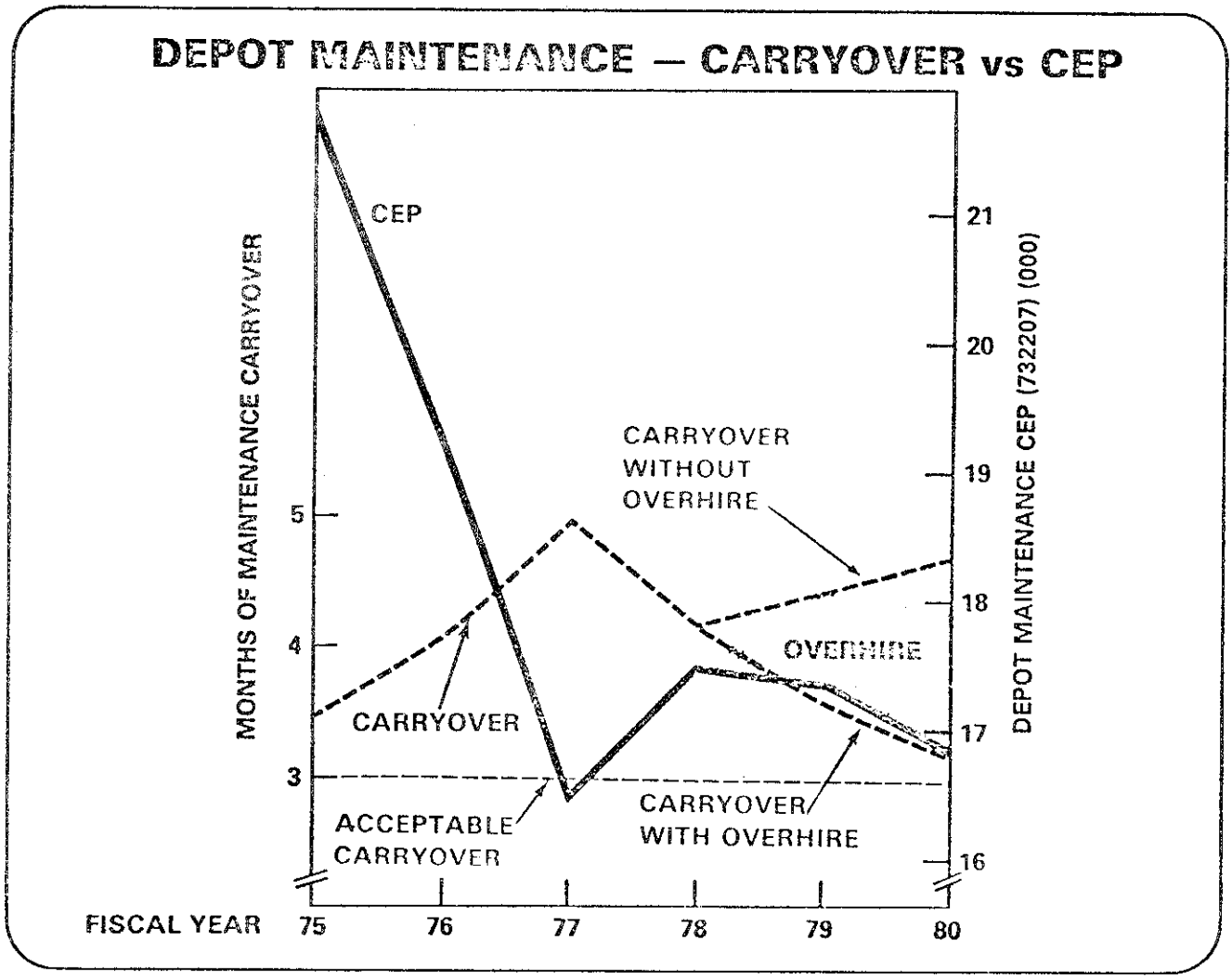
DEPOT	NO. UNITS SCHEDULED FOR FY 78
CORPUS CHRISTI	39,276
RED RIVER	88,330
LETTERKENNY	72,299
SACRAMENTO	55,151
ANNISTON	132,745
NEW CUMBERLAND	21,158
DESCOM	527,303
TOOELE	25,812
TOBYHANNA	92,532



(U) These are high visibility command emphasis items selected by DA and DARCOM for intensive management. They represented approximately 80 percent of the depot maintenance program dollars and consist primarily of major items. The high rate of production versus schedule is indicative of the intensive management these items receive. Overall the depot completion rate improved significantly over FY 1977 performance.

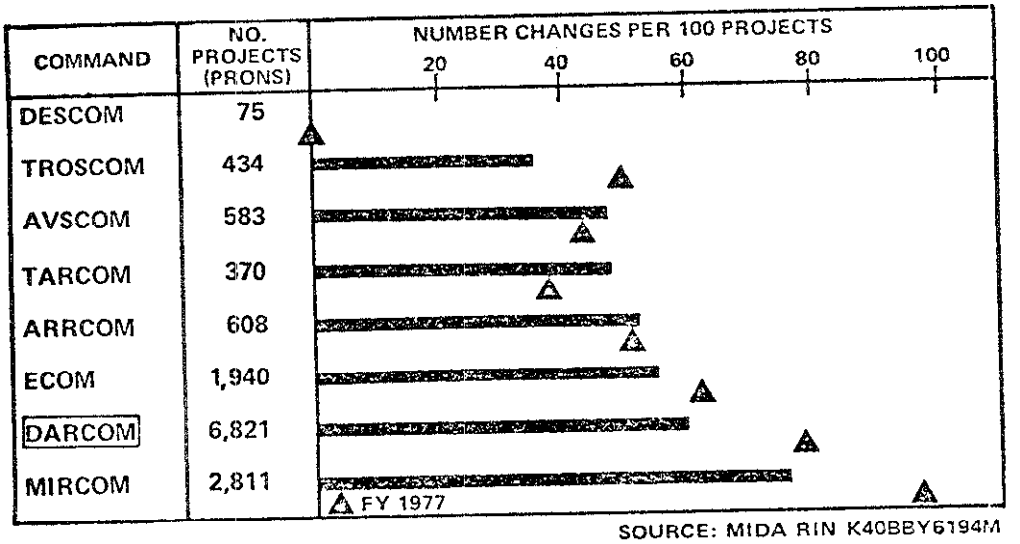


(U) DARCOM had responded in part to the manpower cuts by contracting out significant workloads. The above chart shows that our FY 1978 contracts had doubled since FY 1975. We continued to seek ways to increase contracting out, but past experience taught us that all commodities were not susceptible to this solution. Further, recall the manpower in central procurement--they also planned and executed depot level maintenance contracts. We found ourselves with inadequate personnel to perform in-house maintenance of prime equipment, while at the same time we did not have sufficient procurement people to make timely awards of commercial depot level maintenance contracts.



(U) Some relief was hoped for as DA has authorized overhire authority to DARCOM for the following two fiscal years to apply against the backlog. This overhire position was expected to place the depots in the position of decreasing the backlog and reducing the dollar carry over as shown on the above chart. Three months carry over was the DA goal. This solution seemed to be band-aid in nature when viewing the increasing densities associated with more divisions, increased FMS sales, and the influx of new systems over the subsequent five years.

DEPOT MAINTENANCE PROGRAM
CHANGES
FY 1978 VS FY 1977



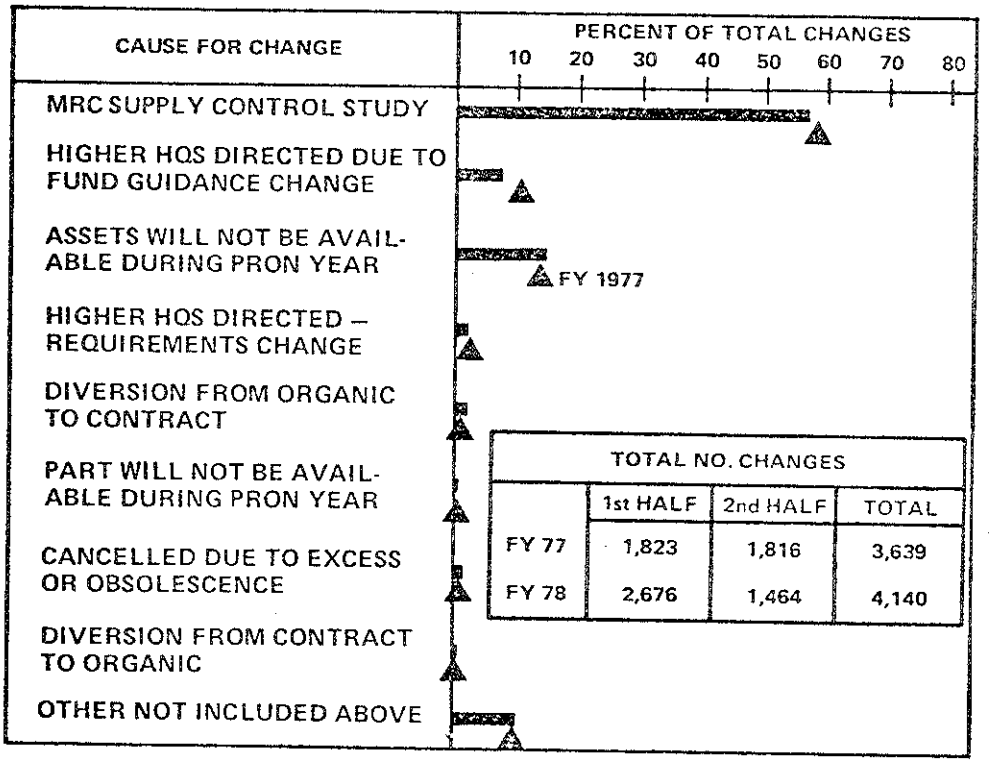
SOURCE: MIDA RIN K40BBY6194M

PRONS: PROCUREMENT REQUEST ORDER NUMBER

(U) In comparison with FY 1977, the total number of DARCOM maintenance rogram changes per 100 PRONS decreased 9 percent (60.7 percent versus 69.7 ercent). The primary causes for program changes are shown on the next chart.

351-462 O - 81 - 30

DEPOT MAINTENANCE PROGRAM
CAUSES FOR CHANGES
FY 1978

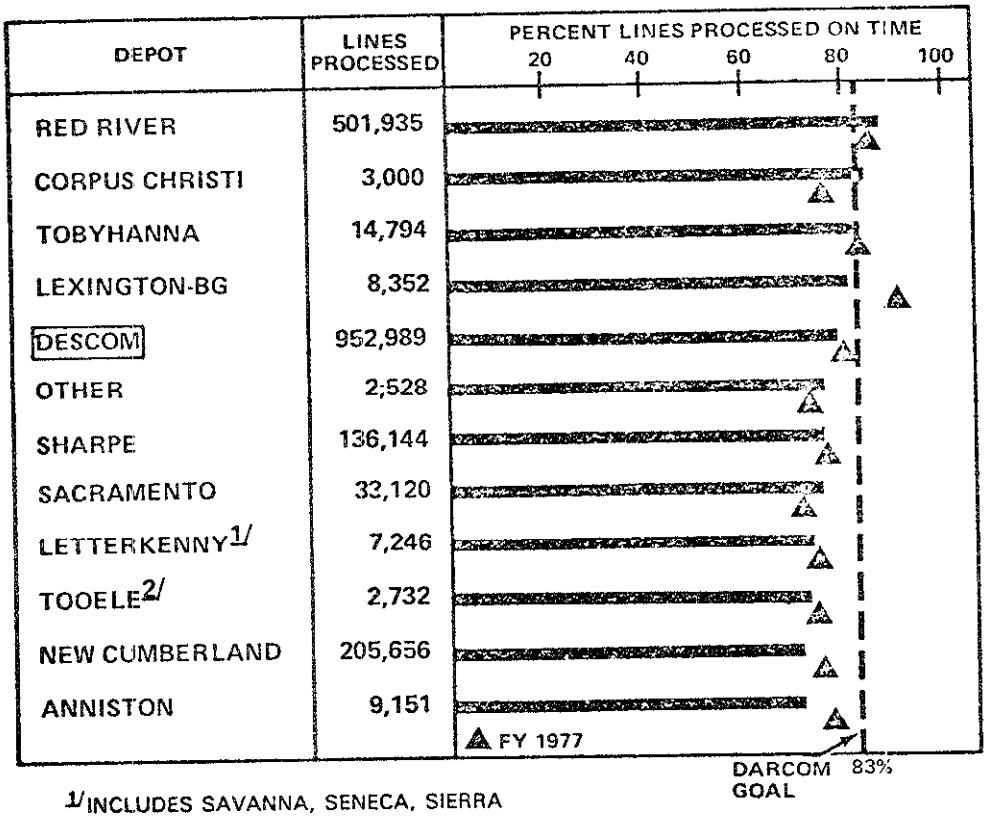


TOTAL NO. CHANGES

	1st HALF	2nd HALF	TOTAL
FY 77	1,823	1,816	3,639
FY 78	2,676	1,464	4,140

(U) The total number of depot maintenance program changes for FY 1978 reflected an increase in the number of changes over FY 1977. The leading cause continued to be quantity changes resulting from Materiel Readiness Command supply control studies. These studies accounted for 56.7 percent of all changes.

TRANSPORTATION
HOLD & IN-TRANSIT, CONUS ONLY
DEPOT (ALL IPGs)
FY 1978

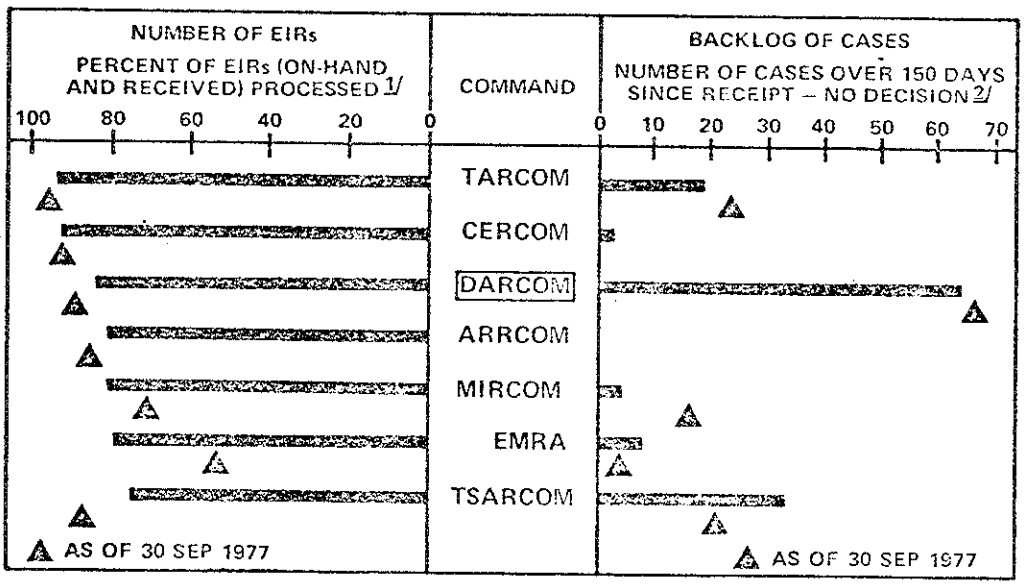


1/INCLUDES SAVANNA, SENECA, SIERRA

2/INCLUDES PUEBLO AND UMATILLA

(U) Transportation hold and in-transit time measures the time between receipt of materiel by the depot transportation element until receipt of materiel by the customer. With the exception of Corpus Christi, Red River, and Tobyhanna, all depots failed to meet the 83 percent goal. Contributing factors for the performance shortfall were unrealistic Uniform Materiel Movement Issue Priority System (UMMIPS) standards for high priority shipments and inadequate carrier scheduling.

(U) A general problem plaguing the large materiel readiness effort was the declining number of authorized personnel responsible for readiness. A more specific indicator, though, of that materiel readiness could be seen in the Equipment Improvement Reports (EIR) received and processed. Both indices showed materiel readiness down.

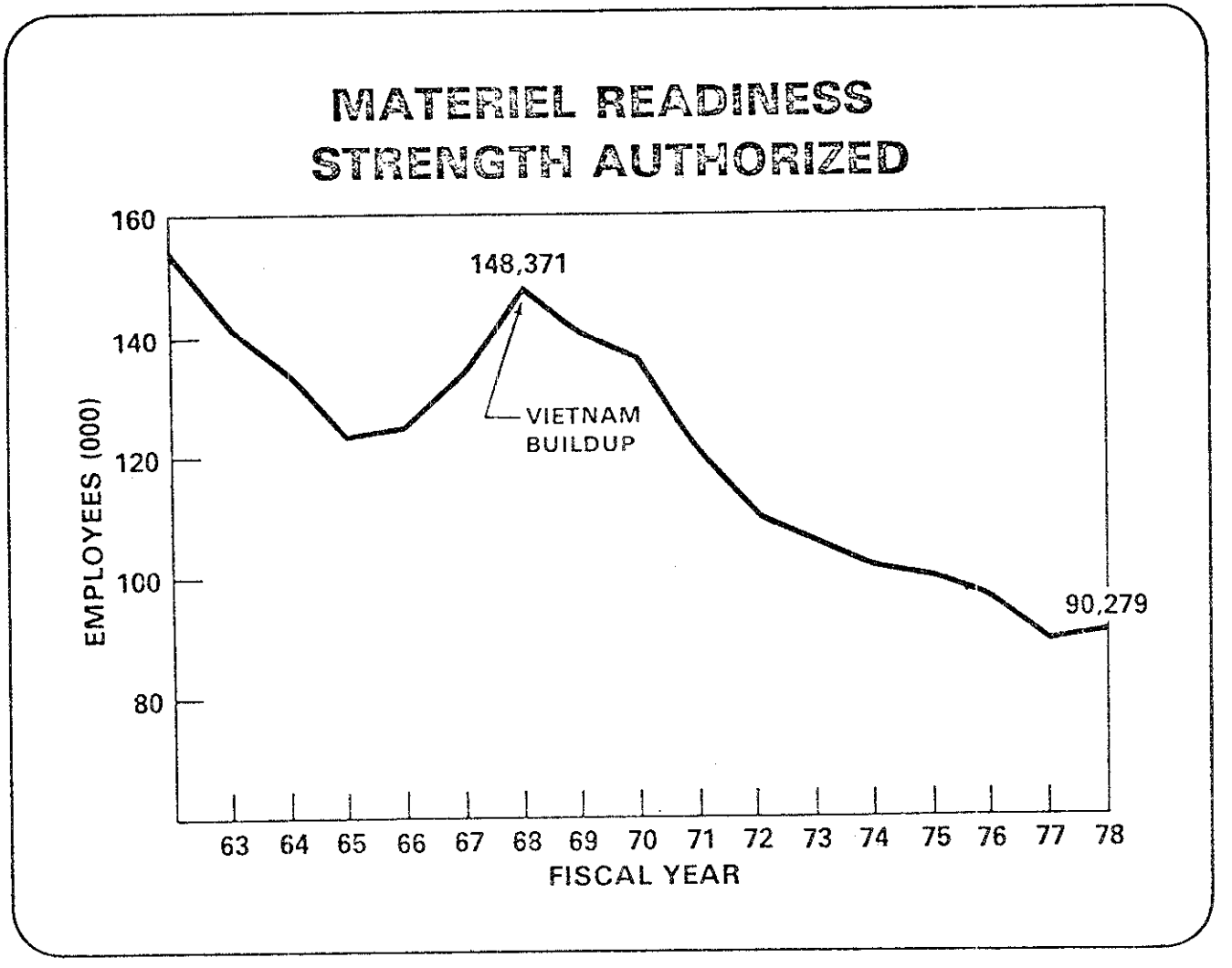


1/ PERFORMANCE IS BASED UPON ON-HAND EIR, PLUS RECEIPTS, VERSUS COMPLETIONS DURING PERIOD

2/ 150 DAYS IS THE MAXIMUM ALLOWABLE TIME BY REGULATION FOR DECISION

(U) The quantity of EIR's received in FY 1978 showed a 22 percent decrease (down to 14,332 from 18,332). TARCOM and TSARCOM continued to lead the other MRC's in the number of EIR's received (together received 88 percent of all the EIR's). The problems cited in the overdue EIR Cases involve design changes, maintenance changes and quality deficiencies (many warranty claims). Approximately two thirds of these overdue cases (TARCOM, EMRA, and TSARCOM) are considered closed by recently published HQ DARCOM policy and should not be reported as overdue to this headquarters.

An EIR/CASE is considered closed for reporting purposes to HQ DARCOM when a decision is reached and a reply provided the EIR submitter. The MRC may, however, track internally the EIR Cases as long as they desire. To improve the EIR program, computer processing of EIR is targeted for 1st Quarter, FY 1980. The computerized system should improve accountability of the EIR from receipt to closure, rapid data retrieval for defective materiel and give an accurate summarization of the overall EIR program, i.e., quantity received, quantity closed, average time to closure, etc.



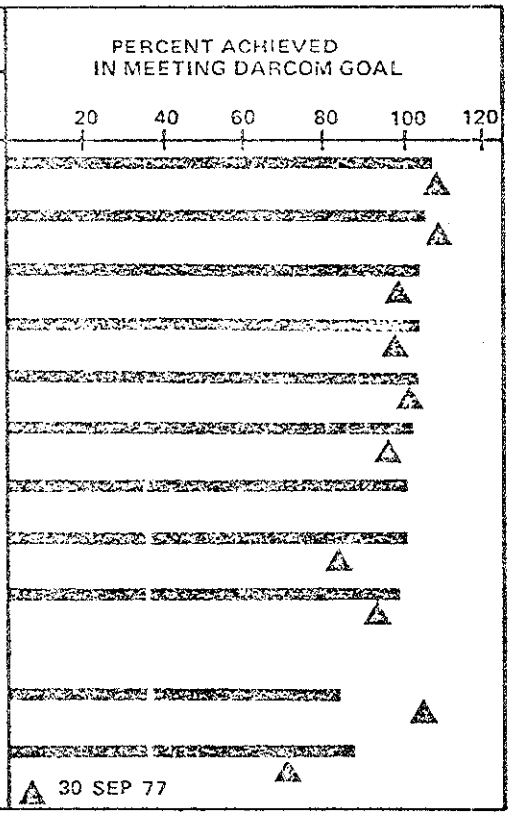
(U) The above chart reflects the trend of DARCOM materiel readiness end strength authorized over the preceding 16 years. Note that authorized levels were reduced by nearly 60,000--almost a 40 percent decrease.

Procurement and Production

(U) Again, in the area of Procurement and Production, the combination of greater demand through increased workload and limited resources operated to limit some of the effectiveness of the efforts in this area. This can be seen especially in the case of High Value vs. Low Value contracts. But in a way the forces generating problems for the command seem reversed, at least in the sense that it may in fact be possible to decrease the number of High Value contracts by a closer disciplined effort to secure more competitive contracts (contract awards by price competition were a lower percentage than FY 1977 but higher than the FY 1978 goal) and by a more determined effort to bring small business into the contract process (while small business contracts increased slightly over FY 1977, the percentage was still well below the set goal and in fact less than what had been achieved in FY 1974, 1975, and 1976.) In other words, just as one problem can generate multiple others, so too can the solution to one problem reduce troubles elsewhere. Substantial evidence of this can be seen in the determined effort made in the area of undefinitized letter contracts. There the number of overage letter contracts was reduced to three and reduced in value by nearly 97 percent. This represented not only a savings of $425 million but also moved the procurement system into a higher gear for the acquisition of materiel. Such efforts could also reduce the backlog of procurement actions which is presently at an unprecedented high.

CONTRACT OBLIGATIONS
(COMBINED ARMY AND REIMBURSABLE)
APA
% OBLIGATIONS VS DARCOM GOAL
AS OF 30 SEPTEMBER 1978

COMMANDS	FIRST HALF FY 1978 ACCOMPLISHMENT ($ MILLIONS) OBLIGATIONS	DARCOM 2nd QUARTER FY 78 GOALS
ARRCOM	1,991.3	1,856.0
MIRADCOM	176.5	167.8
MIRCOM	935.5	892.6
TARCOM	1,474.8	1,414.5
DARCOM	6,753.6	6,495.1
TSARCOM	591.4	580.1
AVRADCOM 1/	202.1	201.1
TARADCOM	385.7	384.5
CERCOM (ERADCOM CORADCOM)	604.5	618.6
ARRADCOM	318.3	379.9
TECOM, HDL, 2/ AMMRC, ETC.	73.5	—

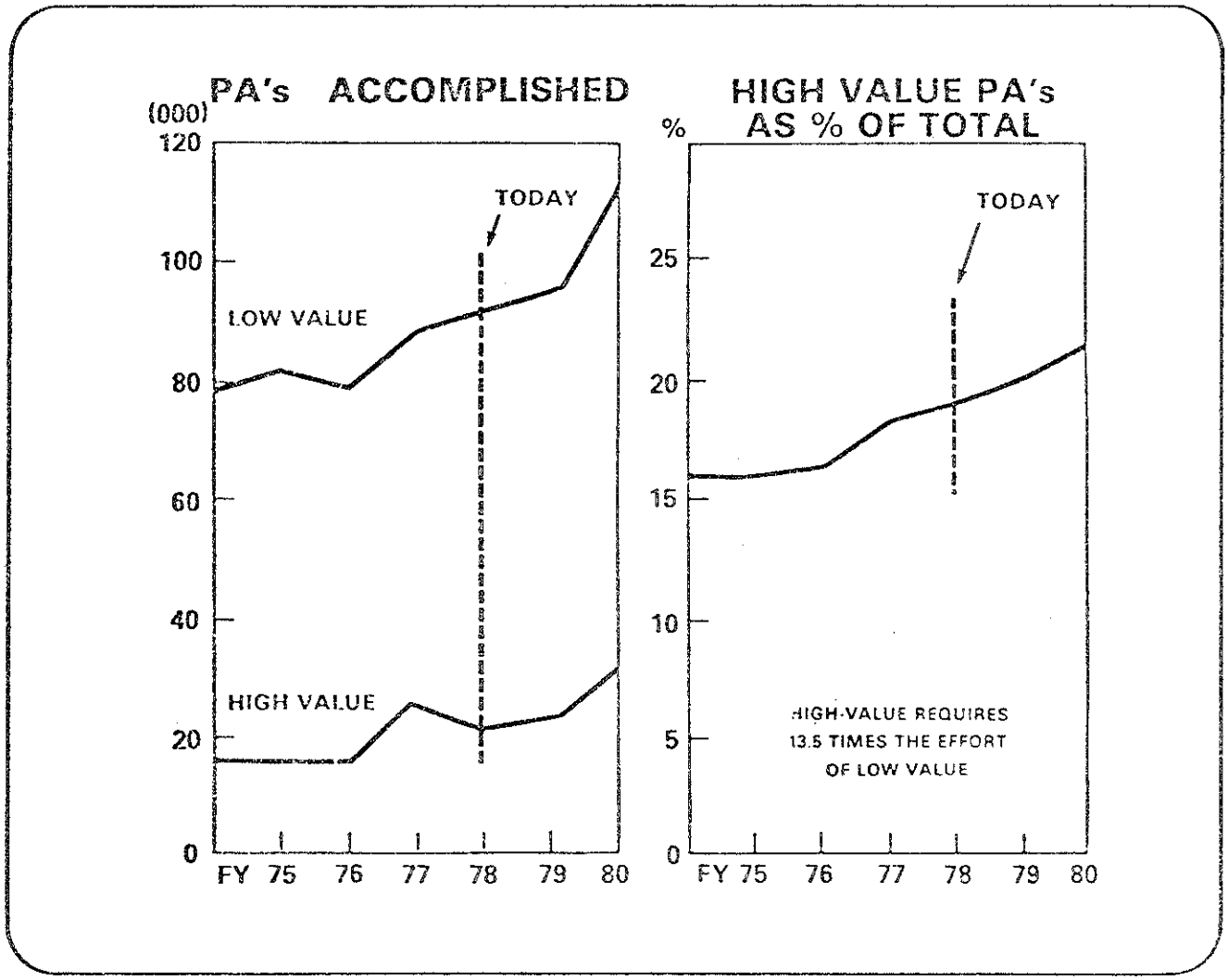


1/ DATA FOR 30 SEP 77 NOT AVAILABLE

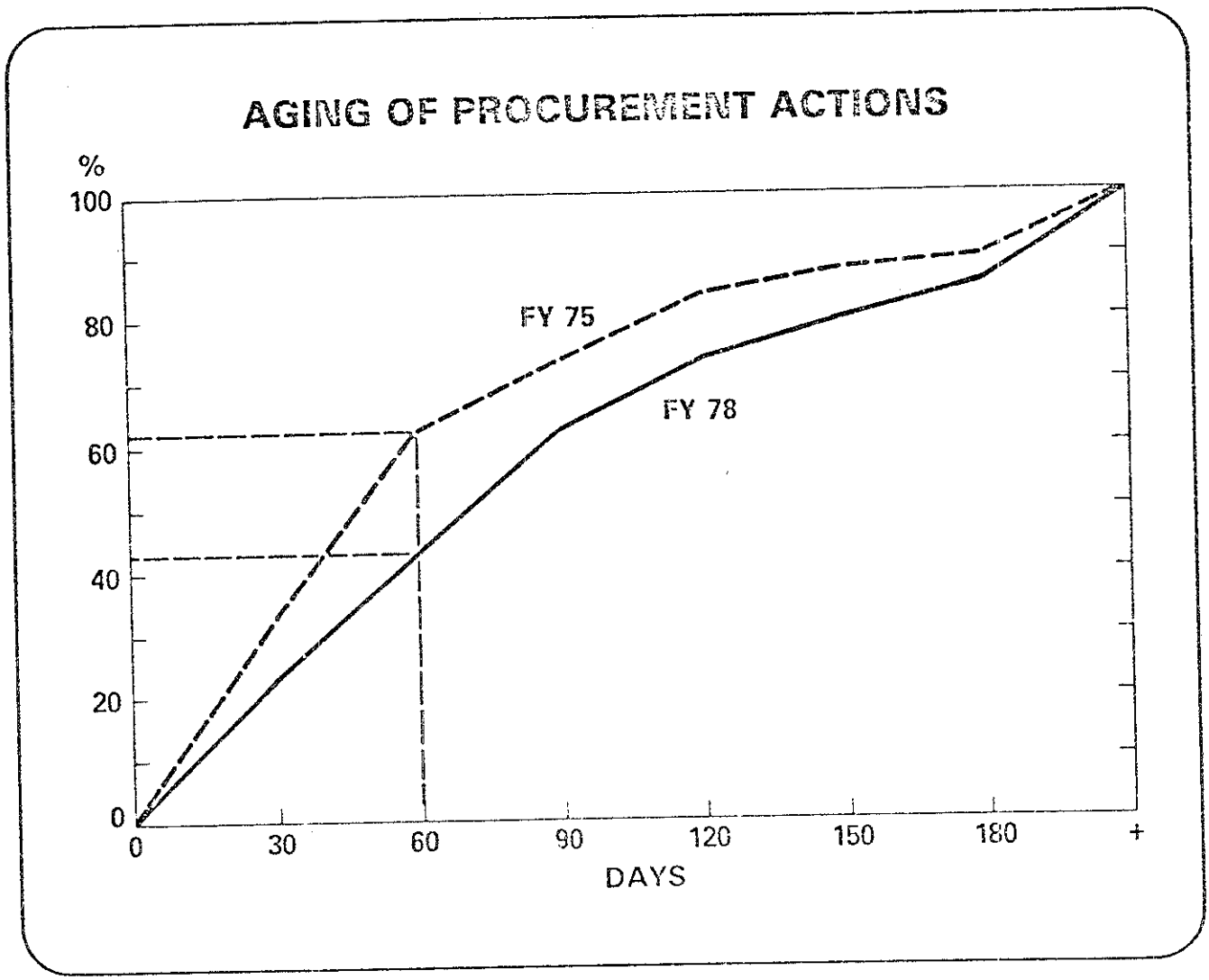
2/ INFORMAL GOAL OF 83.1/M ESTABLISHED

SOURCE: RCS CSGLD 1369(R1)

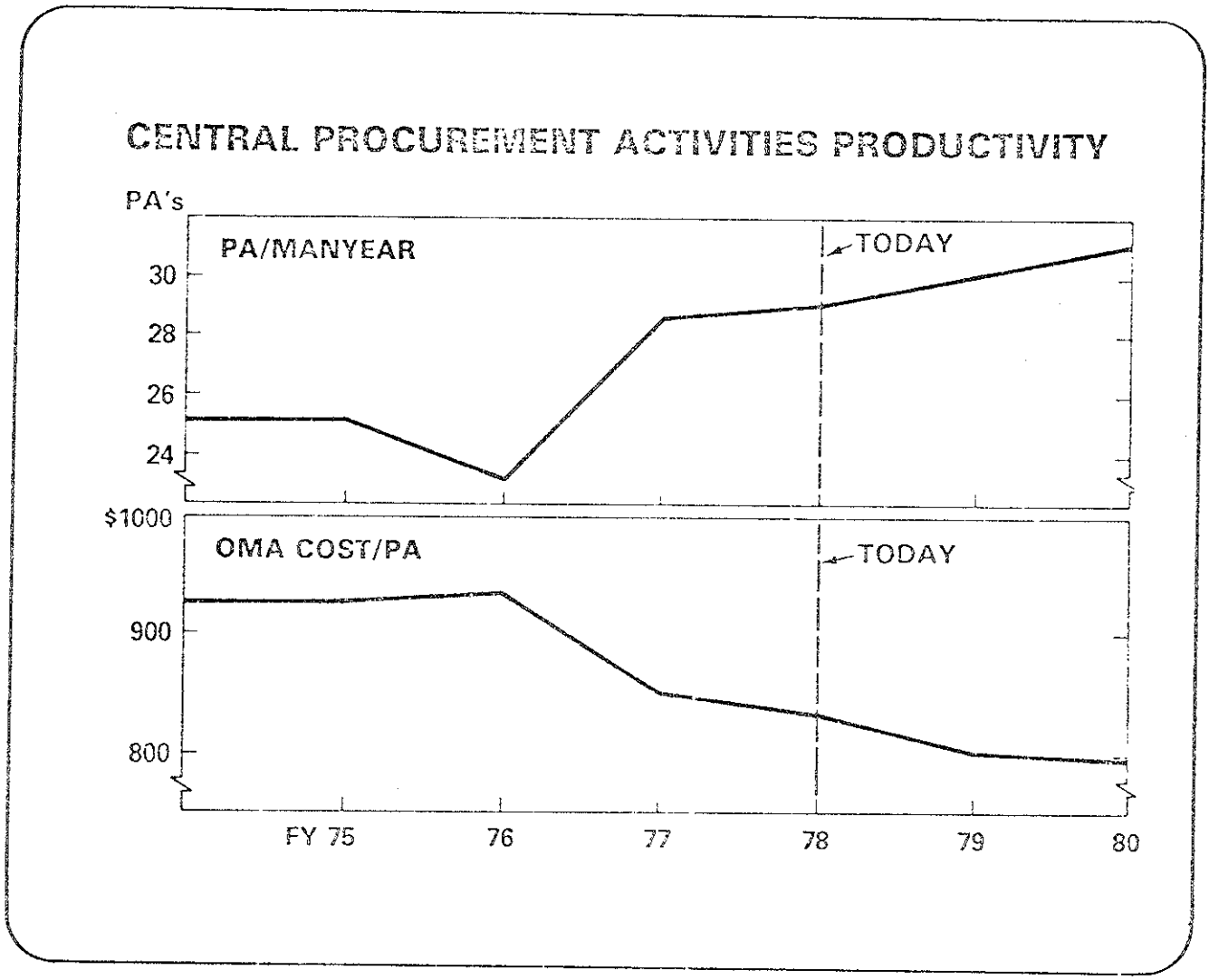
(U) DARCOM established a dollar goal of $6,495.1 million for FY 1978. The overall award performance exceeded the DARCOM goal by $258.5 million for a performance of 104.0 percent. This accomplishment compared favorably over the FY 1977 DARCOM performance of 102.0 percent.



(U) To compound the procurement problem, the ratio of contracts over $10,000 to contracts under $10,000 was rapidly increasing. The high value PA's require 13.5 times the effort of low value contracts. In FY 1975, high value contracts were 16 percent of the total awards. Today they stand at 19 percent, and by FY 1980, they will be more than 22 percent. As a management improvement, DARCOM requested that Department of the Army initiate the required legislation to raise the value of low value contracts from $10,000 to $25,000--and also accommodate out year inflation through the addition of an escalation factor.

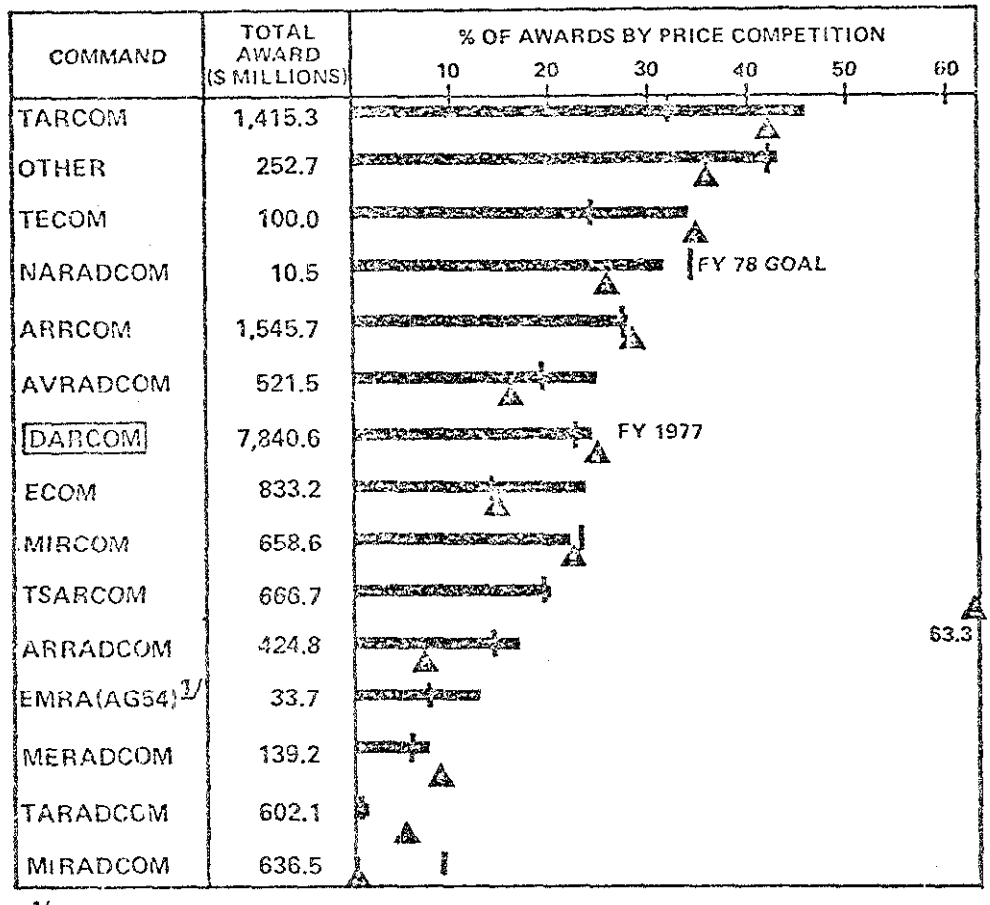


(U) Aging of procurement actions, a key indicator of our declining procurement performance, is displayed in the above chart. In FY 1975, 62 percent of the documents were less than 60 days old. In FY 1978, only 43 percent were under 60 days. The median age of all PWD's had jumped from 31-60 day range to the 61-90 day range. In short, it took longer by then to process a PWD and award a contract than it did in FY 1975.



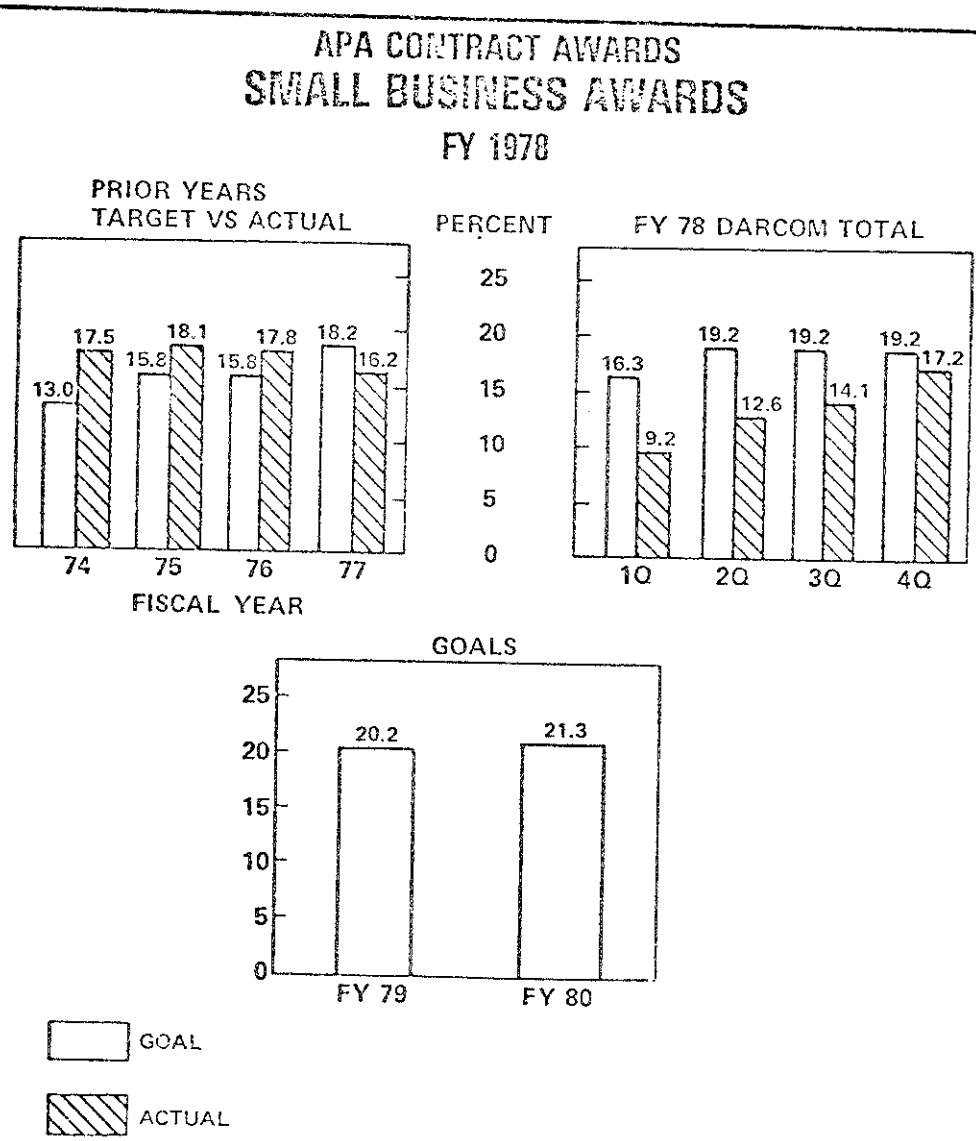
(U) An upward productivity trend was achieved as shown on the above start. Roughly 29 PA's per person per year were accomplished. As this trend increased costs decreased correspondingly.

APA CONTRACT AWARDS
PRICE COMPETITION
FY 1978



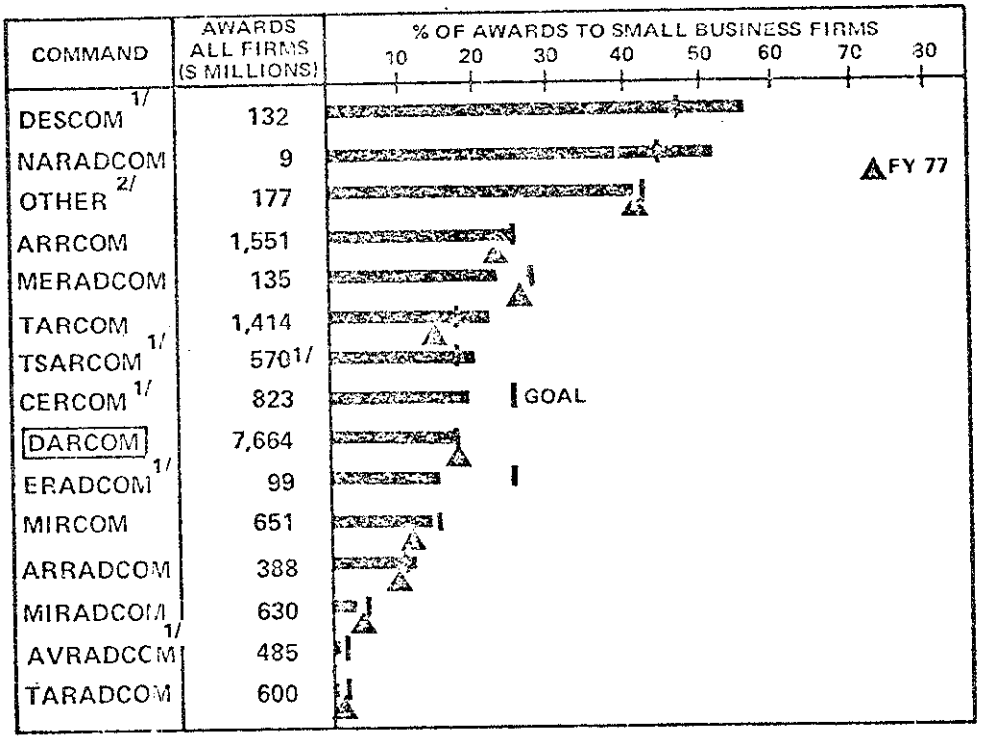
1/COMPARATIVE DATA NOT AVAILABLE FOR FY 1977

(U) Although the percent of awards in FY 1978 was slightly less than in FY 1977, DARCOM exceeded the 23 percent performance goal (24.8 percent in FY 1978).



(U) DARCOM's performance for FY 1978 was 17.2 percent or 89.7 percent of the DA/DoD imposed goal of 19.2 percent, which is one percentage point more than the FY 1977 year end goal of 18.2 percent. More significantly, DARCOM's increase in small business awards in FY 1978 was $289 million greater than those for FY 1977. Goals for FY 1979 and FY 1980 were raised to 20.2 percent and 21.3 percent respectively. A breakout by command is shown on the next page.

CONTRACT AWARDS
SMALL BUSINESS AWARDS
FY 1978

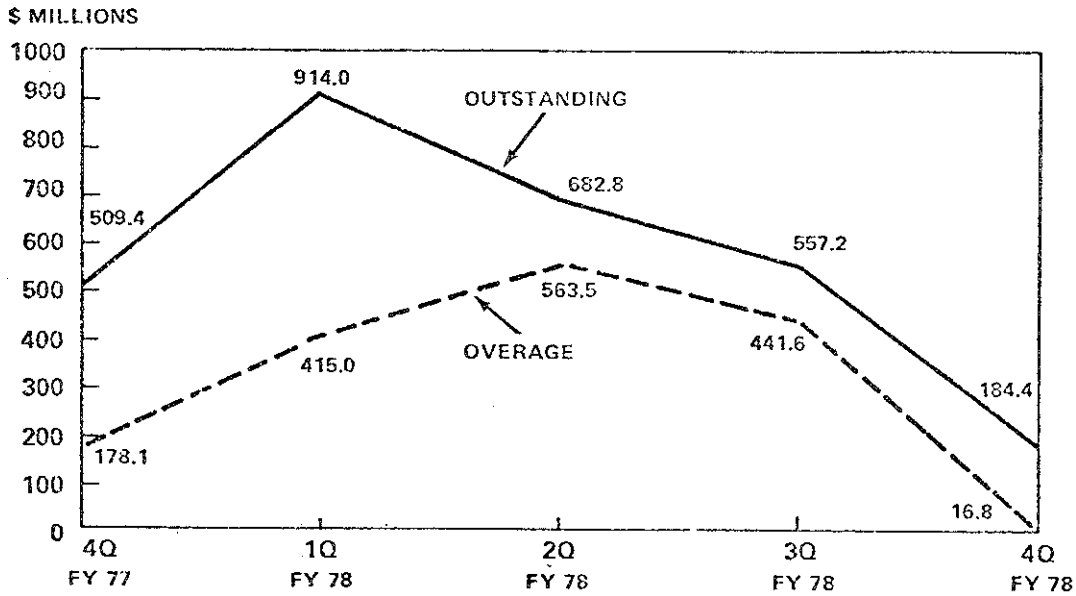


1/ FY 1977 DATA NOT AVAILABLE

2/ INCLUDES TECOM, EMRA, MMRC, AFRTS, ARO, USMA

(U) The Readiness Commands exceeded their FY 1978 goal by over 6 percent, while the R&D commands achieved 55 percent of their assigned goal. Also, DESCOM awarded 19,7 percent more than its goal and others were within 1 percent of their requirement. DARCOM Special Assistant for Small Business was to take special actions to increase the future performance by the R&D Commands to meet the FY 1979 goal.

LETTER CONTRACTS
$VALUE LETTER CONTRACTS – $VALUE OVERAGE
4TH QUARTER FY 1977 THROUGH 4TH QUARTER FY 1978

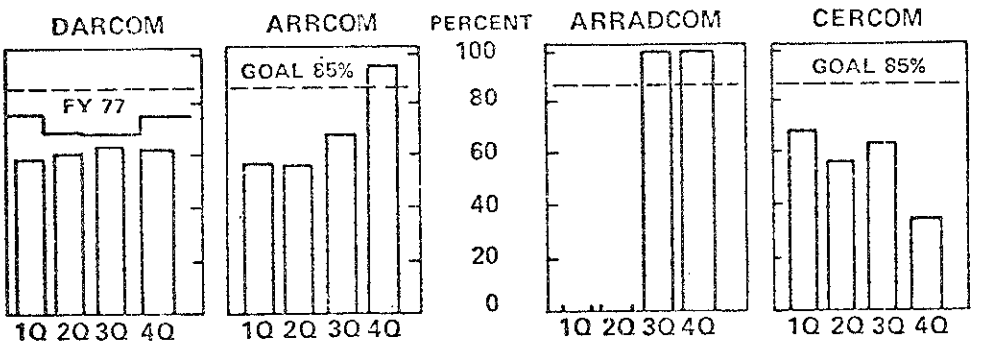


NO. OF LETTER CONTRACTS

OUT STANDING	103	89	59	71	107
OVERAGE	10	13	21	10	3

(U) As of the 4th Quarter, there were 107 undefinitized contracts having a total value of $184.4 million. This amounted to a decrease of $372.8 million over the 3rd Quarter FY 1978. During the quarter, 56 letter contracts were definitized while 92 were entered into. Of the 107 letter contracts, three were six months and older for a total of $16.8 million. This was a decrease of $424.7 million over 3d Quarter FY 1978.

MATERIEL READINESS – PROCUREMENT
PRODUCTION
PERCENT ON-TIME DELIVERY OF INTENSIVELY MANAGED ITEMS
FY 1978

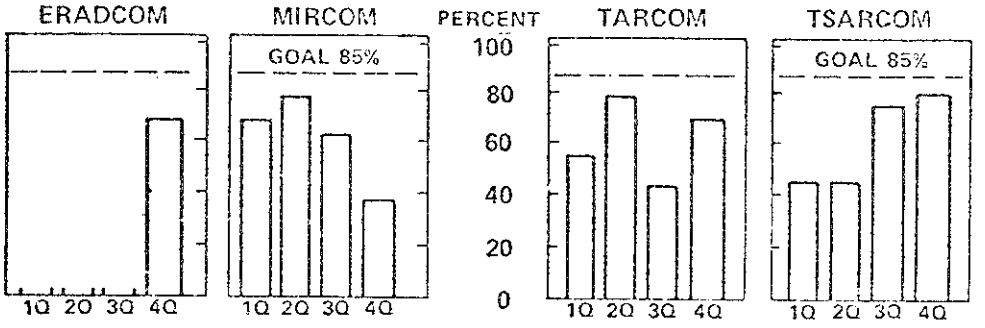


(U) The commands shown on this and the following page control the bulk of intensively managed items. Overall DARCOM performance of 61.3 percent at the end of FY 1978 fell short of the established goal of 85 percent. Major reasons for not meeting targets are shown for each of the commands involved.

CERCOM:

AN/ARC-144 Radio Set -- Contractor unable to meet electro-magnetic interference.
AN/GRC-106A Radio Set -- Failed group A and C test.
AN/URN-103 Signal Generator -- Change in inspection and test personnel and contractor required to recalibrate all test equipment.
PP 4763 Power Supply -- Failed Group C test.
S280 Shelter Facility -- Seam weld breakdown.
S390 Shelter Facility -- Financial problem.
S419/TRC79 Shelter Facility -- Poor production planning.
TD 660 Multiplexer -- Late delivery of material from subcontractor.
S393 Shelter -- Delay of wave guide components.

MATERIEL READINESS – PROCUREMENT
PRODUCTION
PERCENT ON-TIME DELIVERY OF INTENSIVELY MANAGED ITEMS
FY 1978



ERADCOM:

AN/PPS 5 Night Vision Goggles -- First test article delayed.
AN/ALQ 133 Receiving Set -- Low production yield on the YIG tuned oscillator.

MIRCOM:

MISSILE MIM 73C CHAPARRAL -- Flight failure on IPT Flight #8.
MISSILE TACTICAL TOW -- Problem with rod material used for wire drawing.
GUIDED MISSILE LAUNCHER AND PRACTICE FOR DRAGON -- Failed fly to buy test.
GUIDED MISSILE TRACKER FOR DRAGON -- Technical data package deficiencies.
IMPROVED HAWK MISSILE -- Engineering change proposal.

TARCOM:

M88A1 MEDIUM RECOVERY VEHICLE -- Defective GFM.
M88 MEDIUM RECOVERY VEHICLE TO M88A1 CONFIGURATION -- Insufficient vehicles received good condition to maintain supply parts for rebuild.
BREAK/BULK CONTAINER SEMI-TRAILER PLATFORM XM872 -- Production overload in ship.
TRUCK 1¼ TON M880 -- Minor repairs prior to shipping.
TRUCK COMMON CHASIS M915 SERIES -- First article test not completed.
LOADER SCOOP TYPE 4½ - 5 CU YD -- Strike at vendors plant.

TSARCOM:

AIRPLANT UTILITY C-12A -- Shortage of CFE parts and shop overload condition through paint station.
MEDIUM GIRDER BRIDGE -- Lack of storage space.
SHELTER, 5 SEC INFLATABLE -- Poor contractor financial condition.

QUALITY OF OVERALL PROCUREMENT OPERATIONS

FUNCTIONS SACRIFICED, DEFERRED, OR NOT PERFORMED AT ADEQUATE LEVEL

- PROCUREMENT PLANNING
- CONTRACT CLOSE-OUTS
- PROCUREMENT CAREER TRAINING
- REDUCED CALIBRE/DEPTH OF PRE–CONTRACT BOARD REVIEWS
- PRODUCTION MANAGEMENT
- PRODUCTION LEADTIME FORECASTING
- TIMELY DEFINITIZATION OF LETTER CONTRACTS
- FINALIZATION OF CHANGE ORDERS/TASK ORDERS
- IMPROVEMENT OF ADP SYSTEMS
- MAINTENANCE OF BIDDERS' LIST SYSTEM
- TIMELINESS AND COMPLETENESS OF COST AND PRICE ANALYSIS
- TIMELY ISSUING AND UPDATING POLICY
- POST-CONTRACTS REVIEWS

(U) While maximum effort was being directed to obligating the program according to plan, other functions on the above chart were being adversely impacted. For instance, we were unable to perform adequate procurement planning for FY 1979. In other cases, funds were tied up that could have been deobligated and reprogrammed to satisfy other requirements--at a time when the US Government was paying roughly 7 percent to borrow money. One of DARCOM's readiness commands estimated that as much as $52 million could have been deobligated for other use if these contracts could have been closed out.

(U) Other shortfalls are self-explanatory.

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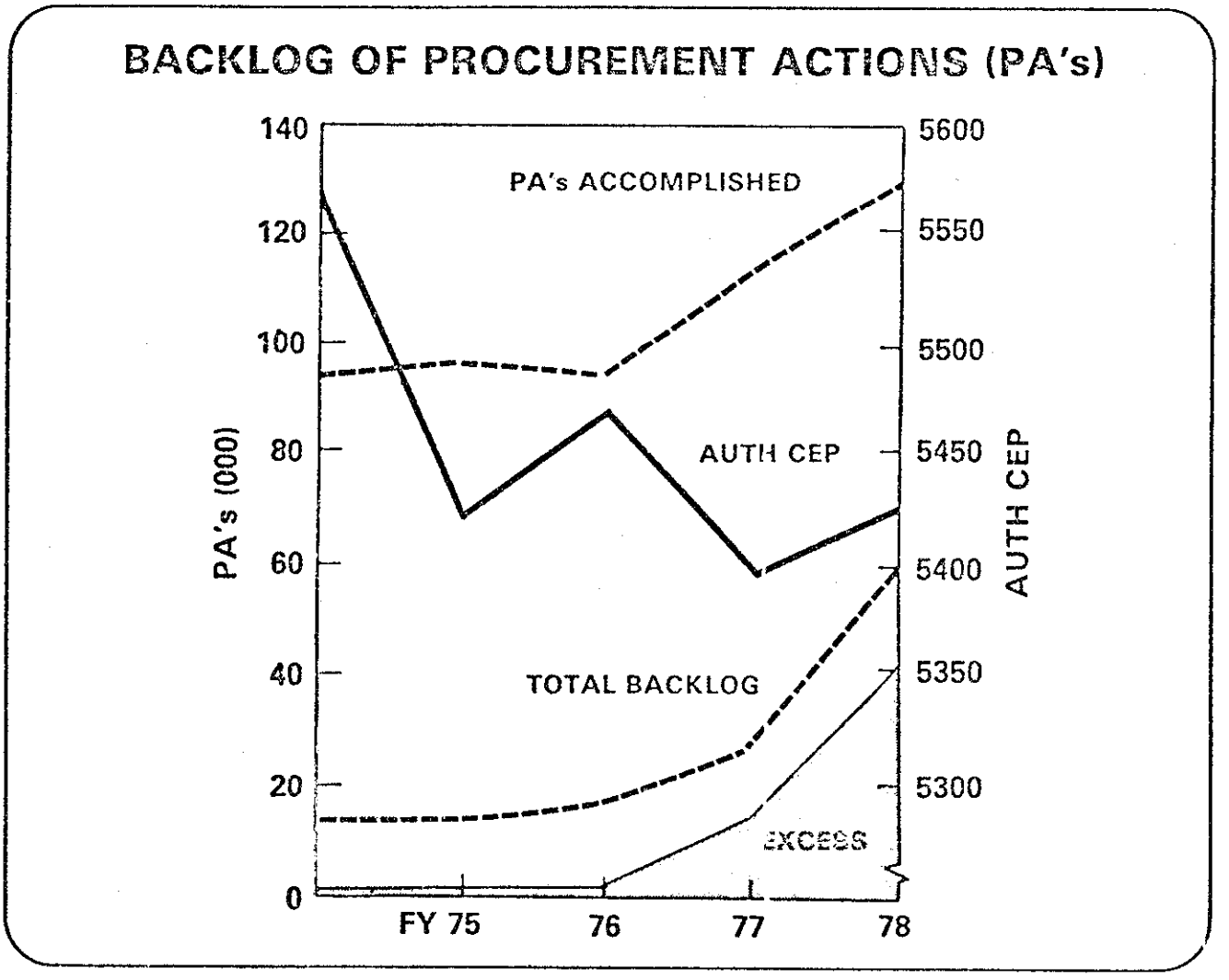
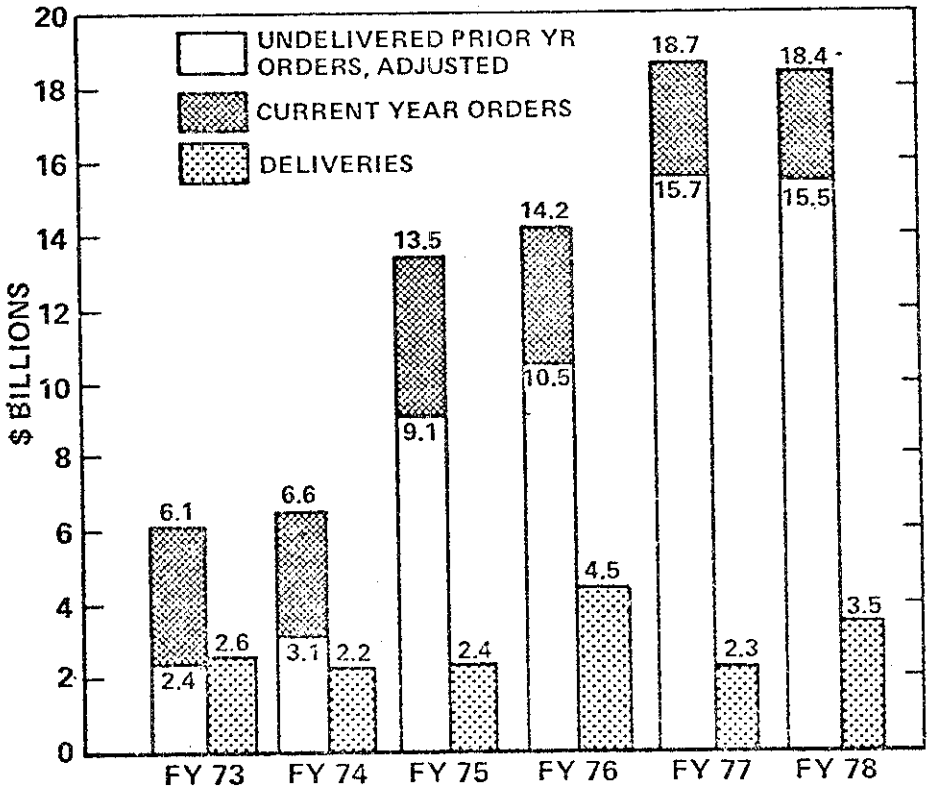


(U) End strength was declining while the workload, as predicted, was rapidly increasing. Because of this imbalance, the backlog was at an unprecedented high. An acceptable backlog in PA's was in the 15,000 range and is shown on the above chart as the band below the total backlog line. However, DARCOM's all time excess high of more than 43,000 PA's had seriously hindered the effort to obligate the FY 1978 procurement (and other appropriations) against the plan. Outlays, a consequence of obligations and a major factor in national economic planning, were likewise affected.

Security Assistance

(U) During FY 1978 DARCOM acquired substantial new business in its Security Assistance Program and also had to manage undelivered prior year orders. The largest portion of the Security Assistance effort came in Foreign Military Sales Cases and more of these cases remained open at the end of the year than previous years, although the number of new FMS cases accepted in FY 1978 was less than previous years.

DARCOM SECURITY ASSISTANCE
ORDERS AND DELIVERIES
FY 1973 THROUGH 30 SEPTEMBER 1978

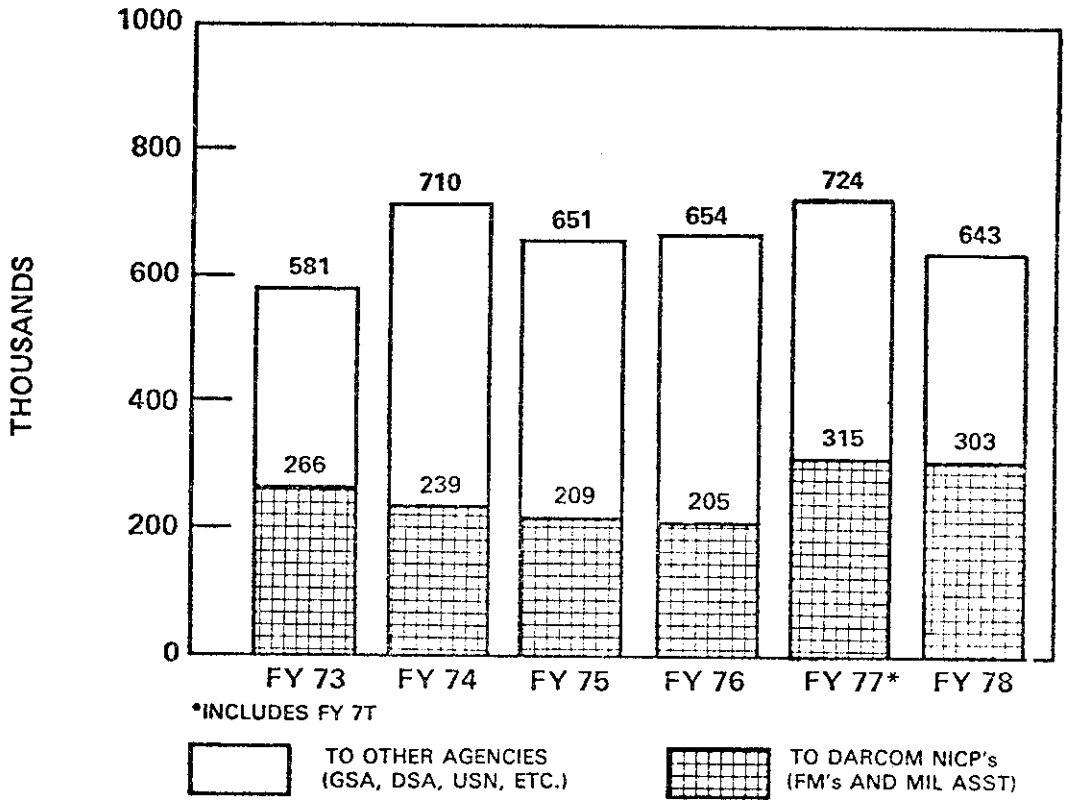


SOURCES: RCS 1395 ILIF
MANUAL REGISTER (DD 1513 & AMENDMENTS)
AMCIL-128

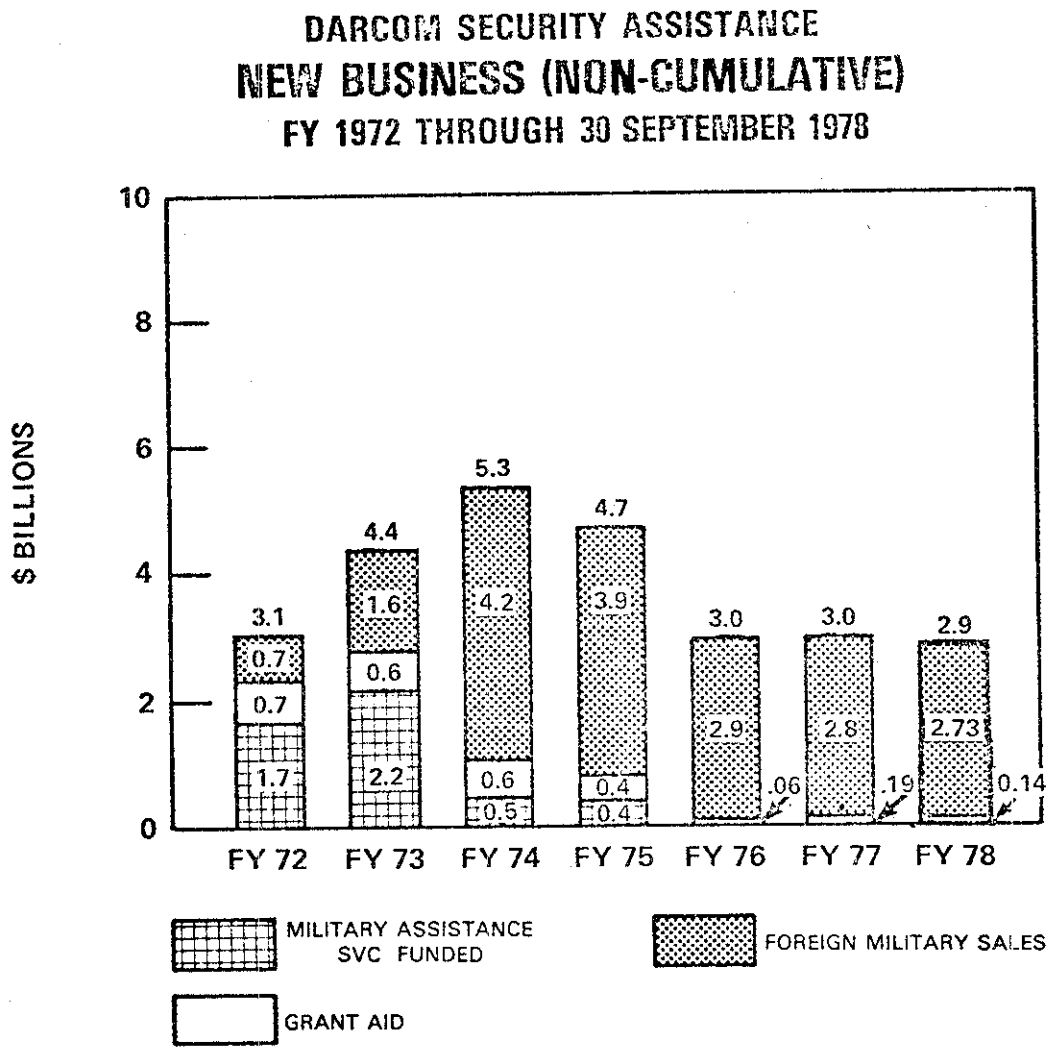
(U) At the end of FY 1978, undelivered prior year orders, adjusted, amounted to $15.5 billion. Current year orders amounted to $2.9 billion. Deliveries for FY 1978 amounted to $3.5 billion. The major portion of the undelivered orders were for the Saudi Arabia program supported by the Corps of Engineers. This program provided for the construction of facilities under the control of the Corps of Engineers. Another major portion of the undelivered orders included the maintenance of equipment, aircraft, and parts, missiles, ammunition, and other equipment for Iran.

DARCOM SECURITY ASSISTANCE

REQUISITIONING/DEMAND ACTIVITY
NICPs COMPARED WITH OTHER AGENCIES
FY 1973 THROUGH 30 SEPTEMBER 1978

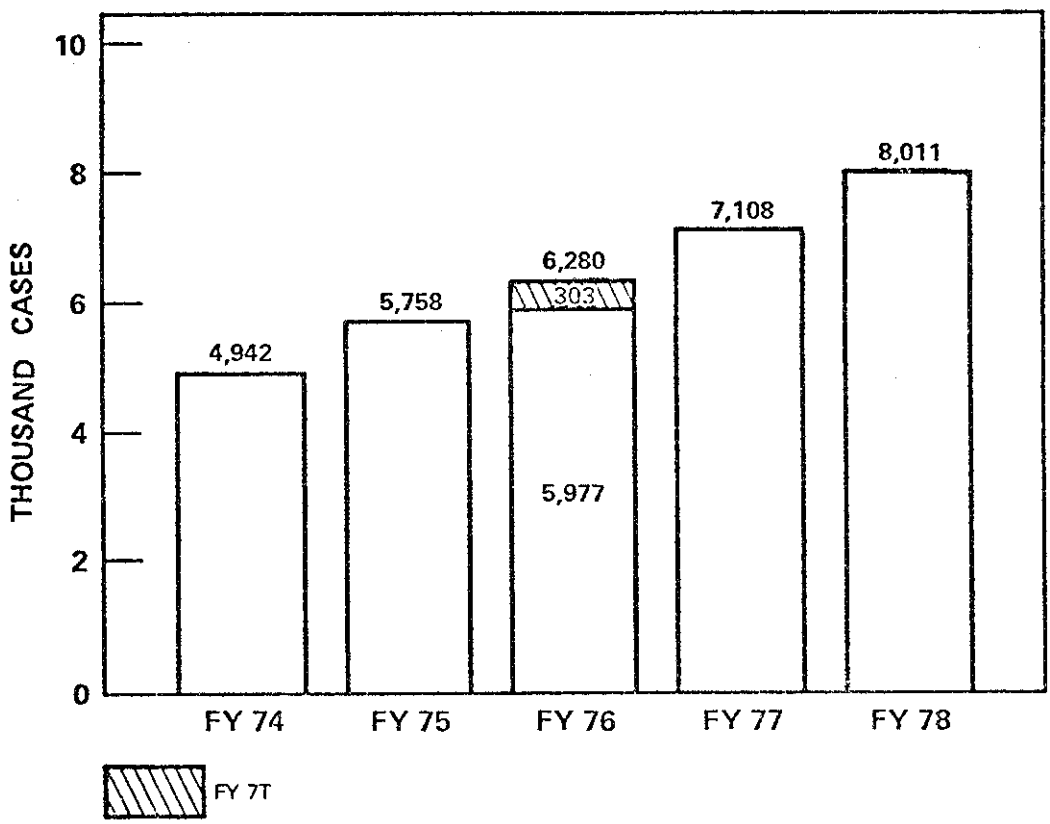


(U) US Army Security Assistance Center forwarded over 600 thousand requisitions to other DOD Agencies, Military Departments, and the DARCOM NICP's, during FY 1978.



(U) The above chart depicts the dollar amount, in billions, of new business for both Grant Aid and Foreign Military Sales. The dollar figures depicted are non-cumulative. The Military Assistance Service funded dollar figures portrayed, applied to the countries of Cambodia, Laos, and Vietnam. The new business for FY 1978 amounted to $2.9 billion.

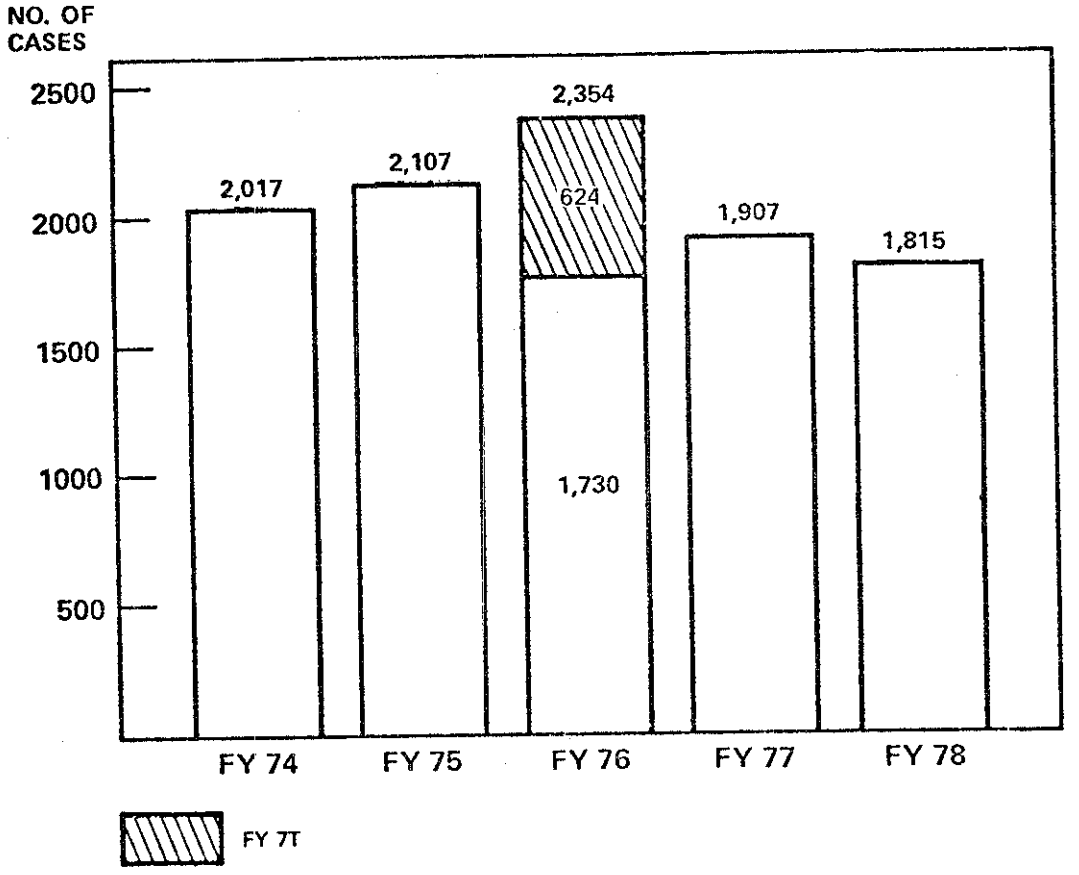
DARCOM SECURITY ASSISTANCE
OPEN FOREIGN MILITARY SALES CASES*
FY 1974 THROUGH 30 SEPTEMBER 1978



*SUPPLY AND/OR FISCAL TRANSACTIONS HAVE NOT BEEN COMPLETED.

(U) This chart depicts the number of open Foreign Military Sales Cases. Supply and/or fiscal transactions have not been completed for open FMS cases. The case figures depicted are cumulative. There were 8,011 Foreign Military Sales Cases open at the end of FY 1978.

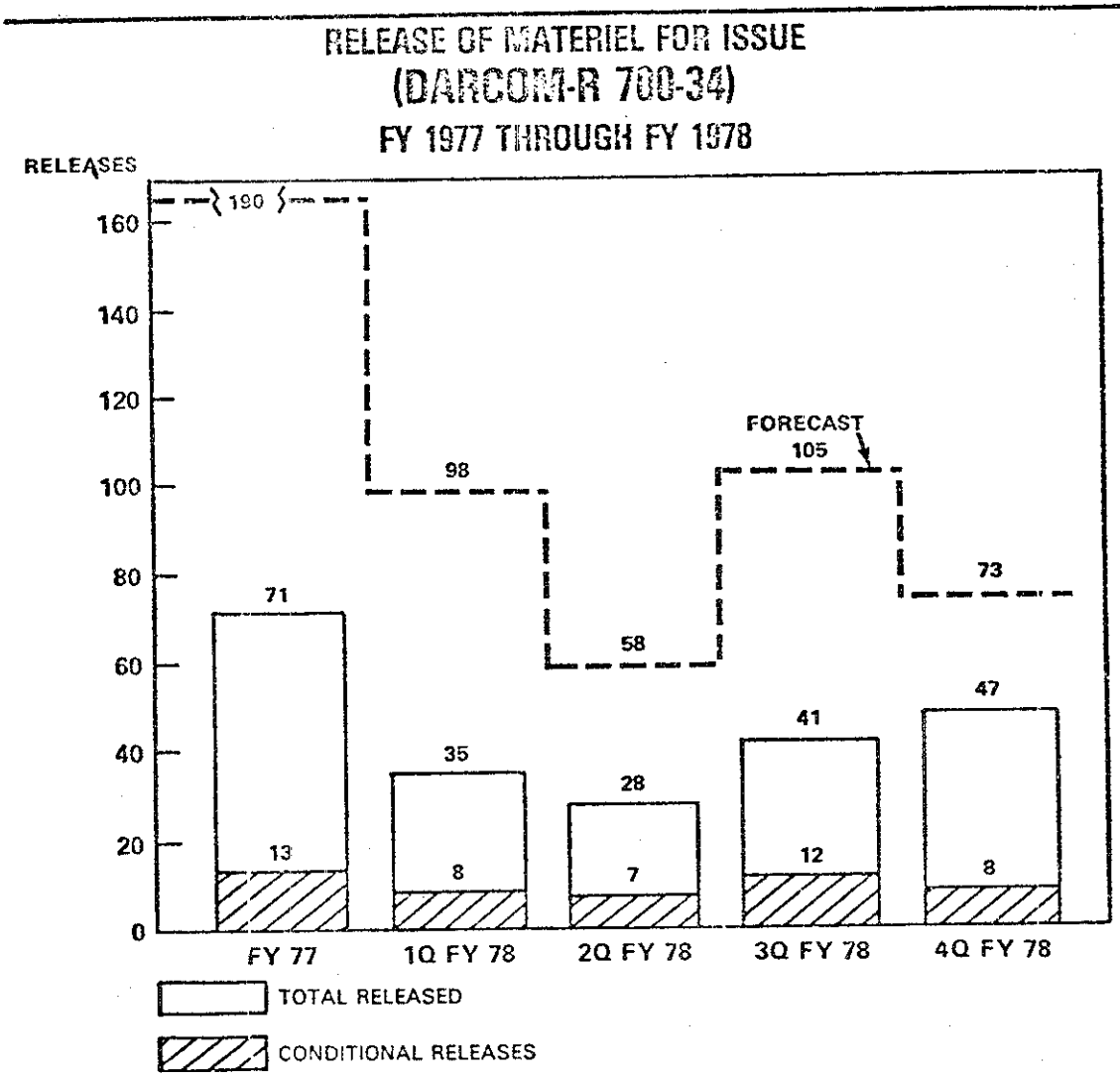
DARCOM SECURITY ASSISTANCE
ACCEPTED FOREIGN MILITARY SALES CASES
FY 1974 THROUGH 30 SEPTEMBER 1978



(U) The above chart depicts the number of Foreign Military Sales Cases accepted in a particular fiscal year. The case figures are non-cumulative. There were 1,815 cases accepted during FY 1978.

Quality Assurance

(U) The Quality Assurance program of DARCOM included a variety of efforts designed to provide user satisfaction for materiel. The forecast release of materiel for issue proved to be substantially higher than the actual number of items released during FY 1978. The number released also proved to be lower than the number accomplished in FY 1977. Customer complaints, mainly regarding shortages, increased slightly over FY 1977. The program also fell below its goal in assessments of fielded equipment. One problem existed in the COSIS (Care of Supply in Storage) system. There the workload in both Priority I and II items steadily increased. As part of the effort to deal with that problem the materiel audits of Priority II items were to be replaced by "in storage surveys."



(U) The above chart depicts the number of DARCOM items forecast for release, the total number of items released and the portion of those items released which were conditional releases.

(U) The DARCOM regulation on release of materiel for issue (DARCOM-R-700-34) prescribes the objectives, responsibilities, and policies for establishing formal and disciplined management controls and certification procedures for assuring that Army Materiel complies with applicable technical requirements and is logistically supportable prior to release for field issue. The DARCOM goal is to minimize conditional releases and optimize user satisfaction in providing materiel which has met performance requirements and is fully supportable prior to release for field issue.

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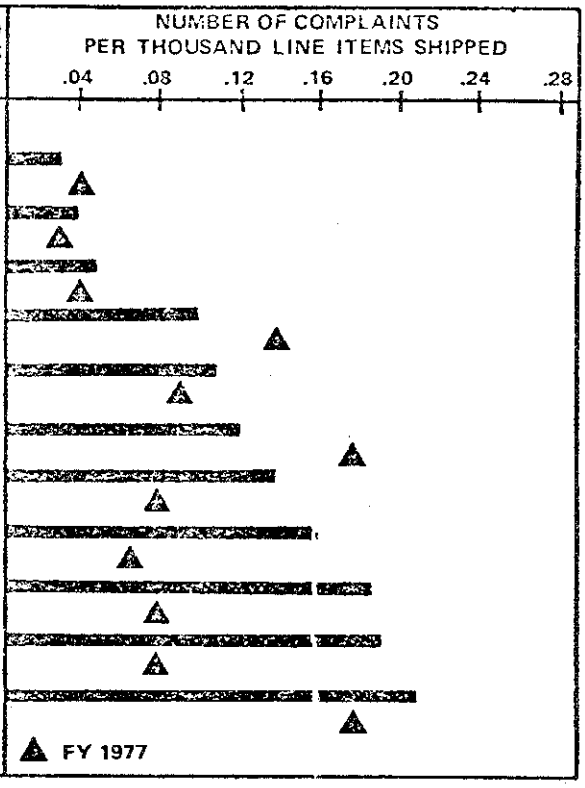
CUSTOMER COMPLAINTS
PER THOUSAND LINE ITEMS SHIPPED
FY 1978

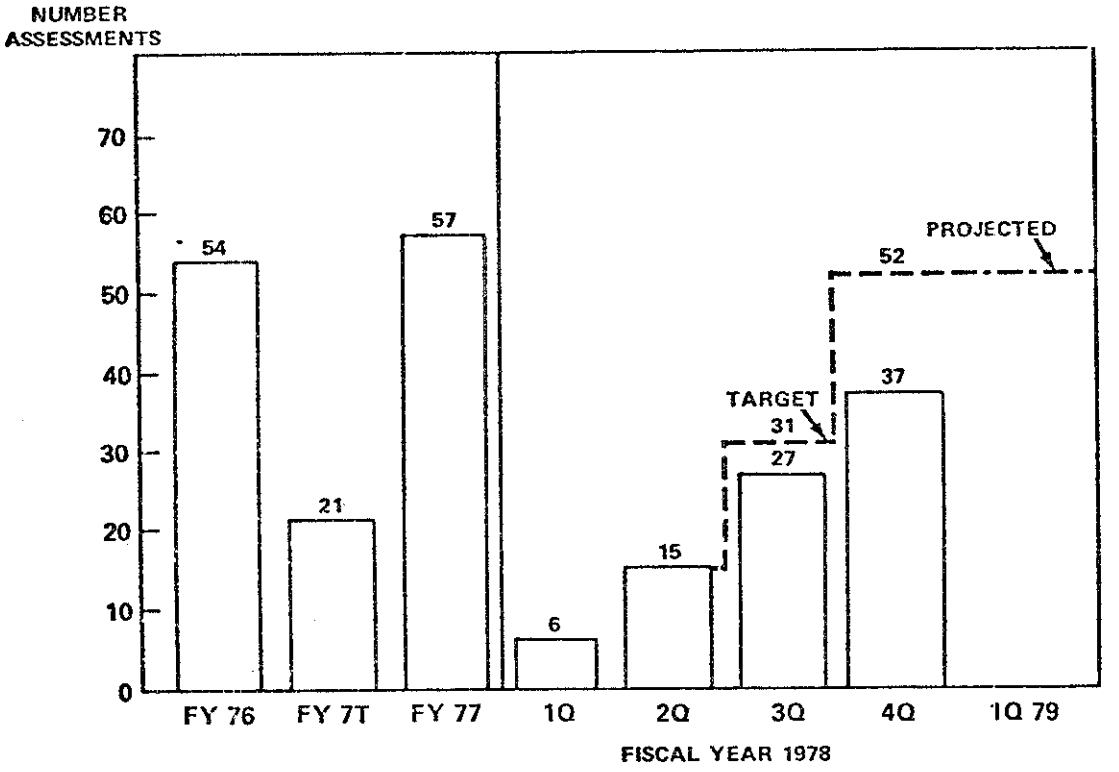
DEPOT	THOUSAND LINE ITEMS SHIPPED
SHARPE	1,186,349
SACRAMENTO	214,947
CORPUS CHRISTI	11,742
NEW CUMBERLAND	1,851,638
DESCOM	4,730,673
TOBYHANNA	82,089
TOOELE 1/	28,586
LEXINGTON-BG	46,554
RED RIVER	1,210,004
ANNISTON	38,365
LETTERKENNY	60,399



1/ INCLUDES PUEBLO

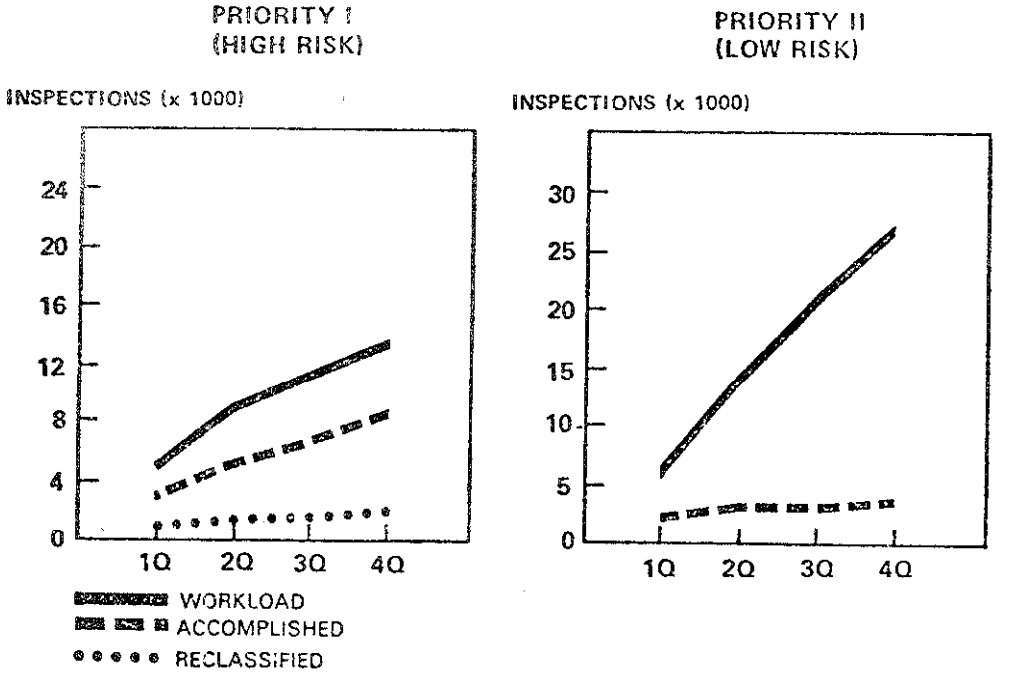
(U) Customer complaints for total DESCOM increased slightly when compared with year end FY 1977. Improvements were noted at New Cumberland and Tobyhanna; however, Tooele, Lexington, Red River, Anniston and Letterkenny showed an increase in customer complaints over FY 1977. Shortages continued to be the most frequent complaint received. Other frequently reported complaints were overages, condition, and damage.

SYSTEM ASSESSMENT PROGRAM STATUS
CUMULATIVE
FY 1976 THROUGH FY 1978



(U) Fifty two system assessments of fielded equipment were scheduled to be completed in FY 1978. By the end of the 4th Quarter FY 1978, 71 percent of the schedule had been accomplished. MIRADCOM, MIRCOM, and TARCOM completed their assessments on schedule. Commands with assessments still due at the end of FY 1978 included: CERCOM--1, ARRCOM--5, TSARCOM--9. These 15 late assessments were projected to be completed by the end of 1st Quarter, FY 1979.

MATERIEL IN STORAGE INSPECTION-CUMULATIVE
(CARE OF SUPPLY IN STORAGE (COSIS))
FY 1978



(U) The above charts display the number of inspections performed, reclassification actions and inspection backlog for materiel in storage.

(U) Priority I (Hi Risk)-- Approximately 50 percent of the inspections were priority 1C - principal items. 519 were 1B - contingency items--parachutes at NCAD. The remainder covered inspections of 1A - shelf life items.

(U) The significant decrease in accomplishments for 2d Quarter, 3d Quarter, and 4th Quarter can be attributed to DESCOM's direction to the depots to limit their COSIS inspection activity primarily to priority 1A shelf life items and priority 1C (principal, sensitive and regulated items). The DESCOM direction was a result of DOD imposed funding restraints.

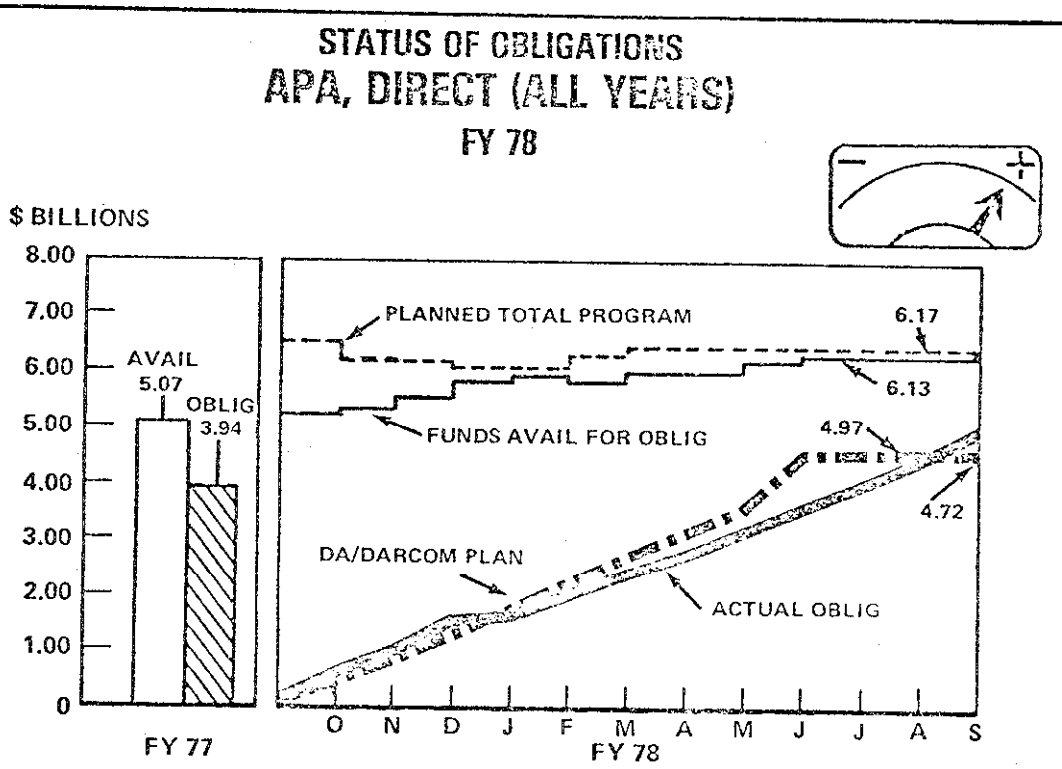
(U) Priority II--The workload line includes a significant number of annual materiel audits which were not accomplished; therefore, the bulk of the backlog zeroed out at the beginning of the new FY. As a COSIS improvement, in January 1979 the materiel audits were to be replaced with "in storage surveys." These surveys were to consist of an annual walk through of the storage area to look at warehousing practices, condition of storage areas, damage to containers, etc.

Resource Management

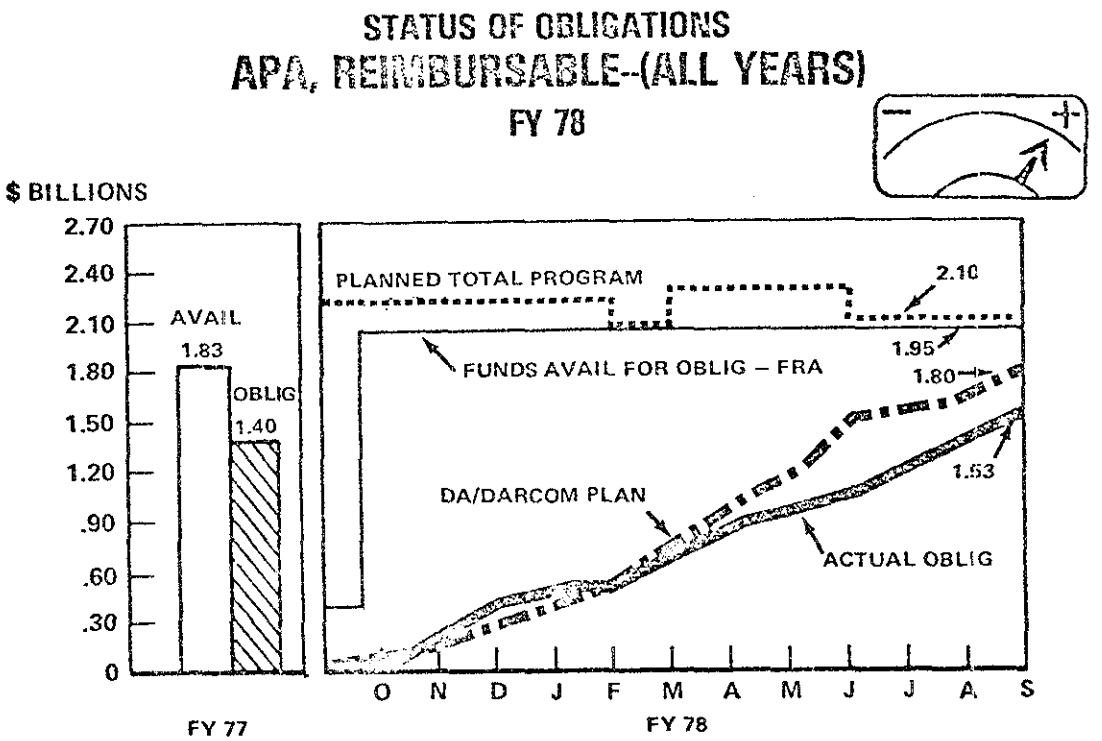
(U) In this general category the basic trend reflects both accomplishment and adversity as DARCOM has had limited resources at its disposal and especially limited personnel, yet has also been able to utilize its resources in an effective way.

Comptroller

(U) One of the central problems confronting the accomplishment of the DARCOM mission was that of timely obligation of available funds. In this responsibility the command acquitted itself admirably as it either exceeded the goals established in the DA/DARCOM plan or came much closer to reaching that level than had previously been the case. Even in the obligation for APA (reimbursable) where obligations fell 15 percent below the plan, this shortfall emerged because customer orders failed to materialize--an external development.

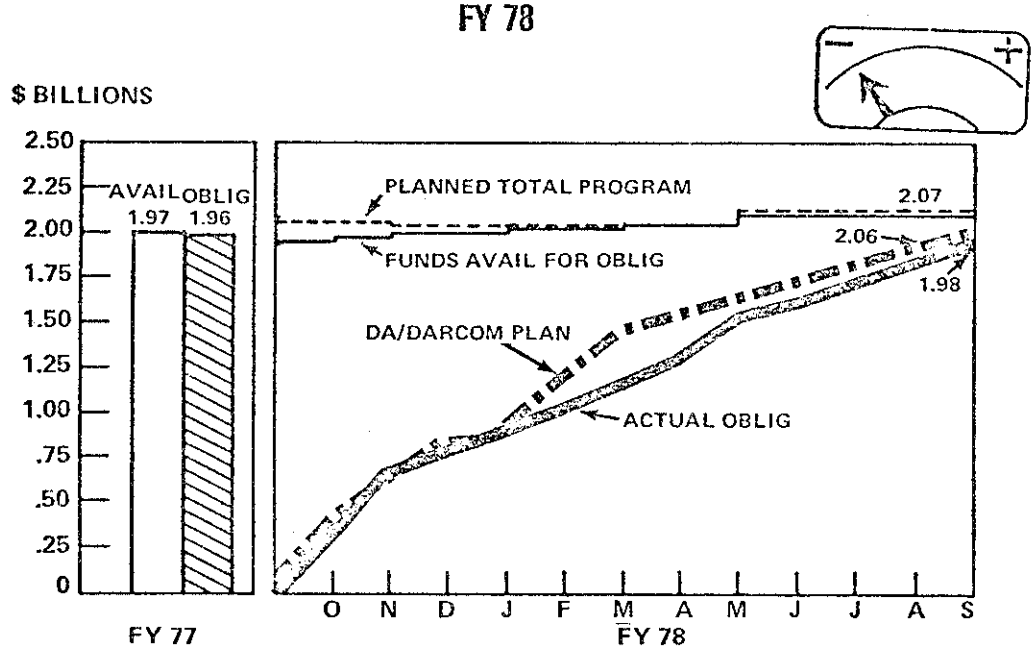


(U) The total DARCOM direct procurement program shown includes funds carried over from prior years as well as those appropriated for FY 1978. As of 30 September 1978, DARCOM obligated $4.97 billion of the available funds and were $249 million or 5 percent above the approved DA/DARCOM obligation plan of $4.72 billion. Of the expiring FY 1976 and 7T funds, DARCOM failed to obligate $24 million or 15 percent of the plan, most of it in ammunition. Of the three-year total figures, obligations were above the plan in missiles, weapons, and ammunition, less than 1 percent below in aircraft and about 6 percent below in other procurement.

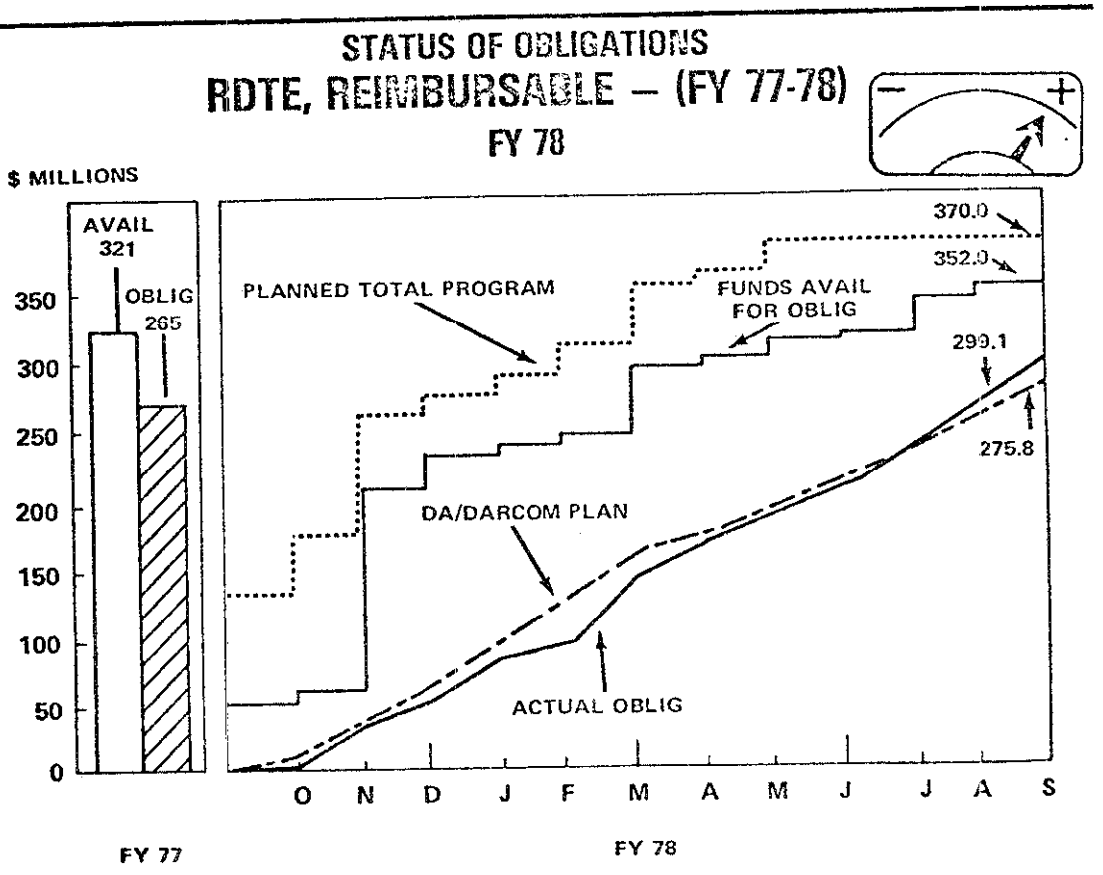


(U) Of the $1.95 billion available, the Command obligated $1.53 billion. This was $272 million, or 15 percent below the plan of $1.8 billion. The reason for the shortfall was the failure of customer orders to materialize as planned. The major part of the deviation from plan was in the weapons and combat vehicles and ammunition appropriations.

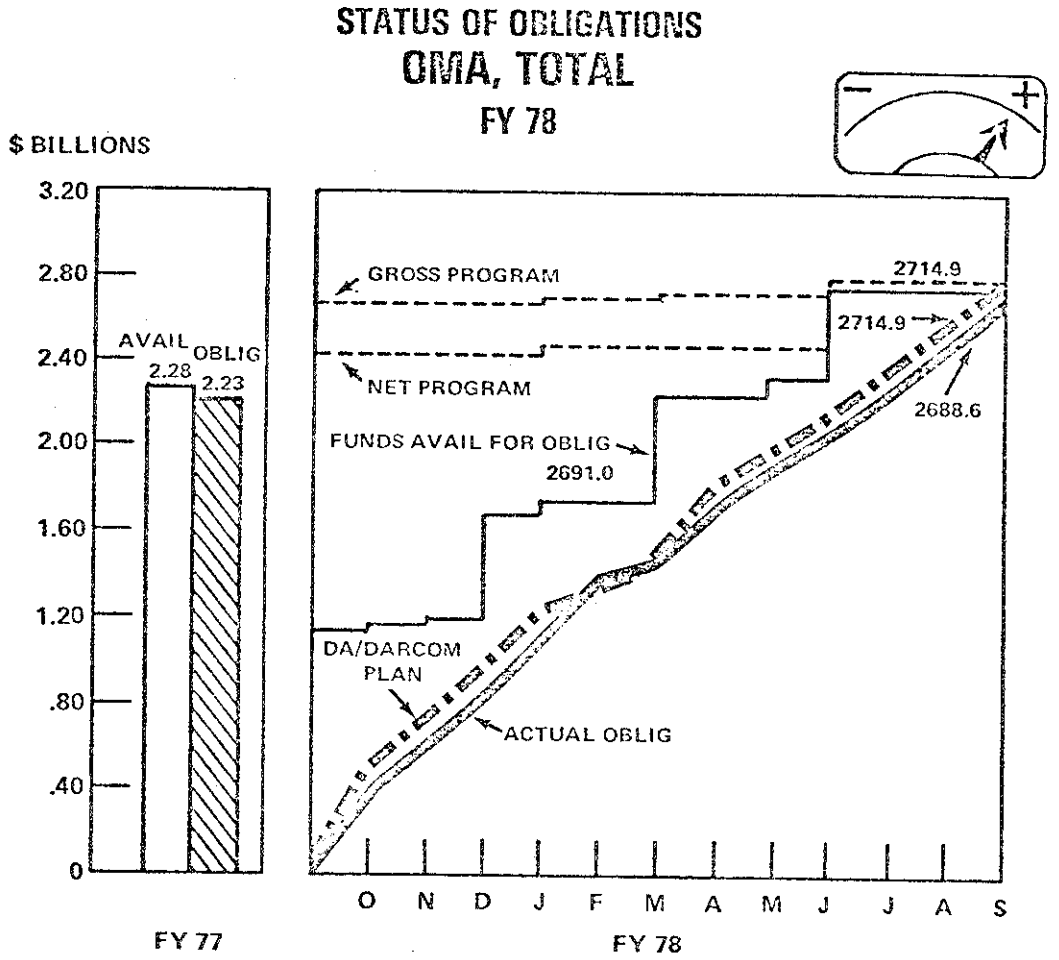
STATUS OF OBLIGATIONS
RDTE, DIRECT- (FY 77-78)
FY 78



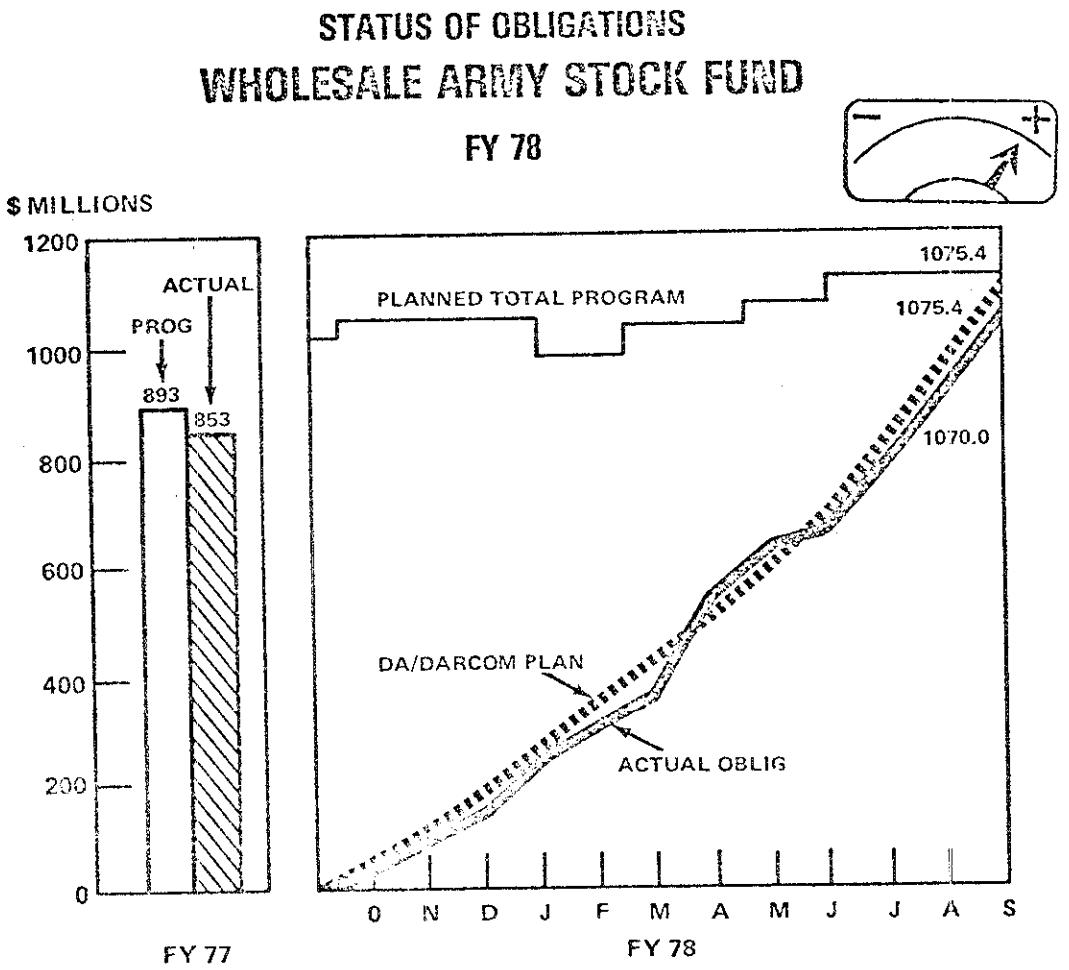
(U) RDT&E obligations of both FY 1977 and FY 1978 funds were $1.98 billion or 98.6 percent of plan, and more than 96 percent of the $2.06 billion of funds available. This breaks down into 96 percent of the FY 1978 funds and 99 percent of the FY 1977 funds available.



(U) Obligations for RDTE, reimbursable, were $299.1 million and exceeded the plan by $23 million, or more than 8 percent. Over 85 percent of the funds available were obligated, with the shortfall all in FY 1978 funds, since the FY 1977 funds available are adjusted to match the amount that can be obligated.



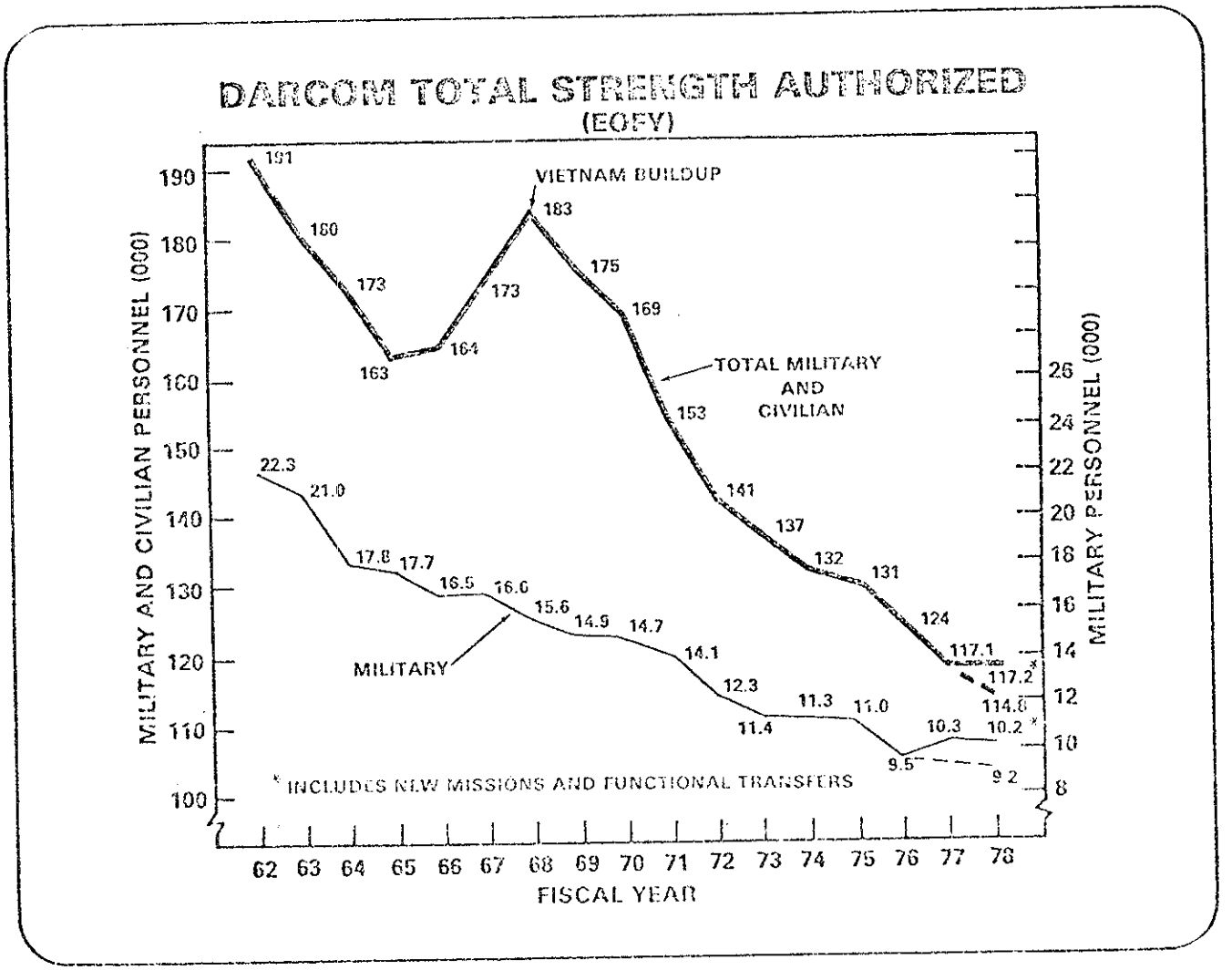
(U) At the total appropriation level, DARCOM obligated $2.69 billion or 99.9 percent of the plan and of the funds available.



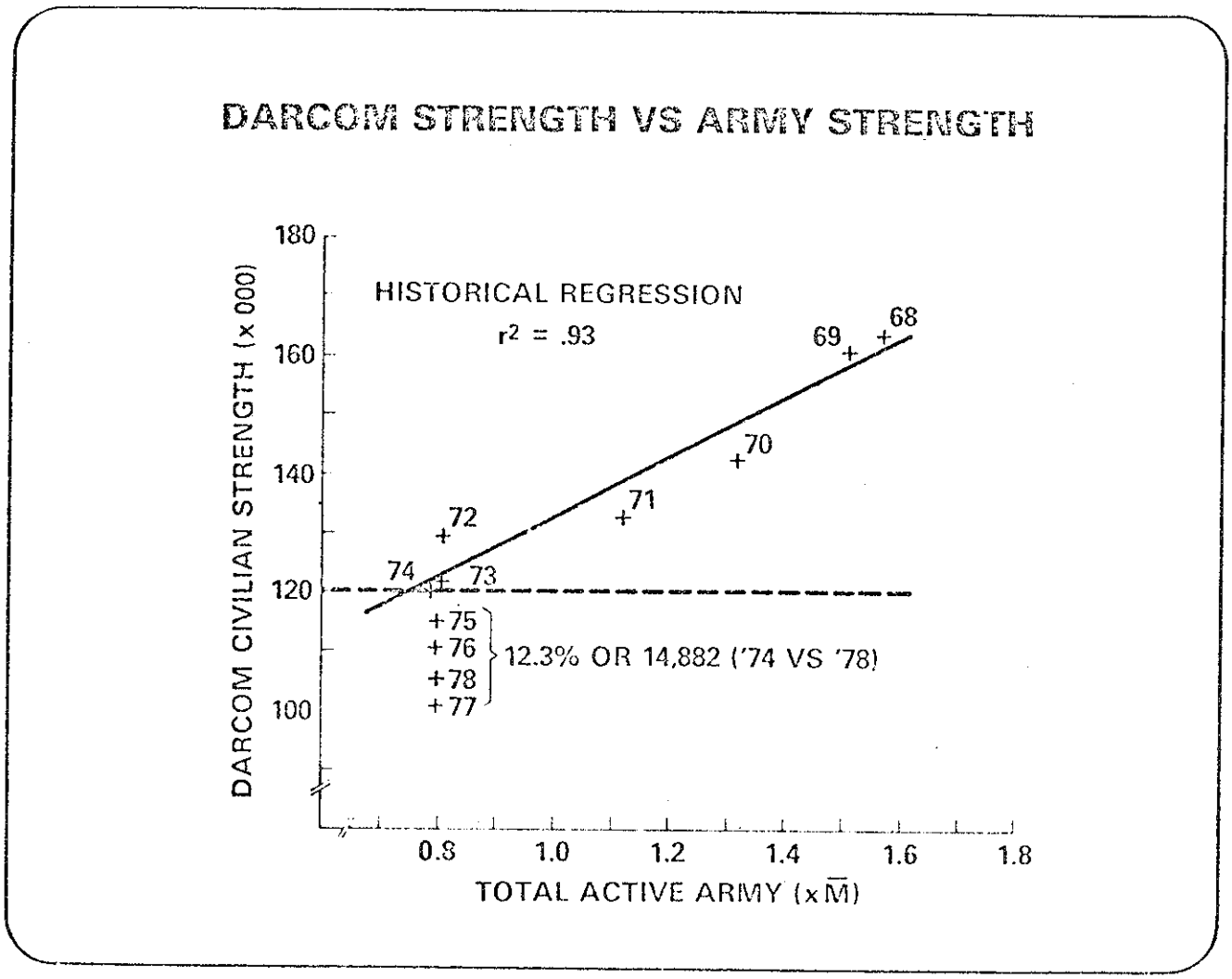
(U) Actual obligations of $1,070 million were below the final DA approved program by $5 million or .005 percent. This is considered to be excellent performance.

Personnel, Training, and Force Development

(U) In the long term analysis, the strength authorized for DARCOM had continually dropped (with only the Vietnam buildup as an aberration) since the formation of the AMC. This draw-down, and its impact, can perhaps be best appreciated by considering the stabilization of the strength of the Army as a whole beginning in FY 1975, and DARCOM continued to decline. In fact, even with a slight increase in personnel the situation did not significantly improve because of new missions assigned and increased requirements in mandated programs. The various studies of the manpower base and requirements for DARCOM performed in FY 1978 all recommended an increase not just for mobilization purposes but to maintain a satisfactory peacetime ability as well. The specific levels of those recommended strengths varied but the recognition of the manpower weakness underlay the entire examination.



(U) The above chart depicts the steadily declining trend in the AMC/DARCOM total strength since 1962. From the peak of the Vietnam War, the DARCOM total authorized strength was reduced from 183,000 personnel to end FY 1978 low of 117,200. The bottom line shows the trend in DARCOM's military strength which had a high of 22,300 in FY 1962 to a strength of 10,200 in FY 1978. The broken line from FY 1977 to FY 1978 indicates the real drawdown in strength. The solid line above it for the same period results from an input of spaces following the transfer to the Army of responsibility as Single Manager for Conventional Ammunition.



(U) Our analysis in the above chart reveals a very high coefficient of correlation (R^2=.93) between DARCOM civilian strength and the total active Army between FY 1968 and FY 1974 thus confirming the strength of the relationship.. Note how the data points cluster closely around the regression line. Beginning in FY 1975 the Army stabilized its strength at approximately 785,000 men while DARCOM continued to reduce. The reductions in those four years equate to 12.3 percent thereby terminating the relationship between the two variables.

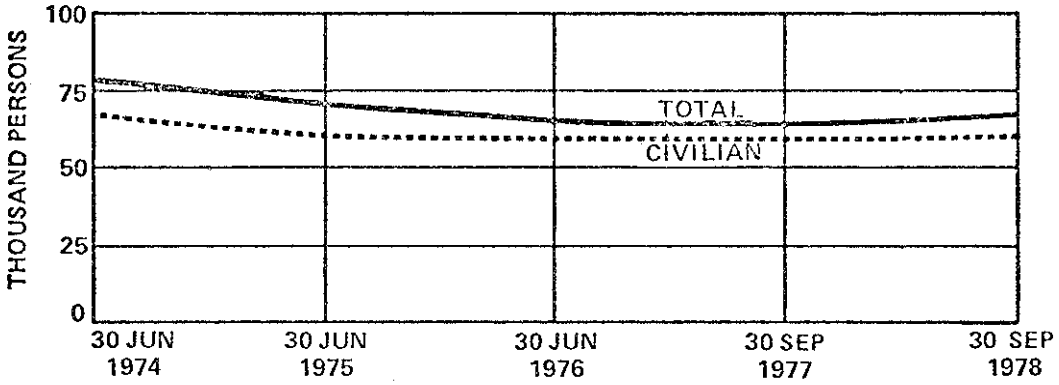
DARCOM PERSONNEL STRENGTH
STATUS BY ORGANIZATION
30 SEPTEMBER 1977 - 30 SEPTEMBER 1978

FUNCTIONAL ORGANIZATION	THOUSAND PERSONS ON ROLLS		PERCENT OF CHANGE
	30* SEPTEMBER 1977	31 SEPTEMBER 1978	02 04 06 08 10
DARCOM TOTAL	113.4	115.8	
DARCOM HQ	1.4	1.4	0
COMMANDS	64.4	67.7	
DESCOM (DEPOTS)	37.9	38.4	
MISCELLANEOUS	9.7	8.3	14.4

PLUS
MINUS
*BASE YEAR CHANGED DUE TO REORGANIZATION

(U) As of 30 September 1978, DARCOM personnel strength (civilian plus military) increased 2,400 on 2.1 percent above the September 1977 base. The increase was primarily in the commands. Depots showed a slight increase. DARCOM headquarters remained at the same level as the September 1977 base period.

DARCOM PERSONNEL STRENGTH
CIVILIAN AND MILITARY
ALL MAJOR SUBORDINATE COMMANDS
30 JUNE 1974 THROUGH 30 SEPTEMBER 1978



NOTE: TOTAL INCLUDES MILITARY

INDIVIDUAL COMMAND COMPARISONS
30 SEPTEMBER 1977 THROUGH 30 SEPTEMBER 1978

COMMAND	(THOUSAND PERSONS ON ROLLS) 30 SEP 1977 1/ CIV	MIL	TOTAL	30 SEP 1978 CIV	MIL	TOTAL	PERCENT OF CHANGE (05 10 15 20 25)
DARCOM 2/ TOTAL	57.7	6.7	64.4	60.9	6.8	67.7	
ARRCOM	11.6	0.5	12.1	13.6	0.5	14.1	
ARRADCOM	7.4	0.3	7.7	7.8	0.3	8.1	
AVRADCOM	1.5	0.1	1.6	1.8	0.1	1.9	
CERCOM	N/A	N/A	N/A	4.7	0.6	5.3	
CORADCOM	N/A	N/A	N/A	1.1	0.2	1.3	
ECOM	8.3	1.2	9.5	N/A	N/A	N/A	
ERADCOM 3/	1.3	0.1	1.4	3.3	0.6	3.9	178.6
MERADCOM	1.2	0.1	1.3	1.1	0.1	1.2	
MIRCOM	5.1	0.7	5.8	5.2	0.6	5.8	N/C
MIRADCOM	2.4	0.1	2.5	2.4	0.1	2.5	N/C
NARADCOM	1.1	0.1	1.2	1.1	0.1	1.2	N/C
TARCOM	4.3	0.3	4.6	4.4	0.2	4.6	N/C
TARADCOM	0.8	0.0	0.8	0.8	0.0	0.8	N/C
TECOM	8.4	3.0	11.4	8.2	3.1	11.3	
TSARCOM	5.1	0.3	5.4	4.8	0.3	5.1	
USASAC	0.5	0.0	0.5	0.6	0.0	0.6	

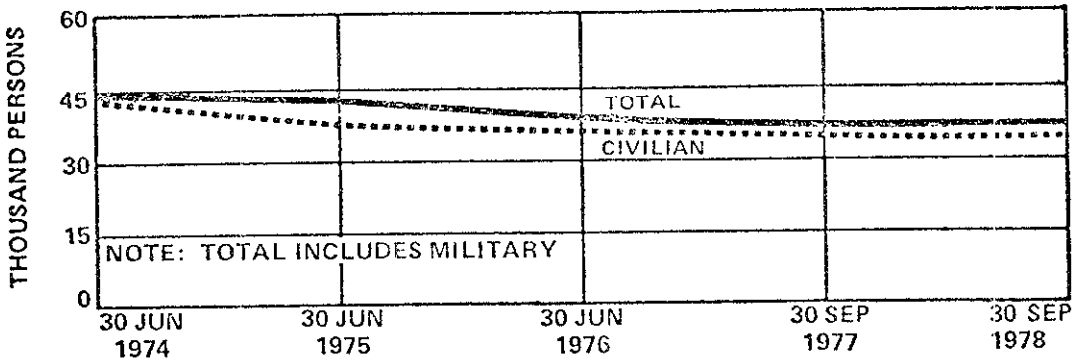
PLUS
MINUS

1/ BASE YEAR CHANGED DUE TO REORGANIZATION

2/ EXCLUDES DESCOM DEPOTS & ERADCOM

3/ BASE YEAR ESTABLISHED 31 MAR 78

DARCOM PERSONNEL STRENGTH
CIVILIAN AND MILITARY
ALL DEPOTS
30 SEPTEMBER 1977 THROUGH 30 SEPTEMBER 1978



INDIVIDUAL DEPOT COMPARISONS
30 SEPTEMBER 1977 THROUGH 30 SEPTEMBER 1978

DEPOT	(THOUSAND PERSONS ON ROLLS)						PERCENT OF CHANGE
	30 SEP 1977 1/			30 SEP 1978			05 10 15 20 25
	CIV	MIL	TOTAL	CIV	MIL	TOTAL	
DESCOM TOTAL	36.7	1.2	37.9 5/	37.2	1.2	38.4 5/	
HQ DESCOM	0.6	0.0	0.6	0.6	0.0	0.6	N/C
ANNISTON	4.9	0.0	4.9	4.9	0.1	5.0	
CORPUS CHRISTI	3.4	0.0	3.4	3.3	0.0	3.3	
LETTERKENNY 2/	4.5	0.1	4.6	4.7	0.1	4.8	
NEW CUMBERLAND	3.4	0.1	3.5	3.4	0.1	3.5	N/C
RED RIVER 3/	6.5	0.1	6.6	6.4	0.1	6.5	
SACRAMENTO	2.3	0.1	2.4	2.8	0.1	2.9	
SENECA	0.7	0.4	1.1	0.8	0.3	1.1	N/C
SHARPE	1.5	0.1	1.6	1.4	0.0	1.4	
SIERRA	0.6	0.2	0.8	0.5	0.3	0.3	N/C
TOBYHANNA	3.2	0.0	3.2	3.4	0.0	3.4	
TOOELE 4/	5.1	0.1	5.2	5.0	0.1	5.1	
PLUS							
MINUS							

1/ BASE YEAR CHANGED DUE TO ORGANIZATION OF DESCOM
2/ INCLUDES SAVANNA
3/ INCLUDES LEXINGTON – BG
4/ INCLUDES FT. WINGATE, NAVAJO, PUEBLO AND UMATILLA
5/ INCLUDES MAINZ AND OBER-RAMSTADT

SOURCE: RCS CSFOR-78

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DARCOM PERSONNEL STRENGTH
MILITARY
ALL MAJOR SUBORDINATE COMMANDS
30 SEPTEMBER 1977 VS 30 SEPTEMBER 1978

OFFICER (INCLUDES WO's) PERCENT OF CHANGE (25 20 15 10 5)	1/ FY 77	30 SEP 78	COMMAND	1/ FY 77	30 SEP 78	ENLISTED PERCENT OF CHANGE (5 10 15 20 25)
	2729	2891	DARCOM TOTAL	6104	6081	
	2073	2216	TOTAL COMMANDS	5780	5889	
	210	216	ARRCOM	286	315	
	169	173	ARRADCOM	137	113	
	89	104	AVRADCOM	44	44	N/C
	N/A	138	CERCOM	N/A	494	
	N/A	112	CORADCOM	N/A	54	
	297	N/A	ECOM	927	N/A	
156.8	44	113	ERADCOM 2/	18	459	2450.0
	21	18	MERADCOM	43	42	
	166	165	MIRCOM	491	461	
	89	100	MIRADCOM	18	21	
	29	28	NARADCOM	67	66	
	99	103	TARCOM	151	125	
37.0	27	37	TARADCOM	1	2	100.0
	410	438	TECOM	2565	2639	
	139	142	TSARCOM	119	118	
	19	20	USASAC	1	1	N/C
N/C	309	309	DESCOM 3/	930	935	

SOURCE: RCS CSFOR-78

PLUS
MINUS

1/BASE YEAR CHANGED DUE TO REORGANIZATION

2BASE YEAR ESTABLISHED 31 MAR 78

3INDIVIDUAL DEPOT DATA SHOWN ON PAGE IV-16

DARCOM PERSONNEL STRENGTH
MILITARY
ALL DEPOTS
30 SEPTEMBER 1977 VS 30 SEPTEMBER 1978

OFFICER (INCLUDES WO's) PERCENT OF CHANGE 25 20 15 10 5	1/ FY77	30 SEP 78	DEPOT	1/ FY77	30 SEP 78	ENLISTED PERCENT OF CHANGE 5 10 15 20 25 30 35
	309	309	TOTAL DEPOTS	930	935	
57.1	14	22	HQ DESCOM	16	11	
	30	27	ANNISTON	24	22	
	16	17	CORPUS CHRISTI	22	15	
	24	28	LETTERKENNY 2/	42	46	
	27	23	NEW CUMBERLAND	44	34	
	36	40	RED RIVER 3/	75	62	
	27	24	SACRAMENTO	59	53	
	29	27	SENECA	323	333	
	16	15	SHARPE	35	31	
	23	25	SIERRA	226	263	
	19	21	TOBYHANNA	25	25	N/C
	44	37	TOOELE 4/	31	32	
	4	3	OTHER 5/	8	8	N/C

SOURCE: RCS CSFOR-78

1/ BASE YEAR CHANGED DUE TO THE ORGANIZATION OF DESCOM

2/ INCLUDES SAVANNA

3/ INCLUDES LEXINGTON BLUE GRASS

4/ INCLUDES FT. WINGATE, NAVAJO, PUEBLO AND UMATILLA

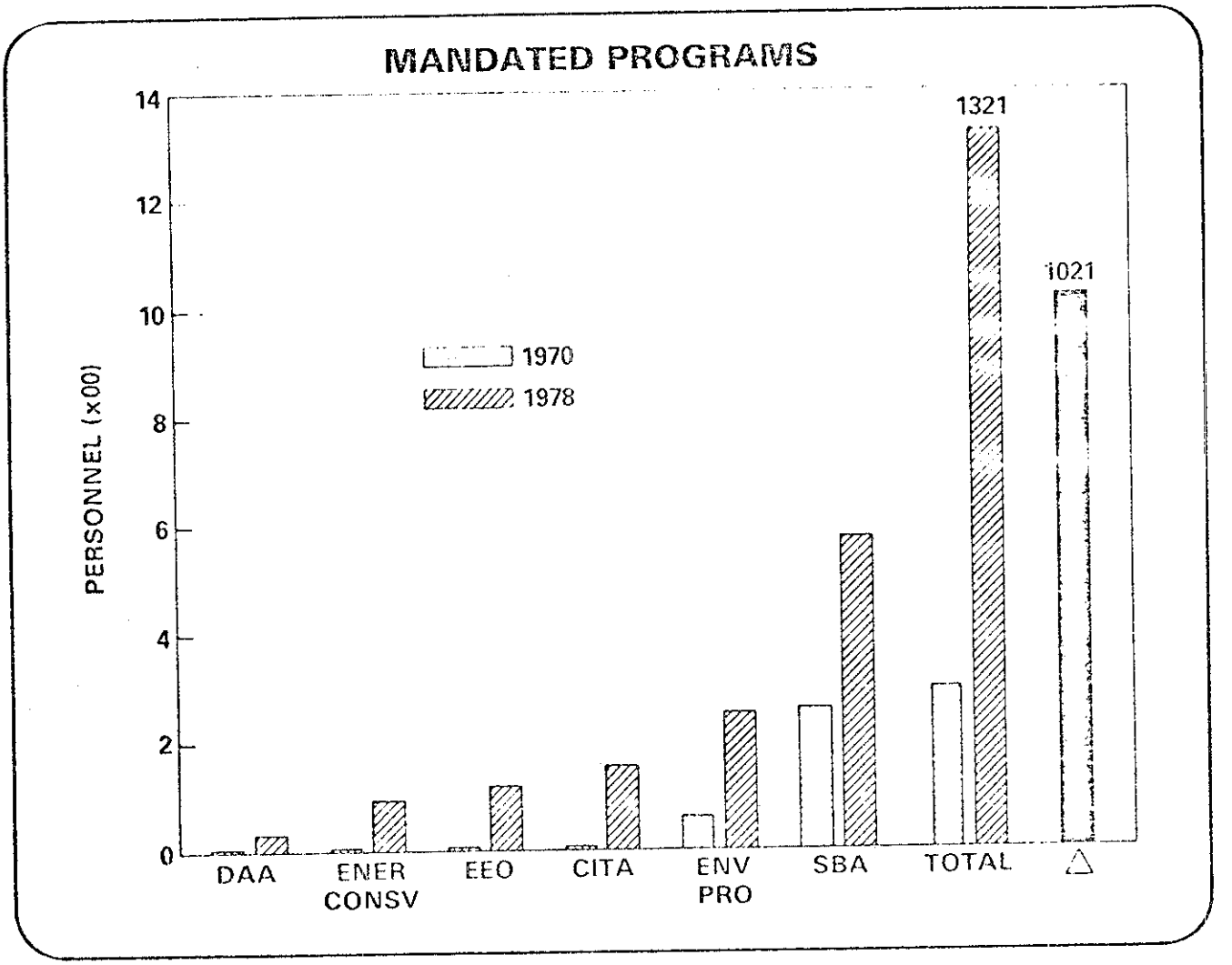
5/ OTHER INCLUDES MAINZ AND OBER-RAMSTADT

PLUS
MINUS

NEW MISSIONS

		PERS REQ'D	PERS REC'D	Δ
NOV 77	EXECUTIVE AGENT FOR SECURITY ASSISTANCE	22	22	0
DEC 76	TACTICAL AND STRATEGIC EW/SIGINT	732	657	-75
JUL 76	OVERSEAS DEPOTS (MAINZ AND OBER-RAMSTADT)	2792	2792	0
JUL 76	STOCKAGE OF DLA ITEMS IN AREA-ORIENTED DEPOTS (NEW CUMBERLAND)	254	254	0
APR 75	INTERNATIONAL R&D	30	23	-7
	TOTALS	3830	3748	-82

(U) The above chart displays other new missions gained by DARCOM since 1975. In most cases we received the resources associated with the new missions--but total manpower steadily declined.



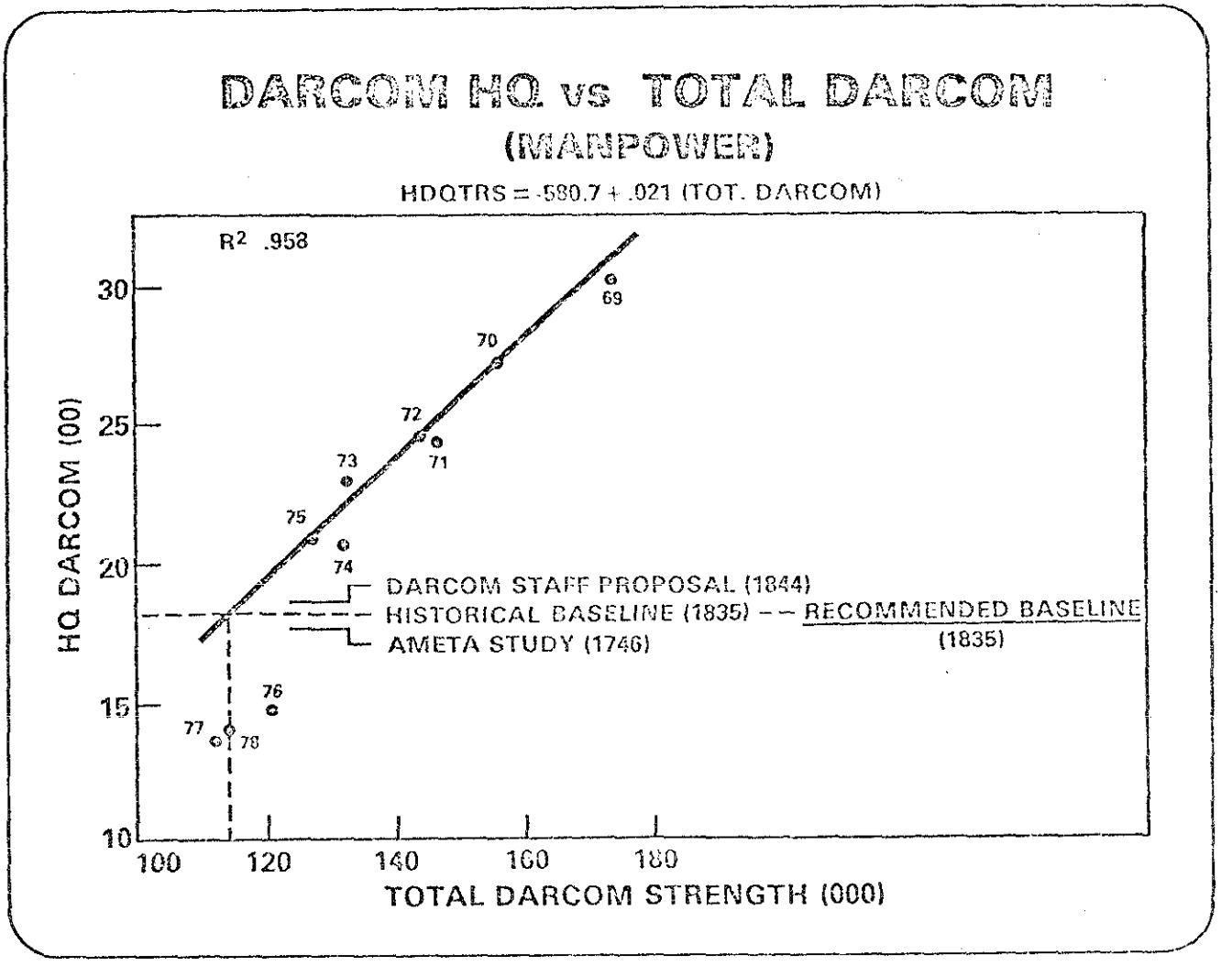
(U) In addition to new missions, the increased requirements of mandated programs continue to erode our available resources. The manpower requirements to support drug and alcohol abuse, energy conservation, the EEO program, CITA, environmental protection and small business have increased by over 1,000 since 1970.

STAFFING REQUIREMENTS FOR DARCOM HEADQUARTERS

ORGANIZATION	AMC TDA END FY 75	CURRENT TDA	STAFF PROPOSAL CURRENT FUNCT.	STAFF PROPOSAL VAR W/ TDA	STUDY RECOMMEND* CURRENT FUNCT.	STUDY RECOMMEND* VAR W/ TDA
CG/CHIEF OF STAFF AREA	357	265	334	69	311	46
DCGMD AREA	356	244	307	63	294	50
DCGMR AREA	783	445	569	124	508	63
DCGRM AREA	565	530	634	104	633	103
CG's RESERVE		21	0	−21	0	−21
TOTAL DARCOM HQ	2122	1505	1844	339	1746	241

*SOURCE: US ARMY MANAGEMENT ENGINEERING TRAINING ACTIVITY (AMETA) HEADQUARTERS DARCOM STAFF REQUIREMENT STUDY - JUNE 1978

(U) The above chart displays recommended DARCOM headquarters staffing requirements which resulted from two independent studies. The DARCOM HQ staff established a requirement for 1844 spaces (as displayed in the third column of the chart) against a TDA authorization of 1505. The Army Management Engineering Training Activity (AMETA) conducted an independent manpower analysis and recommended 1746 spaces.



(U) The above chart displays a very strong relationship over time until 1975 between DARCOM HQ personnel strength versus that of total DARCOM (R^2=.958). The historical projection (1835), established through the regression technique, falls between the levels recommended by the DARCOM HQ staff and AMETA. Because of the close fit between the studies and the regression analysis value we have selected 1835 as our baseline recommendation for DARCOM headquarters.

FY 78 VALIDATED PEACETIME REQUIREMENT

MISSION	VALIDATED MANPOWER SPACES
MATERIEL READINESS	112110
RESEARCH DEVELOPMENT TEST AND EVALUATION	29108
DARCOM HQ	1835
TOTAL	143053

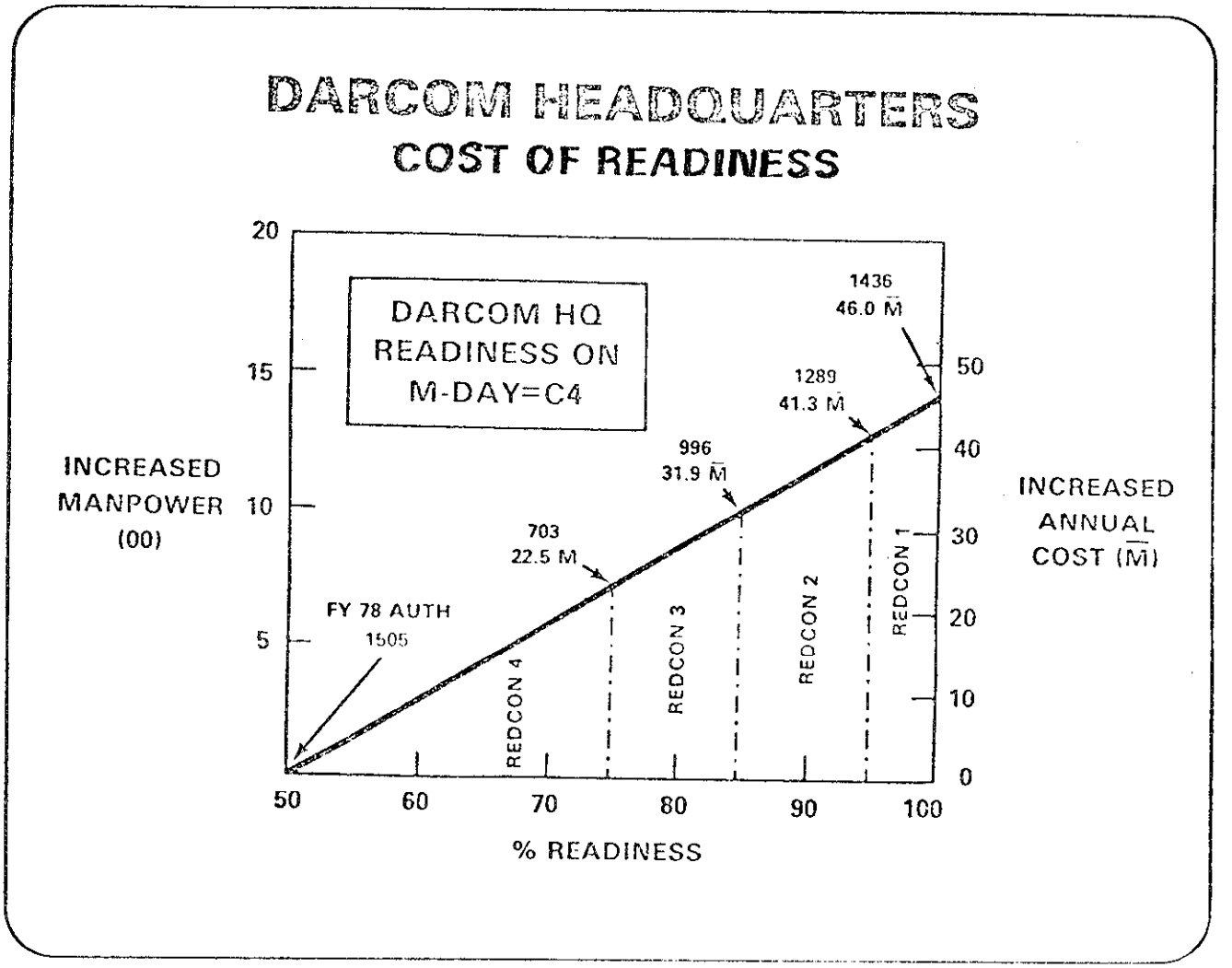
(U) In summary, to accomplish the FY 1978 validated peacetime workload, an end strength of 143,053 was required. Values were provided for each of the DARCOM components considered in this study; materiel readiness, RDTE, and HQ.

READINESS CONDITION (REDCON) CRITERIA

REDCON	CRITERIA	READINESS STATUS
C-1	ABOVE 95.0%	FULLY READY
C-2	85.0% TO 94.9%	SUBSTANTIALLY READY
C-3	75.0% TO 84.9%	MARGINALLY READY
C-4	BELOW 75%	NOT READY

$$\text{READINESS} = \frac{\text{CAPABILITY}}{\text{REQUIREMENT}} \times 100\%$$

(U) DARCOM readiness for mobilization can also be seen in terms of REDCOM levels.



(U) The above chart displays DARCOM headquarters requirements as a function of REDCON level. The FY 1978 authorized level (1505) places DARCOM HQ in a REDCON 4 status on M-day.

TOTAL DARCOM
FY 78 AUTHORIZED vs READINESS

	FY 78 AUTH	CURRENT REDCON	REDCON 3 (75%) BASELINE	REDCON 3 (75%) SHORTFALL	REDCON 2 (85%) BASELINE	REDCON 2 (85%) SHORTFALL	REDCON 1 (95%) BASELINE	REDCON 1 (95%) SHORTFALL	100% BASELINE	100% SHORTFALL
MATERIEL READINESS	90279	4	111322	21043	126142	35863	140961	50682	148371	58092
RESEARCH DEVELOPMENT TEST AND EVALUATION	25407	4	26093	686	29524	4117	32955	7548	34670	9263
DARCOM HQ	1505	4	2208	703	2501	996	2794	1289	2941	1436
TOTAL	117191	4	139623	22432	158167	40976	176710	59519	185982	68791

(U) The above chart compares the authorized total DARCOM personnel strength with that strength required to achieve higher level REDCON postures.

TOTAL DARCOM
RECOMMENDED BASELINE vs READINESS

	RECOM-MEND BASELINE	CURRENT REDCON	REDCON 3 (75%) BASELINE	REDCON 3 (75%) SHORTFALL	REDCON 2 (85%) BASELINE	REDCON 2 (85%) SHORTFALL	REDCON 1 (95%) BASELINE	REDCON 1 (95%) SHORTFALL	100% BASELINE	100% SHORTFALL
MATERIEL READINESS	112110	3	111322	NONE	126142	14032	140961	28851	148371	36261
RESEARCH DEVELOPMENT TEST AND EVALUATION	29108	3	26093	NONE	29524	416	32955	3847	34670	5562
DARCOM HQ	1835	4	2208	373	2501	666	2794	959	2941	1106
TOTAL	143053	3	139623	373	158167	15114	176710	33657	185982	42929

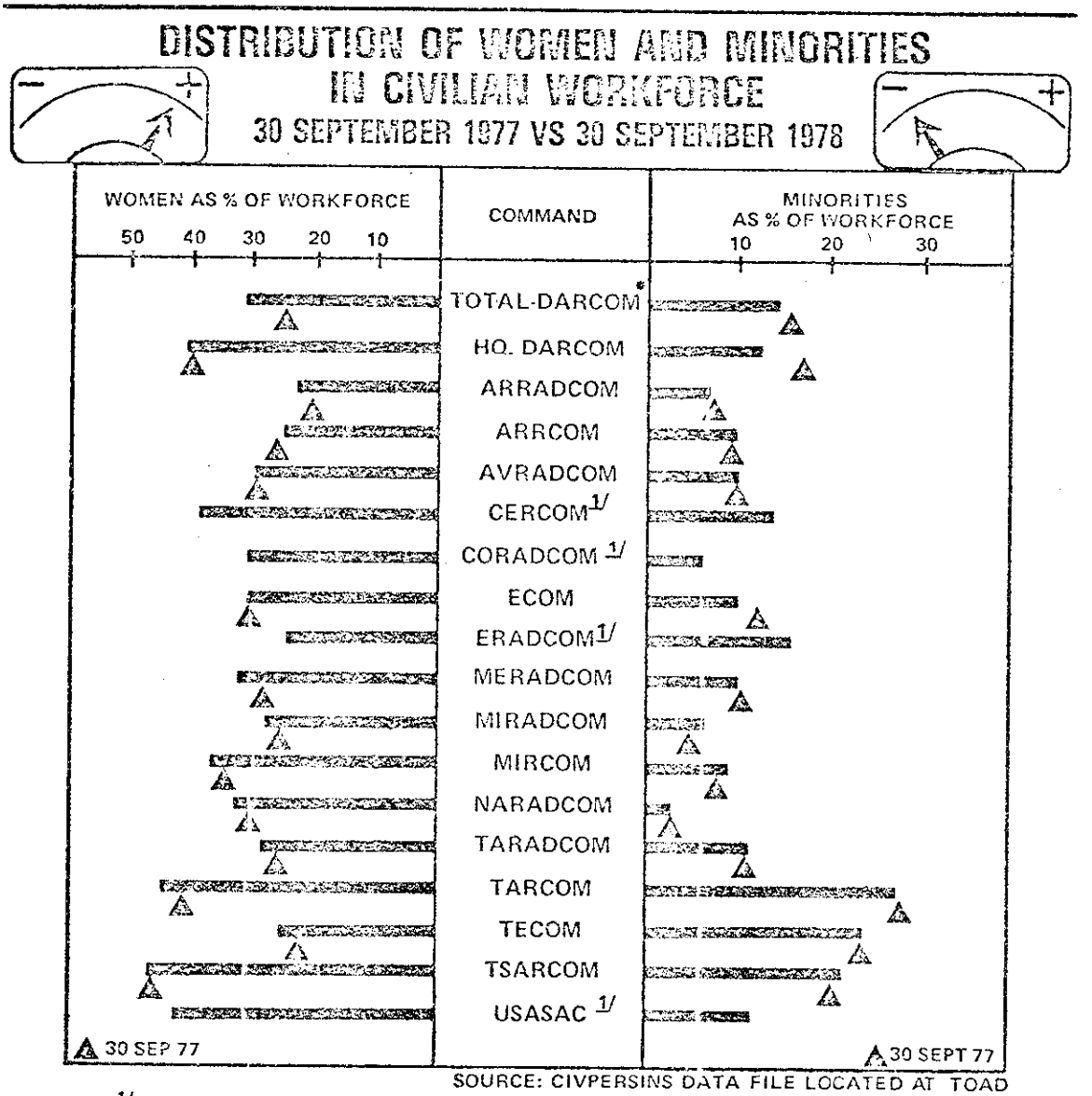
(U) The above chart compares the recommended total DARCOM personnel strength to that strength required to achieve higher level REDCON postures. Note that the total DARCOM recommended baseline of 143,053 would place both mission elements, and DARCOM as a whole, in a REDCON 3 status. In summary our analysis concludes that a manpower level of 143,053 is required for DARCOM to achieve maximum peacetime efficiency and to provide an adequate mobilization/surge capability. Until this baseline is achieved we will continue to strive for greater productivity and to search for other means to augment our capability to support mobilization requirements.

Staff Activities

(U) Efforts of the staff to improve performance in employment opportunity and in safety continued to generate deliberate effort and achieved mixed results.

Equal Employment Opportunity

(U) Partly a function of trends in the larger economy and partly a reflection of limited new employment at DARCOM, the employment of women met the goals for DARCOM and the employment of minorities failed to meet these goals.



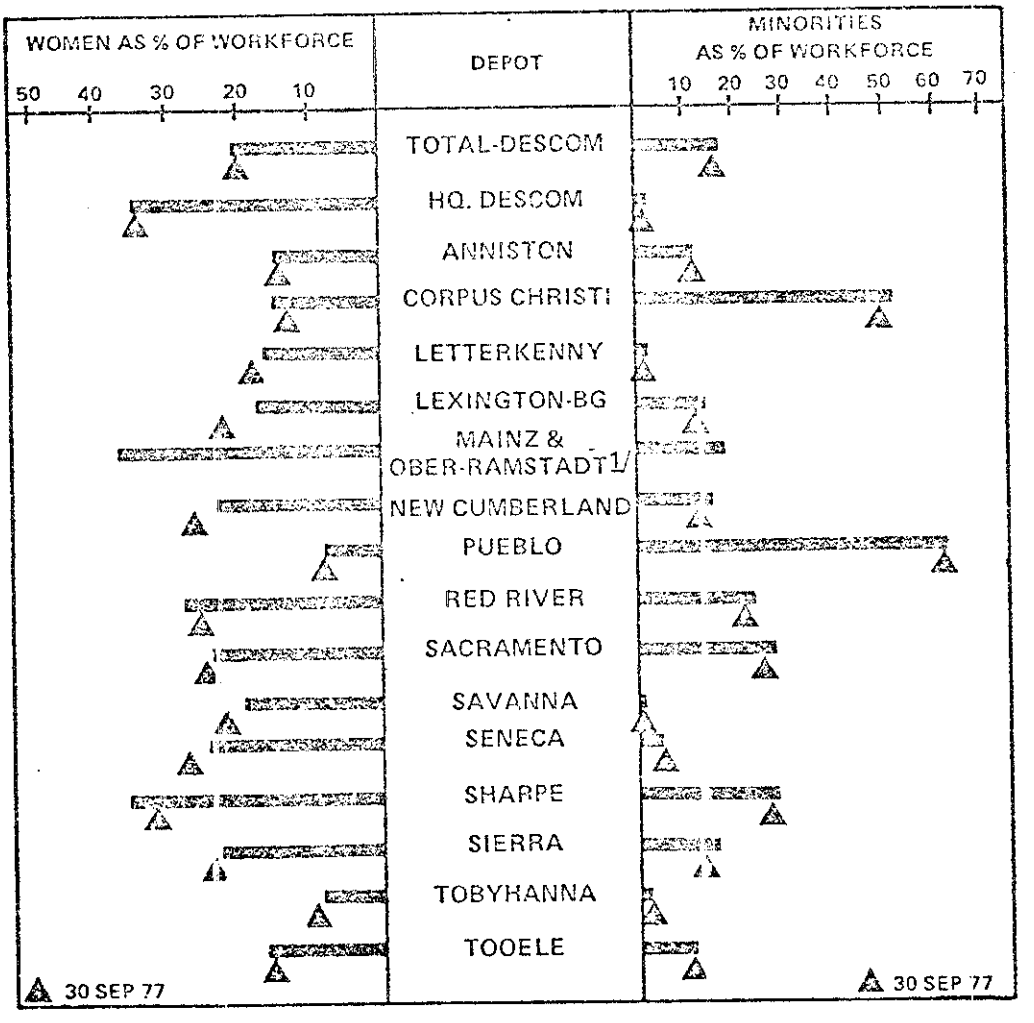
SOURCE: CIVPERSINS DATA FILE LOCATED AT TOAD

1/30 SEPTEMBER 1977 DATA NOT AVAILABLE

*DOES NOT INCLUDE DESCOM WHICH IS SHOWN ON THE NEXT CHART.

(U) Overall, women in the DARCOM civilian workforce increased when compared with FY 1977. Minorities showed a slight decrease. The decrease of minorities at HQ DARCOM was primarily due to retirements and turnover coupled with limits on applications.

DISTRIBUTION OF WOMEN AND MINORITIES IN CIVILIAN WORKFORCE
30 SEPTEMBER 1977 VS 30 SEPTEMBER 1978

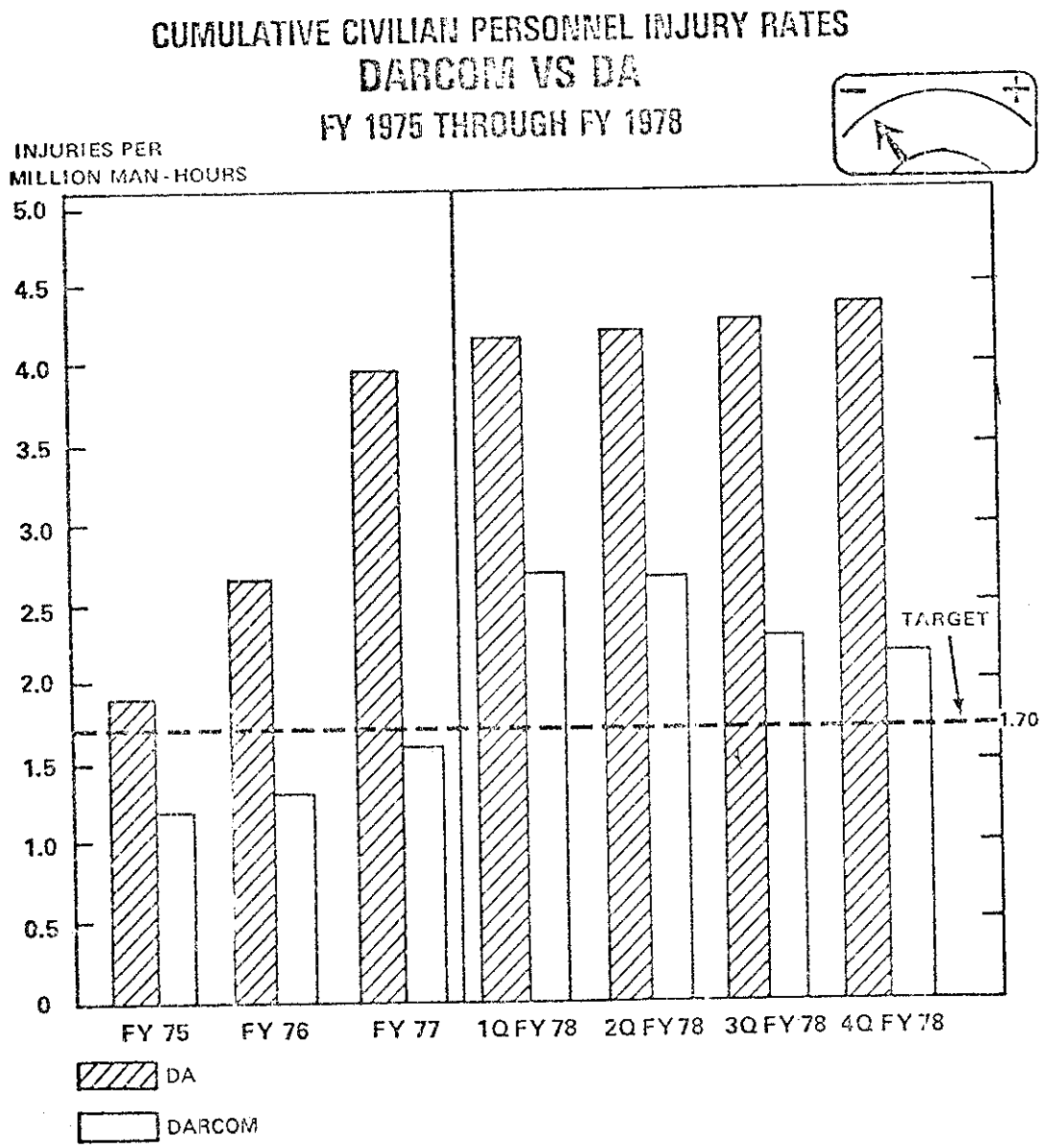


1/30 SEPTEMBER 1977 DATA NOT AVAILABLE

(U) Overall, the percentage of women and minorities in the depot workforce increased slightly when compared with FY 1977. Considering funding constraints that limit hiring at the depots, the performance was considered acceptable.

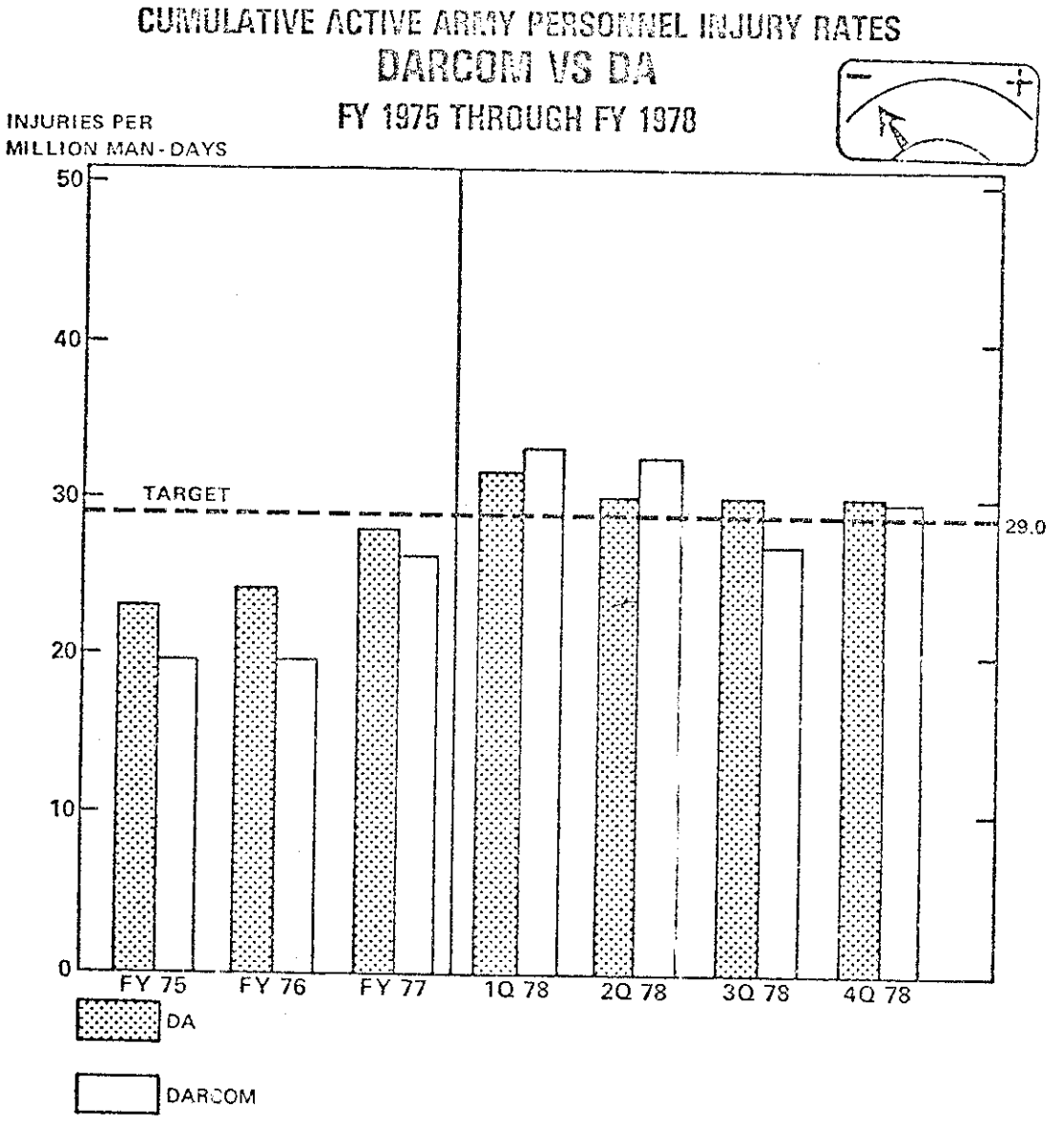
Safety

(U) The injury rates for both Army and civilian employees exceeded target levels in FY 1978 and the active Army injuries in fact were the worst in four years. Mainly those injuries were sustained in motor vehicle accidents while civilian injuries came to the back when lifting heavy objects. Even so, motor vehicle accidents continued their downward, long-term trend but remained slightly above the target level. And though two aircraft accidents were experienced, the target in that area was met overall.

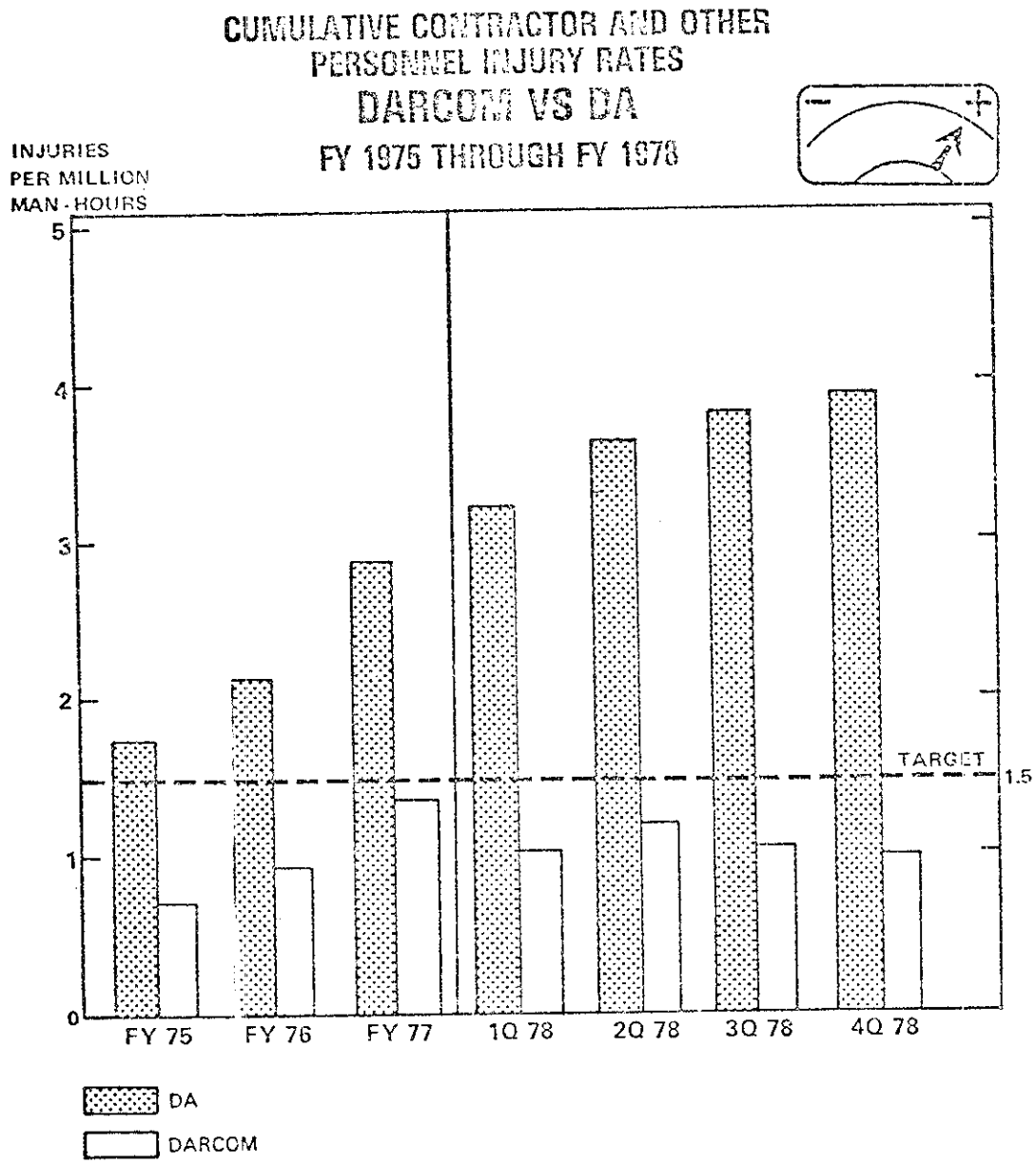


(U) The DARCOM target of 1.7 Army civilian injuries per million man hours worked was exceeded for FY 1978. DARCOM, as well as the Department of the Army, continued a steady upward trend in this indicator. The greatest number of injuries occurred to the back and were primarily caused by improper lifting technique.

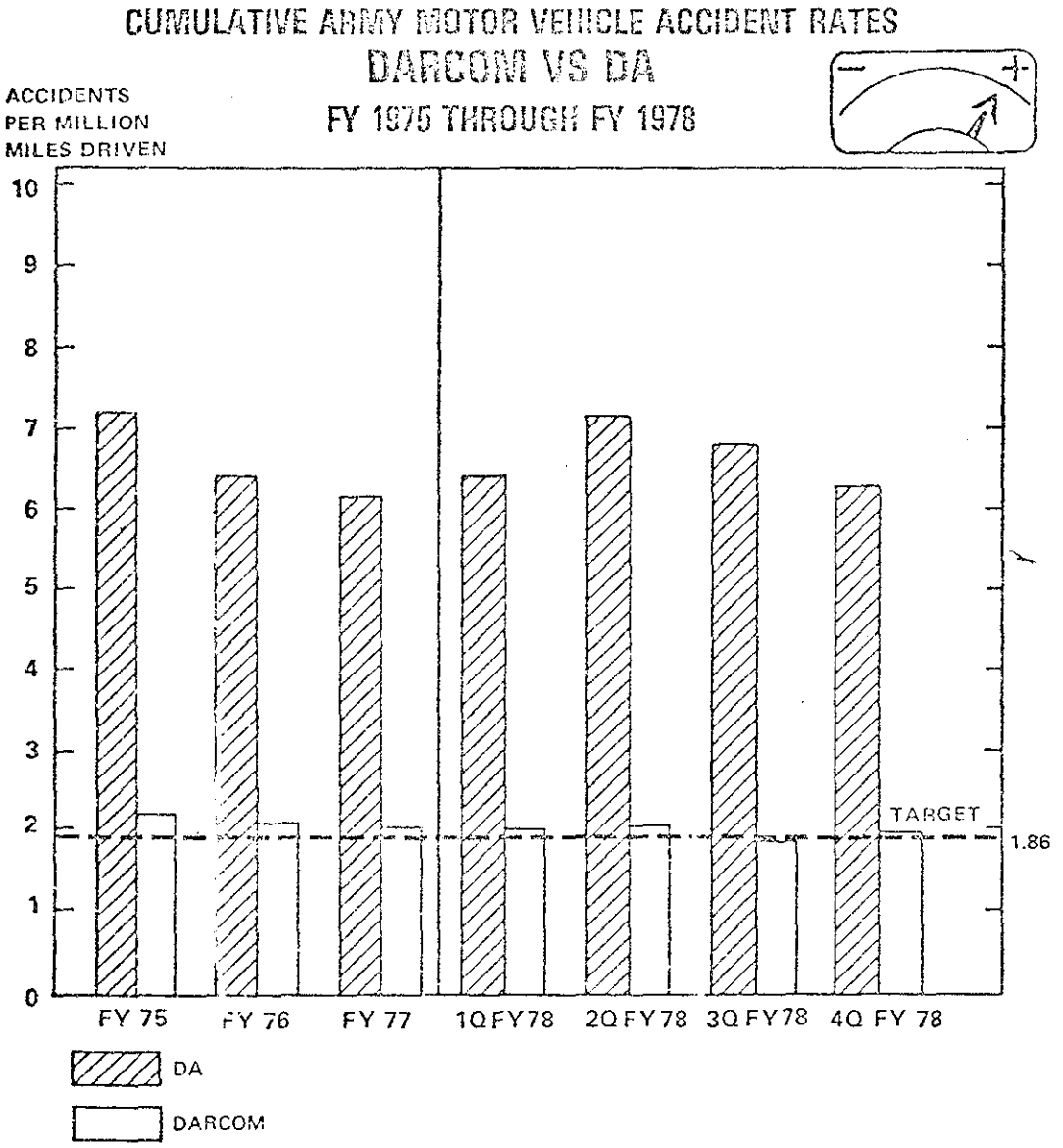
351-462 O - 81 - 34



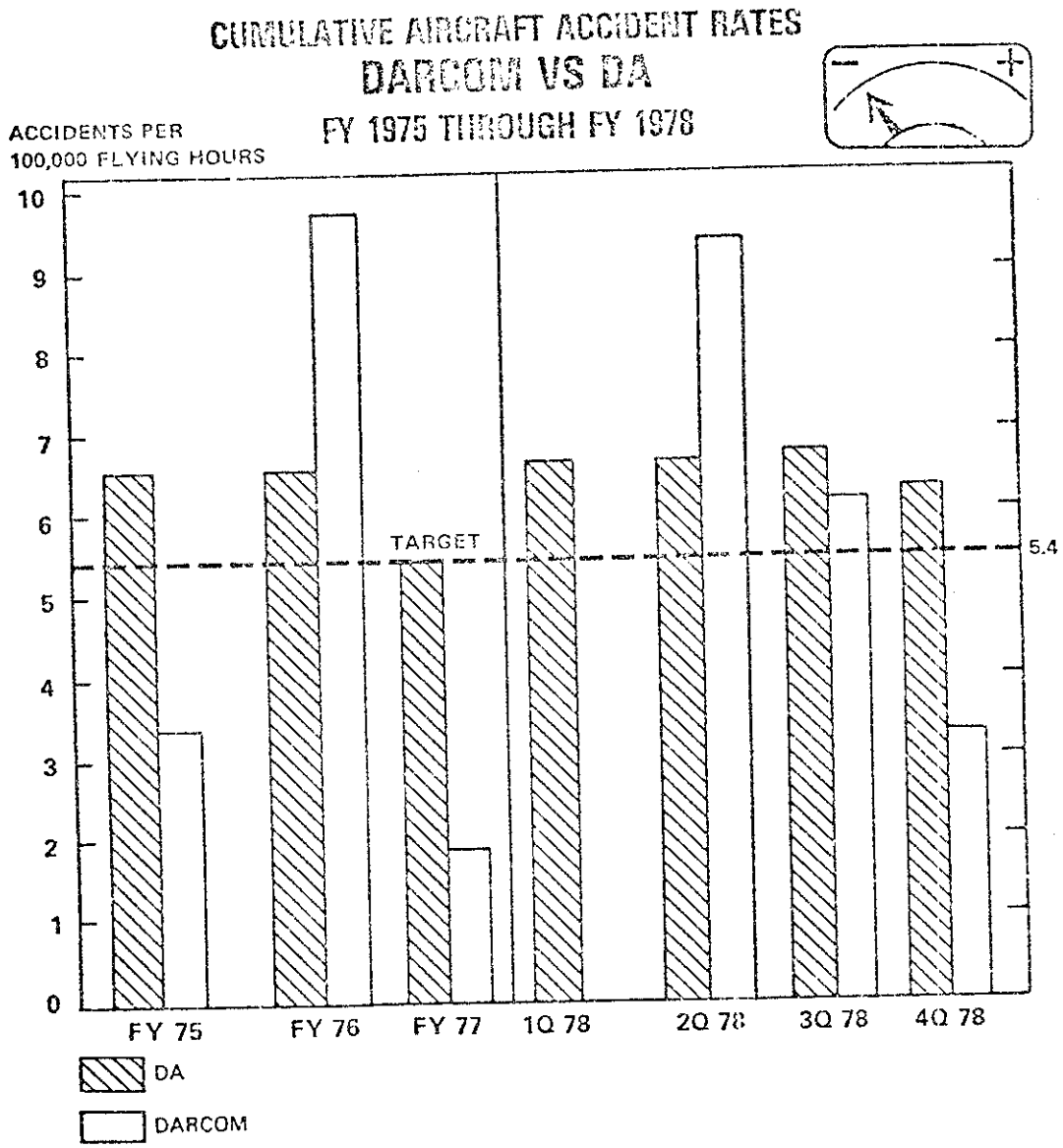
(U) The DARCOM target of 29.0 active personnel injuries per million man days worked was exceeded for FY 1978. This rate was the worst in four years and closely rivaled the rate experienced by the total Army. The cause for most of these injuries was motor vehicle accidents, both Army motor vehicle and privately owned vehicle.



(U) The target of 1.5 injuries per million man hours worked by contractor and other personnel was achieved by DARCOM for FY 1978 with performance of 0.98 as of 30 September 1978.



(U) The DARCOM target of 1.86 Army motor vehicle accidents per million miles driven was marginally exceeded for FY 1978. A downward trend, over the last four years, however, continued. Twenty-six persons were injured in Army motor vehicle accidents. Only three of these persons injured were wearing seat belts and all three were in the same vehicle.



(U) The DARCOM target of 5.4 aircraft accidents per 100,000 flying hours was met for FY 1978 with performance of 3.35 as of 30 September 1978. The statistic represents two aircraft accidents suffered within DARCOM during the fiscal year.

HEADQUARTERS US ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND

5001 EISENHOWER AVE., ALEXANDRIA, VA 22333

STAFF DIRECTORY

COMMANDING GENERAL	GEN J. R. GUTHRIE	10E08	49625	DRCCG
Deputy CG for Materiel Development	LTG R. J. BAER	10N06	49705	DRCDMD
Deputy CG for Materiel Readiness	LTG E. J. D'AMBROSIO	10S06	49700	DRCDMR
Chief of Staff	MG H. B. GIBSON, JR.	10E14	49641	DRCCS
Deputy Chief of Staff	COL R. D. CROSBY, JR.	10E14	49638	DRCDCS
Command Sergeant Major	CSM H. W. SHEDD	10S48	48257	DRCCSM

OFC OF DEPUTY CG FOR MATERIEL READINESS — DRCDMR

Asst Deputy for Mat Readiness	MR. J. F. MACLIN	10S06	49701	DRCDMR
Executive Officer	COL W. G. McGRATH	10S06	49702	DRCDMR
Coordinator	LTC D. G. FITZGERALD	10S10	48896	DRCDMR-TG
PM Coordinator	LTC R. M. REYNOLDS	10W18	49406	DRCDMR-TG
Task Group	LTC W. S. FLYNN	10S10	48895	DRCDMR-TG
SA/US ARNG	COL R. M. BOOTH	10S14	48895	DRCSA-NG
SA/USA Reserve	COL G. H. CHASE	10S14	48895	DRCSA-AR
SA/Nuclear Surety	MR. R. L. MILLER	10W18	49554	DRCSA-NS
SA/Chemical Surety	MAJ K. J. MILLER	10W18	49610	DRCSA-CS

DIRECTOR FOR INTERNATIONAL LOGISTICS — DRCIL

Director	BG(P) T. H. BRAIN	5E22	48380	DRCIL
Deputy Director	MR. R. E. BEAN	5E22	48383	DRCIL

US ARMY INTERNATIONAL LOGISTICS COMMAND — DRSIL

(Washington Field Office (WFO))

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Chief of Staff	COL R. C. BUSH	5E22	48384	DRSIL-S
Mgt Control Ofc	MR. R. E. HAAG (Act)	5S53	48391	DRSIL-SC
Mgt Spt Ofc	MR. E. J. COLEMAN	5E18	48385	DRSIL-WO
Directorate for Plans, Systems & Analysis	MR. F. F. BROTT	5N16	49895	DRSIL-WS
Directorate for Prog Mgt	COL S. E. HOLTOM	5S56	48395	DRSIL-WP
Directorate for Mid-East, Africa	COL D. M. BELL	5S44	48405	DRSIL-WM
Directorate for Europe	COL G. D. JONES	5S54	48399	DRSIL-WE
Directorate for Americas/Pacific/South Asia	COL C. D. FOUNTAIN	5S22	48451	DRSIL-WA

DIRECTORATE FOR MATERIEL MGT — DRCMM

Director	BG E. A. VULLEY, JR.	8S06	481/5	DRCMM
Deputy Director	MR. M. I. HINSON	8S06	48007	DRCMM
Executive Off	LTC A. T. CONROY	8S06	48007	DRCMM
Admin Ofc	MR. W. L. STEPHENS	8W17	49266	DRCMM-A
Assoc Dir for Requirements & Resources	MR. E. GREINER	8W22	48041	DRCMM-R
Assoc Dir for Supply & Distribution	COL O. C. GRUMMT	8S08	49271	DRCMM-S
Assoc Dir for Evaluation	MR. G. C. COX, JR.	8N98	49785	DRCMM-E
Assoc Dir for Maintenance	COL E. A. VIERECK	8S28	48786	DRCMM-M
Programs & Projects Ofc	COL W. F. DILLON	8S44	49487	DRCMM-L
Word Processing Center	MRS. L. L. HANEY	8S43	48953	DRCMM-WPC

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Deputy Director	MR. H. J. BUKOWSKI	5N58	49719	DRCRE
Executive Officer	COL P. D. HAUN	5N58	49720	DRCRE
Proj Off for TMDE	LTC L. R. MURRAY	5E08	49731	DRCRE-T
Admin Officer	MS. E. R. PLUMMER	5N56	49473	DRCRE-A
Associate Director for Integrated Logistics Support	COL E. DOLFI (Act)	5N42	49759	DRCRE-I
Associate Director for Force Status & Customer Assistance	COL J. J. WILMES	5N26	49884	DRCRE-F
Associate Director for Equip Improvement	MR. D. J. HAMERNIK	5N54	49750	DRCRE-E

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Director	BG(P) J. W. SHARP	9E06	48159	DRCPP
Deputy Director	MR. G. E. DAUSMAN	9E06	48167	DRCPP
Executive Officer	MAJ J. R. KUZMICK	9E06	48169	DRCPP
Plans & Admin Office	MR. R. E. POSPICHEL	9E19	48170	DRCPP-A
Assoc Dir for Cost Performance Reporting	COL R. E. FRYE, JR.	9S36	48319	DRCPP-K
Assoc Dir for Industrial Base	COL C. W. McDOWELL, JR.	9E22	48189	DRCPP-I
Assoc Dir for Procurement	MR. W. L. CLEMONS	9N56	48262	DRCPP-S
Assoc Dir for Procurement Mgt Review	MR. V. O. EWELL	9S46	48178	DRCPP-R
Assoc Dir for Programs	COL C. R. J. ROGERS	9S48	48339	DRCPP-P
Special Asst for Small Business	MR. R. L. COOMBS	9N13	48185	DRCPP-Z

DIRECTORATE FOR PLANS, DOCTRINE & SYS — DRCPS

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Deputy Director	MR. L. W. HOCHHEIMER	9S28	48747	DRCPS
Executive Officer	LTC H. E. DAHL	9S28	48227	DRCPS
Admin Office	MS A. E. ARRINGTON	9S22	48748	DRCPS
Assoc Director for Plans & Doctrine	COL J. D SPENCE	9S37	48334	DRCPS-P
Assoc Director for Systems	COL N. W. FLEMING	9S12	48245	DRCPS-S
Chief, DOD Materiel Distribution Systems Office, Hoffman Bldg.	COL C. V. SORRELS	3N47	325-0399	DRCPS-D

COMMANDER'S PERSONAL STAFF — DRCCG

Executive Officer	LTC L. K. MORASKI	10E08	49625	DRCCG
Administrative Off	CWO H. GILMORE	10E08	49626	DRCCG
Secretary	MISS DORA MONTA	10E08	49626	DRCCG

DIRECTORATE FOR PERS, TNG & FORCE DEV — DRCPT

Director	BG L. R. FORNEY, JR.	2E14	48195	DRCPT
Deputy Director	MR. W. S. CHARIN	2E14	48195	DRCPT
Executive Off	LTC J. E. MOORE	2E14	48195	DRCPT
Plans & Admin Ofc	MR. C. W. ROHRER	2E18	48421	DRCPT-A
Civ Pers Div	MR. G. N. KELLETT	2W20	49167	DRCPT-C
Force Dev Div	MR. J. B. MONG	2E08	48215	DRCPT-S
Mil Pers Div	COL B. R. ADAMS, JR.	2S56	49325	DRCPT-M
Race Relations/EO Ofc	CPT J. MILLER	2S55	49138	DRCPT-R
Alcohol & Drug Abuse Ofc	MR D. HELBIG	2N38	49716	DRCPT-H
STAFF SUPPORT ACTIVITIES				
HQ Civ Pers Ofc	MR. R. VELTHUIS	2S32	49427	DRXMM-CO
HQ Mpr Ofc	MR. P. R. ZEKAN	2N46	48974	DRXMM-SM
HQ Mil Pers Ofc	(Vacancy)	2C45	49333	DRXMM-MR
HQ Race Relations EO Ofc	LT J. E. TUCKER	1N07	49477	DRXMM-RR
HQ Alcohol & DA Ofc	MR. D. HELBIG	2N38	49716	DRXMM-AD
Organizational Effectiveness Ofc	LTC R. POWELL	2S40	49837	DRXMM-OE

DIRECTORATE FOR QUALITY ASSURANCE — DRCQA

Director	MR. S. J. LORBER	4W22	48929	DRCQA
Executive Asst	MS. R. DE VEAU	4W22	48930	DRCQA
Product Quality Div	MR. R. F. TINER	4W20	48899	DRCQA-P
Reliability & Sys Assessment Div	MR. A. NORDSTROM	4S06	48912	DRCQA-E

DIRECTORATE FOR PLANS & ANALYSIS — DRCPA

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Deputy Director	MR. D. J. SHEARIN	4N24	48676	DRCPA
Executive Off	LTC J. M. CHAPMAN	4N24	48676	DRCPA
Environmental Quality Ofc	LTC R. M. CLEARWATER (Act)	4N16	48191	DRCPA-E
Mil Plans & Opns Div	COL L. G. PANNIER, JR.	4S27	49426	DRCPA-M
Mission & Org Div	MR. R. G. SILVEY	4S18	48849	DRCPA-O
Program, Plans & Policies Div	MR. W. C. KREMANN	4S25	48854	DRCPA-P
Sys Anal Div	COL J. A. DONNAN	4N08	48037	DRCPA-S

DIRECTORATE FOR INSTALLATIONS & SERVICES — DRCIS

Director	COL W. G. WOLFE	5W12	49041	DRCIS
Deputy Director	MR. J. W. BOUCHER	5W12	49041	DRCIS
Plans & Programs Ofc	MR. J. D. HARTSOE	5W18	49026	DRCIS-P
Engineer Div	COL A. F. LAWRENCE, JR.	5N06	49390	DRCIS E
Services Div	MR. L. H. SANDWEN	5S06	49389	DRCIS-S
Housing Mgt Div	MR. W. H. McDONALD	5W20	49282	DRCIS-H

EQUAL EMPLOYMENT OPPORTUNITY OFFICE — DRCEE

DARCOM Equal Employment Opportunity Off	MR. G. L. JONES	10S15	49690	DRCEE
DARCOM Fed Women's Prog Coordinator	MS. R. GNADT	10S15	49690	DRCEE
DARCOM Spanish Speaking Prog Coordinator	MR. F. ROSARIO	10S15	49690	DRCEE

HQ EQUAL EMPLOYMENT OPPOR OFC — DRCEE

HQ Equal Employment Opportunity Officer	MR. M. W. FRANCIOLI	1C09	49836	DRCEE-H
HQ Federal Women's Program Coordinator	MS. E. D. MANGANA-SWAN	1C09	48021	DRCEE-H

DARCOM AVIATION OFFICE — DRSTS-X*

Aviation Officer	COL D. B. KING	AVN	698-5473	DRSTS-X
Fld Standardization Officer	CW4 C. J. TOMEI	AVN	698-5473	DRSTS-X

*Hq TSARCOM, St. Louis, MO 63120

OFFICE OF THE COMPTROLLER — DRCCP

Comptroller	BG A. J. CADE (Act)	3N58	49131	DRCCP
Deputy Compt	COL J. W. LOWDEN, JR.	3N58	49129	DRCCP
Sp Asst for Fin Mgt	MR. B. R. GILLILAND	3N58	49129	DRCCP
Executive Off	LTC T. K. HIGHTOWER	3N58	49130	DRCCP
Administrative Ofc	MRS. L. S. BROWN	3N57	49120	DRCCP-A
Cost Anal Div	MR. R. R. McGREGOR	3S34	49080	DRCCP-E
Fin & Acct Div	COL E. B. FINCH, JR.	3N54	49231	DRCCP-F
Internal Review & Audit Compliance Ofc	MR J. K. CHURCH	3S26	49020	DRCCP-I
Mgt Div	(Vacancy)	3W06	49170	DRCCP-M
Resources & Prog Div	COL J. W. LOWDEN, JR.	3E10	49039	DRCCP-B
Review & Anal Div	MR. I. BERG	3N18	49220	DRCCP-R

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Inspector General	COL M. R. WAGNER	1S12	48070	DRCIG
DARCOM Inspector General Activity				
Eastern Inspection Division	COL L. W. WRIGHT	1S24	48084	DRXIG-E
Coordination & Control Division	MR. R. V. MURPHY	1S14	48072	DRXIG-X
Investigations Division	COL S. P. DOTUR	1S08	48064	DRXIG-V
Western Inspection Division	COL C. B. HADEN, Autovon	693-3441/3442		DRXIG-W
Administrative Officer	MRS. G. W. LEAK	1S14	48079	DRXIG-X

HISTORICAL OFFICE — DRCHO

Chief	DR. D. BIRDSELL	5S10	49177	DRCHO
Annual Historical Reports/Unit Histories	MR. M. G. MARKEN, SR.	5S10	48173	DRCHO
Historical Monographs/Studies	MR. C. W. LYNCH	5S10	48173	DRCHO
Special Studies/Historical Services	MR. A. A. PUTIGNANO (Act)	5S10	48173	DRCHO
Historical Sources	MR. M. F. COPPOLA	5S10	49177	DRCHO

DIRECTOR OF COMM ELECTRONICS & US ARMY COMM COMMAND-DARCOM — DRCCE / CCNC

Director	COL H. S. CHRISTENSEN	3S10	49050	DRCCE
Commander	COL H. S. CHRISTENSEN	3S10	49050	CCNC-C
Deputy Commander	COL J. D. MITCHELL	3S10	49055	CCNC-DC
SGT Major	SGM J. CECCOLI	3S10	49056	CNC-SM
Operations Div	MR. A. SCHWARTZ	3S19	49073	DRCCE-O
Plans Div	MR. J. E. GOTTFRIED	3S06	49063	DRCCE-P
Resources Div	MR. A. E. PAIGE	3S14	49071	DRCCE-R

USA DARCOM SERVICE SUPPORT ACTIVITY — DRXAM

Director	LTC J. A. VOETSCH III	1E14	48134	DRXAM
Deputy Director	MR. L. F. KORTUM	1E14	48134	DRXAM
Admin Svc Div	LTC G. J. HAROLD	1E10	48139	DRXAM-A
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Gen Services Div	2LT S. D. POST	1S52	49005	DRXAM-G
Space & Sup	MR. P. SIMS	1S58	49095	DRXAM-G
Equip Mgr	MR. J. BALDWIN	1S58	49094	DRXAM-G
Travel	MR. J. H. BARGET	1S52	49006	DRXAM-GT
HQ Budget & Prog Ofc	MR. V. L. GUILER	1E18	48129	DRXAM-B
HQ Security Ofc	MRS. B. E. MILLER	1E22	49066	DRXAM-S
Staff C-E Off	CPT G. W. PERKINS	G3C20	48989	DRXAM-CE
Staff Librarian	MS. I. O. OMDAHL	7S35	48087	DRXAM L
HQ Tech Library	MR J. FRAGALE, JR.	7S35	48152	DRXAM-TL

MISCELLANEOUS NUMBERS

STAFF DUTY OFFICER	G2C60	49223	
AMBULANCE			
(During Duty Hours, Call the Clinic)	1S51	48296	
(After Duty Hours, Call the Guard)	Lobby	9-557-1144	
DARCOM OPERATIONS CENTER	G2C60	48660	
LSSA MANAGEMENT INFORMATION CTR	G3C46	49122	DRXLS-LH
DARCOM PERS SPT AGCY	2E18	48499	DRXMM-P
BUILDING ADMINISTRATOR	1S34	48099	OBM-DARCOM
CIVILIAN EMPLOYEE HEALTH SVC (Clinic)	1S51	48296	
CLASSIFIED MAIL CENTER	G2W07	49585	DRXAM-AMC
COMMAND CONFERENCE ROOM	10N48	48988	DRXAM-PA
CONFERENCE ROOM SCHEDULING	1S17	48485	DRXAM-PA
CREDIT UNION/DARCOM	7C22	48311	
DRIVERS SERVICE	G2W12	48091	DRXAM-GD
GRAPHICS FACILITY	1C22	48491	DRXAM-PG
GUARD OFFICE	Lobby	9-557-1144	
HQ USACC-DARCOM	4N16	48173	CCNC-DC
LOCATOR SERVICE (MIL PERS)	2C45	49339	DRXMM-MR
LOCATOR SERVICE (CIV PERS)	2C33	49491	DRXMM-CO
PHOTOGRAPHIC FACILITY	1C44	48489	DRXAM-PP
PRINTING & DUPLICATING	G2C37	49603	DRXAM-ABP
PUBLICATIONS & EDITORIAL SEC	1E06	48149	DRXAM-ABE
PUBLICATIONS STOCK ROOM	G3C21	49663/4	DRXAM-ABS
RECEPTIONIST	Lobby	49191	DRXAM-G
SPECIAL SECURITY OFFICE (SSO)	G2C63	48986	DAMI-SG-DRC
TELECOMMUNICATIONS CENTER	G3C24	49009	CCNC-CSA-OT
TELEPHONE Service Control Off (Mr. Ford)	G3W17	49001	CCNC-CSA-ST
TOP SECRET REPOSITORY	G2W09	49590	DRXAM-AMT
UNCLASSIFIED MAIL CENTER	G2C16	49594	DRXAM-AMU
USA EQUIP AUTHORIZATIONS REV ACTV	9N31	49292	DRXEA-C
WASH PROCUREMENT OFFICE, ECOM	4W06	48878	DRSEL-PP-CW
DARCOM REPORTS MANAGEMENT OFFICE	4S51	49322	DRXLS-LB
FORMS MANAGEMENT OFFICER	1N58	49141	DRXAM-AR

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Dep Secy General Staff	LTC R. T. BOYLE	10S60	49644	DRCGS
Asst Secy General Staff	MAJ W. W. WINSLOW	10S54	49645	DRCGS
Asst Secy General Staff	MAJ L. A. LEASSEAR	10S54	49645	DRCGS
Asst Secy General Staff	CPT J. K. MILLER	10S60	49646	DRCGS
Asst Secy General Staff	1LT M. J. LIJEK	10S60	49645	DRCGS
Chief, Protocol Office	MRS. H. L. SALPINI	10S50	49669	DRCGS-P
Administrative Officer	MR. C. W. LELAND, JR.	10S55	49662	DRCGS-A

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Command Counsel	MR. F. X. McKENNA	7E06	48046	DRCGC
The Deputy Command Counsel	MR. B. M. BLAIR	7E06	48046	DRCGC-P
Deputy Command Counsel/Command Staff Judge Advocate	COL R. S. HAWLEY	7N56	48003	DRCGC-S
Executive Off	MR. J. K. GAISER	7E06	48046	DRCGC-A
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Patent Law Div	MR. N. EDELBERG	7E06	48031	DRCGC-L
Procurement Law Div	MR. B. M. BLAIR	7E06	48046	DRCGC-P
Plans & Operations Ofc	MR. J. K. GAISER	7E06	48046	DRCGC-A

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Administrative Off	MR. L. L. JOHNSTON	4S58	49155	DRCMS-A
Mat Acq Sys Div	DR. R. P. UHLIG	4E08	48946	DRCMS-I
Mat Rdn Sys Div	MR. J. E. SMITH	4N52	49140	DRCMS-E
Rseources Div	MR. J. CIANFLONE	4S58	48325	DRCMS-T

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Chaplain	LTC R. L. BEZANSON, JR.	10S29	49432	DRCCH
Chaplain	MAJ J. B. SMITH	10S29	49432	DRCCH

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Environmental Quality	LTC J. E. HERNDON, JR.	10S24	49470	DRCSG-S
Medical Entomologist	LTC C. S. BULGER	10S24	49470	DRCSG-E
Industrial Hygienist	MR. C. J. JORDAN	10S24	49470	DRCSG-I

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Public Affairs Officer/Industry Relations	MR. J. J. FOLEY	10S35	48010	DRCIN
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Public Info	MR. J. W. PENTON, JR.	10S35	48012	DRCIN-PI
Community Relations & Special Projects	MR. G. E. FANT	10S35	48013	DRCIN-CRSP

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Intell POC	MR. R. E. ENGLISH	10N34	49455	DRCSS
PM POC	MR. T. MAYFIELD	10N44	49714	DRCSS
INSCOM LNO	LTC L. J. LOOMIS	10N34	49455	IAINTA:LNA

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Aviation	LTC C. L. SCHELHORN	10N36	49475	DRCSF-A
Health Physics	MR. D. N. TARAS	10N41	49340	DRCSF-P
Prog Evaluation	MR. J. D. LLOYD	10N41	49340	DRCSF-S
Rsch & Eng	MR. L. L. MOTHERSBAUGH	10N36	49475	DRCSF-E

SPECIAL ASSISTANTS — DRCSA

Joint Activities	COL C. HENNE, JR.	10S18	49695	DRCSA-JS
Technical Relations	MR. H. HANDLER	10E14	49630	DRCSA-H
Congress Affairs	MR. C. R. SMITH	10S32	48263	DRCSA-C

PROGRAM/PROJECT/PRODUCT MANAGERS

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	COL A. G. ROWE, PM	Ft. Belvoir	354-3031	DRCPM-MEP
	MR. L. J. BORGES, Deputy PM	Ft. Belvoir	354-1204	DRCPM-MEP
Army Container Oriented Distribution System (ACODS)				
	COL W. H. DANZEISEN, JR., PM	9W22	48799	DRCPM-CS
	MR. C. H. SCHIPP, Deputy PM	9W22	48800	DRCPM-CS
Advanced Attack Helicopter (AAH)	LTC B. G. JONES, Chief	7N45	48939	DRCPM-AAH
BLACK HAWK	MRS. D. MUNDAY, Chief	7N45	48940	DRCPM-BH
Munitions Production Base Modernization & Expansion (MPBME)	MR. V. J. GORMAN, Chief	9S08	49361	DRCPM-PBM-LN1
REMBASS Field Representative	LTC R. W. CARMODY, Chief	Ft. Belvoir	534-5702	DRCPM-RBS
PATRIOT	COL J. L. KENNEDY, Chief	10N54	48886	DRCPM-MDW
SANG Modernization Program	LTC R. B. STEED, Chief	9N18	49126	DRCPM-NG-W
US ROLAND	LTC W. C. HARDWICK, Chief	10N54	48240	DRCPM-ROL-W
XM-1 Tank System	LTC P. M. McVEY, Chief	5E07	49738	DRCPM-GCM-WF
ARRCOM Washington Field Office, SM	LTC R. J. HUDAK	7S50	48247	DRSAR-AA
Nuclear Munitions	MR. E. L. BACOT, Chief	5E07	49133	DRCPM-NUC
Fighting Vehicle Systems (FVS)	MR. J. SARAPULSKI, Chief	3S23	49079	DRCPM-FVS

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Asst Deputy for Materiel Development	MR. J. D. BLANCHARD	10N06	49709	DRCDMD
Asst Deputy/Science & Techonology	MR. N. L. KLEIN	10N12	49560	DRCDMD-ST
Asst Deputy/Int'l R&D	MR. B. R. DUNETZ	10N12	48252	DRCDMD
Executive Off	LTC F. W. McDONALD, JR.	10N06	49711	DRCDMD
SA for Minor Prog	MR. J. STOLARICK	10N12	49559	DRCDMD
Task Group	LTC A. D. RODGERS, III	10W12	48657	DRCDMD-TG
Admin Group	MRS. G. K. BARKER	10W12	48657	DRCDMD

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Ind Ln O	MR. J. W. CRELLIN	8S57	49878	DRCDE-L
TILO	MRS. R. LILLER	8S56	48948	DRCDE-LO
Specs, Stds & Engr	MR. J. KICAK (Act)	8N14	49828	DRCDE E
Foreign S&T	COL J. G. MIKULA (Act)	8N47	49816	DRCDE-F
Prog & Bud	MR. R. D. GREENE	8E14	49849	DRCDE-P
Sys Eval & Test	(Vacancy)	8N23	49816	DRCDE-R
Sys Dev	COL J. F. BLEECKER (Act)	8N54	49850	DRCDE-D
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Field Artillery	MR. R. J. HAPPICK (Act)	8N48	49870	DRCDE-DF
Air Defense	COL A. CRAWFORD	8N48	49872	DRCDE-DA
Aviation	COL E. R. SHORE	8N28	48118	DRCDE-DH
Sold/Tng Dev	COL E. A. THOMPSON	8N36	48605	DRCDE-DG
Support	COL C. JONES	8N48	49870	DRCDE-DS
C&C/Survl	COL R. H. ELLIOTT, JR.	8N28	49856	DRCDE-DE
CM, CCM/FIO	COL J. G. MIKULA	8N47	48853	DRCDE-DC/FIO
Tac Comp Sftwr	COL J. F. WASSENBERG	8N22	49811	DRCDE-DK
Spec Mun	MR. C. RUBEN (Act)	8N36	48753	DRCDE-DM

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Deputy Director	DR. P. C. DICKINSON	4S26	47517	DRCBSI
Executive Officer	LTC J. COBURN	4S26	47518	DRCBSI
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Artillery	LTC W. BREEN	4S26	49165	DRCBSI
Aviation	(Vacancy)	4S26	49166	DRCBSI
Cbt Spt/Nuc	COL J. E. McDONNELL	4S26	49154	DRCBSI
Cmd, Cntl & Comm	(Vacancy)	4S26	49132	DRCBSI
Infantry	COL C. J. GEARIN	4S26	49187	DRCBSI
Logistics	COL T. R. HUKKALA	4S26	49165	DRCBSI
Mil Intel	COL R. W. WILMOT	4S26	49132	DRCBSI
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Sys Eng	MR. F. FAIRCHILD	4S26	48279	DRCBSI
OP Rsch Anal (Cost)	MR. R. VERBEKE	4S26	49165	DRCBSI
Elec Eng	MR. A. GIAMBALVO	4S26	47517	DRCBSI

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MGT INT	MR. J. H. DAVIDSON	10N33	48372	DRCPM
RECAP DAPR	(Vacancy)	10N33	48372	DRCPM
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ARRCOM, ARADCOM	MR. T. MEADE	10N25	49579	DRCPM
AVRADCOM, TSARCOM	MR. N. VAILLANT	10N25	49581	DRCPM
TARCOM, TARADCOM	MR. H. C. MELVIN	10W13	48671	DRCPM
MIRCOM, MIRADCOM	MR. G. B. LEVY	10W13	48671	DRCPM
MIRCOM, MIRADCOM, SAR	MR. F. O. ANGEL	10W13	48671	DRCPM

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DEA/Sci Engr Progs	MR. W. A. SILBERT	9W14	48367	DRCIRD
INT'L R&D	MR. J. G. WASKO	9W14	48367	DRCIRD
ABCA Progs; TEAL	LTC J. LOWE	9W14	48367	DRCIRD
MAS; ASCC	MR. P. J. PFEIFFER	9W14	48367	DRCIRD
TTCP; AGARD; NATO	MR. A. A. BERMAN	9W14	48367	DRCIRD
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MAS; SEATO; CENTO; NATO	MR. M. Y. HARVEY	9W14	48367	DRCIRD
ABCA; ABCA Naval	MISS L. JONES	9W14	48367	DRCIRD
ABCA Loans	MS. D. WHITLEY	9W14	48367	DRCIRD

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MM&T	MR. E. GARDNER	9N08	48288	DRCMT
PESO	MR. R. DELMAR	9N08	48298	DRCMT
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Tech Transfer	MR. G. SCHUCK	9N08	48289	DRCMT
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Program Control & Budget Div	MR. S. RICHEY	3W14	49200	DRCPI

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MERADCOM/TARADCOM	MR. M. MARKS	10N24	49561	DRCLDC
MIRADCOM/ARO	DR. G. BUSHEY	10N24	49565	DRCLDC
ERADCOM/CORADCOM	MR. J. BENDER	10N24	49561	DRCLDC
NARADCOM/AMMRC	MR. R. ZENTNER	10N30	48059	DRCLDC
AVRADCOM/HEL	MR. J. LINDWARM	10N24	49566	DRCLDC
Facil & Equip	MR. C. CLIFFORD	10N24	49562	DRCLDC
Personnel	MR. M. SYKES	10N24	49562	DRCLDC

LIAISON

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*Canada	LTC J. C. BEREZOWSKI	10S44	49679	CLNO
*Germany	COL H. ROTHE	10S38	49684	FRGLNO
Marine Corps	MAJ M. R. JANAY	10S44	49676	DRCGS-F
TRADOC/Logistics Center	LTC H. M. HAMMER	10S44	49678	DRCGS-L
DESCOM	MR. E. G. KILPATRICK	10W16	49620	DRCGS-D

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US Navy Weapons Center*	LTC R. F. BOYD	245-3544	
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OCTOBER 1977

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HEADQUARTERS US ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND

5001 EISENHOWER AVE., ALEXANDRIA, VA 22333

STAFF DIRECTORY

COMMANDING GENERAL

COMMANDING GENERAL	GEN JOHN R. GUTHRIE	10E08	49625	DRCCG
Deputy CG for Materiel Readiness	LTG E. J. D'AMBROSIO	10S06	49700	DRCDMR
Deputy CG for Materiel Development	LTG R. J. BAER	10N06	49705	DRCDMD
Deputy CG for Resource Management	MG R. L. BERGQUIST	10E20	49640	DRCDRM
Chief of Staff	BG(P) R. L. MOORE	10E14	49638	DRCCS
Deputy Chief of Staff	COL L. A. HERGENROEDER	10S60	49644	DRCDCS
Command Sergeant Major	CSM H. W. SHEDD	10S48	48257	DRCCSM

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SECRETARY OF THE GENERAL STAFF — DRCGS

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Dep Secy Gen Staff	MAJ W. W. WINSLOW	10S60	49645	DRCGS
Asst Secy Gen Staff	MAJ L. A. LEASSEAR	10S54	49659	DRCGS
Asst Secy Gen Staff	CPT J. MILLER, SR.	10S54	49646	DRCGS
Asst Secy Gen Staff	MAJ D. M. SMITH	10C55	49419	DRCGS
Asst Secy Gen Staff	MAJ J. J. BIKUS	10S54	49646	DRCGS
Chief, Protocol Office	MRS. H. L. SALPINI	10S50	49669	DRCGS-P
Administrative Officer	MR. C. W. LELAND, JR.	10S55	49662	DRCGS-A

DEPUTY CG FOR MATERIEL READINESS — DRCDMR

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Asst Deputy for MR	MR. J. F. MACLIN	10S06	49701	DRCDMR
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Coordinator	LTC D. G. FITZGERALD	10S10	48896	DRCDMR-TG
PM Coordinator	MR. R. P. O'BRIEN	10W18	49406	DRCDMR-TG
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SA/USA Reserve	COL G. H. CHASE	10S10	48895	DRCSA-AR
SA/Nuclear Surety	MR. R. L. MILLER	10W18	49554	DRCSA-NS
SA/Chemical Surety	Vacant	10W18	49610	DRCSA-CS

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Director	MG T. H. BRAIN	5E22	48380	DRCDS
Deputy Director	MR. R. E. BEAN	5E22	48383	DRCDS

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Chief of Staff	COL R. C. BUSH	5E22	48384	DRSAC-S
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Mgt Spt Ofc	MR. E. J. COLEMAN	5E18	48385	DRSAC-SO
Directorate for Financial Mgt	MR. R. E. HAAG (Act)	5S53	48390	DRSAC-MF
Directorate for Plan & Systems Analysis	MR. F. F. BROTT	5N16	49895	DRSAC-MS
Directorate for Program Mgt	COL S. E. HOLTOM	5S56	48395	DRSAC-MP
Directorate for Mideast Africa & Americas	COL D. M. BELL	5S44	48405	DRSAC-MM
Directorate for Europe	COL G. D. JONES	5S54	48399	DRSAC-ME
Directorate for Asia Pacific	COL C. M. MARSHALL	5S22	48451	DRSAC-MA

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Executive Off	LTC J. M. GRAY	8S06	48007	DRCMM
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Maint Interservice Spt Mgt Ofc	MR. G. A. KRONE	8S44	49396	DRCMM-MI

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Executive Officer	COL P. D. HAUN	5N58	49720	DRCRE
Proj Off for TMDE	LTC L. R. MURRAY	5E08	49731	DRCRE-T
Admin Officer	MS. E. R. PLUMMER	5N56	49473	DRCRE-A
Associate Director for Integrated Logistics Support	COL E. DOLFI (Act)	5N42	49759	DRCRE-I
Associate Director for Force Status & Customer Assistance	COL E. F. MASON	5N26	49884	DRCRE-F
Associate Director for Equip Improvement	MR. D. J. HAMERNIK	5N54	49750	DRCRE-E

DIRECTORATE FOR PROCUREMENT & PRODUCTION — DRCPP

Director	MG J. W. SHARP	9E06	48159	DRCPP
Deputy Director	MR. G. E. DAUSMAN	9E06	48167	DRCPP
Executive Officer	MAJ P. C. GILL	9E06	48169	DRCPP
Plans & Admin Office	MR. R. E. POSPICHEL	9E19	48170	DRCPP-A
Assoc Dir for Cost Performance Reporting	COL R. E. FRYE, JR.	9S36	48319	DRCPP-K
Assoc Dir for Industrial Base	COL C. W. McDOWELL, JR.	9E22	48189	DRCPP-I
Assoc Dir for Procurement	MR. W. L. CLEMONS	9N56	48262	DRCPP-S
Assoc Dir for Procurement Mgt Review	MR. V. O. EWELL	9S46	48178	DRCPP-R
Assoc Dir for Programs	COL C. R. J. ROGERS	9S48	48339	DRCPP-P
Special Asst for Small Business	MR. J. W. SHEPARD	9N13	48185	DRCPP-Z

DIRECTORATE FOR PLANS, DOCTRINE & SYS — DRCPS

Director	COL E. HONOR	9S28	48229	DRCPS
Deputy Director	MR. L. W. HOCHHEIMER	9S28	48747	DRCPS
Executive Officer	LTC E. L. WALKER	9S28	48691	DRCPS
Admin Office	MS. B. BISE	9S22	48748	DRCPS
Assoc Director for Plans & Doctrine	COL R. W. GRUEN	9S37	48334	DRCPS-P
Assoc Director for Systems	COL N. W. FLEMING	9S12	48245	DRCPS-S

DEPUTY CG FOR RESOURCE MGT — DRCDRM

DCG for RM	MG R. L. BERGQUIST	10E20	49640	DRCDRM
Executive Officer	LTC W. S. FLYNN	10E14	49641	DRCDRM

OFFICE OF THE COMPTROLLER — DRCCP

Comptroller	BG A. J. CADE	3N58	49131	DRCCP
Deputy Compt	MR. A. T. WALKER	3N58	49129	DRCCP
Sp Asst for Fin Mgt	MR. B. R. GILLILAND	3N58	49129	DRCCP
Executive Off	LTC T. K. HIGHTOWER	3N58	49130	DRCCP
Administrative Ofc	MRS. L. S. BROWN	3N57	49120	DRCCP-A
Cost Anal Div	MR. R. R. McGREGOR	3S34	49080	DRCCP-E
Fin & Acct Div	COL W. E. DYSON	3N54	49231	DRCCP-F
Internal Review & Audit Compliance Ofc	MR. J. K. CHURCH	3S26	49020	DRCCP-I
Mgt Review & Anal Div	MR. W. A. CHAVET	3N06	49170	DRCCP-S
Resources & Programs Division	COL J. O. HEGDAHL	3E10	49039	DRCCP-B

DIRECTORATE FOR PERS, TNG & FORCE DEV — DRCPT

Director	VACANT	2E14	48195	DRCPT
Deputy Director	MR. W. S. CHARIN	2E14	48195	DRCPT
Executive Off	MAJ B. J. McHUGH	2E14	48195	DRCPT
Plans & Admin Ofc	MR. C. W. ROHRER	2E18	48421	DRCPT-A
Civ Pers Div	MR. G. N. KELLETT	2W20	49167	DRCPT-C
Force Dev Div	MR. G. E. TAGTMEYER	2E08	48215	DRCPT-S
Mil Pers Div	LTC(P) H. DYSON	2S56	49325	DRCPT-M
Equal Oppor Ofc	MAJ R. RATHER, JR.	2S55	49138	DRCPT-R
Alcohol & Drug Abuse Ofc	MR. D. HELBIG	2N38	49716	DRCPT-H

STAFF SUPPORT ACTIVITIES

HQ CIV Pers Ofc	MRS. E. W. MANIFOLD	2S32	49427	DRXMM-CO
HQ Mpr Ofc	MR. P. R. ZEKAN	2N46	48974	DRXMM-SM
HQ Mil Pers Ofc	MAJ J. P. COPPENS	2C45	49333	DRXMM-MR
HQ Equal Oppor Ofc	1LT R. E. BLAKELY	1W07	49477	DRXMM-RR
HQ Alcohol & Drug Abuse Ofc	MR. D. HELBIG	2N38	49716	DRXMM-AD
Organizational Effectiveness Ofc	LTC R. POWELL	2S40	49837	DRXMM-OE

DIRECTORATE FOR PLANS & ANALYSIS — DRCPA

Director	COL G. T. FEILKE	4N24	48676	DRCPA
Deputy Director	MR. D. J. SHEARIN	4N24	48676	DRCPA
Executive Off	CPT P. L. CAPESTANY (Act)	4W06	48122	DRCPA
Environmental Quality Ofc	DR. D. K. EMIG	4N16	48191	DRCPA-E
Mil Plans & Opns Div	COL R. E. HEDGCOCK	4S27	49426	DRCPA-M
Mission & Org Div	MR. R. G. SILVEY	4S18	48849	DRCPA-O
Program, Plans & Policies Div	MR. W. C. KREMANN	4S25	48854	DRCPA-P
Sys Anal Div	COL J. A. DONNAN	4N08	48037	DRCPA-S

DIRECTORATE FOR INSTALLATIONS & SERVICES — DRCIS

Director	COL W. G. WOLFE	5W12	49041	DRCIS
Deputy Director	MR. J. W. BOUCHER	5W12	49041	DRCIS
Plans & Programs Ofc	MR. J. D. HARTSOE	5W18	49026	DRCIS-P
Engineer Div	COL A. F. LAWRENCE, JR.	5N06	49390	DRCIS-E
Services Div	MR. L. H. SANDWEN	5S06	49389	DRCIS-S
Housing Mgt Div	MR. W. H. McDONALD	5W20	49282	DRCIS-H

OFFICE OF THE COMMAND COUNSEL — DRCGC

Command Counsel	MR. F. X. McKENNA	7E06	48046	DRCGC
The Deputy Command Counsel	MR. B. M. BLAIR	7E06	48046	DRCGC-P
Deputy Command Counsel/Command Staff Judge Advocate	COL R. S. HAWLEY	7N56	48049	DRCGC-S
Executive Off	MR. J. K. GAISER	7E06	48046	DRCGC-A
Adversary Proceedings Div	MR. R. I. BARDAVID	7N48	48052	DRCGC-B
Mil Law/Legal Svc Div	COL R. S. HAWLEY	7N56	48049	DRCGC-S
Patent Law Div	MR. N. EDELBERG	7E06	48031	DRCGC-L
Procurement Law Div	MR. B. M. BLAIR	7E06	48046	DRCGC-P
Plans & Operations Ofc	MR. J. K. GAISER	7E06	48046	DRCGC-A

DIRECTORATE FOR MGT INFO SYSTEMS — DRCMS

Director	MR. J. C. GILBERT	4E16	48626	DRCMS
Deputy Director	MR. J. A. ARNTSON	4E16	48627	DRCMS
Executive Off	LTC C. O. WALTERS	4E16	48627	DRCMS
Administrative Off	MR. L. L. JOHNSTON	4E13	48310	DRCMS-A
Mat Acq Sys Div	MRS. C. G. MORRIS	4E08	48946	DRCMS-I
Mat Rdn Sys Div	MR. J. E. SMITH	4N52	49140	DRCMS-E
Rseources Div	MR. J. CIANFLONE	4E22	49480	DRCMS-T

OFFICE OF THE CHAPLAIN — DRCCH

Staff Chaplain	COL D. L. WILSON	10S29	49432	DRCCH
Chaplain	LTC R. S. BEZANSON, JR.	10S29	49432	DRCCH
Chaplain	MAJ J. B. SMITH	10S29	49432	DRCCH

OFFICE OF THE SURGEON — DRCSG

Surgeon	COL R. T. CUTTING, M.D.	10S24	49470	DRCSG
Occupational Medicine	COL B. H. KAPLAN, M.D.	10S24	49470	DRCSG-O
Environmental Quality	LTC J. E. HERNDON, JR.	10S24	49470	DRCSG-S
Medical Entomologist	LTC C. S. BULGER	10S24	49470	DRCSG-E
Industrial Hygienist	MR. C. J. JORDAN	10S24	49470	DRCSG-I

PUBLIC AFFAIRS OFFICE — DRCIN

Chief, Public Affairs	COL C. A. HAMMAKER, JR.	10S35	48010	DRCIN
Public Affairs Officer/Industry Relations	MR. J. J. FOLEY	10S35	48010	DRCIN
Comd Info	MS. E. P. HANCE	10S35	48019	DRCIN-CI
Public Info	MR. J. W. PENTON, JR.	10S35	48012	DRCIN-PI
Community Relations & Special Projects	MR. G. E. FANT	10S35	48013	DRCIN-CRSP

SECURITY OFFICE — DRCSS

Chief	COL B. T. WHITE	10N34	49454	DRCSS
Executive Officer	LTC L. J. LOOMIS	10N34	49455	DRCSS
Sec Spt Acty	LTC B. BILLINGS	FT GILLEM	AV 797-5620	DRXPX-O
Physical Security	MAJ W. M. SYMONDS	10N44	49714	DRCSS
Intelligence	MR. R. E. ENGLISH	10N34	49455	DRCSS

SAFETY OFFICE — DRCSF

Chief	MR. W. G. QUEEN	10N36	49475	DRCSF
Aviation	LTC A. J. HALL	10N36	49475	DRCSF-A
Health Physics	MR. D. N. TARAS	10N41	49340	DRCSF-P
Prog Evaluation	MR. J. D. LLOYD	10N41	49340	DRCSF-S
Rsch & Eng	MR. L. L. MOTHERSBAUGH	10N36	49475	DRCSF-E

SPECIAL ASSISTANTS — DRCSA

Joint Activities	COL C. HENNE, JR.	10S18	49695	DRCSA-JS
Technical Relations	MR. H. HANDLER	10E14	49630	DRCSA-H
Congress Affairs	MR. C. R. SMITH	10S32	48263	DRCSA-C

OFFICE OF THE INSPECTOR GENERAL & DARCOM IG ACTIVITY — DRCIG / DRXIG

Inspector General	COL R. D. DESCOTEAU	1S12	48070	DRCIG

DARCOM INSPECTOR GENERAL ACTIVITY

Chief	COL R. D. DESCOTEAU	1S12	48070	DRXIG
Coordination & Control Division	MR. R. V. MURPHY	1S15	48072	DRXIG-X
Administrative Officer	MS. A. E. ARRINGTON	1S14	48079	DRXIG-X
Investigations Division	COL G. B. CALHOUN	1S08	48064	DRXIG-V
Eastern Inspection Division	COL L. W. WRIGHT	1S24	48084	DRXIG-E
Western Inspection Division	COL C. B. HADEN	Autovon 693-3441	48084	DRXIG-W

HISTORICAL OFFICE — DRCHO

Chief	DR. D. BIRDSELL	5S10	49177	DRCHO
Annual Historical Reports/Unit Histories	MR. M. G. MARKEN, SR.	5S10	48173	DRCHO
Historical Monographs/Studies	MR. C. W. LYNCH	5S10	48173	DRCHO
Special Studies/Historical Services	MR. A. A. PUTIGNANO (Act)	5S10	48173	DRCHO
Historical Sources	MR. M. F. COPPOLA	5S10	49177	DRCHO

DIRECTOR OF COMM ELECTRONICS & US ARMY COMM COMMAND-DARCOM — DRCCE / CCNC

Director	COL H. S. CHRISTENSEN	3S10	49050	DRCCE
Commander	COL H. S. CHRISTENSEN	3S10	49050	CCNC-C
Deputy Commander	COL J. D. MITCHELL	3S10	49055	CCNC-DC
SGT Major	SGM J. HEININGE	3S10	49056	CCNC-SM
Operations Div	MR. A. SCHWARTZ	3S19	49073	DRCCE-O
Plans Div	MR. J. E. GOTTFRIED	3S06	49063	DRCCE-P
Resources Div	MR. A. E. PAIGE	3S14	49071	DRCCE-R

USA DARCOM SERVICE SUPPORT ACTIVITY — DRXAM

Director	LTC R. T. BOYLE, JR.	1E14	48134	DRXAM
Deputy Director	MR. L. F. KORTUM	1E14	48134	DRXAM
Admin Svc Div	LTC G. J. HAROLD	1E10	48139	DRXAM-A
Mail Management Br	MR. J. W. HENDERSON	G2C08	48341	DRXAM-AM
Printing & Publications Br	MR. H. S. JOHNSON	1E10	48141	DRXAM-AB
Records Administration Br	MR. E. M. THORNE, JR.	1E06	49141	DRXAM-AR
Audio-Visual Presentations Div	MR. B. W. ADKINS	1C13	48481	DRXAM-P
General Services Div	2LT S. D. POST	1S52	49005	DRXAM-G
Space & Sup	MR. S. R. LINKE	1S58	49095	DRXAM-GA
Equip Mgr	MR. J. BALDWIN	1S58	49094	DRXAM-GA
Travel	MR. J. H. BARGET	1S52	49006	DRXAM-GT
HQ Budget & Prog Ofc	MR. V. L. GUILER	1E18	48129	DRXAM-B
HQ Security Ofc	MRS. B. E. MILLER	1E22	49066	DRXAM-S
Staff C-E Off	MR. C. W. CALL (Act)	G3C20	48989	DRXAM-CE
Staff Librarian	MS. I. O. OMDAHL	7S35	48087	DRXAM-L
HQ Tech Library	MR. J. FRAGALE, JR.	7S35	48152	DRXAM-TL

DIRECTORATE FOR QUALITY ASSURANCE — DRCQA

Director	MR. S. J. LORBER	4W22	48929	DRCQA
Executive Assist	MS R. E. SMITH	4W22	48929	DRCQA
Product Quality Div	MR. R. F. TINER	4W20	48899	DRCQA-P
Reliability & Sys Assessment Div	MR. A. NORDSTROM	4S06	48912	DRCQA-E

EQUAL EMPLOYMENT OPPORTUNITY OFFICE — DRCEE

DARCOM Equal Employment Opportunity Off	MR. G. L. JONES	10S15	49690	DRCEE
DARCOM Fed Women's Prog Coordinator	MS. R. M. GNADT	10S15	49690	DRCEE
DARCOM Hispanic Empl Prog Coordinator	MR. F. ROSARIO	10S15	49690	DRCEE

HQ EQUAL EMPLOYMENT OPPOR OFC — DRCEE-H

HQ Equal Employment Opportunity Officer	MR. M. W. FRANCIOLI	7S44	49836	DRCEE-H
HQ Federal Women's Program Coordinator	MS. E. D. MANGANA-SWAN	7S44	49836	DRCEE-H

DEPUTY CG FOR MAT DEVELOPMENT — DRCDMD

DCG for MD	LTG R. J. BAER	10N06	49705	DRCDMD
Asst Deputy for MD	MR. J. D. BLANCHARD	10N06	49709	DRCDMD
Asst Deputy/Science & Technology	MR. N. L. KLEIN	10N06	49560	DRCDMD-ST
Asst Deputy/Int'l R&D	MR. B. R. DUNETZ	10N12	48252	DRCDMD
Executive Off	LTC A. D. RODGERS	10N06	49711	DRCDMD
SA for Minor Prog	MR. J. STOLARICK	10N12	49559	DRCDMD-MP
Task Group	MAJ A. GRAVATT (Act)	10W12	48657	DRCDMD-TG
Admin Group	MS. T. SHIFFLETT	10W12	48692	DRCDMD

DIRECTORATE FOR DEVELOPMENT & ENG — DRCDE

Director	MG R. J. LUNN	8E08	49490	DRCDE
Deputy Director	DR. R. L. HALEY	8E08	49493	DRCDE
Executive Officer	COL J. F. BLEECKER	8E08	49494	DRCDE-X
Prog Spt Ofc	MR. G. F. SCORTIA	8N55	48537	DRCDE-A
Specs, Stds & Engr	MR. J. KICAK (Act)	8N14	49828	DRCDE-E
Foreign S & T	COL J. G. MIKULA (Act)	8N47	48853	DRCDE-F
Ind Ln Ofc	MR. J. W. CRELLIN	8S57	48978	DRCDE-L
Tri-Svc Ind Info Ctr	Army/Navy/A/F	8S56	48948	DRCDE-LO
Army RDA Mag	MR. V. L. NAISAWALD	8N23	49586	DRCDE-LN
Prog & Bud	MR. R. D. GREENE	8E14	49849	DRCDE-P
Sys Eval & Test	MR. J. A. LOCKERD	8N22	49811	DRCDE-R
Sys Dev	MR. E. M. SEDLAK	8N54	49850	DRCDE-D
Development Managers:				
Air Defense	COL T. A. CRAWFORD	8N36	49872	DRCDE-DA
Cmd & Control	COL R. H. ELLIOTT, JR.	8N28	48392	DRCDE-DE
Field Artillery	LTC R. A. FADEL	8N48	49871	DRCDE-DF
Sol/Tng D/Spt Sys	COL E. A. THOMPSON	8N36	48605	DRCDE-DG
Aviation	COL E. R. SHORE	8N32	48118	DRCDE-DH
Tac Comp SFTWR	VACANCY	8N32	49819	DRCDE-DK
Spec Mun	MR. C. RUBEN	8N48	48753	DRCDE-DM
Armor/Infantry	COL A. F. COLLINS	8N42	48620	DRCDE-DW
Sig Int/EW	LTC A. R. MADSEN	8N24	48118	DRCDE-DX

DIRECTORATE FOR BATTLEFIELD SYSTEMS INTEGRATION — DRCBSI

Director	BG S. SHERIDAN (13 Nov 78)	4S26	49112	DRCBSI
Deputy Director	VACANT	4S26	47517	DRCBSI
Associate Dir for Tech Opns	VACANT	4S26	49165	DRCBSI
Executive Officer	MAJ J. R. POWER	4S26	47518	DRCBSI-X
Systems Directors:				
Air Defense	LTC(P) B. R. HUGGINS	4S26	49165	DRCBSI-AD
Armor	VACANT	4S26	49132	DRCBSI-A
Artillery	LTC W. W. BREEN	4S26	49165	DRCBSI-AR
Aviation	COL J. L. TOW	4S26	49132	DRCBSI-AV
Cbt Spt/Nuc	COL J. E. McDONNELL	4S26	49154	DRCBSI-CN
Cmd, Cntl & Comm	COL J. R. HAY	4S26	49132	DRCBSI-C
Infantry	COL C. J. GEARIN	4S26	49116	DRCBSI-I
Logistics	VACANT	4S26	49187	DRCBSI-L
Mil Intel	COL R. W. WILMOT	4S26	49132	DRCBSI-MI
Technical Office:				
OP Rsch Anal	DR. G. ANDERSEN	4S26	49144	DRCBSI-OR
Sys Eng	MR. F. FAIRCHILD	4S26	48279	DRCBSI-SE
OP Rsch Anal (Cost)	MR. R. VERBEKE	4S26	49165	DRCBSI-OR/C
Elec Eng	MR. A. GIAMBALVO	4S26	49165	DRCBSI-EE

OFFICE OF PROJECT MANAGEMENT — DRCPM

Chief	COL L. M. EEK, JR.	10N18	49571	DRCPM
Asst Chief	MR. R. L. MICHELLON	10N18	49570	DRCPM
Admin Off	MR. P. PAIGE	10N19	48220	DRCPM
Project Officers				
PM TNG	VACANCY	10N19	49572	DRCPM
PM CHARTERS	MR. P. N. GARNER (Act)	10N19	49572	DRCPM
MGT INT	LTC M. P. WALLS	10N33	48372	DRCPM
MGT INT	MR. J. H. DAVIDSON	10N33	48372	DRCPM
RECAP/DAPR/LOGCAP	MR. C. W. LETSEN (Act)	10N33	48372	DRCPM
ARRCOM, ARADCOM, CORADCOM, CERCOM	MR. T. MEADE	10N25	49579	DRCPM
ARRCOM, ARADCOM	MRS. M. MAREK	10W13	49581	DRCPM
AVRADCOM, TSARCOM, ERADCOM	MR. N. VAILLANT	10N25	48671	DRCPM
TARCOM, TARADCOM	MR. H. C. MELVIN	10W13	48671	DRCPM
MIRCOM, MIRACOM	MR. G. B. LEVVY	10W13	48671	DRCPM
MIRCOM, MIRADCOM, SAR	MR. F. O. ANGEL	10W13	48671	DRCPM

OFC OF INTERNATIONAL R&D — DRCIRD

Chief	COL R. J. CUTHBERTSON	9W14	48367	DRCIRD
Asst Chief	R. C. COOK	9W14	48367	DRCIRD
Plans & Programs	LTC H. W. LEISNER	9W15	48555	DRCIRD
DEA/Sci Engr Progs	MR. W. A. SILBERT	9W14	48367	DRCIRD
INT'L R&D	MR. J. G. WASKO	9W14	48367	DRCIRD
NATO; TTCP; ASCC; CENTO	MR. M. Y. HARVEY	9W14	48367	DRCIRD
	MR. A. A. BERMAN	9W14	48367	DRCIRD
	MR. P. J. PFEIFFER	9W14	48367	DRCIRD
CO-OP R&D; Dev Shar; MOU	MR. R. J. FACEY	9W14	48367	DRCIRD
ABCA; TEAL	LTC J. M. LOWE	9W14	48367	DRCIRD
	MS. L. JONES	9W14	48367	DRCIRD
Loans; Travel	MS. D. WHITLEY	9W14	48367	DRCIRD

OFFICE OF PRODUCT IMPROVEMENT — DRCPI

Chief	COL L. A. GIMPLE	3W14	49200	DRCPI
Tech Mgt Div	MR. R. ODELL	3W14	49203	DRCPI
Program Control & Budget Div	MR. S. RICHEY	3W14	49200	DRCPI

OFFICE OF MANUFACTURING TECHNOLOGY — DRCMT

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Electronics	MR. F. MICHEL	9N08	48298	DRCMT
Materials	MR. L. CROAN	9N08	48284	DRCMT
MM&T/MACI	MR. E. GARDNER	9N08	48284	DRCMT
Prod Engr	MR. P. CHERNOFF	9N08	48284	DRCMT
PESO	MR. R. DELMAR/ MR. J. DONNELLY	9N08	48288	DRCMT
Tech Transfer	MR. G. SCHUCK	9N08	48284	DRCMT
Value Engr	MR. H. MLODOZENIEC	9N08	48288	DRCMT

OFC OF LAB & DEV CENTER MGT — DRCLDC

Chief	MR. J. LINDWARM	10N24	49566	DRCLDC
ARRADCOM	MR. T. SHIRATA	10N30	47676	DRCLDC
MERADCOM/TARADCOM	(Vacancy)	10N24	49561	DRCLDC
ARO	DR. G. BUSHEY	10N24	49565	DRCLDC
ERADCOM/CORADCOM/MIRADCOM	MR. J. BENDER	10N24	49561	DRCLDC
NARADCOM/AMMRC	MR. R. ZENTNER	10N30	48059	DRCLDC
AVRADCOM HEL	MR. J. LINDWARM	10N24	49566	DRCLDC
Facil & Equip	MR. C. CLIFFORD	10N24	49562	DRCLDC
Personnel	MR. M. SYKES	10N24	49562	DRCLDC

LIAISON

TO HEADQUARTERS, DARCOM

*United Kingdom	LTC G. J. QUIRKE	10S44	49675	BLNO
*Canada	LTC J. C. BEREZOWSKI	10S44	49679	CLNO
*Germany	COL H. ROTHE	10S38	49684	GELNO
Marine Corps	MAJ M. R. JANAY	10S44	49676	DRCGS-F
TRADOC/Logistics Center	LTC H. M. HAMMER	10S44	49678	DRCGS-L
TSARCOM, Aviation Officer	COL D. B. KING	AVN	698-5473	DRSTS-X
DESCOM	MR. E. G. KILPATRICK	10W16	49620	DRCGS-D
FSTC	MR. J. A. BURT	8N55	48538	DRXST-WLO

*DARCOM Point of Contact for all Documents and Visits is Security Office, DARCOM Security Support Activity, Atlanta, GA, Autovon 797-5543/44

FROM HEADQUARTERS, DARCOM TO

Hq. AF Systems Command*	MR. J. H. PROCTOR	981-5181	DRXFA(SDOA)
US Navy Weapons Center*	LTC R. F. BOYD	245-3544	
Kirtland AFB*	COL J. A. BERRIER	964-4822	DRCFO
DARCOM Liaison Office TCATA/Ft. Hood, TX.	LTC D. BURLESON	737-1228	DRXFS
DARCOM RDT&E Liaison Office, HQ, TRADOC	LTC D. SANDERS	680-3637	

*FOR MAILING ADDRESS, MISSION INFO, ETC., CALL OR VISIT DRCDE-A, TEL EXT 48537, ROOM 8N55 5001 EISENHOWER AVE., ALEXANDRIA, VA 22333.

MISCELLANEOUS NUMBERS

STAFF DUTY OFFICER	G2C60	49223	
AMBULANCE			
(During Duty Hours, Call the Clinic)	1S51	43296	
(After Duty Hours, Call the Guard)	Lobby	9-557-1144	
DOD BLDG ADMINISTRATOR	1S34	48099	OSA
DARCOM OPERATIONS CENTER	G2C60	48660	
LSSA HQ SUPPORT DIVISION	4N26	48686	DRXLS-LH
DARCOM PERS SPT ACTV	2E18	48499	DRXMM-P
CIVILIAN EMPLOYEE HEALTH SVC (Clinic)	1S51	48296	
CLASSIFIED MAIL CENTER	G2W07	49585	DRXAM-AMC
COMMAND CONFERENCE ROOM	10N48	48988	DRXAM-PA
CONFERENCE ROOM SCHEDULING	1S17	48485	DRXAM-PA
CREDIT UNION/DARCOM	7C22	48311	
DRIVERS SERVICE	G2W12	48091	DRXAM-GD
DSSW, ALEXANDRIA, VA	7N28	48878	
GRAPHICS FACILITY	1C22	48491	DRXAM-PG
GUARD OFFICE	Lobby	9-557-1144	
LOCATOR SERVICE (MIL PERS)	2C45	49339	DRXMM-MR
LOCATOR SERVICE (CIV PERS)	2C33	49491	DRXMM-CO
PHOTOGRAPHIC FACILITY	1C44	48489	DRXAM-PP
PRINTING & DUPLICATING	G2C37	49603	DRXAM-ABP
PUBLICATIONS SECTION	1E06	48149	DRXAM-ABE
PUBLICATIONS STOCK ROOM	G3C21	49663/4	DRXAM-ABS
RECEPTIONIST	Lobby	49191	
RESERVATIONS & TICKETS (OFFICIAL)	1S38	48108	USASCAF
SPECIAL SECURITY OFFICE (SSO)	G2C63	48986	MISG-DRC
TELECOMMUNICATIONS CENTER (Msg)	G3C24	49009	CCNC-BHA-OT
TELECOMMUNICATIONS CENTER (DATAFAX)		48601/2	
TELEPHONE Service Control Off (Mr. Ford)	G3W18	49001	CCNC-BHA-ST
TOP SECRET REPOSITORY	G2W09	49590	DRXAM-AMT
UNCLASSIFIED MAIL CENTER	G2C16	49594	DRXAM-AMU
USA EQUIP AUTHORIZATIONS REV ACTV	9C32	49292	DRXEA-C
DARCOM REPORTS MANAGEMENT OFFICE	4S51	49322	DRXLS-LB
FORMS MANAGEMENT OFFICER	1N58	49141	DRXAM-AR

PROGRAM/PROJECT/PRODUCT MANAGERS

Army Container Oriented Distribution System (ACODS)				
	COL W. H. DANZEISEN, JR., PM	9W22	48799	DRCPM-CS
	MR. C. H. SCHIPP, Deputy PM	9W22	48800	DRCPM-CS
Mobile Electric Power (MEP)				
	COL A. G. ROWE, PM	Ft. Belvoir	AVN 354-3031	DRCPM-MEP
	MR. R. A. STANGE, Deputy PM	Ft. Belvoir	664-1147	DRCPM-MEP-D
Advanced Attack Helicopter (AAH)				
	LTC B. G. JONES, Chief	7N45	48939	DRCPM-AAH-WFO
Munitions Production Base Modernization & Expansion (MPBME)				
	MR. V. J. GORMAN, Chief	9S08	49361	DRCPM-PBM-LN1
Remotely Monitored Battlefield Sensor Systems (REMBASS)				
	MAJ D. TURNER, Chief	Ft. Belvoir	534-5702	DRCPM-RBS
PATRIOT				
	COL J. L. KENNEDY, Chief	10N54	48886	DRCPM-MDW
SANG Modernization Program				
	LTC R. L. DUPWE, Chief	9N18	49126	DRCPM-NGW
Satellite Communication (SATCOM)				
	MAJ T. N. THOMAS, Chief	7N45	48940	DRCPM-SC-W
US ROLAND				
	LTC W. C. HARDWICK, Chief	10N54	48240	DRCPM-ROL-W
XM-1 Tank System				
	LTC P. M. McVEY	1S07	48504	DRCPM-GCM-WF
Nuclear Munitions				
	MR. E. L. BACOT	1S07	48565	DRCPM-NUC-W
Fighting Vehicle Systems (FVS)				
	MR. J. SARAPULSKI, Chief	3S23	49079	DRCPM-FVS-W

AUTOVON 284 + XXXX
COMMERCIAL 202-274-XXXX
CABLE ADDRESS CDRDRC ALEX VA

STAFF DUTY OFFICER
AUTOVON 284-9223
COMMERCIAL 202-274-9223
OPERATIONS CENTER: Administrative: 274-8586/7
Emergency: 274-8660

1 OCTOBER 1978

THIS IS NOT AN OFFICIAL ORGANIZATIONAL CHART

(UNCLASSIFIED)

DARCOM FIELD ELEMENTS

MATERIEL READINESS

US ARMY ARMAMENT MATERIEL READINESS COMMAND, ROCK ISLAND, IL (ARRCOM)

MG W. E. EICHER

Installations/Activities

*USA Watervliet Arsenal
*USA Rock Island Arsenal
*USA Pine Bluff Arsenal
*Rocky Mountain Arsenal
USA Ammunition Center
Central Ammo Mgt Ofc Pacific (CAMO)
Fld Svcs Activity/ARRCOM
Joint Convl Ammo Prog Coord Group (JCAP-CG)
USA Tech Escort Unit
Crane Army Ammo Activity

(28) GOCO Ammo Plants

Alabama, Childersburg, AL
Cornhusker, Grand Island, NB
Holston, Kingsport, TN
Indiana, Charlestown, IN
Iowa, Middletown, IA
Kansas, Parsons, KS
Lake City, Independence, MO
Lone Star, Texarkana, TX
Louisiana, Shreveport, LA
Milan, Milan, TN
Radford, Radford, VA
Badger, Baraboo, WI
Longhorn, Marshall, TX
Sunflower, Lawrence, KS
Joliet, Joliet, IL
St. Louis, St. Louis, MO
Gateway, St. Louis, MO
Twin Cities, Minneapolis, MN
Ravenna, Ravenna, OH
Riverbank, Riverbank, CA
Volunteer, Chattanooga, TN
Scranton, Scranton, PA
Burlington, Burlington, NJ
Hays, Pittsburgh, PA
Hawthorne, Hawthorne, NV
McAlester, McAlester, OK
Newport, Newport, IN
Phosphate Dev Wks, Muscle Shoals, AL

Zip Code 61201
Area Code 309
Tel. 794-5111
Autovon 793-5111

US ARMY COMMUNICATIONS & ELECTRONICS MATERIEL READINESS COMMAND, FT. MONMOUTH, NJ (CERCOM)

MG J. K. STONER, JR.

Installations/Activities

HQ Instal Support Activity/CERCOM
TV-AUDIO Support Activity
Comm Security Logistics Activity
241st MP Co.
389th USA Band

Zip Code 07703
Area Code 201
Tel. 532-1515
Autovon 992-1515

US ARMY MISSILE MATERIEL READINESS COMMAND, REDSTONE ARSENAL, AL (MIRCOM)

MG L. RACHMELER

Installations/Activities

Redstone Arsenal Support Activity (RASA)
US Army Metrology and Calibration Center
Field Services Activity/MIRCOM
291st MP Co
95th Svc Co/Calib

Zip Code 35809
Area Code 205
Tel. 876-2101
Autovon 746-2101

US ARMY TANK-AUTOMOTIVE MATERIEL READINESS COMMAND, WARREN, MI (TARCOM)

MG H. F. HARDIN, JR.

Installations/Activities

USA Mod Cen Lima, OH
Field Service Activ/TARCOM
USA TARCOM Support Actv Selfridge, MI
HQ & Instl Spt Actv/TARCOM

Zip Code 48090
Area Code 313
Tel. 573-1131
Autovon 2733-1132

US ARMY TROOP SUPPORT AND AVIATION MATERIEL READINESS COMMAND, ST. LOUIS, MO (TSARCOM)

MG R. H. THOMPSON

Installations/Activities

USA Support Activity, Phila, PA
USA Gen Mat & Petrl Actv (GMPA)
St. Louis Area Support Center
Field Svc Activity
Admin and Instl Support Actv

Zip Code 63120
Area Code 314
Tel. 263-2201
Autovon 693-2201

OTHER ELEMENTS

US ARMY DEPOT SYSTEM COMMAND, CHAMBERSBURG, PA (DESCOM)

MG R. L BERGQUIST

Installations/Activities

*USA Depot Anniston, AL
*USA Depot Corpus Christi, TX
*USA Depot Letterkenny, PA
*USA Depot Mainz, Germany
*USA Depot New Cumberland, PA
*USA Depot Red River, Texarkana, TX
*USA Depot Sacramento, CA
*USA Depot Seneca, Romulus, NY
*USA Depot Sharpe, Lathrop, CA
*USA Depot Sierra, Herlong, CA
*USA Depot Tobyhanna, PA
*USA Depot Tooele, UT
Lexington-Blue Grass Army Depot Activity, KY
Navajo Army Depot Activity, Flagstaff, AZ
Ober Ramstadt Army Depot Activity, Ober Ramstadt, Germany
Pueblo Army Depot Activity, CO
Savanna Army Depot Activity, IL
Umatilla Army Depot Activity, Hermiston, OR
Fort Wingate Army Depot Activity, Gallup, NM

Zip Code 17201
Area Code 717
Tel. 263-6400
Autovon 242-6400/1110

US ARMY SECURITY ASSISTANCE CENTER ALEXANDRIA, VA (USASAC)

BG(P) T. H. BRAIN

Installations/Activities

None

Zip Code 22333
Area Code 202
Telephone 274-8383
Autovon 284-8380

US ARMY TEST AND EVALUATION COMMAND, ABERDEEN PROVING GROUND, MD (TECOM)

MG P. W. POWERS

Installations/Activities

*USA Aberdeen Proving Ground, MD
*USA Dugway Proving Ground, UT
*USA Yuma Proving Ground, AZ
*USA Jefferson Proving Ground, IN
USA Electronics Proving Ground
USA Cold Regions Test Center
USA Tropic Regions Test Center
USA Aircraft Development Test Actv
*White Sands Missile Range
523rd MP Co
259th MP Co
65th MP Plt
White Sands Missile Range Troop Comd

Zip Code 21005
Area Code 301
Tel. 278-4374
Autovon 283-4374

SEPARATE INSTALLATIONS AND ACTIVITIES UNDER HEADQUARTERS, DARCOM

	Autovon
USA Central TMDE Activity, Lexington, KY 40511	745-3206
USA DARCOM Automated Log Mgt Sys Activity, St. Louis, MO 63101	268-6044
USA DARCOM Aviation Office, HQ, TSARCOM, St. Louis, MO 63120	698-5473
USA DARCOM Catalog Data Activity, New Cumberland, PA 17070	977-6600
USA DARCOM Field Ofc, Hq AF Sys Cmd, USAF, Andrews AFB, Washington, DC 20334	858-5181
USA DARCOM Field Safety Activity, Charleston, IN 47111	366-xxxxx
USA DARCOM Inspector General Activity, Alexandria, VA 22333	284-8072
USA DARCOM Installations and Services Activity, Rock Island, IL 61201	793-5018
USA DARCOM Liaison Ofc/TCATA Ft. Hood, TX 76544	
USA DARCOM Log Control Activity, Presidio of San Francisco, CA 94129	586-5701
USA DARCOM Log Systems Spt Activity, Chambersburg, PA 17201	242-6389
USA DARCOM Maintenance Mgt Center, Lexington, KY 40511	745-4237
USA DARCOM Personnel Spt Activity, Alexandria, VA 22333	284-8195
USA DARCOM QA Field Activity, Lexington, KY 40507	745-3449
USA DARCOM Security Support Activity, Forest Park, GA 30050	797-5621
USA DARCOM Surety Field Activity, Dover, NJ 07801	880-5196
*USA ECOM Washington Procurement Ofc, Alexandria, VA 22333	274-8878
*USA Electronics Materiel Readiness Activity, Vint Hills Farm Sta, Warrenton, VA 22186	249-6701
USA Equip Auth Rev Activity, Alexandria, VA 22333	284-9292
USA Foreign Science and Technology Center, Charlottesville, VA 22901	274-7110
USA Human Engr Lab, Aberdeen PG, MD 21005	283-3883
USA Industrial Base Engr Activity, Rock Island Arsenal, IL 61201	793-5010
USA Log Mgt Center, Ft. Lee, VA 23801	687-4424
USA Mgt Engr Tng Activity, Rock Island, IL 61201	793-6043
*USA Materiel & Mechanics Resch Center, Watertown, MA 02172	955-3275
USA Mat Sys Anal Activity, Aberdeen PG, MD 21005	870-2432
USA Procurement Activity, Hawaii, Fort Shaffer, Hi 96858	
*USA Research Ofc, Research Triangle Park, Durham, NC 27709	935-3331
USA Research & Stdzn Gp/Europe, Box 65, London, England, APO New York 09510	
USA Register of DARCOM Career Interns, Alexandria, VA 22333	284-8501
USA Satellite Comm Agency, Ft. Monmouth, NJ 07703	992-1228
USA Space Program Ofc, Alexandria, VA 22333	284-8774
USA Standardization Gp/Australia, Canberra Australia, APO San Francisco 96404	
USA Standardization Gp/Canada, Ottawa 4 Canada	
USA Ofc Test Dir Joint Svcs Electro-Optical Guided Weapons Countermeasures Test Program, White Sands Missile Range, NM 88002	258-1134
Joint Mil Packaging Tng Center, Aberdeen PG, MD 21005	283-4451

RESEARCH & DEVELOPMENT

US ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND, DOVER, NJ (ARRADCOM)

MG B. L. LEWIS

Installations/Activities

Ballistic Research Laboratory
*Chemical Systems Laboratory
ARRADCOM Picatinny Arsenal Support Activity

Zip Code 07801
Area Code 201
Tel. 328-3200
Autovon 880-3200

US ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND, ST. LOUIS, MO (AVRADCOM)

MG S. C. STEVENS

Installations/Activities

Hughes Plant Activity
USA Avn Engr Flight Activity
Bell Plant Activity
*USA Air Mobility R&D Lab
USA Boeing-Vertol Plant Activity
USA Avionics Agency and Lab

Zip Code 63166
Area Code 314
Tel. 268-2201
Autovon 698-2201

US ARMY COMMUNICATIONS RESEARCH AND DEVELOPMENT COMMAND, FT. MONMOUTH, NJ (CORADCOM)

MG H. DICKINSON

Installations/Activities

CORADCOM Test Facility
Center for Tactical Computer Sciences (CENTACS)
Center for Communications Systems (CENCOMS)
Battlefield Systems Integration Center (BSICEN)

Zip Code 07703
Area Code 201
Tel. 532-4612
Autovon 992-4612

US ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND, ADELPHI, MD (ERADCOM)

MG C. D. DANIEL, JR.

Installations/Activities

ERADCOM Technical Support Activity
Aviation Flight Test Activity
Signals Warfare Lab
*Harry Diamond Lab
Combat Survey & Target Acquisition Lab
Electronic Warfare Lab
Atmospheric Science Lab
Electronic Technical & Devices Lab
Night Vision Lab

Zip Code 20783
Area Code 202
Tel. 394-1600
Autovon 290-1600

US ARMY MOBILITY EQUIPMENT RESEARCH AND DEVELOPMENT COMMAND, FT. BELVOIR, VA (MERADCOM)

COL B. C. HUGHES

Installations/Activities

None

Zip Code 22060
Area Code 703
Tel. 664-4996
Autovon 354-4996

US ARMY MISSILE RESEARCH AND DEVELOPMENT COMMAND, REDSTONE ARSENAL, AL (MIRADCOM)

MG C. F. MEANS

Installations/Activities

Missile Intelligence Agency

Zip Code 35809
Area Code 205
Tel. 876-7128
Autovon 746-7128

US ARMY NATICK RESEARCH AND DEVELOPMENT COMMAND, NATICK, MA (NARADCOM)

COL H. F. PENNEY

Installations/Activities

None

Zip Code 01760
Area Code 617
Tel. 653-1000 Ext. 2206
Autovon 955-2001

US ARMY TANK-AUTOMOTIWE RESEARCH AND DEVELOPMENT COMMAND, WARREN, MI (TARADCOM)

MG O. C. DECKER, JR.

Installations/Activities

None

Zip Code 48090
Area Code 313
Tel. 573-2144
Autovon 273-2144

PROGRAM/PROJECT/PRODUCT MANAGERS

			Autovon
Advanced Attack Helicopter (AAH)	COL(P) E. M. Browne	St. Louis, MO	698-2927
Aircraft Survivability Equipment (ASE)	COL J. L. Keaton	St. Louis, MO	698-3961
Amphibians and Watercraft (AWC)	LTC Walter V. Pope	St. Louis, MO	693-2361
Armored Combat Vehicle Technology (ACVT)	LTC R. L. Catron	Warren, MI	273-1360
Army Container Oriented Distribution System (ACODS)	COL W. H. Danzeisen, Jr.	Alexandria, VA	284-8799
Army Gun Air Defense Systems (ARGADS)	COL L. S. Marrella	Dover, NJ	880-2271
Army Tactical Communications Systems (ATACS)	*COL W. V. Paul, Jr.*	*Ft. Monmouth, NJ*	*995-2109*
Army Tactical Data Systems (ARTADS)	BG D. R. Lasher	Ft. Monmouth, NJ	992-4612
Automatic Test Support Systems (ATSS))	LTC W. J. Gabrysiak	Ft. Monmouth, NJ	992-1759
BLACK HAWK	COL R. D. Kenyon	St. Louis, MO	698-3831
Cannon Artillery Weapons Systems (CAWS)	COL R. E. Philipp	Dover, NJ	880-2572
CH-47 Modernization Program	COL J. M. Hesson	St. Louis, MO	698-3984
Chapparral/FAAR	COL H. E. Stubbs	Redstone Ars., AL	746-6130
Chemical Demilitarization and Installation Restoration	COL F. A. Jones	Aberdeen PG, MD	584-4467
COBRA	COL R. P. St Louis	St. Louis, MO	698-2331
Control & Analysis Ctrs	COL T. D. Sargent	Arlington, VA	222-5165
COPPERHEAD (CLGP)	LTC R. A. Nulk	Dover, NJ	880-2122
DCS (Army) Communications Systems	BG E. Paige, Jr.	Ft. Monmouth, NJ	992-5101
FAMECE and UET	COL M. B. Scheider	Ft. Belvoir, VA	354-1116
Fighting Vehicle Armament	COL R. W. Spotts	Warren, MI	273-2632
Fighting Vehicle Systems	BG S. R. Sheridan	Warren, MI	273-1630
FIREFINDER	COL T. F. Cameron	Ft. Monmouth, NJ	996-5324
General Support Rocket System	COL B. P. Masters	Redstone Ars., AL	746-1195
Ground Laser Designators	COL B. J. Pellegrini	Redstone Ars., AL	746-4462
HAWK	COL H. C. Whittaker	Redstone Ars., AL	746-5609
Heavy Equipment Transporter (HET)	COL R. W. Pointer	Warren, MI	369-2637
HELLFIRE	*COL R. J. Feist*	*Redstone Ars., AL*	*746-1117*
High Energy Laser System	COL D. H. Lueders	Redstone Ars., AL	746-2382
Improved Tow Vehicle	COL C. C. Adsit	Warren, MI	273-2069
Iranian Aircraft Program (IAP)	COL E. M. Aguanno	St. Louis, MO	698-3741
Kuwait Missile System	COL M. J. Small	Redstone Ars., AL	746-3196
LANCE	COL D. P. Whalen	Redstone Ars., AL	746-6144
M60 Tank Development	COL R. E. Butler	Warren, MI	273-2831
M60 Tank Production	COL R. H. Sawyer	Warren, MI	273-2720
M110E2 8" Howitzer	LTC N. R. Hurst	Rock Island, IL	793-4308
M113/M113A1 Family of Vehicle Readiness	COL F. Hissong, Jr.	Warren, MI	369-2477
Mobile Electric Power	COL A. G. Rowe	Springfield, VA	354-3031
Multi-Service Communications Systems	COL A. F. Albright	Ft. Monmouth, NJ	995-2249
Munitions Production Base Modernization & Expansion	BG J. S. Egbert	Dover, NJ	880-3207
Navigation Control Systems (NAVCOM)	COL L. White	Ft. Monmouth, NJ	992-4240
Nuclear Munitions	COL J. H. Sloan	Dover, NJ	880-5342
PATRIOT	MG O. D. Street, III	Redstone Ars., AL	742-3240
PERSHING	COL L. H. Hunt	Redstone Ars., AL	746-1165
Remotely Monitored Battlefield Sensor Systems (REMBASS))	COL L. C. Friedersdorff	Ft. Monmouth, NJ	992-4541
2.75 Rocket System	COL J. L. Tow	Redstone Ars., AL	746-3630
*Saudi Arabian Nat'l Guard (SANG) Modernization	BG J. W. Hudachek	APO NY NY 09038	
SATCOM	*COL F. M. Knipp*	*Ft. Monmouth, NJ*	*992-1228*
Selected Ammunition	COL R. J. Cook, Jr.	Dover, NJ	880-3230
Signal Intelligence/Electronic Warfare (SIGINT/EW)	COL W D. Clingempeel	Ft. Monmouth, NJ	992-5344
Single Channel Ground and Airborne Radio Subsystem (SINCGARS)	COL J. E. Wyatt	Ft. Monmouth, NJ	995-4141
Smoke/Obscurants ((SMOKE)	COL H. R. Shelton	Aberdeen PG, MD	283-2804
Special Electronic Mission Aircraft(SEMA)	COL J. J. Top	St. Louis, MO	698-6183
Stand-Off Target Acquisition/Attack System (SOTAS)	COL A. M. Cianciolo	Ft. Monmouth, NJ	996-5436
STINGER	COL V. P. DeFotta	Redstone Ars., AL	746-6191
TOW/DRAGON	COL A. L. Goodall	Redstone Ars., AL	746-7194
Training Devices	COL J. Leszczynski	Orlando, FL	791-5292
US Roland	BG F. P. Ragano	Redstone Ars., AL	746-4225
VIPER/Advanced Heavy Antitank Missile Sys (AHAMS)	COL J. O. Lax, Jr.	Redstone Ars., AL	746-2131
XM-1 Tank System	BG(P) D. M. Babers	Warren, MI	273-2184

* Procurement Offices Also Located Here.

★ *Electronics Command (ECOM) functional elements will be distributed between CERCOM, CORADCOM, and ERADCOM. Activation of the new commands is expected during FY 1978.*

DARCOM HEADQUARTERS STAFF

(UNCLASSIFIED)

COMMAND GROUP

COMMANDING GENERAL	GEN JOHN R. GUTHRIE	10-E-08	274-9625
DEPUTY CG FOR MATERIEL READINESS	LTG E. J. D'AMBROSIO	10-S-06	274-9700
DEPUTY CG FOR MATERIEL DEVELOPMENT	LTG R. J. BAER	10-N-06	274-9705
CHIEF OF STAFF	MG H. B. GIBSON, JR.	10-E-14	274-9641
DEPUTY CHIEF OF STAFF & SECY OF THE GENERAL STAFF	COL R. D. CROSBY, JR.	10-E-14	274-9638
COMMAND SERGEANT MAJOR	CSM H. W. SHEDD	10-S-48	274-8257

OFFICE OF THE DEPUTY CG FOR MATERIEL READINESS

Asst Deputy/Materiel Readiness	Mr. J. F. Maclin	274-9701
Executive Officer	COL W. B. McGrath	274-9702
PM Coordinator	LTC R. M. Reynolds	274-9406
Task Group	LTC W. S. Flynn	274-8895
SR Adv/US ARNG	COL J. Keeling	274-8895
SR Adv/USA Reserve	COL G. H. Chase	274-8895
Sp Asst/Nuclear Surety	Mr. R. L. Miller	274-9554
Sp Asst/Chemical Surety	MAJ K. Miller	274-9610
Coordinator	LTC D. G. Fitzgerald	274-8896

DIRECTOR FOR SECURITY ASSISTANCE

BG(P) T. H. Brain 274-8380

DIRECTORATE FOR MATERIEL MANAGEMENT

BG E. A. VULEY, JR. 274-8175

DIRECTORATE FOR READINESS

MG E. L. Konopnicki 274-9718

DIRECTORATE FOR PROCUREMENT & PRODUCTION

BG(P) J. W. Sharp 274-8159

DIRECTORATE FOR PLANS, DOCTRINES & SYSTEMS

COL R. C. Hawk 274-8229

LIAISON

TO HEADQUARTERS, DARCOM

*United Kingdom	LTC G. J. Quirke	274-9675
*Canada	LTC J. C. Berezowski	274-9679
*Germany	COL H. Rothe	274-9684
Marine Corps	MAJ M. R. Janay	274-9676
TRADOC/Log Center	LTC H. M. Hammer	274-9678
DESCOM	Mr. E. G. Kilpatrick	274-9620

*DARCOM point of contact for all documents and visits is Security Office, DARCOM Security Support Activity, Atlanta, GA — Autovon 797-5543/44

FROM HEADQUARTERS, DARCOM TO

		AUTOVON
*HQ, AF Systems Command	Mr. J .H. Proctor	858-6181
*US Navy Weapons Center	LTC R. F. Boyd	245-3544
*Kirtland AFB	COL J. A. Berrier	964-4822
DARCOM Liaison Office TCATA/Ft Hood, TX	LTC C. A. Brewer	737-1228
*Wright-Patterson AFB	MAJ J. A. Evans	785-4317

*For mailing address, mission info, etc., call or visit DRCDE-A, 274-8537 Room 8N55, 5001 Eisenhower Ave., Alexandria, VA 22333

DIRECTORATES

DIRECTOR OF COMMUNICATIONS/ELECTRONICS & US ARMY COMMUNICATIONS COMMAND — DARCOM
COL H. S. Christensen 274-9050

DIRECTORATE FOR INSTALLATIONS & SERVICES
COL W. G. Wolfe 274-9041

DIRECTORATE FOR MANAGEMENT INFORMATION SYSTEMS
Mr. J. C. Gilbert 274-8626

DIRECTORATE FOR PERSONNEL, TRAINING & FORCE DEVELOPMENT
BG L. R. Forney, Jr. 274-8195

DIRECTORATE FOR PLANS & ANALYSIS
COL G. T. Feilke 274-8676

DIRECTORATE FOR QUALITY ASSURANCE
Mr. S. J. Lorber 274-8929

OFFICES

OFFICE OF THE CHAPLAIN
COL D. L. Wilson 274-9432

OFFICE OF THE COMMAND COUNSEL
Mr. F. X. McKenna 274-8046

OFFICE OF THE COMPTROLLER
BG A. J. Cade (Actg) 274-9131

EQUAL EMPLOYMENT OPPORTUNITY OFFICE
Mr. G. L. Jones 274-9690

HISTORICAL OFFICE
Dr. D. Birdsell 274-9177

OFFICE OF THE INSPECTOR GENERAL
COL M. R. Wagner 274-8070

PUBLIC AFFAIRS OFFICE
COL C. A. Hammaker, Jr. 274-8010

SAFETY OFFICE
Mr. W. G. Queen 274-9475

SECURITY OFFICE
COL J. A. Barry 274-9454

SERVICE SUPPORT ACTIVITY
LTC J. A. Voetsch, III 274-8134

OFFICE OF THE SURGEON
COL R. T. Cutting, MD 274-9470

OFFICE OF THE DEPUTY CG FOR MATERIEL DEVELOPMENT

Asst Deputy/Materiel Development	Mr. J. D. Blanchard	274-9709
Asst Deputy/Science & Technology	Mr. N. L. Klein	274-9560
Asst Deputy/Int'l R&D	Mr. B. R. Dunetz	274-8252
Executive Officer	LTC F. W. McDonald, Jr.	274-9711
Sp Asst for Minor Programs	Mr. J. Stolarick	274-9559
Task Group	LTC A. D. Rodgers, III	274-8657

DIRECTORATE FOR DEVELOPMENT & ENGINEERING

MG Robert J. Lunn 274-9490

DIRECTORATE FOR BATTLEFIELD SYSTEMS INTEGRATION

MG I. A. Hunt, Jr. 274-9112

OFFICE OF PROJECT MANAGEMENT

COL L. M. Eek, Jr. 274-9571

OFFICE OF INTERNATIONAL RESEARCH & DEVELOPMENT

COL R. J. Cuthbertson 274-8367

OFFICE OF MANUFACTURING TECHNOLOGY

COL N. Vinson 274-8298

OFFICE OF PRODUCT IMPROVEMENT

COL L. A. Gimple 274-9200

OFFICE OF LABORATORY & DEVELOPMENT COMMAND MANAGEMENT

Mr. J. Lindwarm 274-9566

SPECIAL ASSISTANTS

Congressional Affairs	Mr. C. R. Smith	274-8263
Joint Activities*	COL C. Henne, Jr.	274-9695
Technical Relations	Mr. H. Handler	274-9630

(UNCLASSIFIED)

MISSION
MATERIEL DEVELOPMENT AND READINESS COMMAND

Manage the wholesale materiel activities of the Army.
Provide supply and maintenance support to the Army -- and to other customers.
Assist in the formulation of the Army materiel program and implement that program.

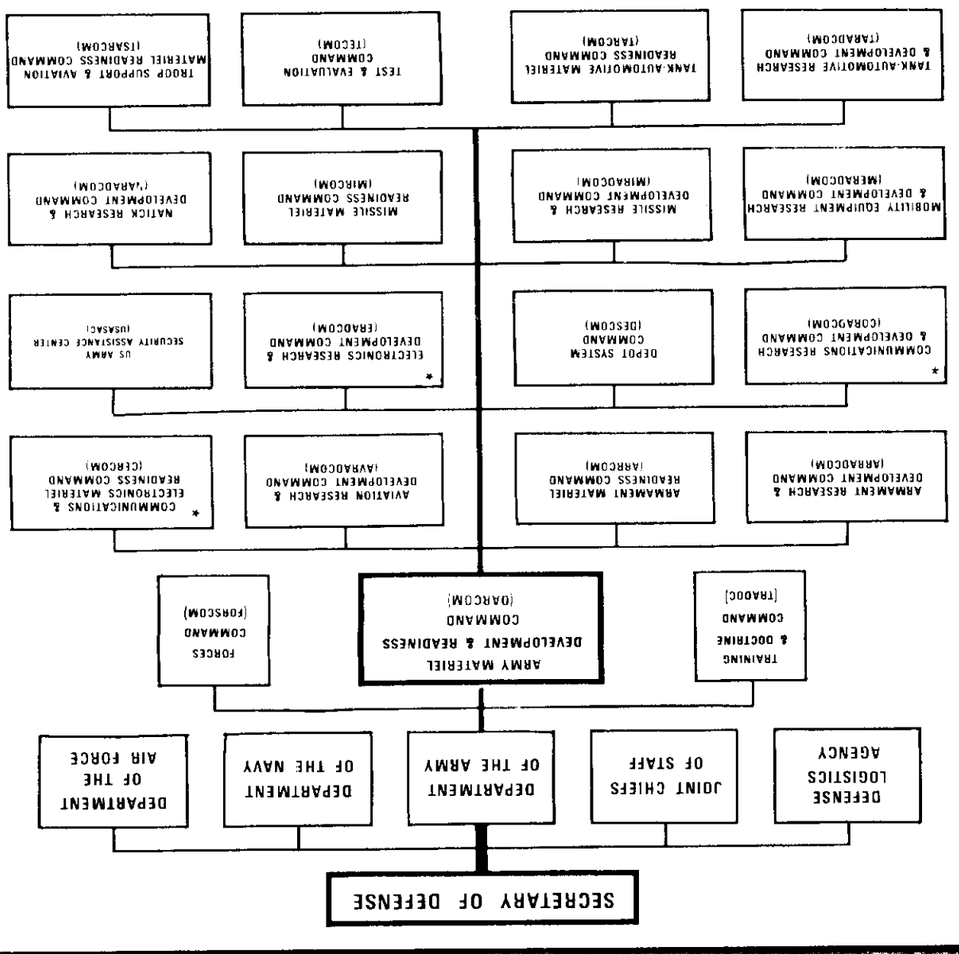
MAJOR SUBORDINATE COMMAND RESPONSIBILITIES

Primary mission responsibilities of major subordinate commands listed inside of this guide are outlined below:

MAJOR SUBORDINATE COMDS / MISSIONS RESPONSIBILITY	ARRADCOM	ARRCOM	AVRADCOM	CERCOM *	CORADCOM *	DESCOM	ERADCOM *	USASAC	MERADCOM	MIRADCOM	MIRCOM	NARADCOM	TARADCOM	TARCOM	TECOM	TSARCOM	ECOM *
RESEARCH	✓																
DESIGN	✓																
ENGINEER DESIGN TESTING	✓																
GOV'T VALIDATION TESTING			✓						✓	✓		✓	✓		✓		✓
USER TESTING (SUPPORT)	✓		✓						✓	✓		✓	✓		✓		✓
PROD/POST PROD TEST SUPPORT		✓	✓														
MATERIEL EVALUATION	✓	✓	✓														
PROCUREMENT	✓	✓	✓														
CATALOGING & STANDARDIZATION	✓	✓	✓														
PRODUCT & PRODUCTION ENGRG	✓	✓	✓														
MAINTENANCE ENGINEERING		✓	✓														
NEW EQUIP TRAINING		✓	✓														
WHOLESALE INVENTORY MGMT	✓	✓	✓														
SUPPLY & FINANCIAL MGMT	✓	✓	✓														
TECHNICAL ASSISTANCE		✓	✓														
INDUSTRIAL MOBILIZATION		✓	✓														

* MISSION RESPONSIBILITIES FOR ERADCOM, CORADCOM AND CERCOM WILL BE SHOWN ON NEXT EDITION OF THIS CHART.

A GUIDE* to UNITED STATES ARMY MATERIEL DEVELOPMENT & READINESS COMMAND ORGANIZATION AND MISSIONS



* Electronics Command (ECOM) Functional Elements will be distributed between CERCOM, CORADCOM, and ERADCOM — with activation of the new commands expected during FY 1978.

HEADQUARTERS
UNITED STATES ARMY MATERIEL
DEVELOPMENT & READINESS COMMAND
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AUTOVON 284 XXXX

NOVEMBER 1977

*NOT OFFICIAL ORGANIZATION CHARTS

(UNCLASSIFIED)

GLOSSARY

AA	Affirmative Action
AAL	Additional Authorization List
AAO	Authorized Acquisition Objective
AAP	Army Ammunition Plant
ACAMS	Automatic Continuous Air Monitoring System
ACOCS	Army Customer Order Control System
AD	Air Defense
ADA	Air Defense Artillery
ADTF	Aviation Development Testing Facility
AIF	Army Industrial Fund
ALOC	Air Line of Communications
AMARC	Army Materiel Acquisition Review Committee
AMC	US Army Materiel Command
AMCRD	AMC Research-Development
AMCRP	Directorate for Requirements and Procurement
AMDF	Army Master Data File
AMETA	Army Management Engineering Training Agency
AMMRC	Army Materials and Mechanics Research Center
AMSAA	Army Material Systems Analysis Activity
AMSF	Area Maintenance Supply Facility
AOAP	Army Oil Analysis Program
APA	Army Procurement Appropriation
APATS	Acquisition Planning & Tracking System
APG	Aberdeen Proving Ground
APM	Army Program Manager
ARLANT	US Army Atlantic Command
ARRADCOM	US Army Armament Research and Development Command
ARRCOM	US Army Armament Materiel Readiness Command
ARRED	US Army Readiness Command
ASA(RDA)	Asst. Secretary of the Army, Research, Development and Acquisition
ASARC	Army Systems Acquisition Review Council
ASC	Autodin Switching Center
ASD	Assistant Secretary of Defense
AUTODIN	Automatic Digital Network
AUTOSEVOCOM	Automatic Secure Voice Communication Network
AVRADCOM	US Army Aviation Research and Development Command
AVSCOM	US Army Aviation Systems Command
BII	Basic Issue Items
BOM	Bills of Material
BRL	Ballistics Research Laboratories

CAMDS	Chemical Agent Munitions Disposal System
CAS	Cost Accounting Standards
CASA	Coordinator for Army Security Assistance
CBR	Chemical, biological, radiological
CCMIS	Commodity Command Management Information System
CCP	Consolidation and Container Point
CCSS	Commodity Command Standard System
CDC	Control Data Corporation
CDIR	Chemical Demilitarization and Installation Restoration
CE	Corps of Engineers
CERCOM	Communications & Electronics Materiel Readiness Command
CFV	Cavalry Fighting Vehicle
CINC	Commander-in-Chief
CITA	Commercial Industrial Type Activity
CIVPERSINS	Civilian Personnel Management Information System
CLRT	Command Logistics Review Team
CLRTX	Command Logistics Review Team Expanded
CMS	Configuration Management System
COA	Comptroller of the Army
COBE	Command Operating Budget Estimate
COCO	Contractor Owned-Contractor Operated
COINS	Contract Input Data Entry System
COMMZ	Communications Zone
CONRATES	Contractor Rates Data
CONUS	Continental United States
CORADCOM	US Army Communications Research & Development Command
COSCOM	Corps Support Command
COSIS	Care of Supplies in Storage
CPIR	Command Performance Indicator Review
C/SCSC	Cost/Schedule Control Systems Criteria
DAMPL	DA Military Priority List
DARCOM	USA Materiel Development & Readiness Command
DCA	Defense Communications Agency
DCS	Defense Communications System
DCGMD	Deputy Commanding General for Materiel Development
DCGMR	Deputy Commanding General for Materiel Readiness
DCSOPS	Deputy Chief of Staff for Operations
DCSRDA	Deputy Chief of Staff for Research, Development & Acquisition
DESCOM	US Army Depot System Command
DEVA	Development Acceptance
DFP	Distributed Functional Processing
DID	Data Item Descriptions
DIDS	Defense Integrated Data System
DIPEC	Defense Industrial Plant Equipment Center

DIVAD	Division Air Defense
DLA	Defense Logistics Agency
DODMDS	DOD Materiel Distribution System
DPESO	Defense Product Engineering Services Offices
DPG	Dugway Proving Ground
DRCDE	Directorate for Development and Engineering
DCSLOG	Deputy Chief of Staff for Logistics
DOE	Department of Energy
DRCLDC	Office of Laboratory & Development Center
DRCPA	Directorate for Plans & Analysis
DRES	DARCOM Readiness Evaluation System
DSAA	Defense Security Assistance Agency
DSARC	Defense Systems Acquisition Review Council
DSCS	Defense Satellite Communications System
DSS	Direct Support System
DT	Development Test
DT/OT	Development Testing/Operational Testing
ECOM	US Army Electronics Command
ED	Engineering Development
EEO	Equal Employment Office
EFO	European Field Office
EIR	Equipment Improvement Recommendations
ELITE	Executive Level Interactive Terminal Environment
EMRA	Electronic Materiel Readiness Activity
EOH	Equipment on Hand
ERADCOM	US Army Electronics Research and Development Command
ERPSEL	Essential Repair Parts Stockage Lists
ES	Equipment Status
FA	Field Artillery
FCG	Functional Coordinating Group
FEBA	Forward Edge of Battle Area
FEC	Federal Electric Corporation
FMS	Foreign Military Sales
FMSO	Foreign Military Sales Order
FORSCOM	US Army Forces Command
FPM	Force Packaging Methodology
FSED	Full Scale Engineering Development
FWPC	Federal Women's Program Coordinators
GAO	General Accounting Office
GBL	Government Bill of Lading
GFSR	General Functions Systems Requirements
GOCO	Government Owned-Contractor Operated
GOGO	Government Owned-Government Operated
GOS	Government of Spain

HAZCON	Hazardous Conditions
HDL	Harry Diamond Labs
HEPC	Hispanic Employment Program Coordinators
HFE	Human Factors Engineering
HIA	Hold in Abeyance
HQMIS	HQ Management Information System
HRH	His Royal Highness
HT	Heavy Transportable
ICM	Improved Conventional Munitions
ICOEI	Integral Components of End Items
ICP	Inventory Control Point
IFV	Infantry Fighting Vehicle
IH	Improved Hawk
IIGF	Imperial Iranian Ground Forces
ILS	Integrated Logistic Support
IOC	Initial Operational Capability
IOE	Intensity of Operational Employment
IPF	Initial Production Facility
IPP	Industrial Preparedness Planning
IPR	In Process Review
IPT	Initial Production Test
ITDT	Improved Technical Documentation & Training
ITO	Industry and Technology Office
IWSM	Integrated Weapons Support Management
IWY	International Womens' Year
JOAP	Joint Oil Analysis Program
JSAO	Joint Services and Analysis Office
LAO	Logistics Assistance Office
LAP	Load, Assemble and Pack
LEA	Logistics Evaluation Agency
LIF	Logistics Intelligence File
LOA	Letters of Offer and Acceptance
LOGCAP	Logistics Command Assessment Program
LOGMARKS	Logistics Application of Automated Marking & Reading Symbols
LOGPLAN	Logistics Systems Plan
LPMES	Logistics Performance Measurement & Evaluation System
LR	Letter Requirement
LSAR	Logistics Support Analysis Record
LSO	Logistic Studies Office
LSRC	Logistics Systems Review Committee
LSSA	Logistic Systems Support Activity

MACOM	Major Army Commands
MART	Modular AMME Remote Terminal
MAS	Military Agency for Standardization
MCA	Military Construction, Army
MDMS	Maintenance Data Management System
ME	Maintenance Evaluation
M&E	Modernization & Expansion
MERADCOM	Mobility Equipment Research & Development Command
MICOM	US Army Missile Command
MILPERCEN	US Army Military Personnel Center
MILSTEP	Military Supply and Transportation Evaluation Procedures
MIRADCOM	US Army Missile Research and Development Command
MIRCOM	US Army Missile Materiel Readiness Command
MISMO	Maintenance Interservice Support Management Office
MIS-Q	Maintenance Information System-Quality
MMC	Maintenance Management Center
MM&T	Manufacturing Methods & Technology
MOB	Main Operating Base
MODA	Minister of Defense and Aviation
MPBME	Munitions Production Base Modernization & Expansion
MPTS	Metal Parts
MRC	Materiel Readiness Commands
MRO	Materiel Release Order
MRSA	Materiel Readiness Support Activity
MSA	Missile System Availability
MSC	Major Subordinate Command
MTMC	Military Traffic Management Command
MTOE	Modification Table of Organization & Equipment
MTT	Materials Testing Technology
MWO	Modification Work Order
NAF	Non-Appropriated Funds
NARADCOM	US Army Natick Research and Development Command
NATO	North Atlantic Treaty Organization
NDI	Non-Development Items
NICP	National Inventory Control Point
NIOSH	National Institute of Occupational Safety and Health
NORS	Not Operationally Ready, Supply
OASD	Office, Assistant Secretary of Defense
ODCSRDA	Office, Dep. Chief of Staff for Research, Development & Acquisition
OIRD	Office of International Research & Development
OMA	Operations & Maintenance, Army
OMB	Office of Management and Budget
OMT	Office of Manufacturing Technology
OPA	Other Procurement Army
OPE	Other Plant Equipment
OSHA	Occupational Safety and Health Act
OT	Operational Test
OTEA	Operational Test & Evaluation Agency

PAA	Procurement Apprioriation, Army
PADDS	Procurement Automated Data and Document System
PALT	Procurement Administrative Lead Time
PARR	Program Analysis and Resource Review
PATF	Property Accountability Task Force
PBG	Program and Budget Guidance
PBM	Production Base Modernization
PEM	Production Engineering Measure
PEMA	Procurement of Equipment & Missiles, Army
PEQUA	Production Equipment Agency
PI	Product Improvement
PICA	Primary Inventory Control Activity
PIP	Product Improvement Program
PM	Project Manager
POM	Program Objective Memorandum
POMCUS	Prepositioning of Materiel Configured in Unit Sets
PROMS	Procurement Management System
PRON	Procurement Request Order Number
PT	Physical Teardown
QAFA	Quality Assurance Field Activity
QAT	Quality Assurance Teams
RAM	Reliability, Availability, Maintainability
RAMP	Review of Army Mobilization and Planning
RC	Reserve Component
RCDMP	Reserve Components Dedicated Maintenance Program
RDD	Required Delivery Date
RDTE	Research, Development, Test and Evaluation
REDCON	Readiness Condition
RIMSTOP	Retail Inventory Management and Stockage Policy
RISE	RAM Improvement of Selected Equipment
RMA	Rocky Mountain Arsenal
ROC	Required Operational Capability
ROC	Republic of China
ROKIT	Republic of Korea Indigenous Tank
RPV	Remotely Piloted Vehicle
RSI	Rationalization, Standardization, Interoperability
SAA	Saudi Arabian Army
SAAD	Sacramento Army Depot
SAAM	Special Assignment Airlift Movement
SABL	Standard Automated Bidders' List
SAG	Saudi Arabian Government
SAMAS	Security Assistance Manpower Accounting System
SAMPAM	System for the Automation of Materiel Plans for Army Materiel
SAMSO	Space and Missile Systems Organization
SATCOMA	Satellite Communications Agency

SBO	Small Business Office
S&ECC	Scientific & Engineering Computing Council
SICA	Secondary Inventory Control Activity
SHF	Superhigh Frequency
SISMS	Standard Integrated Support Management System
SOW	Scope of Work
SPA	Skilled Performance Aids
SPEEDEX	System-wide Project for Electronic Equipment at Depots Extended
STANAG	Standardization Agreement
STROM	Safe Transportation of Munitions
TACSATCOM	Tactical Satellite Communications
TAEDP	Total Army Equipment Distribution Plan
TAFT	Technical Assistance Field Teams
TARADCOM	US Army Tank Automotive Research & Development Command
TARCOM	US Army Tank-Automotive Materiel Readiness Command
TCM	Toxic Chemical Munitions
TCN	Territorial Command Network
TCN	Transportation Control Number
TDA	Table of Distribution and Allowance
TEAD	Tooele Army Depot
TECOM	US Army Test and Evaluation Command
TIWG	Test Integration Working Group
TMDE	Test, Measurement and Diagnostic Equipment
TOA	Terms of Agreement
TO&E	Table of Organization & Equipment
TOW	Tube Launched, Optically Tracked, Wire Guided
TRADOC	US Army Training and Doctrine Command
TSARCOM	US Army Troop Support and Aviation Materiel Readiness CMD
UHF	Ultra High Frequency
URL	Urgent Requirements List
USAARMC	US Army Armor Center
USACC	US Army Communications Command
USACEEIA	US Army Communications-Electronics Engineering Installation Agency
USAFAC	US Army Finance & Accounting Center
USAFOR	US Army Forces
USAREUR	US Army, Europe
USASATCOMA	US Army Satellite Communications Agency
USCSC	US Civil Service Commission
USG	US Government
VADS	Vulcan Air Defense Systems
VECP	Value Engineering Change Proposals
VEPS	Value Engineering Proposals
WSMR	White Sands Missile Range
WWMCCS	Worldwide Military Command and Control System

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