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US ARMY ARMAMENT, MUNITIONS  
AND CHEMICAL COMMAND

ANNUAL HISTORICAL  
REVIEW



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HISTORICAL OFFICE  
US ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND  
ROCK ISLAND, ILLINOIS 61299-6000

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ANNUAL HISTORICAL REVIEW

US ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND

FISCAL YEAR 1986

1 October 1985 - 30 September 1986

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BY

Otis Bryan England

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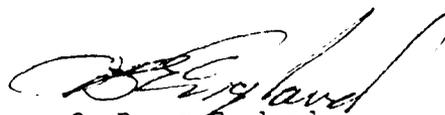
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US Army Armament, Munitions and Chemical Command  
Rock Island, IL 61299-6000  
1987

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## PREFACE

This annual historical review, prepared in accordance with Army Regulation 870-5, Military History: Responsibilities, Policies and Procedures, recounts the activities of the United States Army Armament, Munitions, and Chemical Command during Fiscal Year 1986. While this volume tries to provide an overview of the command's myriad activities, its concentration is on the command headquarters at Rock Island, Illinois. Anyone trying to completely recapture the events of FY 1986 would have to study this volume and the annual historical reviews of the Armament Research, Development, and Engineering Center at Picatinny, New Jersey; the Chemical Research, Development, and Engineering Center, at the Edgewood area of Aberdeen Proving Ground, Maryland; the Munitions Production Base Modernization Activity at Picatinny; and AMCCOM's arsenals, army ammunition plants, and other activities. To quote a trite phrase, "AMCCOM is big."

The author would like to thank the historical coordinators within the headquarters directorates who performed the often thankless and laborious task of compiling the "feeder" reports which are essential to the recounting of the activities of a command as large as AMCCOM. Additionally he would like to thank Mrs. Carol L. Secoy, who edited this volume, and Mr. James R. Cooper and Dr. Sheila C. Kamerick, who read and commented on large portions of the text. While much of the credit for producing this history belongs to the above, the responsibility for the conclusions expressed herein rests with the author alone.



O. Bryan England  
Acting Chief, AMCCOM Historical Office  
14 August 1987



MAJOR GENERAL FRED HISSONG, JR.  
Commanding General  
US Army Armament, Munitions and Chemical Command

AMCCOM Deputy Commanding Generals



BG Richard D. Beltson  
Armament and Munitions



BG Paul J. Greenberg  
Procurement and Readiness



BG James R. Klugh  
Chemical Materiel  
1 Oct 85 - 11 Jun 86



BG Peter D. Hidalgo  
Chemical Materiel  
11 Jun 86 - 30 Sep 86

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## CHAPTER I

### COMMAND OVERVIEW

#### Mission

The Army Armament, Munitions, and Chemical Command (AMCCOM) was a major subordinate command of the Army Materiel Command (AMC). AMCCOM's mission was to "exercise life cycle management over the accomplishment of total research, development, engineering, product assurance, integrated logistic support, industrial preparedness, procurement, production, security assistance, and materiel readiness for assigned systems/materiel." It executed assigned missions in support of other AMC, Department of the Army (DA), and/or Department of Defense (DOD) elements having centralized management responsibility for weapon systems or items. In addition, AMCCOM executed the mission of single manager for conventional ammunition for the DOD, and exercised centralized management authority over the munitions production base modernization and expansion program. The command maintained a technological base for the development, procurement, production, and life cycle support of assigned materiel, and commanded and controlled its assigned centers, activities, and installations.<sup>1/</sup>

#### Organizational History

In a 1962 reorganization of the army, the seven technical services were largely supplanted by AMC and the Defense Logistics Agency, with the former inheriting the procurement and development functions for weapons and munitions and the latter inheriting the procurement function for common supply items. AMC consisted of a number of major subordinate commands which included the Army Weapons Command, headquartered at Rock Island Arsenal, Illinois, and the Army Munitions Command, headquartered at Dover, New Jersey. The Weapons Command replaced the previous Ordnance Weapons Command, established in 1955 at Rock Island. The Munitions Command was the product of a merger of Frankford Arsenal, the Chemical Corps installations, and the Ordnance Special Weapons-Ammunition Command, which was, in turn, the product of a 1959 merger of the Ordnance Ammunition Command and Picatinny Arsenal. The Ordnance Ammunition Command was established in 1954.<sup>2/</sup>

The Vietnam War prompted a 1973 consolidation of the Weapons Command and the Munitions Command into the US Army Armament Command in an attempt to improve coordination in the development of weapons and ammunition. Included in the new command were the Ammunition Procurement and Supply Agency at Joliet, Illinois, and the Small Arms Systems Agency at Aberdeen Proving Ground,

Maryland, which were "discontinued" later in the year. Yet, the Armament Command, itself, was to be short-lived as the desire for added emphasis on research and development prompted yet another reorganization.3/

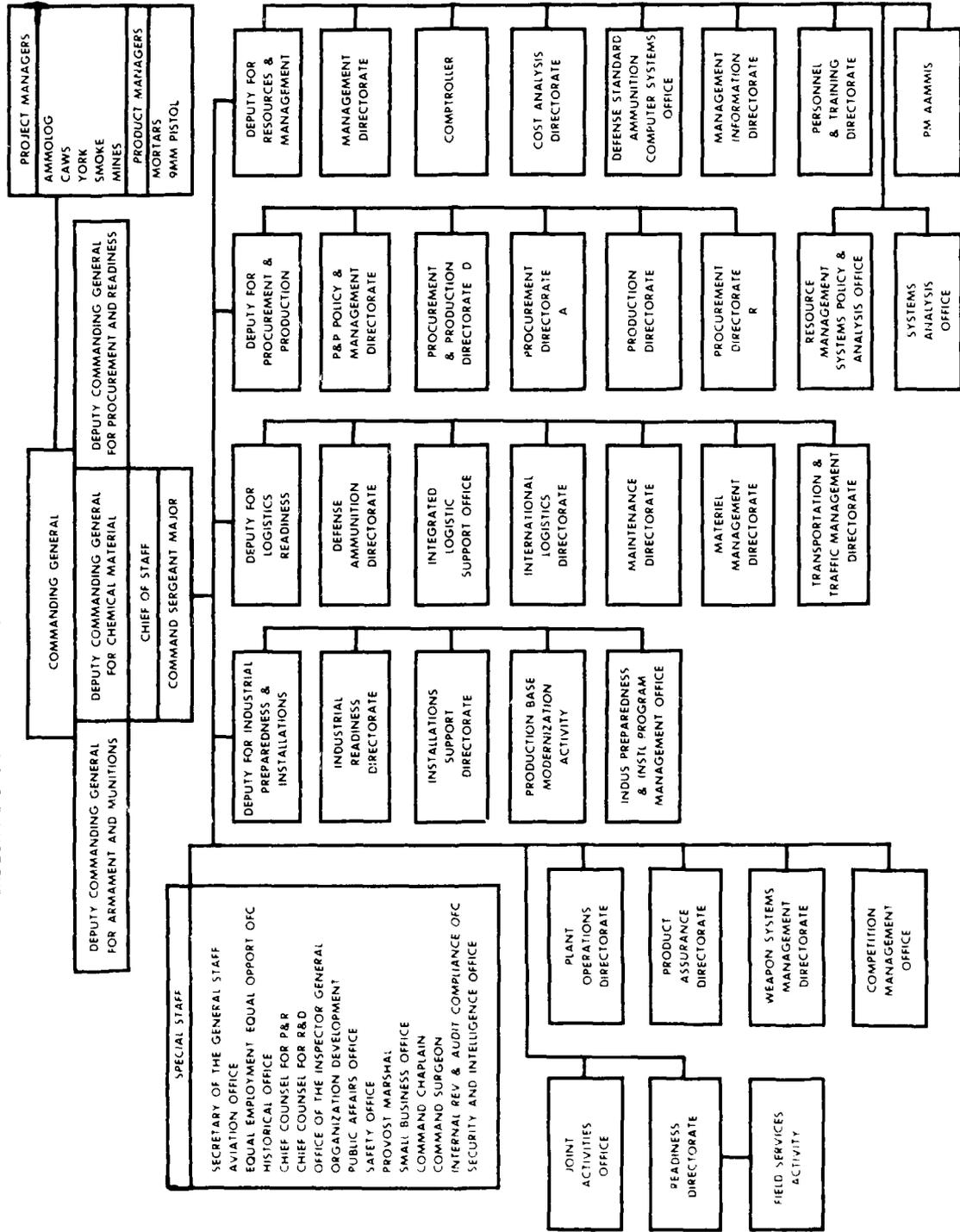
Responding to a 1974 study, AMC began to split its major subordinate commands into "research and development" and "materiel readiness commands." The Armament Command was divided into the Armament Materiel Readiness Command, headquartered at Rock Island, and the Armament Research and Development Command, headquartered at Dover, on 31 January 1977. While the new "systems" approach did solve some problems associated with research and development, a new conflict arose over "transitioning," or the point at which a materiel readiness command would take over responsibility for a new system from the research and development command.4/

AMC wearied of resolving the inevitable jurisdictional disputes between its major subordinate commands and gradually began to merge them. Accordingly, on 1 July 1983, the two armament commands were merged into AMCCOM, headquartered at Rock Island. The Dover, New Jersey, site became an armament research and development center, with a corresponding chemical research and development center located at the Edgewood area of Aberdeen Proving Ground. The new command also included the Munitions Production Base Modernization Agency, which had been appended to the materiel readiness command in 1979.5/

#### Organization and Structure

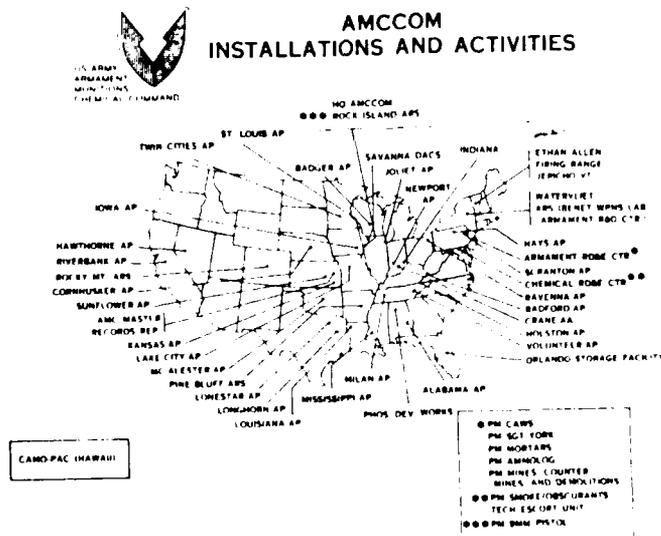
During fiscal year 1986 AMCCOM was commanded by a major general headquartered at the Rock Island Arsenal (RIA). He was assisted by three deputy commanding generals (DCG). One, for procurement and readiness, was stationed at RIA; one, for armament and munitions, was stationed at the Armament Research, Development, and Engineering Center (ARDEC) at Dover; and one, for chemical materiel, was stationed at the Chemical Research, Development, and Engineering Center (CRDEC) at Aberdeen. Additionally, the command was served by civilian deputies for resources and management, logistics readiness, industrial preparedness and installations, and procurement and production. The basic organization and structure of the command can be seen on the organization chart on the following page.

HEADQUARTERS U.S. ARMY ARMAMENT MUNITIONS AND CHEMICAL COMMAND



Installations

AMCCOM facilities included 2 research, development, and engineering centers; 4 arsenals; 29 army ammunition plants and activities; plus various other field and support activities. These installations and activities were at 36 locations in 28 different states, as seen on the following map:6/



AMCCOM installations and activities contained 32,000 buildings with 112 million square feet of floor space. They also contained almost 2,000 miles of paved roadways and 92 miles of railroad trackage.7/

Personnel

AMCCOM was commanded by Major General Fred Hissonq, Jr., throughout fiscal year 1986. General Hissonq received his commission after graduating from Ohio State University in 1955 with a bachelor of science degree in personnel management. He received a master's degree in industrial management from Babson College, Babson Park, Massachusetts, and in 1984 completed the Harvard University program for senior managers in government. General Hissonq's military schooling included the US Army War College, the Command and General Staff College, and the Military Nuclear Weapons School. His military awards included the Bronze Star Medal, the Meritorious Service Medal with two oak leaf clusters, and the Army Commendation Medal. He was also awarded the Parachutist's Badge. General Hissonq came to AMCCOM from an

assignment as the deputy executive director for conventional ammunition at AMC headquarters.8/

Brigadier General Paul Greenberg served as the deputy commanding general for procurement and readiness. General Greenberg received a bachelor's degree in chemistry from Texas A&M University, a master's degree in systems management from the University of California, and a second master's degree in business administration from Shippensburg State College, Pennsylvania. He also attended the Command and General Staff College and the US Army War College. General Greenberg's military awards include the Legion of Merit, the Bronze Star Medal, the Meritorious Service Medal with three oak leaf clusters, and the Army Commendation Medal. He came to AMCCOM from service as the project manager for the Ammunition Logistics Office at APG.9/

The command's deputy commanding general for armament and munitions was Brigadier General Richard D. Beltson. General Beltson graduated from Lehigh University with a Bachelor of Science degree in business administration. He later earned a Master of Business Administration degree from the University of Kansas. His military schooling included the Command and General Staff College and the War College. General Beltson's military awards and decorations included the Legion of Merit, the Bronze Star Medal with V device and oak leaf cluster, the Meritorious Service Medal with three oak leaf clusters, and the Army Commendation Medal. He came to AMCCOM from an assignment as director of the Combat Developments Directorate at the Field Artillery School, Fort Sill, Oklahoma.10/

For most of FY 1986 AMCCOM's deputy commanding general for chemical materiel was Brigadier General James R. Klugh. General Klugh received a bachelor's degree in chemistry from South Carolina State University and a master's in public administration from Shippensburg State. His military education included the Command and General Staff College, the Logistics Executive Development Course, and the War College. His military awards included the Legion of Merit with two oak leaf clusters, the Meritorious Service Medal with oak leaf cluster, and the Air Medal with three oak leaf clusters. His immediate prior assignment was deputy commander of the Army Logistics Center, Fort Lee, Virginia.11/

On 11 June 1986 General Klugh was succeeded by Brigadier General Peter D. Hidalgo. General Hidalgo was a 1958 graduate of the US Military Academy, West Point, New York. He was awarded a master's degree in business administration from the University of Pittsburgh in 1964, and was a graduate of the Command and General Staff College and the War College. General Hidalgo's military decorations included the Legion of Merit, the Bronze Star Medal,

## Command Overview

the Meritorious Service Medal with three oak leaf clusters, the Army Commendation Medal with oak leaf cluster, the Parachutist Badge, and the Army General Staff Identification Badge. His immediate prior assignment was as AMC's deputy chief of staff for chemical and nuclear matters.12/

As of 30 September 1986 AMCCOM's civilian strength was 21,509. There were 784 military personnel assigned. In addition, 23,836 contractor personnel were employed at the command's ammunition plants and activities. A list of AMCCOM's key personnel, the positions they held, and their dates of tenure can be found at Appendix A.13/

### Budget

AMCCOM's total authorized budget for FY 1986 was \$8.254 billion. The total direct program was \$4.468 billion, and the total reimbursable program was \$3.786 billion. The procurement appropriation program was \$3.143 billion, and the central ammunition working capital fund was \$2.121 billion. Operation and maintenance, army, funds available for obligation during the fiscal year were \$821,171,200.14/

### Highlights

#### Congress and the 9mm Pistol

During fiscal year 1986 the army faced continuing pressure over its selection of Beretta's 92SB-F 9mm automatic pistol as the M9, the standard side arm for all the military services. Smith & Wesson and Maremont, two losers in the competition, found little succor in the court system; both of their law suits and the subsequent appeals failed. Smith & Wesson then turned to the political arena for redress. As Smith & Wesson's Robert L. Hall stated,

... the stakes were and are high. The winner of the procurement could most assuredly and is most assuredly claiming its weapon has been certified by the U.S. Army as the best handgun in the world. Every company knows that the revenues gained or lost would extend far beyond the individual procurement itself.15/

Smith & Wesson turned to Representatives Edward P. Boland (D-Mass.) and Silvio O. Conte (R-Mass.) who led the fight in Congress against the Beretta contract. Not coincidentally, Springfield, Massachusetts, was the home of Smith & Wesson. Concerned with the 1,870 jobs the company gave to their district, the Congressmen brought the 9mm procurement to the attention of Representative Jack Brooks (D-Tex.), the chairman of the House

Committee on Government Relations, who requested a General Accounting Office (GAO) inquiry in September 1985.16/

The GAO conducted its inquiry expeditiously, completing interviews and a survey of files at Rock Island on 6 December. During their exit interview, the two investigators, John A. Rinko and Walter S. Ochinko of GAO's National Security and International Affairs Division, indicated that they had found no impropriety on the part of the PM or AMCCOM, and that a suggestion by the Brooks Committee for the GAO to independently repeat the competitive testing was being opposed by the GAO.17/

The GAO's report concluded that the goal of the 9mm program was "not to eliminate all but superior candidates but rather was to identify those whose products met the government's needs," and that Smith & Wesson was "improperly eliminated from the competition." The army contended that Smith & Wesson had failed to meet two mandatory test requirements--24 inch-ounces of firing pin energy and an expected service life of at least 5,000 rounds. The GAO contended, however, that the army had erred in converting the NATO metric standard to US units of measures by rounding to the nearest whole number. Smith & Wesson had failed by one-ten thousandth of an inch, and would have passed if the NATO standard had been converted more precisely. Likewise, the request for test samples had called for an expected service life of at least 5,000 rounds, which GAO interpreted to mean an average service life. Smith & Wesson was eliminated because one of the three weapons tested developed a crack between 4,500 and 5,000 rounds, which GAO interpreted as applying a minimum service life criteria. The GAO, however, discounted Smith & Wesson's charge that the competition had been "wired for Beretta."18/

If the 9mm competition was not "wired" for Beretta, an army observer could contend that the subsequent committee hearings were "wired" for Smith & Wesson. In his opening remarks at the 5 June 1986 Legislation and National Security Subcommittee hearings, Congressman Brooks stressed that

. . . this was a relatively simple procurement for a standard commercially available weapon. No new technique, no new science, no breakthrough, no age of technology junk. If they couldn't get this one right, can you imagine how they are handling the large, complex weapons projects? Doesn't it make you nervous about that?19/

Representative Frank Horton of New York stated that the "deficiencies we've found in the Army's managerial practices, and

especially its procurement practices, have not been reassuring to the American taxpayers." Clearly, the army was guilty until proven innocent.20/

In addition to a representative from GAO, Congressman Brooks called upon Dr. Edward C. Ezell of the Smithsonian Institution, an "internationally recognized scholar in the field of military small arms developments." Dr. Ezell addressed how army testing organizations established "realistic performance criteria for candidate military weapons being evaluated for possible standardization." Ezell contended that the research, development, and acquisition establishment had "grown too large" and did not "pay attention to its original goal." Its procedures had "become too complex, or at the very least they tend to be inappropriately tailored to the needs of the items that are being tested."21/

. . . What relationship does 5,000 shots have to do with, for example, previous pistols such as the M1911 pistol or the revolvers currently used by the military? How did the U.S. armed services come to the conclusion that a pistol should have had a minimum life of 5,000 shots?22/

He concluded that the figure was "picked . . . out of thin air by the planners of the test because it seemed to be a reasonably good guideline." Ezell contended that the military acquisition process had become "overly dependent upon attempting to quantify answers to questions."23/

The army's lone witness was its undersecretary, James R. Ambrose. Mr. Ambrose testified the 24 inch-ounce firing pin energy standard had been intentional, to "impose a new standard which was a bit more on the safe side; a standard that was put in the specifications and to which [Smith & Wesson] did not object before the bid." Additionally, the 5,000 round service life requirement came from existing federal standards for the M1911A1 and service .38 caliber pistols. "For somebody to come up here and say as a historian or GAO that the Army took such numbers as 5,000 rounds off the wall and it was excessive, it seems to me to be quite unreasonable."24/

Ambrose brought up the subject of foreign sourcing as an area of "conflicting and contradicting legislation."

There are all sorts of rules such as Buy American Act and the like which the Congress has passed, or helped pass. We have complaints from both the American side and the foreign suppliers. Almost any action we take becomes an action that is litigated one way or another, or protested . . .

He called upon Congress to "help us out here by stripping through these conflicting instructions that we get and giving us a good set of rules."25/

To Ambrose, the 9mm procurement was a "classical case of how the Federal Government shouldn't buy anything." The procurement was complicated by "congressional instructions, OSD instructions, joint service boards arguing endlessly about specifications and so forth and so forth."

We got an appropriation pressed on us from the Congress for \$1.9 million with the insistence that there be that much testing, and also that it be limited to that because other parts of the Congress said they didn't want us to do it. . .

. . . One faction in Congress said you must go ahead with this; if you don't, we will hold all of your small arms ammunition hostage, and they did. Another faction said in the letter to me one time, if you don't kill it, Ambrose, we will. We got batted back and forth.26/

Undersecretary Ambrose felt that under no circumstances should the 9mm procurement be recompeted, saying, "I think enough water is over this dam." Even GAO was "unclear what action, if any," was in the government's best interest, and Ezell had "similar questions" as to whether recompetition was "a wise thing to do or not." But Congressman Brooks was outraged that the only domestic entry not voluntarily withdrawn was eliminated from the competition prior to the bid openings.27/

You never even opened the Smith & Wesson bids. You don't know what they bid. Maybe they'd sell those guns for \$130 a piece, I don't know. And if we had the Italian Government financing them, like it probably did for Beretta, maybe Smith & Wesson could have sold them for \$130. Who knows whether those foreign governments are subsidizing their manufacturers?

. . . The least we could do is let the American people have a shot at putting their price in and qualifying them instead of acting like they won't shoot.

I went down there and shot them. They'll shoot pretty well. There's nothing wrong with Smith & Wesson guns. I've had one for 30 years.28/

Accordingly, the Committee on Government Operations recommended that the contract with Beretta be cancelled "after the fulfillment of the current order," and that the secretary of the army "direct a recompetition among technically acceptable candidates for the remaining number of pistols." Finally, the committee recommended that the House Appropriations Committee eliminate further funding for the 9mm program if the secretary failed to implement its recommendations.29/

On August 14, the House Appropriations Committee ordered the army to throw out its contract with Beretta and to recompute the 9mm handgun. Beretta called upon Representative Steny Hoyer (D-Md.) and Senators Alfonse D'Amato (R-N.Y.), Ernest Hollings (D-S.C.), and Lawton Chiles (D-Fla.), whose districts all had connections with the corporation, to champion its cause in the House and Senate.30/

They were only marginally successful. While the resultant compromise allowed Beretta to keep its multiyear contract for 320,030 M9 pistols, the Congress directed the army to hold a new competition for the remainder of the 9mm program. Rather than provide a new supplier for the M9 pistol, the Congressional action opened the possibility of two different 9mm pistols in the government's arsenal, violating one of the specific intents of the 9mm program that the Congress, itself, had mandated.31/

#### Program Manager for Chemical Munitions

Section 1412 of Public Law 99-145 mandated the demilitarization of the US stockpile of lethal chemical agents and munitions by 30 September 1994, and a central management organization, under a general officer, to be established by 1 May 1986 to oversee the task. Prior to passage of the act the chemical demilitarization program was assigned to the US Army Toxic and Hazardous Materials Agency (USATHAMA), a subordinate of AMC which was responsible for the army's installation restoration program and served as the lead agency for AMC's pollution abatement and environmental control technology programs. However, the increased magnitude and complexity of the program, imposed by the overall conditions and restrictions of the act, prompted AMC to establish a separate organization to accomplish the task.32/

In December 1985 AMC commissioned a study by A. D. Little, Inc., which recommended that a project manager be established reporting through the commanding general, AMC. A subsequent study conducted by the US Army Management Engineering and Training Activity in March 1986 concurred with the project management concept and reporting authorities. However, in April AMC issued new guidance on formulating the PM's office which directed that the binary munitions program be placed under project management as

well, that a capstone program manager be established over both chemical demilitarization and binary munitions, and that the capstone PM report be titled AMDDOM. AMC permanent order 18-1, 1 May 1986, formalized the establishment of the Office of the Program Manager (Demilitarization and Binary) (Provisional), later renamed the PM for Chemical Munitions.33/

Brigadier General David A. Nydam was appointed as the PM effective 2 June 1986. BG Nydam was born in Oak Park, Illinois, and was commissioned into the Chemical Corps in 1958. He had a bachelor of science degree, a master of science in microbiology, and a master of public administration degree in management engineering. His military education included the Navy Command and Staff College, the US Army War College, and the Industrial College of the Armed Forces. General Nydam's awards and decorations included the Distinguished Flying Cross, the Soldier's Medal, the Bronze Star with Oak Leaf Cluster, the Meritorious Service Medal with Oak Leaf Cluster, the Air Medal with two Oak Leaf Clusters, the Joint Service Commendation Medal, the Army Commendation Medal, and the Vietnam Cross of Gallantry with Gold Star. He also earned the Airborne, Ranger, and Expert Infantry Badges. General Nydam came to the PM office from Dugway Proving Ground after two years as its commander.34/

Upon assuming office, General Nydam identified two immediate goals: the establishment of the program manager's organizational structure, and the planning for expansion of the program manager's responsibilities to include the binary chemical program. Most of the PM's activities during the remainder of FY 1986 were toward the realization of the first goal by developing and staffing the supporting PM charters, the reorganization concept plan, and associated tables of distribution and allowance which would separate the demilitarization mission from USATHAMA. These documents were submitted to DA for approval in March 1987.35/

The chemical stockpile disposal program incorporated four existing chemical disposal programs: the BZ disposal program, the drill and transfer system, the chemical agent munitions disposal system, and the Johnston Atoll chemical agent disposal system. The BZ disposal facility, located at Pine Bluff Arsenal, Arkansas, was to destroy the incapacitating agent by incineration. Operations were scheduled to begin in July 1987.36/

The drill and transfer system (DATS) was a portable system designed to transfer the chemical agent from leaking munitions to approved containers for subsequent disposal. By the end of FY 1986 the DATS had successfully emptied more than 600 unserviceable chemical munitions at five army installations.37/

## Command Overview

The chemical agent munitions disposal system (CAMDS) was located at Tooele Army Depot, Utah, and was designed to "prove out" and improve industrial and military chemical disposal processes. Since it began operations in 1979, the CAMDS had "proven" chemical neutralization and incineration of nerve agents, explosive components deactivation, processing and containerization of by-products and residues, highly sensitive detection and monitoring equipment, and large volume, high efficiency air filtration.38/

When Congress prohibited the return of chemical stocks to the continental United States by passing Public Law 91-672 in 1971, obsolete chemical munitions were shipped to Johnston Atoll, located approximately 717 nautical miles west southwest of Honolulu, Hawaii. The Johnston Atoll chemical agent disposal system was developed to apply CAMDS-proven technology to dispose of all obsolete and unserviceable chemical munitions. Operation of the Johnston Atoll facility was scheduled to begin in 1989.39/

### Total Package/Unit Materiel Fielding

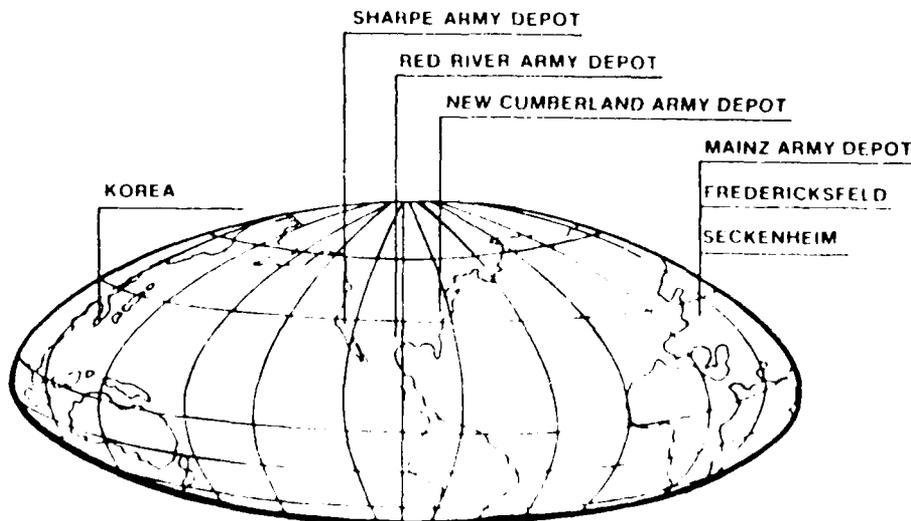
The 1980s ushered in a period wherein the army was fielding more new weapon systems than at any time since World War II. While these new weapon systems vastly improved the army's ability to wage war, they also created new logistical problems, specifically "how to put a fully supportable system into the hands of the using unit with minimal disruption of that unit's day-to-day mission." In December 1982 the Army Materiel Command began an initiative which resulted in the development of the total package/unit materiel fielding (TP/UMF) concept.40/

TP/UMF was defined as "a materiel distribution control process that provides a consolidated support package of equipment and materiel for the gaining command." Prior to TP/UMF, a gaining unit received new equipment by the "pull" method, which placed most of the burden of budgeting for initial repair parts; requisitioning special tools, test equipment, and associated items of equipment; and "a myriad of other actions" on the unit itself. Under TP/UMF, the workload of the gaining unit was minimized, since the materiel developer gathered the end item and all its required support into a single package which was identified, funded, assembled, shipped, and deprocessed by the materiel developer.41/

The first step in TP/UMF was to determine the materiel requirements of the gaining organization. This was accomplished through close coordination between AMC, the AMC subordinate commands, the project manager, and the gaining organization, with assistance from other agencies as required. The gaining organization's modification table of organization and equipment or

table of distribution and allowances was compared with the requirements imposed by the new end item, and all needed equipment was identified on a materiel requirements list (MRL). The MRL identified the end items with all major items and basic issue items; support items required to operate, maintain, or transport the end item; authorized stockage list and prescribed load list items; special tools and test equipment; test, measurement, and diagnostic equipment; technical publications; special mission equipment; and deployable common table of allowances items for the activation of new units. The AMC fielding command also identified requirements for petroleum products and lubricants, ammunition, medical supplies, and communications security devices, which were the requisitioning responsibility of the gaining organization.42/

After the MRL was agreed upon, the AMC fielding command funded and requisitioned the required items. Repair parts, special tools and test equipment, and publications were sent to a unit materiel fielding point (UMFP) which received and consolidated the items into unit packages for shipping to the central staging area. The three UMFPs were Sharpe, Red River, and New Cumberland Army Depots. The end item and associated support items were sent directly to the central staging area. This central staging area was the point where the entire package was assembled for transportation to the handoff point, or where the package was actually handed off to the gaining organization. The UMFPs and central staging areas outside the continental United States can be seen on the following diagram:43/



## Command Overview

At the handoff point, the total package was inventoried by the fielding command's handoff team and representatives of the gaining organization, and the package was inspected for damage. When all discrepancy reports were filed, and the TP/UMF joint inventory and handoff form was signed by the gaining and fielding organizations, the handoff was complete. Subsequent requisitioning of materiel to support the end item was the responsibility of the gaining command.44/

The TP/UMF concept was tested in FY 1984 with the fielding of six systems. Based on the success of the test fieldings, the vice chief of staff of the army directed the expansion of the program. AMC planned to expand the concept by fielding 24 systems in FY 1985, 81 systems in FY 1986, and to field all AMC systems in FY 1987 and thereafter by TP/UMF.45/

## NOTES

1/AMCCOM Regulation 10-1, Mission and Major Functions of the Headquarters, AMCCOM, 1 April 1986, p. 01-1.

2/AMC General Order Number 4, Establishment of Major Subordinate Commands and Organizations, 23 May 1962, confirmed by DA General Order Number 46, Transfers of Installations and Activities to the U.S. Army Materiel Command, 25 July 1962. For a more extensive discussion of the organizational evolution of AMCCOM, see James R. Cooper, Jr., et al., Annual Historical Review: US Army Armament, Munitions, and Chemical Command, Fiscal Year 1983 (Rock Island, IL: AMCCOM Historical Office, 1984), pp. 1-7.

3/AMC General Order Number 112, 17 May 1973; AMC General Order Number 113, 17 May 1973; AMC General Order Number 257, 21 September 1973; Cooper, op. cit., p. 5.

4/US Army Materiel Development and Readiness Command (DARCOM) Permanent Order 25-1, 30 September 1976; Cooper, op. cit., p. 6. AMC, which became DARCOM in 1976, reverted to the name AMC in August 1984. See "Command redesignated AMC," AMC News, August 1984, p. 1.

5/DARCOM Permanent Order 43-1, 3 June 1983. The two research and development centers were redesignated as research, development, and engineering centers in March 1986 to better depict their missions.

6/AMCCOM Public Affairs Office, computer file "AMCCOM.OVERVIEW," on PRIME computer system "Commander's Menu," 21 Oct 86; AMCCOM Pamphlet 5-1, "AMCCOM Facts," 30 Jun 86, p. 3.

7/"AMCCOM.OVERVIEW."

8/Public Affairs Office, biographical sheet, MG Fred Hissong, Jr.

9/Public Affairs Office, biographical sheet, BG Paul L. Greenberg.

10/Public Affairs Office, biographical sheet, BG Richard D. Beltson.

11/Jeffery K. Smart, Annual Historical Review: US Army Chemical Research and Development Center, Fiscal Year 1984 (Aberdeen Proving Ground, MD: AMCCOM Historical Office, 1985),

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p. vii.

12/News release number 86-57, "Hidalgo is Commander of CRDEC," Public Affairs Office, CRDEC, 11 Jun 86.

13/For more information on AMCCOM's personnel status, see chapter 7, "Resources Management."

14/For additional information on AMCCOM's budget, see the comptroller section of chapter 7, "Resources Management."

15/House Committee on Government Operations, The Beretta Pistol: Should it be the Defense Department's Standard Handgun?: Hearing Before a Subcommittee of the Committee on Government Operations, 99th Cong., 2d sess., 1986, p. 93, hereinafter cited as Congressional Hearing. For additional information on the procurement of the M9 and its ancillary equipment, see the Product Manager, 9mm Pistol section of chapter II. For background on the selection of the Beretta pistol, see Sheila C. Kamerick, et. al., Annual Historical Review: US Army Armament, Munitions, and Chemical Command, FY 1984, (Rock Island, IL: AMCCOM Historical Office, 1985), pp. I-21--I-23. For the beginnings of industry's reaction to the selection, see Lawrence L. Leveque, et. al., Annual Historical Review: US Army Armament, Munitions, and Chemical Command, FY 1985, (Rock Island, IL: AMCCOM Historical Office, 1986), p. I-2.

16/"Congress Reopens Competition For 9-mm Pistol Production," Army, November 1986, p. 65; Congressional Hearings, p. 2.

17/"White Tail" memo, MG Fred Hissong, Jr., to GEN Richard A. Thompson, 9 Dec 85.

18/Congressional Hearings, pp. 10-13; Ibid., p. 94.

19/Ibid., p. 2.

20/Ibid.

21/Ibid., pp. 18-19.

22/Ibid., p. 21.

23/Ibid., pp. 21-22.

24/Ibid., p. 54; Ibid., p. 60.

25/Ibid., p. 41.

26/Ibid., pp. 52-53; Ibid., p. 59.

27/Ibid., p. 54; Ibid., p. 6; Ibid., p. 37.

28/Ibid., pp. 48-49.

29/House Committee on Government Operations, Army 9-MM Handgun Contract With Beretta Corporation Should Be Terminated, 99th Cong., 2d sess., 1986, H. Rept. 99-652, p. 23.

30/"Beretta Struggles To Keep Handgun Work," Defense Week, 14 October 1986, p. 14.

31/"Congress Reopens Competition," p. 65; Cooper, op. cit., p. 45.

32/Defense Logistics Studies Information Exchange report number LD 71036A, Establishment of the Office of the Program Manager for Chemical Munitions: Lessons Learned (Fort Lee, VA: US Army Logistics Management Center), n. p.

33/Ibid.

34/"Dugway chief promoted to brigadier general," APG News, 31 July 1985; "Nydam to Guide Chemical Disposal," excerpt from APG News, 25 June 1986, p. 3.

35/"Nydam," p. 1; Lessons Learned, n. p.

36/"Nydam," p. 2.

37/Ibid.

38/Ibid.

39/Ibid.

40/Total Package/Unit Materiel Fielding Primer (Draft), (Lexington, KY: AMC Materiel Readiness Support Activity, not dated), paragraph 1-1; Maxine Richter, "The Total Package--Unit Materiel Fielding Way," Army Research, Development & Acquisition Magazine, November-December 1985, p. 12.

41/Primer, para. 1-5; Richter, p. 12; William B. Johnston and Kenneth M. Lewis, "Ready on Delivery," ALOG, September-October 1985, p. 32.

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42/Johnston and Lewis, pp. 32-33; Richter, p. 13.

43/Johnston and Lewis, p. 33; Richter, p. 13; Primer,  
para. 4-5.

44/Johnston and Lewis, p. 33.

45/Richter, p. 12.

## CHAPTER II

### WEAPON SYSTEMS MANAGEMENT

Weapon systems management at AMCCOM was executed on three levels. Level 1 management was vested in a number of project/product managers (PM) established by charters from the commanding general, Army Materiel Command (AMC). These PMs were responsible for centralized intensive management of their respective commodities. During FY 1986 project managers for ammunition logistics, cannon/artillery weapon systems, the SGT York air defense system, smoke/obscurrants, and mines, and product managers for mortars and the 9mm pistol, reported through the commanding general, AMCCOM. In addition, a program manager for chemical munitions, supervising the PMS for chemical demilitarization and binary munitions, and a product manager for fuzes were provisionally established. Of these, only the PM for the M9 9mm pistol was physically located at Rock Island. Therefore, only its activities are reported here.1/

Level II weapon system management was vested in the weapon system matrix managers located in AMCCOM's Weapon Systems Management Directorate, and empowered by a charter from the AMCCOM CG. Level III items were managed by the functional directorates, or the research, development, and engineering centers.2/

#### PRODUCT MANAGER, 9MM PISTOL

##### Mission

The mission of the Product Manager, 9mm, was to exercise the full line authority of the AMC commanding general, as delegated to the AMCCOM CG, for centralized intensive management of the joint services 9mm program as specified in the 9mm product manager charter. He was responsible for the development, testing, selection, acquisition, fielding, and deployment of a standard 9mm weapon, and the development of ammunition and ancillary items. These functions were carried out for the Department of the Army, acting as executive agent for the Department of Defense. The PM managed the planning, scheduling, directing, coordinating of testing and evaluation, research and development, configuration management, life cycle modeling, engineering, production, supply, integrated logistic support, deployment, and fielding of the M9 9mm pistol.3/

## Weapon Systems Management

### Staffing and Personnel

Lieutenant Colonel Richard C. Williams served as the product manager, 9mm pistol, during FY 1985. His office staff consisted of four civilians, as opposed to an authorized three civilians.4/

### Major Activities

#### M9 Pistol

Following the rejection of Beretta's first article test report in September 1985 AMCCOM worked closely with the contractor to insure passage of the retest. Beretta revised its quality assurance procedures and adjusted machining processes to preclude nonconforming parts. Additionally, a series of engineering and production studies resulted in an improved manufacturing process.5/

The first article retest began on 7 January 1986 and was completed on 16 January. An onsite government team of product manager, engineer, quality assurance, and contracting personnel, empowered to make on the spot decisions, approved the first article test and gave a go-ahead for production on 20 January.6/

Initial input for the Level III technical data package (TDP) drawings was received from Beretta USA, Accokeek, Maryland, in February 1986. Government technical evaluation identified necessary corrections before acceptance. Beretta was scheduled to submit the TDP in October 1986.

The second year (FY 1986) of the 5-year multi-year contract with Beretta was awarded in March 1986. A total of 57,000 weapons, at a cost of \$12.4 million, was ordered. The army ordered 25,400 M9s at a cost of \$5.3 million; the air force ordered 19,000 at a cost of \$4.2 million; the marines ordered 10,000 at \$2.2 million; the navy ordered 1,100 at \$300,000; and the coast guard ordered 1,500 M9s at a cost of \$400,000.

During FY 1986 Beretta delivered 26,400 pistols to the government. Of these, 3,470 were delivered to the army; 8,500 went to the air force; and 14,430 went to the marine corps.

#### M882 Ammunition

Federal Cartridge, Anoka, Minnesota, passed the M882 first article test in December 1985. Production deliveries began in January 1986.7/

Solicitation for the FY 1986 buy of 35 million rounds was issued in January. The contract was awarded in May to Olin Winchester Corporation, East Alton, Illinois, for \$3.9 million. The first article test was accepted in July 1986 with initial deliveries beginning in October 1986.8/

A total of 25 million M892 rounds was delivered by Federal to the government in FY 1986. The marines received 13.24 million of these, the air force received 4.62 million, and the army received the remaining 7.14 million.

#### M12 Holster

Production of the M12 holster began at Bianchi Leathergoods, Temecula, California, in November 1985. An option (FY 1986 buy) was awarded for an additional 87,000 holsters in December. The dollar amount was \$1.3 million.

The initial input for the level III TDP from Bianchi was reviewed in February 1986. The government identified corrections needed, and revisions were sent to Bianchi. The final TDP was to be delivered in October 1986.9/

Bianchi delivered 86,500 M12 holsters during FY 1986.

#### M1 Ammunition Pocket

The first article test (FAT) submitted by Infinite Creations was rejected in November 1985 "due to incomplete documentation, dimensional errors, variation in stitches per inch, and other factors." Resubmission of the FAT was accepted in February 1986.10/

A FY 1986 option buy was awarded for an additional 100,000 pockets in November 1985 at a cost of \$272,000. Infinite Creations delivered 120,600 pockets in FY 1986.

#### M14 Arms Rack

Two ARDEC-designed prototypes for the XM14 arms rack were constructed at Tobyhanna Army Depot and shipped to Fort McClellan in January 1986 for testing by the Military Police School (USAMPS). Following the evaluation, one prototype design was selected for continued development.

In May 1986 a message from USAMPS stated that the modified M1920 arms rack was not suitable for permanent use as the M9 storage rack. Development of the XM14 rack was accelerated and a prototype was tested at ARDEC in June 1986 by the USAMPS. This prototype was accepted and type-classified as the M14 rack on 14

August 1986.11/

A purchase order with Abbott Products Incorporated was signed in August 1986 to develop a preproduction prototype and prove out the TDP. Delivery was scheduled for October 1986.

#### Pistol Chest

ARDEC was developing a pistol storage chest for the US Marine Corps. Four prototypes were ordered from commercial sources and received in February 1986. None was considered acceptable.

A Commerce Business Daily article was prepared in September 1986 for release in the first quarter of FY 1987 to conduct a market survey. A non-developmental item strategy was anticipated.

#### Bar Coding

The air force and marines had a firm requirement to bar code all 9mm pistols. Working with the DOD LOGMARS permanent marking subgroup, the army developed a specification for laser-etched bar coding for the pistol. The specification was forwarded to Beretta for a cost estimate to be incorporated into the pistol production contract.

Two methods of bar coding were considered: laser etching and adhesive labels. The thick metal labels would not stay on the curved surfaces. A clear polyurethane coating, painted over the laser-etched bar code, was expected to prevent corrosion. However, the polyurethane coating did not withstand a solvent-soaking test. A better polyurethane coating was being sought. Bar coding would be implemented as soon as protective coating problems were resolved.

#### Technical Manuals (TM)

TM 9-1005-317-23&P, dated January 1986, was printed and distributed in April 1986. A five-service meeting was held in September 1986 to discuss change 1 to the TM and TM 9-1005-317-10.

#### Material Release for Issue

The initial production test for the pistol, holster, ammunition pocket, and ball ammunition was conducted from February through June 1986. No deficiencies or shortcomings were found and all items were recommended for release.

The material release review board met on 24 July 1986 and approved the release of the M9 pistol, M882 ball ammunition, M12 holster, and M1 pocket. The full release was formally approved on

6 August 1986.

Audits

The Army Audit Agency completed its review of the 9mm program. The final report, Number MW 86-11, took issue with the method of selecting initial provisioning quantities for repair parts. Corrective actions were initiated.

The General Accounting Office completed its investigation of the 9mm program. Its report, issued in June 1986, concluded that there was no evidence that the 9mm handgun procurement was "wired" for Beretta. However, it did conclude that Smith & Wesson was unfairly eliminated from the competition in the areas of firing pin energy and weapon durability. The army disagreed with the latter conclusion.<sup>12/</sup>

Litigation

Litigation by Maremont and Smith & Wesson were both resolved in February 1986 in favor of the government. In May 1986, Maremont appealed the lower court's decision. A decision from the First Circuit Court of Appeals was expected in the first quarter of FY 1987.<sup>13/</sup>

WEAPON SYSTEMS MANAGEMENT DIRECTORATE

Mission

The Weapon Systems Management Directorate intensively managed level II weapon systems through its chartered weapon system matrix managers (WSMM). It provided continuing commodity expertise plus across-the-board command direction, coordination, and control of its assigned systems. The directorate also was the command's major staff element for the planning and implementation of all transition and transfer actions for the single manager for conventional ammunition (SMCA) and newly developed systems.<sup>14/</sup>

Organization

The directorate was comprised of offices of the director and deputy director, and the following divisions/offices: the Artillery/Ship Gun Munitions Division, the Infantry/Air Munitions Division, the Medium Artillery Systems Division, the Nuclear Munitions/Chemical Materiel Division, the Program and Management Division, and the Armor Division.

Staffing and Personnel

## Weapon Systems Management

Colonel George T. Murray served as the director of the Weapon Systems Management Directorate throughout the year. Mr. George M. McCoy, as in previous years, served as deputy director. The total staffing in the director's office was one military and four civilians.

The overall authorized directorate staffing changed during FY 1986 as follows:

	Authorized	Actual
1 Oct 85: Military	16	16
Civilian	110	113
30 Sep 85: Military (Army)	14	12
Civilian	105	107

### Director's Overview

The Weapon Systems Management Directorate contributed to the AMCCOM mission of providing weapons and ammunition readiness support to the field by ensuring that new production/overhauled weapons systems were delivered to soldiers fully supportable, capable of sustained operations, and in a timely fashion. A total of 45 items transitioned to AMCCOM during FY 1986.

During 1986 the Weapons Systems Management Directorate continued managing the Level II weapon systems/items as provided in AMCCOM regulation 700-3, Weapon Systems Management for Designated Systems/Items/Programs, by assigning WSMMs to manage the designated Level II systems. By the end of the fiscal year, 64 WSMM charters had been signed by the CG, with three additional charters in various stages of staffing.

The directorate was staffed with 87 WSMMs or assistant WSMMs, who managed approximately 65 Level II systems containing an additional 74 subsystems/items assigned to those major systems. In addition to the WSMM duties, these WSMMs also served as project officers for 25 project-managed systems/items containing an additional six sub-items.

Worldwide fielding of the backup computer system (BUCS) was completed, except for new battalion activities for the 6th and 10th Infantry Divisions. The total package/unit materiel fielding (TP/UMF) of BUCS was very successful, and the system was well received by troops in the field.

Fielding of the squad automatic weapon system (SAWS) was resumed in April 1986 after an interruption of approximately 20 months. In that period stocks of ammunition were built up,

production and design improvements to the weapons were made, and design defects in the arms rack were corrected. Units receiving weapons were the 10th Special Forces Group at Fort Devens, Massachusetts, and the 101st Airborne Division at Fort Campbell, Kentucky. In addition, issues of approximately 2,000 weapons to the US Army, Europe (USAREUR), were begun.

Installation of the remoted target system (RETS), which began in FY 1985 with the first range being installed at Fort Hood, Texas, continued into FY 1986. Ranges that were installed during the year included five ranges at Fort Benning, two at Fort Hood, two at Fort Jackson, two at Fort McClellan, one at Fort Bliss, and one at Fort Dix.

Fielding of the M8A1 chemical agent alarm continued with a total of 3,150 M8A1s; 7,114 M43A1 detectors; 170 M140 test sets; and 35 authorized stockage list packages handed off using TP/UMF procedures. Fieldings were completed in USAREUR, the Eighth US Army (EUSA), the US Army in Japan, and the Western Command (WESTCOM).

Fielding of 105 welding shops and 11 machines to USAREUR and 23 machines to EUSA was accomplished.

The fielding of conduct of fire trainers (COFT) continued successfully and on schedule. In FY 1986 a total of 46 COFTs were fielded: 21 continental US (CONUS) and 25 outside CONUS (OCONUS). The availability of these fielded systems remained at 99.7 percent.

#### Major Activities

##### Armor Division

The Armor Division managed tank main armament, fire control, ammunition, and training devices. Responsibilities included support of new production, rebuild, and conversion programs, as well as field support.

##### Abrams Tank Program

The M1A1 tank production start-up was delayed until May 1986 due to a strike at General Dynamics Land Systems, and the finishing of improved performance (IP) M1 production. A build-up of the M1A1 tank went as follows: 10 tanks in May, 40 tanks in June, 50 tanks in July, 80 tanks in August, and 84 tanks in September.

## Weapon Systems Management

The vice chief of staff of the army (VCSA) approved a conditional release of the M1A1 to the Forces Command (FORSCOM) and the Training and Doctrine Command (TRADOC) on 18 July 1986. A conditional release for USAREUR was pending the results of the initial production test (IPT). The IPT started 21 June 1986 at Aberdeen Proving Ground and was to continue through the second quarter of FY1987. Fielding started at Fort Bliss, Texas, on 26 August 1986 with the hand-off of the first company of the 2nd squadron, 3rd Armored Cavalry Regiment.15/

Production of IPM1 tanks ended in FY 1986 with a total of 2,374 M1s and 894 IPM1s produced. All IPM1 tanks were fielded, as well as basic M1 tanks.

The technical data package for the common power control unit was determined to be competitive and suitable for breakout. A pre-award bidders conference was held on 9 September 1986. Approximately 30 bid packages were sent out. Expected savings were estimated at a minimum of \$1.2 million.

PM Tank Systems, Logistics Division, established the M1A1 block II tank integrated logistic support management team. Block I product improvement programs to the M1 tank included improvements that resulted in the M1A1 tank. Block II PIPs were to be added to the M1A1. AMCCOM was afforded membership on the advisory committees for the various M1A1 tank block II improvements. Statements of work for the full scale engineering development contracts for the commander's independent thermal viewer and the carbon dioxide laser rangefinder were reviewed by AMCCOM. AMCCOM representatives attended the block II preliminary design review in December 1985.16/

The carbon dioxide laser rangefinder full scale engineering development contract was let on 30 September 1986 with General Dynamics Land Systems, the block II integration contractor. Selection of actual leader/follower manufacturers was yet to come.

TDP review procedures were modified to ensure that AFDEL had made an engineering review of TDPs prior to use in procurement actions. This new procedure minimized the potential problem of using noncompetitive TDPs in competitive solicitations. An AMCCOM team was formed to review TDPs that were in the procurement process prior to implementation of the new procedures. Of the 131 packages examined, only 2 packages required a change in the procurement method. Approximately \$3.9 million was spent in FY 1986 for engineering support to the M1 Abrams program.

On 3 March 1986 an AMCCOM contract was placed with Hughes Aircraft Company to provide system technical support services for the Abrams thermal imaging system, laser rangefinder, and thermal

system test set. Funding for this effort was provided by PM Tank Systems. To aid in contract execution, five AMCCOM representatives were assigned as functional technical representatives.

Direct Support Electrical System Test Set (DSESTS)

A total of 305 DSESTS operator interface units, 267 sets of Abrams-peculiar hardware, and 228 sets of Bradley-peculiar hardware were procured through FY 1986. Considerable resources were expended by the procurement and production community in support of the program. In excess of \$70 million was contracted out by AMCCOM for DSESTS hardware, repair parts, contractor depot level support, and related support equipment (M109 and M934 vans).

Major modifications to the DSESTS in FY 1986 included M1A1 Abrams double memory test set reconfiguration, Bradley DSESTS shop replaceable unit test assembly and M2/M3A1 Bradley updates. Contractor depot level modification teams visited the field twice during this period to modify test set hardware and program software.

During the fourth quarter of 1986, AMC approved a waiver to automated test equipment policy, providing authorization for expansion of the DSESTS to include testing capabilities for thermal imaging systems (TIS) on M1/M1A1 systems. In effect, this DSESTS-TIS enhancement would result in the phase out of 71 thermal system test sets. The preliminary engineering change proposal (ECP) incorporating this modification was approved on 25 August 1986. Initial fielding of the enhanced DSESTS-TIS was scheduled to begin in October 1987. Considerable AMCCOM logistic and procurement activity continued to ensure repair part support, technical manuals, and prime hardware was available to support this highly accelerated fielding.

The PM for light combat vehicles requested ARDEC engineering assistance to accept DSESTS drawings and engineering revision reports resulting from ECP action. Initial ARDEC sign-off of drawings was scheduled to occur in October 1986. ARDEC assistance would alleviate a major 18 month backlog of drawings awaiting approval.

Significant effort was expended by ARDEC during FY 1986 to review the DSESTS technical data package to identify those repair parts which could be competitively procured. The review was being accomplished in three phases: authorized stockage list and prescribed load list items; organizational, direct support, and general support items; and depot level items. Targeted for completion in December 1986, the ARDEC review was approximately 50 percent complete at the end of the fiscal year. 17/

M48/M60 Tank and Derivative Fleet

Applique armor provided additional protection against warheads for the turret and front glacis of armored vehicles through the use of explosive tiles. AMCCOM was responsible for integrated logistic support (ILS) planning, procurement, production, maintenance, and safety of the system. Provisioning for applique armor for M60 tanks was continued with stock numbers developed for all spare parts. Procurement directives were issued. Rock Island Arsenal was provided funds to produce 1,350 hardware kits, and production was initiated. Justification and approval for production of tiles for applique armor for M60 tanks at Milan Army Ammunition Plant was approved in August 1986, and a work order was issued in September.18/

On 11 March 1986 the project manager for M60 tanks held the second of a series of special fleet readiness reviews. This review addressed all M48A5 tanks and all M60 series tanks and derivative vehicles. Division personnel, along with representatives from TACOM and CECOM, participated in this conference, which was held in Warren, Michigan. All viewgraph charts presented were prepared according to a format that was derived by PM personnel in October 1985.

A severe shortage of M3 personnel heaters continued. The contractor, S&K Electronics, Inc., made substantial progress in alleviating repositioning and electro-magnetic interference (EMI) problems. The first article test on the repositioning fix neared completion, and the contractor demonstrated considerable success in reducing the level of objectionable EMI noise. Meanwhile, the demand pressure for the item was relieved to a small extent in that some types of armored vehicles, like the Bradley, were able to use the S&K heaters as delivered.19/

120mm Tank Ammunition

The 120mm tank gun ammunition program was necessitated by the use of the German 120mm smooth bore cannon in the Abrams tank. All cartridges used combustible cases in stub bases, which minimized cartridge weight, decreased the amount of spent cartridge case material, and reduced the escape of propellant gas into the tank.20/

During the second quarter of FY 1986 DOD terminated any thought of pursuing component breakout as an acquisition strategy for 120mm ammunition. It was also dictated that second sources be found to compete with Honeywell for future procurements.

Through a source selection which included AMCCOM, ARDEC, the PM for tank main armament systems, and Honeywell, two new contractors were selected. They were General Defense and General Electric. Honeywell agreed to bring them "up to speed" technically at cost, without profit. The two contractors were to develop plans for the reduction of cost. One would be down-selected for 20 percent of the FY 1987 procurement.

After a relatively easy development, the M865 target practice cartridge experienced production problems. Chamberlain Manufacturing Corporation experienced precision problems with its production, and there appeared to be burning residue left in the chamber after firing. Over 3,000 M865 projectiles were unable to meet the specifications. Through long investigative trials, both problems were eliminated, and the cartridge, along with the other three, was released in June and July 1986.

The M829 armor piercing, fin stabilized, discarding sabot cartridge also had problems in initial production. Accuracy/precision was not achievable, but this was later traced to fin burning problems which resulted from a sharp fin edge. Rounds with these fins were sorted out.

The M829 had a depleted uranium (DU) penetrator and was, therefore, more restricted in handling and transportation. The Department of Transportation ruled that AMCCOM had misinterpreted the regulations in shipping DU, and must put a radioactive label on the inner pack. After much effort, an exception was obtained and the rounds could be moved without the radioactive markings. Also, the Safety Office developed procedures for handling the DU ammunition and for firing and reporting fires involving DU.

The M830 high explosive, anti-tank (HEAT) had start-up problems, but was able to meet required delivery schedules. Fuze production was slow, and barely met requirements. For the 1986 procurement, the contract was split between Hamilton and Bulova.

The M831 target practice cartridge had very little trouble in initial production.

#### 105mm Tank Ammunition

The M833 105mm cartridge experienced production problems due to lack of calibration rounds for propellant and projectile/cartridge testing. The calibration lot had only 54 cartridges and experienced poor performance with high velocity standard deviation. The new candidate lot for calibration also exhibited large velocity standard deviation and was rejected. The cause for the problem was unknown, but the propellant was suspected. Improved propellant manufacturing procedures were

## Weapon Systems Management

implemented, but it would be June 1987 before it would be known if these new procedures would correct the high velocity standard deviation problem.

The M490A1 105mm cartridge which replaced the M490 target practice, tracer cartridge successfully completed its IPT/FAT and was in full production. The M490A1 incorporated single base propellant and a static stable design which did away with the fin and boom assembly and reduced cost.

A modified PA104 metal container was approved to replace the wood box as the standard container for the M456A2 105mm HEAT-T cartridge. Testing of the metal container was successfully completed and production was underway. The metal container provided one-step, easy access, clean round unpackaging. It was NBC decontaminable and would standardize the packaging of kinetic energy and HEAT tank ammunition.

The M39 propellant with the M127 primer successfully completed product improvement testing in the M456A2E1 cartridge, and was type classified standard. The M39 was the first insensitive propellant to be type classified by the army, and, because of its unique ability to be insensitive to hot spall fragments, tank survivability was enhanced.

### M105 Cannon Enhancements

Funds previously earmarked for the XM24 long gun program were diverted to the restructured 105E program. The restructured program looked at gun mount development to accommodate firing the XM900E1 cartridge and future generation 105mm rounds. In addition, fire control improvements and integration were looked at for overall system performance. Progress continued to be made in modifying the cannon, computer, and telescope to make them compatible, and thus enhance the overall performance of the 105E systems.

The 105E program received a funding cut that would slip IOC of the XM900E1 nine months, to the second quarter of FY 1990. The zeroing of the gun integration line terminated the development of upgrades to the M1E2 and M60A3 tanks to fire the XM900E1 and future 105mm rounds.

### Training Devices

Production and shipment of COFTs continued on schedule. The mobile-COFT had a successful first fielding for the army national guard in North Carolina. Through FY 1986 a total of 80 COFTs were in operation world-wide with 99.7 percent availability, and an operational reliability of 403 mean-time-between-failures.

Funding of contractor logistic support (CLS) using operations and maintenance, army dollars (1 year) was determined to be a severable activity. To preclude loss of CLS, AMC suggested a legislative initiative to have the law changed or CLS exempted.21/

Difficulties in site preparation and completion occurred in Europe, Korea, and Mississippi, resulting in delays, reinspection of sites, and changes to schedules.22/

Over utilization of the COFT was also a problem. On 31 December 1985, the CLS contract was altered to allow operation of the COFT at an annual rate of 2,600 hours instead of 10 hours a day for 5 days a week. Additionally, each major command was given a pool of extra hours, 900 per COFT, to allow usage above the 2,600 hour limit.23/

The M1, M2/M3, and M60A3 unit COFT configurations successfully transitioned to AMCCOM from the PM for training devices (PM-TRADE). Efforts were underway to complete the remaining quantities of COFT for FY 1987 and subsequent years. Major Charles Moore was assigned as the OCONUS materiel fielding team chief located in the Federal Republic of Germany, replacing Major Tom Broz.24/

#### Videodisk Gunnery Simulator (VIGS)

The videodisk gunnery simulator (VIGS) production contract was awarded in February 1986. A system guidance conference was held in March 1986 to review the overall system effort.

The materiel fielding plan and materiel fielding agreement were being processed by AMCCOM for PM-TRADE. Efforts to resolve the system's maintenance concept, especially at the time of system transfer, were initiated.

The FAT and -10 manual verification for VIGS were completed. Steps were taken to assist PM-TRADE in fielding the system in January 1987, and for system transition to AMCCOM on 1 October 1988.25/

#### Artillery/Ship Gun Munitions Division

The Artillery/Ship Gun Munitions Division was responsible for all artillery weapons, munitions, fire control systems, training devices, and associated equipment, except for the 155mm family of artillery weapons.

#### M119 Howitzer

## Weapon Systems Management

The M119 howitzer was a light weight, towed 105mm artillery weapon developed by the United Kingdom and evaluated for use by the US Army as a non-developmental item. It would be used to replace M102 and M101A1 howitzers in selected light infantry divisions, special purpose divisions, and separate light infantry brigades.26/

The M119 howitzer acquisition plan (November 1984) had scheduled a type classification milestone for December 1985. The in-process review (IPR) package was prepared and staffed in November. Unanimous concurrence was received, and the M119 was type classified standard on 19 December. This represented 19 months from the initial decision to test the British Army L119 to final acceptance for the US Army inventory.27/

The next major milestone was the first unit equipped, scheduled for December 1987 at the 7th Infantry Division. Extensive management effort was underway, specifically in the ILS area, to achieve this next goal. A procurement funding line was established for FY 1987, with initial deliveries planned for the first quarter of FY 1988.

All 20 M119 howitzers and their ancillary equipment, previously on loan to the US government for test and evaluation, were purchased outright during the second quarter of FY 1986. Six were issued to Fort Bragg and six were issued to Fort Ord for user familiarity. The remainder were used to support developmental programs for M760 cartridge production, proof charge development/production, user troop training, and production/technical data reference models at Rock Island, Watervliet, and Picatinny Arsenals.

The M119 acquisition plan was completed during the second quarter with all AMCCOM materiel acquisition review board (MARB) suggestions incorporated and submitted to AMC for staffing. The acquisition plan promulgated three procurement options: purchase all howitzers from the United Kingdom; full and open international competition; or limited production of a workshare by the United Kingdom, a short co-production of 100 howitzers by the UK and the US, and the remainder of the requirement from production by the Rock Island and Watervliet Arsenals. The latter was recommended, because it would aid in establishing arsenal operations at competitive and economic levels, aid in providing a logical return on modernization investments through reduced unit costs, aid in maintaining a skilled production cadre, and establish the mobilization bases at the preferred locations within CONUS.28/



## Weapon Systems Management

The M119 acquisition plan (AP) was approved on 10 June 1986 by DA and returned to AMC for implementation. The AP promulgated sole source procurement of the agreed-to workshare of 100 howitzers, 75 carriages, 25 trails, and 5 million pounds sterling worth of components from the Royal Ordnance factory in England, with production of the remainder of the 548 total requirement at Watervliet (cannon) and Rock Island (carriage/integration and assembly).29/

Partial FY 1986 funding, \$2,055 million, was received with the remainder indicated to be forthcoming for the weapon program as well as for the XM913 high explosive, rocket assisted (HERA) and XM915 dual purpose, improved conventional munition ammunition developmental programs. The M119 TDP was purchased with the initial increment of FY 1986 weapon funding to facilitate an ILS/logistic support analysis record provisioning and engineering study. Required modifications such as chemical agent resistant coating (CARC) paint and patterns, secure lighting, and tiedowns were incorporated.

Provisioning activity was completed by AMCCOM for the M119 spares, utilizing a full set of TDP aperture cards furnished by Royal Ordnance. It was intended that \$5 million worth of spares be placed on order at Royal Ordnance during FY 1986.

Three ceiling priced contracts were awarded to Royal Ordnance during the fourth quarter for the M119 howitzer. One \$2 million contract was for LSA and manuals, and a second contract required conversion of the TDP for American use in production and competitive procurement of spare/repair parts. The third contract was for 5 L20 cannon assemblies and \$200,000 worth of repair parts required by the 20 M119s in country. All future spares orders were to be fully and openly competed with US producers.

Major portions of the TDP were received from Royal Ordnance. Payment was being held up pending a thorough investigation to determine completeness and currentness of the TDP.30/

Due to the ballistic hump in the M119 howitzer cannon and the uncertainty in the velocity levels in existing M200 propelling charges, it was decided that a calibration test must be conducted on the M200 before production of the M760 105mm cartridge could begin.

The XM913 105mm rocket assisted projectile cartridge warhead metal parts contractor was experiencing considerable cost growth and technical problems. A decision was made to terminate or cancel funding for the next phase of this contract. A justification and approval was approved that would allow a contract to be awarded to the next bidder.

M578 Recovery Vehicle

The M578 recovery vehicle mid-life PIP included 27 changes to its design to improve reliability and update design technology. Changes included some automotive items, a redesign of the hydraulic system, and addition of an extendable boom.<sup>31/</sup>

The preliminary production decision milestone for the M578 light recovery vehicle mid-life PIP was accomplished. The level II configuration control board (CCB) concluded with a positive recommendation for the AMCCOM level I CCB; the M578 had an adequate design, documented by an approved TDP with appropriate technical manual coverage, and the MLP was suitable for procurement. Following formal level I CCB approval, the TDP would be stored by ARDEC awaiting subsequent procurement appropriation funding. The FYDP had zero funds for procurement/retrofit of the M578 mid-life PIP.

The M578 mid-life PIP was recommended for inclusion in the M578 TDP, pending receipt of required procurement appropriation, army (PAA) funding. AMC indicated that programmed PAA support in the FY 1990-95 timeframe had "been eliminated with little chance for restoration." In effect, this meant that although the MLP TDP was adequate, no further action was anticipated. The MLP TDP would be kept with the rest of the M578 TDP at the ARDEC repository.

The Ordnance Center and School (OC&S) continued its interest in the M578 light recovery vehicle's MLP. Both OC&S and TRADOC increased support for M578 modification, since the RV90 development program was dropped.

The PM for intelligence, electronic warfare (PM-IEW) developed a special mission alteration (SMA) to the M578. The PM required a 15,000 pound boom capacity for use with the M1015 electronic shelter carrier. Although the M578's boom had a 30,000 pound capacity, it was not long enough to properly engage the electronic shelters as mounted on the M1015 carrier.

Under AMCCOM advisement, PM-IEW undertook a development program for a six-foot boom extension alteration to the M578. The initial test integration working group was conducted, engineering and operational testing was completed, and application of the SMA to an estimated 24 M578s began in FY 1986. Several provisions were made to insure safe operation of the altered M578s, and the PM-IEW programmed for the eventual restoration of those assets to the standard US Army configuration. This was a short range solution to its special mission. The long range solution, a newly designed vehicle, was to be available by FY 1989.

M22 Binocular

The M22 binocular was to replace the existing M19 binocular, with major usage for artillery, infantry, and tank fire direction. It was to have a seven-power magnification and contain a mil scale reticle. It also would have a field of view of at least 128 meters at 1,000 meters range, weigh no more than 3.5 pounds, and be rubber coated to reduce shocks.32/

Evaluation of 10 bid samples from 7 bidders to the M22 binocular request for proposal (RFP) was completed in the first quarter. Since none of the bidders met the specification, it was revised and released to the 7 original bidders. One additional sample was received and its evaluation was pending.

A coated lens, adequate to provide the laser protection required, was evaluated in a binocular by TRADOC. The conclusion was that the coating did not significantly degrade operational utility. As a result, the RFP for the M22 binocular, which was suspended pending availability of the coated lens, was amended and released on 2 June 1986.

Bids were received from 8 respondees to RFP DAAA09-85-R-0300 on 30 July 1986. There were no domestic bidders. Problems with obtaining a pre-award survey and funds prevented an award by 30 September. An RFP DAAA09-86-R-1671 for laser protective coating of 96,000 lenses to be installed in the M22 binocular was released on 25 August 1986 and bid samples were received at ARDEC on 29 September 1986. The RFP was restricted to CONUS bidders since the specification was classified "Secret, No Foreign."

Backup Computer System (BUCS)

The BUCS was a commercially available, non-developmental item that used AMCCOM-developed read only memory (ROM) modules for cannon, Survey, and Lance missile applications. It was used to perform ballistic functions in support of field artillery cannon systems, and was capable of computing accurate, individual piece firing solutions. It was used to backup the battery computer system, and replaced the Texas Instruments 59 computer.33/

Total package/unit materiel fielding of BUCS to EUSA and WESTCOM occurred in October 1985, meeting scheduled first unit equipped (FUE) dates.34/

During the first quarter of FY 1986, AMCCOM and the US Army Field Artillery School (USAFAS) held several meetings to discuss improvements and follow on requirements which reduced the BUCS processing time for artillery fire missions. Negotiations between AMCCOM and USAFAS centered on the users' requirements and AMCCOM's

ability to meet these requirements using the Hewlett Packard 71B computer.

AMCCOM proceeded with the development of software for the Lance missile ROM modules. Fielding of the BUCS for the Lance units was planned for March 1986 in USAREUR and in April 1986 at Fort Sill. However, the fielding was delayed by a Hewlett Packard manufacturing problem that occurred during ROM manufacture. The problem was resolved, and fielding occurred in late April and early May 1986.35/

Fielding of the BUCS to the Air Defense School, Fort Bliss, Texas, was accomplished on 28-29 May 1986. New equipment training (NET) was provided by USAFAS representatives. BUCS fielding was scheduled on 5 August 1986 to the 1-7 Field Artillery, 10th Mountain Division at Fort Drum, New York. NET was provided on 6 August 1986 by USAFAS.

#### Vulcan Air Defense System (VADS)

Plans to displace the VADS from the army to the national guard ended when the secretary of defense terminated the SGT York program. This action required continued use of the VADS until a successor system came to fruition.36/

Logistic engineering initiated a program of reliability growth and competition enhancement for VADS repair parts procurement. Depot maintenance work requirement (DMWR) proposed procedures and modifications were prepared to assure proper installation of harmonic actuators. Recoverability and rework prospects were evaluated, as was a possible competitor. Likewise, a possible competitor for ammunition chutes submitted prototype hardware for evaluation. A value engineering project proposal was submitted for possible funding.37/

New drawings of the slip ring assembly were received and evaluated. The contractor was making needed corrections. An alternate supplier for sole source magnetics for the Klystron power supply was qualified and added to the TDP drawings.

A problem with a new competitive producer's hardware for the static inverter was isolated and rework begun. The new TDP remained deficient, but work was progressing. A new TDP for the x-band source was in-house, and government review proceeded.

An interested competitor for the friction clutch assembly proposed a TDP and qualification for about \$65,000. Funding was not available, and the answer to the proposal was pending. The clutter attenuator assembly drawing was converted from a source control to specification control in order to enhance competition.

## Weapon Systems Management

Also, alternate producer hardware for the radar antenna redome retention band was to be evaluated, and a source for the gasket box was added, with a change from source to specification control.<sup>38/</sup>

A proposal for an inexpensive TDP for the multimeter was being processed, and a new source was established. A price proposal for missing data on the M61 sight was also being evaluated.

The production contractor for the Klystron power amplifier tube was being encouraged to submit value engineering proposals related to the composition and shape of magnetic materials. Consideration was also being given to the use of alternative material for the shipping drum. Finally, new materiel with greater stress and environmental tolerance was being considered for the gun's mechanical stop.

The DA-directed, one-time VADS fleet overhaul was concluded in June 1986 at Red River Army Depot. This program began in January 1980 to enhance the readiness of the VADS fleet. An AN/TSM-115 shop set was overhauled and upgraded to "A" configuration and shipped to USAREUR in the first quarter. This program was at USAREUR's request, to enhance reliability of the shop set and provide support/compatibility for the A1 configuration Vulcans and the AN/VPS-2 radar test set.

### M110A2 Product Improvement Program

Procurement funding for the M110A2 self propelled howitzer PIP modification programs were eliminated due to budgeting constraints and the relatively low priority of M110A2 modifications. The M110A2 program proceeded, however, with the previously-funded development of the crew ballistic shelter (CBS) and a mid-life PIP by the contractor. Hardware development and all required development testing was to be completed and a certifiable, production TDP was to be produced. In the event of future funding restoration, production and retrofit of the modification would be possible.

Contractor effort at Barnes and Reinecke, Inc. (BRI), was originally scheduled to use four test vehicles for each program. The only source for howitzers was the depot repair cycle float, and the existing quantity was insufficient to support the turn around of combat vehicle evaluation qualified candidates from the field in a timely manner. This condition worsened with DA's decision to provide 16 M110A2s to a foreign country from the US Army's inventory. Based on the above dismal outlook for test howitzers, modifications were incorporated to test each PIP with only two vehicles.

The development contractor informed AMCCOM in March 1986 that the test weight of the complete CBS would be in the neighborhood of 6,311 pounds. The maximum weight required by the contract was 4,000 pounds, plus the weight of a commander's cupola, 300 pounds. In order to comply with established APG/Fort Sill test windows, it was agreed to trim the weight to 5,300 pounds and forego a previously planned three-month contractor development test. Excess weight acceptance or rejection would be based on a performance analysis of vehicle test characteristics such as top speed, drawbar pull, acceleration, speed on 60 percent grade, and cooling system and radiator tank top temperature. All test data would be compared to previous baseline data to determine if there was a significant drop in the M110A2 self-propelled howitzer performance over that of the 4,000 pounds CBS target weight (baseline). Contractor testing was initiated in the fourth quarter.

M110A2 PIPs on radio mounting brackets and battery computer system brackets were completed and retrofit, by modification work order (MWO), on all M110A2s in the US fleet.

The M174 gun mount became in short supply during the first quarter due to an influx of unserviceable units that required the replacement of trunnions and the repair of gunways. Both of these operations were slow, and the latter was above the capability of Letterkenny Army Depot (LEAD). To alleviate this supply position, Rock Island Arsenal assisted LEAD by converting 37 M4 gun mounts from obsolete M115 towed howitzers to M174 gun mounts, in addition to overhauling 50 M174s. The cradle assemblies were to begin to be available to LEAD starting in April of 1987.

The number of back orders increased from 47 at the end of the third quarter to 77 at the end of the fourth. With both RIA and LEAD overhauling unserviceable gun mounts, the availability of serviceable mounts was expected to improve.

#### XM940 20mm Cartridge

The XM940 was an improved, fuzeless, pyrotechnic-initiated 20mm high explosive cartridge designed to replace the M246 as the primary air defense cartridge for the VADS and the product Improved VADS (PIVADS). The lack of a fuze permitted a 32 percent reduction in drag on the projectile, extending the range of the VADS from 1500 meters to 2400 meters against aircraft targets.<sup>39/</sup>

Research and development (R&D) funding for XM940 multipurpose ammunition in the amount of \$1.3 million was released in the first quarter. This funded the first phase of the R&D effort.

The acquisition strategy for the XM940 was staffed at AMC during the second quarter and released for R&D contract in the third quarter. Only one contractor bid for the program, so the Defense Contract Audit Agency performed an audit prior to contract award. The contract was let to Olin Winchester Group in August 1985.

#### PIVADS

PIVADS instructor and key personnel training was completed on 16 November 1985 at Fort Bliss, Texas. Prototype systems were shipped back to Lockheed for refurbishment to the production configuration prior to the initial production test (IPT).40/

The final Army Materiel Systems Analysis Agency (AMSAA) independent evaluation report for PIVADS developmental testing (DT) IIA was approved in March 1986. PIVADS modifications were designed to improve system effectiveness by increasing gunner tracking and gun pointing accuracies and to simplify maintenance by adding a built in test (BIT) capability. The AMSAA report found that PIVADS had a substantially better tracking and gun pointing accuracy than the VADS, and the BIT was tested successfully.41/

Contract award was made in March 1986 for the PIVADS modification of 135 M61 sights which would provide sights for a float during the PIVADS field application.42/

Initial production testing began on 9 May 1986. Phase I of the IPT, ground firing and tracking in the dome moving-target simulator, was completed by 30 May 1986 at APG. A towed and a self-propelled PIVADS were shipped to Orogrande Range, New Mexico, for Phase II of the testing, firing at and tracking live targets. Training of operators was conducted from 10-20 June 1986. Phase II was completed on 31 July 1986. The PIVADS physical teardown/logistic demonstration and manual validation/verification started on 17 June and was completed on 15 August 1986 at Fort Bliss, Texas.43/

By June 1986 the PIVADS operator manuals had been verified. Validation and verification of the M61A1 sight portion of the DMWR and MWO was completed at the Fraser/Volpe plant by 23 May 1986. Training for the follow-on evaluation (FOE) was conducted from 18 August through 12 September 1986. The FOE testing started on 24 September and was completed on 22 October 1986.44/

M102/M101A1 Howitzers

After the PACE contract for M102/M101A1 publications was cancelled, a new contract with Nomura Enterprises, Inc., was awarded in December 1985. Publication was pending as of calendar year end.

Letterkenny Army Depot delivered 14 M101A1 howitzers to the Iowa US Army Reserve in exchange for M102 howitzers. The US Marine Corps declared 96 M101A1 howitzers as excess. These were shipped to LEAD during the first quarter.

LEAD completed the overhaul and mid-life PIP application to 104 M102 howitzers during the fiscal year. Repair parts shortage problems surfaced in early July and threatened to stop the overhaul of howitzers. These problems were averted through a concerted effort by the Weapons System Management and the Materiel Management Directorates and a LEAD strike force team. LEAD also overhauled a total of 79 M101A1 howitzers during FY 1986.

Air Defense Systems

With the realignment of air defense artillery in the aftermath of the SGT York cancellation, five specific systems were identified as new army program initiatives. AMCCOM was tasked to support MICOM in the materiel acquisition for three of these systems: the line of sight forward heavy (LOS-F-H), the line of sight rear (LOS-R), and the line of sight forward light (LOS-F-L) systems. Additionally, AMCCOM supported combined arms improvements to provide some air defense capability to existing ground systems. Support was provided through the forward area air defense (FAAD) gun team, headed by Colonel William S. Chen and located at ARDEC. Functional elements from both Rock Island and Dover sites provided support to the gun team.

AMCCOM provided support to the RFP and test and evaluation master plan (TEMP) document efforts for both LOS-F-H and LOS-R, as well as management and administrative efforts. The gun team also identified possible improvements to selected combined arms systems to add capability for the air defense mission. The line of sight systems were planned as non-developmental items. Both systems required a missile complemented by a gun subsystem, which would be supported by AMCCOM. Support would also be provided as required for product improvements to combined arms items managed by AMCCOM.

The LOS-R component had an approved required operational capability (ROC), and a RFP was released to industry on 18 July 1986. The LOS-F-H was in a day-to-day slip pending release of program funds. During the fourth quarter the LOS-F-H program received funding of \$38.2 million; AMCCOM received \$1.4 million

## Weapon Systems Management

of the appropriation.

The LOS-R component started proposal evaluation in the fourth quarter; the LOS-F-H RFP began, with initial release targeted for 24 November 1986. The AMCCOM CG approved a provisional TDA to support FAAD, which was forwarded to AMC for authorization.

### M509A1 8 Inch Projectile

The M509A1 continued in production, with a total of 306,861 projectiles produced as of the end of FY 1986.

Early in the second quarter acceptance testing of the M509A1 was transferred from Jefferson Proving Ground, Madison, Indiana, to Yuma Proving Ground, Yuma, Arizona. The test impact area at Jefferson either became semi-frozen or covered with snow, which required the transfer to Yuma. This transfer of testing was a yearly occurrence.

### Sense and Destroy Armor System (SADARM)

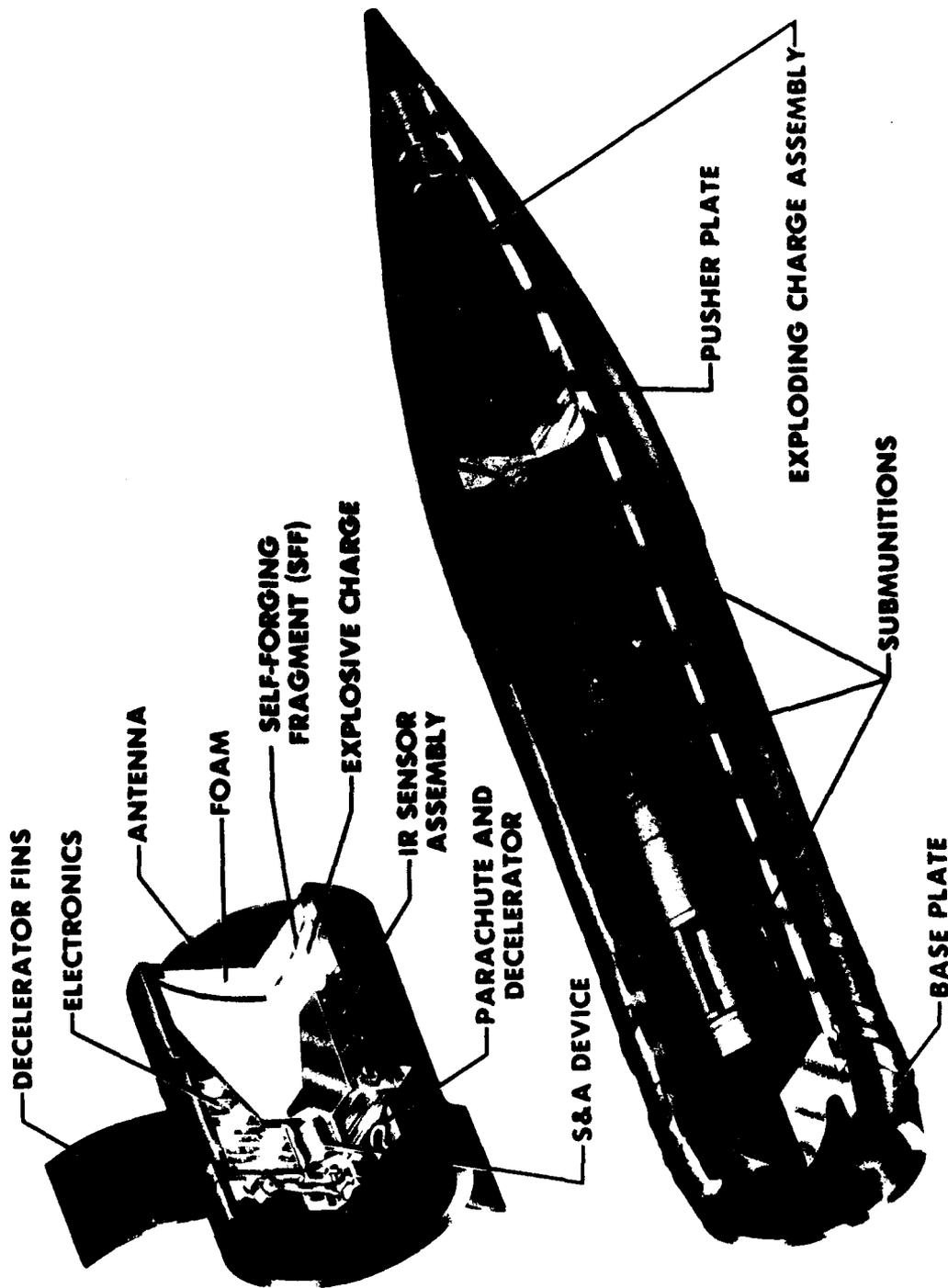
The SADARM system was a submunition for 155mm howitzer projectiles and a rocket for the multiple launch rocket system (MLRS). The submunitions would be ejected at a predetermined height above potential targets and descend by parachute in decreasing circles. A dual mode sensor would detect an armored target and detonate the submunition at a fixed position above it. The warhead would develop a self-forging fragment that would impact the top of the target at a high velocity. The submunition was meant to be used against self propelled howitzers or other armored targets.45/

SADARM continued in the acquisition cycle. The acquisition plan RFP, the TEMP, and the ROC documents were completed at the working level and presented to the AMC MARB during the second quarter. The TEMP received conditional approval from the involved commands, and the ROC was approved by DA.46/

The RFP and the AP for SADARM were approved by the undersecretary of the army. The RFP for full scale engineering development was issued to industry in April 1986. Three responses to the RFP were received at ARDEC, and a source selection process was initiated.47/

The source selection authority acted on the recommendations of the source selection advisory council and picked Honeywell and Aerojet to perform the full scale engineering development for SADARM. Contracts were awarded on 24 September 1986. An IPR was held on the SADARM submunition at ARDEC on 8 August 1986, chaired by AMCCOM's DCG for procurement and readiness. The results of the

# PROJECTILE, 8-INCH, ANTI-ARMOR, XM836 (SADARM)



IPR were briefed to the AMC MARB and to the deputy chief of staff for research, development, and acquisition on 13 August and 15 August, respectively.48/

#### Infantry/Air Munitions Division

This division managed infantry weapons and munitions, aerially delivered munitions, armament systems for helicopters, and armament and fire control for the fighting vehicle systems.

#### Squad Automatic Weapon (SAW)

Production of the M249 SAW was stopped on 25 August 1985 in response to complaints from using units. A joint working group met at Fort Benning and proposed a series of SAW modifications to overcome these problems. The modifications that could be implemented within six months were made to SAWS in stock at Fabrique Nationale's plant in Belgium, at Letterkenny Army Depot, and at Fort Bragg. These included replacing components of the front and rear sight and the bolt extractor pin, removing the cartridge link ejection cover, adjusting the magazine feed, and resetting the firing spring pins. Fabrique Nationale also worked with the army to devise "long term" solutions, which included a barrel hand guard, redesigning the barrel changing handle, and lowering the buttstock to allow users wearing gas masks to aim the weapon.49/

Fielding of the SAW resumed on 2 April 1986 after an interruption of approximately 20 months. In that period, stocks of ammunition were built up, production and design improvements to the weapons were made, and design defects in the arms rack were corrected. Units receiving weapons were the 10th Special Forces Group at Fort Devens, Massachusetts, and the 101st Airborne Division at Fort Campbell, Kentucky. In addition, issues of approximately 2,000 weapons to USAREUR were begun.50/

Two SAWs were to replace the two M16A1 rifles used in each infantry squad as automatic weapons. The SAW and its M855 ball and M856 tracer rounds offered a significant improvement in firepower over the M16A1. Further weapon issues were to be made in FY 1987.

#### MK19 Mod 3 40mm Grenade Machine Gun

The MK19 Mod 3 successfully completed FAT on 16 May 1986. Saco Defense, Inc., was notified of approval of the FAT on 10 June by the Naval Sea Systems Command, the procurement agency for the MK19. Initial production test weapons were to be delivered during the first quarter of FY 1987, and initial fielding to the 9th Infantry Division was scheduled for the third quarter. The

division identified 225 MK19s as a minimum readiness requirement.51/

M136 AT-4

The M136 AT-4 was an 84mm recoilless gun developed by FFV of Sweden, and was selected by MICOM as the alternate to the M72 light antitank weapon (LAW) for use against light armored vehicles. An AT-4 transition planning meeting was held on 5-6 February 1986 at AMCCOM. Representatives from MICOM attended and presented the program status. It was planned that program responsibilities would transition to AMCCOM after FUE in February 1987.52/

Meanwhile, the AT-4 procurement continued to receive criticism based on the Infantry Center and School's concerns about the weapon's 14.8 pound weight. The House Armed Services Committee recommended holding funding for the AT-4 "hostage" until further tests on the LAW were completed. This threatened a \$44 million contract with Honeywell, the domestic licensee of FFV, to produce 55,000 AT-4s at Joliet AAP.53/

Remoted Target System (RETS)

During the second quarter, AMC quality assurance personnel verbally advised that conditional release was approved for the remoted target system.54/

Installation of training ranges continued. Ranges at Fort Jackson, Fort Dix, and three additional ranges at Fort Benning became operational during FY 1986. Preparations were underway for installing ranges at Schofield Barracks, Fort Sill, Fort Bliss, and Fort McClellan.55/

Infantry training range reliability performance exceeded expectations with excellent field acceptance. However, performance of armor ranges continued to be hindered by armor hit sensor performance. Concentrated efforts were expended to resolve the problems, and the initial phase of resolution was expected to be applied within six months.56/

Sniper Weapon System

An ambitious schedule to field the M24 sniper weapon system (SWS) on 1 August 1987 was approved by the army chief of staff on 2 August 1986. The rifle was to replace the M21 sniper rifle due to the latter's lack of durability, the nonavailability of spare parts, and excessive repair time.57/



The SWS was generically type classified on 16 September 1986, and was assigned national stock number (NSN) 1005-01-240-2136. The bidder's presolicitation conference was held on 8 September, and the solicitation was released on 1 October, with contractors' proposals and test samples due by 14 November 1986. The contract award was expected by April 1987.

#### Improved 81mm Mortar

The M252 improved 81mm mortar was the basic United Kingdom mortar with a blast attenuation device and an improved M177 mount, using the US M3A1 baseplate. Testing of a thicker, stronger steel baseplate, compared to a lighter powdered aluminum baseplate was completed during FY 1987. The aluminum baseplate was rejected due to failures.58/

The XM819 smoke, the XM853 illumination, the XM879 full range practice, and the XM880 1/10 scale training round were successfully demonstrated to the user at Fort Benning on 6 November 1985.

#### 120mm Mortar

After twice being rejected by the undersecretary of the army, the 120mm mortar system request for proposal was released on 15 November 1985. Contractors were requested to submit proposals by 14 February 1986. The RFP requested proposals for both a towed (XM120) and carrier (XM121) version of the 120mm mortar, from both the arsenals and industry. Subsequent amendment to the RFP granted a 60-day extension for submission of contractor proposals. The FUE for the XM120 was scheduled for May 1989 to the 9th Infantry Division, Fort Lewis, Washington. FUE for the XM121 carrier version was FY 1992.59/

#### 4.2 Inch Mortar

The 120mm mortar system was to replace the M30 4.2 inch mortar system in the 9th Infantry Division and all mechanized divisions. The 4.2 inch mortar was scheduled to be replaced by the 120mm mortar in the active forces in the early to mid 1990s. In the interim, the 4.2 inch mortar would continue to be supported.

The resolution of misfires of the 4.2 inch M329A2 high explosive round was an example of this continuing support. These misfires, or "stickers," were caused by interference between the preengraved rotating band on the round and the rifling in the M30 mortar tube. The resolution of the problem, through the addition of a wire bristle obturator, experienced a several months slip in the first quarter of FY 1986 due to engineering and contracting

## Weapon Systems Management

delays. These problems were resolved, and the fix was scheduled to be in production in March 1986. Renovation of the M329A2 stockpile was scheduled for completion in the fourth quarter FY 1987.60/

### M224 60mm Lightweight Company Mortar System (LWCMS)

The M224 was a lightweight, high angle of fire, smooth bore, man-portable 60mm mortar with improved performance capabilities. It was to be fielded with airborne, air assault, light infantry, and ranger rifle companies in the army, and with marine companies.61/

The M224 was fielded to the 101st Air Assault Division, the 25th Light Infantry Division, and the 10th Mountain Division during the first quarter of the fiscal year. Also, DA granted a one-year loan of LWCMSs to navy Seal teams and Seabees. Shipments to the navy were made during the second quarter.

### Gator

During FY 1985 a major tri-service decision was made to pursue a modified total system performance responsibility (MTSPR) acquisition strategy for the FY 1986 Gator weapon system. In December 1985 the air force and navy finalized the technical scope of work for the MTSPR and forwarded it to AMCCOM.

Operational testing at Eglin Air Force Base in September 1985 uncovered a functional problem with the Gator KMU-466/B, the electrical interface between the dispenser and the mines. The mines were properly dispensed, but 15 percent were armed at the wrong self-destruct setting and the remainder were unarmed. A similar failure occurred in March 1986. The Naval Weapons Center at China Lake traced the cause to a design problem associated with the triggering of an internal electronic arming switch when the weapon's tail fins opened in flight. Another air drop was scheduled on 27 August 1986 at Eglin.62/

Honeywell completed first article acceptance testing (FAAT) of the antipersonnel (AP) mine body and expected to receive a conditional approval for production which would result in initial production deliveries during February 1986. Also, Acudyne Corporation entered FAAT, with completion scheduled for late January or early February 1986. Acudyne shipped the first two lots of AP mine body assemblies during the third quarter, which were accepted and delivered on the FY 1984 program.

During the third quarter the solicitation for the modified system procurement of FY 1986 GATOR was released. The closing date, as well as production of FY 1983 systems, was on hold

100MM LIGHTWEIGHT  
MORTAR



pending resolution of a functional interface problem between the dispenser, the kit modification unit, and the mines.

Combined Effects Munition (CEM) CBU-87/B

The CEM was a multi-purpose munitions system capable of defeating a wide spectrum of targets: armor, material, or personnel. It consisted of the SUU-65/B tactical munitions dispenser loaded with 202 combined effects bomblets. Each bomblet had three kill mechanisms: shaped charge, fragmentation, and incendiary. The system was air-deliverable within the operating envelopes of existing and developmental tactical aircraft. A transition planning meeting was held at AMCCOM on 11 December 1985, with representatives from both Hill and Eglin Air Force Bases in attendance.63/

During the third quarter, the Armament Division of Eglin recommended the CEM CBE-87/B not transfer to the Ogden Air Logistics Center (Hill AFB) until March-June 1987, instead of July 1986 as originally planned. This meant the transition to the SMCA would be delayed until June 1987. The Armament Division indicated the TDP was not yet stabilized, since many changes were being requested and implemented. While Hill AFB agreed to the delay, the SMCA objected, since Eglin had already awarded the FY 1983-86 contracts. These objections were for naught, and Eglin would be awarding the FY 1987 contract.64/

FMU-130B Mechanical Bomb Fuze

The FMU-130B mechanical bomb fuze was found by the air force to be inadequate as originally designed. The air force sought funding to support a proposed R&D effort of \$3.75 million and a low rate initial production of \$9.9 million for a modified dual-mode FMU-130/B. Originally designed for low drag, general purpose bombs, the proposed revision was to be capable of detonating both high and low drag configured bombs.

FMU-139/B Electric Bomb Fuze

The FMU-139/B electric bomb fuze continued to experience production difficulties at Motorola. After two lot failures, deliveries to Hawthorne AAP for load, assemble, and pack (LAP) were halted. Motorola's highly automated production line was excessively labor intensive. The second source contract was awarded to International Signal Corporation in January 1986, at approximately one-third the Motorola price per-unit.

The FMU-139/B continued to experience production problems at Motorola through the third quarter, however to a lesser degree. The FY 1986 third quarter program review resulted in numerous

minor corrective actions, since Motorola was not following its written procedures. As a result of Motorola being delinquent on its production contract, AMCCOM issued a show-cause letter on 1 July 1986.

The second source appeared to be progressing well, with a first article test scheduled for December 1986.

#### Have Void

LAP of the Have Void, the non-SMCA precursor to the eventual-transitioning I-2000 pound penetrator bomb, slowed at McAlester AAP due to limited availability of bomb bodies and internal "plumbing." The I-2000 utilized as much knowledge gained from the near-identical Have Void as possible, and considered the Have Void's low rate initial production as its own, barring any complications. The I-2000 program was expected to be in full production much faster than expected for a completely new bomb system.

Eglin AFB, the development agency, planned to breakout and compete the FY 1987 program quantity. All components were to be sent to one metal parts assembly contractor. An exception was the FMU-143/B fuze system which would be shipped as a separate item issue prior to shipping to McAlester AAP for LAP. The US Air Force planned to transition the BLU-109 bomb to SMCA in FY 1988.

#### Shoulder Mounted Assault Weapon (SMAW)

The SMAW was a marine corps program. The army had interest in the acquisition of the SMAW system, and if the army requirement materialized, the acquisition strategy would be to adopt the marine corps version, if possible. The army procurement plan would be to add onto the basic ordering agreement (BOA) with McDonnell-Douglas, Titusville, Florida, for the production of the weapon and ammunition items. This BOA was the first full-scale production contract for the marine corps.

#### Medium Artillery Systems Division

The mission of the Medium Artillery Systems Division was to provide centralized management to all aspects of the 155mm family of artillery weapons and associated ammunition.

#### M109A2 Self-Propelled Howitzer

M109A2 production at Bowen McLaughlin and York was delayed due to a disagreement on government welding specifications and procedures. The government required a minimum of 355 amps be utilized for ballistic joints where requirements were for 1/16

## Weapon Systems Management

inch or greater penetration. Agreement was reached in December 1985.<sup>65/</sup>

A start of work meeting with Barnes Reinecke, Inc., was held for phase II of its M109 operation and support cost reduction effort. Primary areas of study were anticipated to be maintenance, depots, repair procedures, and training.

A start of work meeting with BRI was also held for a "low-heat" engine study. Efforts with Detroit Diesel were to adopt a special head configuration to improve engine cooling and to investigate use of a glow plug start system for cold weather operations.

During the second quarter, the first 6 howitzers produced on a contract for 193 received conditional acceptance. Two howitzers were shipped to APG for IPT. Conditional acceptances for the remainder of the year were 12 each month for April and May, and 10 each month for June, July, August, and September.<sup>66/</sup>

### M198 Towed Howitzer

M198 towed howitzer production continued throughout FY 1986. Of the 229 produced, 20 were for the army, 20 were for the reserves, 17 were for the national guard, 50 were for the repositioning of materiel configured in unit sets program, 60 were for the special defense acquisition fund, 42 were for Saudi Arabia, and 20 were for Pakistan. In all 230 M198s were produced.

### M712 Copperhead

The Copperhead was a fin stabilized, laser guided projectile fired from a 155mm howitzer. The projectile was guided to its target during the last portion of its flight by a laser designator.<sup>67/</sup>

Transition plans for the M712 Copperhead from the PM for cannon artillery weapon systems (PM-CAWS) level I management to the Weapons System Management Directorate level II management were drafted and staffed during the first quarter of FY 1986. The AMC CG approved the phased transition plan for the M712 HEAT Copperhead and the M823 inert training projectile. Transition was to be completed in December 1987.

Management responsibilities for the M712 Copperhead extractor and the M823 inert training projectile were transferred to Level II management from PM-CAWS on 30 April 1986. Logistic responsibility for the Copperhead program was transferred to AMCCOM on 30 May. Stockpile surveillance for the M712 transitioned from PM-CAWS to AMCCOM on 30 September.

M718/M741 155mm Remote Anti-Armor Mine System (RAAMS)

The first competitive procurement of the M718/M741 projectile electronic lens assembly was executed in the second quarter. The total quantity of lens for GATOR and RAAMS was advertised as one solicitation and directed to the five qualified bidders. Contract awards were made on 14 March 1986 to the two low bidders, Honeywell and Hamilton Technology.

The type classification standard of the product improved M718A1/M741A1 RAAMS projectiles was approved by the AMCCOM CG on 11 March 1986. The product improvement provided reduced arming time and improved resistance to countermeasures. FY 1987 production of the M718A1/M741A1 was planned.

New Chamber Swab for 155mm and 203mm

The Artillery Board, under Fort Sill's "Battleking" program, evaluated chamber swabs provided by the SAN/BAR Corporation. The swabs were high density, low absorption, polyethylene material which were resistant to ultraviolet light, acid, carbon, and oil. The swabs were encased in a heavy-duty, specially treated mesh cover which added to the life of the swab by inhibiting deterioration and also provided a scouring surface for the removal of encrusted residue. The swabs could be used with the existing swab holder. The life of the swabs were not established during the "Battleking" program evaluation.68/

AMCCOM initiated a small purchase of 1,900 155mm and 700 203mm swabs from SAN/BAR. The basis of authorization was to be one per weapon. The one swab would replace the five sponges authorized. Subsequent competitive procurements were planned after the development of a government technical data package.69/

The 155mm swab was assigned NSN 1025-01-232-6822, with a price of \$8.95. Issue of the swabs would be controlled by AMCCOM. The 203mm swab was assigned NSN 1025-01-232-6821, with a price of \$11.41. The swabs were delivered during July 1986.70/

Nuclear Munitions/Chemical Materiel Division

The Nuclear Munitions/Chemical Materiel Division managed binary chemical munitions, chemical defense equipment, warhead sections for large missiles, nuclear munitions, and tools and equipment.

XM87 NBC Reconnaissance System (NBCRS)

The XM87 NBC reconnaissance system development contract was awarded to TRW Defense Systems Group, Systems Engineering and Development Division. The start of work meeting was held in early December 1985. Meanwhile, TECOM and CRDEC conducted an international materiel evaluation of the German Spurpanzer FUCHS reconnaissance vehicle.

During the third quarter, the development progress of several NBCRS subsystems was behind the expected schedule. Program resources were reallocated to correct lagging subsystem developments. The side-by-side test of a surrogate NBCRS and a German Spurpanzer FUCHS NBC reconnaissance vehicle was completed.

A special IPR was held on 23 September 1986. The recommendations of the voting members were that the XM87 NBCRS should proceed in development without jeopardizing the potential FUCHS alternative, and that a task force be established for 60-90 days to determine the availability of the FUCHS for USAREUR fielding and its requirements for supportability.

Chemical Agent Resistant Coatings (CARC)

A DA-mandated change took place throughout the army procurement and depot overhaul programs. This change used aliphatic polyurethane paint in place of alkyd enamel on essentially all army equipment. The DA guidance indicated that all FY 1986 program releases (contracts, work directives, etc.) would provide for painted surfaces to include CARC. The CARC program was also coupled with a new, three color camouflage pattern painting system.

A management problem concerning control of depot overhaul operation became noteworthy during the third quarter. The CARC program released new paints into the system that required somewhat different painting techniques. The use of one particular primer, "low volatile organic compound" was desirable to the depots to satisfy state environmental protection laws. AMCCOM was concerned, however, with the depots' ability to apply the primer and finish coats with sufficient process control to ensure satisfactory end item corrosion resistance. Letterkenny Army Depot asserted that as long as the paint was an approved material, AMCCOM had no "right" to control or criticize its application. By the end of the quarter it appeared as though agreement might be reached, although AMCCOM was forced to stop acceptance of overhauled howitzers late in June due to unknown paint quality.71/

The depot application problem continued into the fourth quarter. Some controls and tests were initiated at Letterkenny allowing acceptance of howitzers held up at the end of the third quarter, but it soon became obvious that there was a lack of guidance on what process controls were essential for the application process. By the end of the quarter, AMCCOM had declined to accept M12A1 decontaminating apparatus due to unknown CARC paint quality. At a VENUS conference on CARC in early September, no other major subordinate command, nor AMC, was interested in assisting with the development of process controls. AMCCOM then decided to develop an AMCCOM "specification" that would provide guidance to ensure satisfactory coatings, including inspection requirements.

The program to develop the new, three-color, camouflage patterns made considerable progress during the fourth quarter. AMCCOM had 24 systems identified for the new patterns. Of these, 19 had the patterns completed, four were in process at the Belvoir Research, Development, and Engineering Center (BRDEC) (the pattern developer), and one required data from AMCCOM to be supplied to BRDEC. The latter was scheduled to be completed during FY 1987.

#### M8A1 Automatic Chemical Agent Alarm

The M8A1 alarm increased the field's capacity to detect nerve agents, and greatly reduced operating costs by eliminating the need for a refill kit.72/

Total package/unit materiel fielding to USAREUR began on 27 August 1985, and 70 alarms were fielded to the Johnston Island Chemical Activity in November. The new equipment reduced Johnston's false alarm rate 60 to 80 percent, resulting in cost savings and increased production.73/

During the second quarter of FY 1986 the fielding operation at Mainz Army Depot transitioned to bulk storage and issue. This enabled the materiel fielding team to issue the quantities USAREUR needed and also to fill shortages in earlier fieldings. A new materiel introductory briefing was presented at FORSCOM in March, laying the groundwork for future fieldings. There was also one issue of 20 detectors at Fort Huachuca in March.74/

The M8A1 fielding to active forces in Europe was completed on 3 June 1986, two weeks ahead of schedule. A total of 8,267 items were fielded. The fielding team closed down the operation at Mainz and assembled in Korea to begin the fielding to EUSA. Korean fielding began in July.75/

In the fourth quarter, EUSA, Japan, and WESTCOM were fielded the alarms via TP/UMF. Additionally, several AMC depots and surety sites were fielded via normal supply procedures. AMCCOM was approximately 1/3 done with fielding this system worldwide. FORSCOM and TRADOC, starting with Alaska, were scheduled for the first quarter of FY 1987. Forts Bragg, Campbell, and Lewis would follow Alaska.76/

In the fourth quarter all DOD services purchased quantities of the automatic chemical agent alarm. Because of Under Secretary of the Army Ambrose's imposed ceiling of 32,249, the army had an end item shortfall. This shortfall was projected to DA with recommendations to readdress the under secretary's decision.

#### M51 Collective Protection Shelter System

The fielded system review of September 1985 was provided to AMC on 16 October 1985 as part of the AMC product assurance test directorate field user feedback program. Remaining contractual production funds for 96 softgoods systems (entrances and shelters) were withdrawn from the contractor, Xtyal Corporation, which was undergoing bankruptcy proceedings.

A new procurement package included procurement of softgood systems, as well as the entrance and shelter, as separate repair parts for the first time. An interchangeability demonstration of entrances and shelters from different contractors was completed on 14 January 1986 to validate the acquisition strategy for the final procurement of the M51. Management responsibility for the M51 was transferred to the Materiel Management Directorate in May 1986.77/

#### Nike Hercules

Action on the Nike Hercules product improvement program included the final logistics working group meeting, at which the final draft retrofit fielding plan was approved. This plan was forwarded to USAREUR and returned with final comments. All coordination between USAREUR and the personnel who would be performing the retrofit was continued to allow for a smooth flow of operations. Retrofit kits and equipment were sent to the appropriate units in preparation for the start of the actual application.

During the second quarter the PIP continued with the first generation trained NET team teaching US Army personnel how to perform the application. This second generation-trained army team performed the actual application of the PIP for the Southern European Task Force with the assistance of a first generation-trained quality assurance advisor.

The initial operational capability of the product improved nuclear warhead section was met on schedule during the third quarter. Modifications of warheads in Europe continued on schedule, resulting in modification of most warhead sections in the stockpile by end of the year.

#### XM43 CB Mask

Development of the XM43 mask for the AH-64 Apache helicopter continued on its accelerated schedule. No problems in meeting the expected helicopter first unit equipped date were identified. The significant program change, initiated in the closing days of FY 1985, was the proposed adoption of the XM43 as the general aviation protective mask for all rotary wing flight crews. Army fixed wing crews would be issued the air force mask with oxygen capability.78/

Discussions and planning for making the change continued through the first quarter. Discussions on transition of end item management from AVSCOM to AMCCOM were initiated. As a mask peculiar to the AH-64 helicopter, AVSCOM managed the program and provided "aircraft procurement, army" funds for the end items. Transition would involve management by AMCCOM and end item funding with "other procurement, army" funds.

Design deficiencies in the XM43 CB mask, discovered during DTII, were corrected during the third quarter. The milestone III IPR was slipped to September 1986, however, due to retesting, test report consolidation, and preparation and review of the IPR document package. The US Army Combined Arms Center recommended to TRADOC that the XM43 be chosen as the general aviator's mask for all rotary wing aircrews.

The Milestone III IPR was held on 18-19 September 1986 and resulted in type classification of the XM43 mask as type classification limited production-urgent (TCLP-U) for fielding to AH-64 attack helicopter battalions (AHB). The TCLP-U was recommended for 1,009 masks over a 20-month period. Type classification of the XM43 as standard A (TC-Std A) was expected prior to October 1987 for the full complement of mask systems (1,820 each) to meet AHB requirements. No decision was made on the employment of the XM43 as the army general aviation mask.79/

#### Welding Shop and Machines

Final arrangements for fielding to Europe were concluded. From May to August, 105 shops and 11 machines were fielded at the Geinsheim staging area. This was the first major fielding effort at the facility, and served as a "break in" for Geinsheim. During September, 23 welding machines were fielded to the Eighth Army,

Korea.80/

Steam Cleaner

Configuration modifications were achieved to change the custom-designed trailer to the M116A2 trailer. This was made possible by weight reductions gained by switching to a newly available 3 kilowatt generator, instead of the original 5 kilowatt model. Substantial effort and progress were made toward completion of two prototypes for testing in laboratory and field surroundings.81/

XM22 Automatic Chemical Agent Detector Alarm (ACADA)

The XM22 ACADA program was restructured during the year to eliminate type classification-limited production and all activities associated with limited production in the program. This would result in type classification standard in November 1987 rather than November 1988, and first unit equipped in August 1990 rather than February 1989. Because of technical problems with the development testing prototypes, the development tests were rescheduled to August 1986. The number of prototypes was increased to 140 units based on needs for the NBC reconnaissance vehicle development program. This resulted in a contract change and an increase in the total value of the contract with Bendix Division to \$45,194,000.

Problems continued to plague the acceptance of the prototype due to leaks in the internal airflow of the detector and pump modules. Allied-Bendix recommended that all Halar (a thermoplastic) be removed and replaced with metal. An evaluation of the proposal was judged to be unsatisfactory in both technical and management areas. Because restructuring would be necessary, work by the contractor was sharply curtailed to preserve program funds. Limited work continued to collect test data and develop software. Contract funds in the amount of \$947,000 were withdrawn and reprogrammed within CRDEC. A restructured program was expected to be approved in the first quarter FY 1987. Contract modifications with Allied Corporation, Bendix Division, were to start in November 1985.82/

Patriot, Hawk, Chaparral, and MLRS

Support to MICOM continued with deliveries of Patriot M248 warheads and M143 safe and arming devices, Hawk 155 warheads and M100 safe and arming devices, Chaparral M250 warheads, and MLRS M77 grenades. All items were in production status.

XM785 155mm Artillery Fired Atomic Projectile

The XM785 was a new 155mm nuclear projectile being developed to replace the existing M454. It had improved range, improved handling characteristics, and greater reliability. Its three major sections were the XM749 proximity fuze, the W82 warhead, and the XM122 rocket motor.<sup>83/</sup>

In December 1985 the XM785 projectile program schedule was slipped, delaying the initial operational capability date by seven months. Slippage was due to a delay in startup of production facilities experienced by the Department of Energy (DOE).

Developmental engineering and testing continued throughout the year at a brisk pace in both DOD and DOE. ARDEC and DOE conducted joint firing tests to gain additional data on interior ballistic environments induced on the physics package as a result of a worn gun tube. The worst condition found was due to a worn North Atlantic Treaty Organization/United Kingdom FH-70 tube. Additional funding of approximately \$2.9 million was sought for FY 1987 to complete testing.

The stockpile-to-target sequence was revised, and the US Army Nuclear and Chemical Agency published the new version in mid-July 1986. Additional environmental criteria were included, and logistics interplay was clarified in the revised version.

During the 12-13 March 1986 executive project officers group meeting, the decision was made to have one material developer be responsible for full integration of the integrated control unit (ICU) for the trainer. The interface in question dealt with the fuze setter and the rest of the ICU managed by the Harry Diamond Lab (HDL) and DOE, respectively. Therefore, HDL would provide the fuze setter simulator to DOE. All army components would be furnished to the DOE Pantex plant for final assembly/integration, and the army would be the recipient of complete containerized trainer rounds, as well as complete war reserve rounds.

Overall program funding for FY 1987 was projected as being short \$6.7 million. Efforts were underway at DA and OSD to obtain the balance.

During the development engineering phase of testing, a rocket motor malfunctioned during the grain certification firing test at Yuma Proving Grounds on 29 August 1986. This failure was being investigated and might require additional time and effort before a fix could be obtained. The expectations were that the effect would not delay the overall program if the funding imbalance was resolved.

DOE reexamined the command disable system. Indications were that a new design was in the offing which could impact on the IOC date also. The army proceeded with a special in-process review to start DTII and approve release of funds for procurement of long lead time items. AMC, the Logistics Evaluation Agency, and TRADOC were in agreement and were expected to concur during the 30 October 1986 review.

#### Protective Outfit Toxicological Microclimate Controlled

The protective outfit toxicological microclimate controlled (POTMC) was developed to satisfy the needs of the explosive ordnance disposal (EOD) community. However, after the POTMC was fielded, EOD personnel raised many complaints against it. As a result, the army held a meeting in October 1985 at the Technical Escort Unit at Edgewood. At that meeting the EOD representatives unanimously rejected the POTMC.84/

Consequently, DA decided to obsolete it. Umatilla Army Depot Activity was designated to store the POTMC until a final disposition was made. Management responsibility was transferred to the Materiel Management Directorate in May 1986.85/

#### M12A1 Decontaminating System

Letterkenny and Mainz Army Depots satisfactorily completed pilot applications of the MWO. Letterkenny started inventory of the MWO kits in February 1986 as part of the retrofit program, however, the retrofit operations did not start due to discrepancies encountered with tank reinforcements, a part included in the kits. The retrofit operations started in May, at a rate of eight per month, but stopped in June due to test stand problems and a shortage of fuel hoses. The operations resumed in July at the rate of 10 per month and increased to 15 per month in September. However, no assets were classified as condition code "A," since none had passed CARC paint quality assurance requirements. Required TM-10 manuals for overpack were hastily printed at an Edgewood local printer after the Adjutant General's approval was obtained.86/

Due to the recurrence of kit discrepancies, the Level II manager directed that a representative sample be fully inspected and that appropriate action be taken by the contractor.

Two M12A1 production contracts with Gil, Inc., experienced difficulty during this period. One contract for 82 systems (75 for the marines and 7 for the navy) was terminated due to inexcusable delay in delivery. The other contract was for 250 systems (246 for the marines and 4 for foreign military sales). Gil failed the first production lot test (FPLT) twice, and seemed

either to not fully understand FPLT requirements or did not want to comply with them. Due to the urgent need of the marines, the army provided the corps with four retrofitted systems from the army inventory.87/

Intensive management was applied, but at the end of the year, the contractor had still not met requirements for acceptance. A critical milestone would be February 1987, when the marines would require 30 additional M12A1s.

#### Nonaqueous Vehicle Decontamination System (NAVDS)

The XM20 NAVDS was a follow-on to the XM16 jet exhaust decontamination program. The acquisition plan (AP) was approved by AMCCOM in the first quarter. In addition, a request for waiver (RFW) to solicit and award a contract for the proof of principle phase before AMC's approval of the AP was approved by AMCCOM. The AP and the RFW were forwarded to AMC, which approved them in June 1986. However, it mandated that no proposal be opened until DA approved the AP.88/

The XM20 program was terminated as a result of a quarterly Chemical School/CRDEC review on 8 August 1986. Hot air proved to be only partially capable of decontaminating the systems. Weapon system management charter number 16-85 was terminated on 22 September 1986.89/

#### Multipurpose Integrated Chemical Agent Detector (MICAD)

The MICAD program suffered from the lack of a requirement document, and, consequently, the funding needed to meet planned milestones. During the fourth quarter, Battelle Columbus Laboratories delivered brassboard MICAD units for customer tests at CRDEC.90/

#### M11 Canister

The M11 canister (old design) for the M9A1 special purpose mask began production in March 1986 in order to meet field requirements, pending the production of an improved M11 canister. The old design required the use of a filter-type check pad between the faceblank and canister to prevent the passage of excessive charcoal fines into the mask. This canister had been reported under the AMC significant major problem hardware report system since late 1982.

The redesigned (improved) M11 canister designed by Mine Safety Appliances solved the hardware problem. It would improve the overall reliability of the M9A1 mask and the logistic supportability of the mask.

By the end of the fiscal year 19,700 of 20,000 total, old design canisters were delivered to the depots. The remaining 40,000 canisters of improved design were scheduled for delivery to the depots during November-December 1986 and January-February 1987 at the rate of 10,000 per month. The M11 canister was removed from the problem hardware report on 31 March 1986.

#### M14 Mask Leakage Tester

The M14 mask leakage tester served as the workhorse in the area of protective mask leakage testing. From 3 January to 28 February 1986 the "percent penetration indicators" were modified at all AMC surety sites and selected contractor mask production facilities. This effort significantly improved M14 operators' performance in mask leakage testing, thereby greatly reducing the risk of using leaking masks in surety operations or accepting leaking masks in repair/production operations.

Modifications were completed at AMC mask storage facilities for the performance of surveillance operations. Two manufacturing methods and technology improved M14 tester prototypes (with automated flexing) were being tested at Aberdeen Proving Ground, Maryland, and Pine Bluff Arsenal, Arkansas (one each per site). Test results, due to assigned testing priorities, had not been obtained by the end of the year.

#### Fuel Injection Test Stands (FITS)

The year began with continued production effort on the initial FITS. From 7 to 27 January 1986 Bacharach Instrumentation Company successfully conducted FAT. The results were approved by AMCCOM with minor exceptions. Subsequent to the FAT approval, the contractor began with quality production of the first production order of 40 FITS. Also during this quarter, the option quantity clause (120 items) of the basic FITS contract was signed.91/

In July 1986 the contractor substituted an "equal" coolant chiller, due to uncertain delivery of the original chiller. Because the substitute had not been approved, the government required that a limited FAT be performed. The substitute chiller failed the limited FAT in September. Therefore, fielding of the FITS, which was tentatively set for the fourth quarter, was rescheduled pending repualification of the chiller unit. Retesting was planned for mid-January 1987.92/

#### Nuclear Weapon Survivability, Security, and Safety (NWS3)

In the NWS3 area, the improved upload procedure (IUP) program consisted of the addition of self-contained tiedown (SCTD) straps, casters, ramps, and winches to special weapons and special weapons

units to decrease the time needed to upload a special weapons unit. Ramps and winches were being studied for use in the field.

The casters portion of the IUP program had action during the year. Rock Island Arsenal received updated technical data packages for the Pershing Ia and Pershing II caster assemblies and started production in August 1986. As a result of a demonstration/evaluation in USAREUR during May 1986, the ramps, SCTDs, and winches were eliminated, since these items were determined to be impractical and not user-friendly. Casters for the Lance container were produced beginning in May 1986 and achieved IOC in September 1986.

#### Weapon Access Delay System (WADS)

By the end of FY 1986, installation of WADS components at 31 European sites was completed, and work was started in one of two remaining countries south of the Alps. This was Phase I. Phase II was started in the second quarter, consisting of installing the lockout system and the concertina blanket at what eventually would be over 40 sites throughout the European theater. Completion of WADS fielding in Europe was to be in two years.93/

CONUS deployment consisted of WADS installations at the eastern depot, with beneficial occupancy by the government scheduled for December 1986. The western depot construction/installation contract had not been let; speculation was that the impasse would be resolved by the second quarter of FY 1987. The depots would have all the WADS components except the concertina blanket and the interior barrier.

FY 1986 proved to be a challenging time because of two incidents in which lightning strikes and switching transients caused smoke generators to accidentally fire in operational igloos. An investigation was launched, and additional protection devices and grounding procedures were recommended. Most corrections were promptly implemented, with long term actions planned for the future.94/

Logistics support continued to be a challenge, also, in that integration of WADS into the army supply and support system had not been completed. AMCCOM, ARDEC, PM-NUC, the US Army Installation Support Activity-Europe, and Secure Engineering Services, Inc., (SESI), the maintenance contractor, intensely managed to provide a high readiness level to the units overseas. The contract for SESI was extended for another year under the option clause, rather than revert to organic support, in view of the unique responsiveness and cost effectiveness of the support being provided.95/

M20 Simplified Collective Protection Equipment (SCPE)

The M20 SCPE was type classified as a standard army item on 13 June 1986. As a result, the first portion of the initial production contract was awarded on 20 June. The second portion of the initial multiyear (FYs 1986 and 87) production contract was awarded on 13 August.96/

Based on contract production deliveries, initial production test, and TP/UMF requirements, the first unit equipped date was scheduled for 31 March 1988. The revised basis of issue plan was being staffed at DA for approval.97/

The development effort on the M20E1 research, development, test, and evaluation contract, awarded to Donaldson Company and ILC Dover, Inc., in March 1986, continued as scheduled. Prototype hardware was fabricated and shipped for a corps hospital demonstration to be conducted in the first quarter of FY 1987.

M17A2 Mask Sizing Tool

Fielding of the M17A2 face mask sizing tool began in May 1986 and was completed in July. Some 6,100 tools were issued by push package (free issue) to all active army commands, agencies, and activities worldwide. This effort initiated mask re-sizing, which would provide the best-fit mask to the soldier in the field. Reserve and national guard units were required to requisition the sizing tool through normal channels.98/

Major repair, overhaul, and rebuild maintenance operations were completed for the mask at Pine Bluff Arsenal. Upon completion of low volume maintenance work, the M17A2 facilities were to be placed in a standby status until needs emerged in FY 1988 and beyond. Selective equipment and facilities were to be used for initial receipt inspection, classification, and mask disposal operations, as required.99/

Modular Collective Protection Equipment (MCPE)

The planning, programming, funding, and fielding of the MCPE continued during the year as planned, however, two major milestones occurred. First, on 18 May 1986, DA announced a major policy change to require project managers to plan and execute budget and program actions to obtain MCPE for their respective systems beginning in FY 1988. The separate MCPE program objective memorandum line was deleted. Second, due to the high priority of the "Regency Net" system, DA directed TCLP-U of 246 XM93 filter units (MCPE) to ensure NBC protection for the system. Contracting actions to support the requirement were initiated.100/

The first MCPE system review in 18 months was conducted on 25-26 June 1986. The review was highly successful, and over 25 managers from AMCCOM, CRDEC, and other agencies attended.101/

A sole source contract was awarded on 30 September 1986 to Donaldson, Inc., to provide 241 XM93 100 cubic feet per minute (CFM) gas particulate filter units (GPFU), plus repair/spare parts and manuals, to the CECOM "Regency Net" program. This sole source action was based upon the TCLP-U designation. Funds committed were \$1.9 million.

A ready for test review (RFTR) was held by CRDEC on 25 September 1986 to review the results of engineering tests on seven items of MCPE and to approve or disapprove them for DT II testing. The items were the XM93 100 CFM, the XM95 200 CFM, and the XM96 400 CFM GPFUs, along with the XM17 -20 integrated protective entrances and an upgraded version of the XM5 static frequency converter with cooling shroud. The result of the RFTR was to proceed to DT II testing as all of the preliminary test results were favorable.

A VENUS teleconference was held on 4 September 1986 to discuss formulation of an integrated plan for fielding MCPE. This was prompted by a perception that MCPE was proliferating, with numerous models performing the same basic functions. The task of developing the integrated plan was to eliminate from fielding unnecessary or duplicated items which resulted from evolving design conceptions. This task was unfinished as of the end of the fourth quarter FY 1986 buy, but was to be completed by the close of the first quarter of FY 1987.

#### Missile Systems

Preliminary tests showed that a M77 grenade dud reduction of 50 percent could be achieved through the strengthening of the M223 fuze housing, a component of the M77 grenade for the MLRS missile. On 28 August 1986 a contract was awarded to McCay Tool & Engineering for 715 M248 warhead metal parts at \$1,841.15 per unit. This represented a \$121.30 per unit reduction from a contract awarded in 1985. The PM for the Patriot missile system decided to have its prime contractor, Raytheon, be the procuring agent for the M143 safe and arm device, starting in FY 1987.102/

A contract was awarded to Raymond Engineering in the fourth quarter for the M100 safe and arm device, 572 units at \$1,560 each, in support of the PM Hawk.

The PM for the army tactical missile system funded AMCCOM \$3 million to manufacture M74 grenades for R&D testing. Milan AAP was to assemble M74 grenades with recovered M219A2 fuzes from the

Lance M251A1 modification program.

New Mission

Planning to accept the new mission as the PM-Smoke/Obscurants focal point at AMCCOM was started with development of a draft MOA, PM-Smoke/Obscurants comments, and finalization in the second quarter. Implementation without additional resources occurred in March 1986.

Program and Management Division

The Program and Management Division compiled reports, data, and other information required by other divisions and offices in the performance of their management functions. The division was also responsible for coordinating system assessments on fielded systems, new materiel releases, armament materiel transition policies and procedures, and a variety of other non-system oriented tasks.

The significant problem hardware report continued to be processed during FY 1986. Two items were reported during the months of October 1985 through March 1986, and no items were reported for the remainder of the fiscal year.

Two fielded system reviews were completed during FY 1986 on the M231 firing port weapon and an update of the basic MILES.

A total of 45 items transitioned to AMCCOM during the fiscal year, to include 12 items from the air force, 10 items from the navy, one item from the US Army Mobility Equipment Research and Development Command, 1 from the Night Vision Laboratory, 1 from Natick Laboratory, 3 from PM-TMAS, 15 from PM-TRADE, and 1 item from PM-Bradley. The items transitional included the unit conduct of fire trainers for the M1 and M60A3 tanks and the M2/M3 Bradley fighting vehicles, M730 series 25mm ammunition, the CBU-89 Gator, the FMU-139/B electric bomb fuze, and the air to ground engagement simulation/air defense engagement simulation.

Additionally, at the end of the fiscal year, 47 items had been identified but not yet transitioned, including 23 other army/PM-TRADE items, 9 air force single manager items, and 15 navy items. Of these, 18 had draft transition plans and 16 had approved plans awaiting official execution.

## NOTES

1/For further information on the establishment of the PM for chemical munitions and the PM for fuzes, see chapter VIII of this annual historical review.

2/For further information on AMCCOM's weapon system management, see James R. Cooper, et. al., Annual Historical Review: US Army Armament, Munitions and Chemical Command, Fiscal Year 1983, (Rock Island, IL: AMCCOM Historical Office, 1984), pp. 32-35.

3/AMCCOM Regulation 10-1, Mission and Major Functions of the Headquarters, AMCCOM, 1 Apr 86, p. 85-2.

4/Unless otherwise noted, this section is based on the annual historical submission of the Product Manager, 9mm Pistol, LTC Richard C. Williams, Product Manager, 18 Nov 86.

5/"White Tail" memo, MG Fred Hissong, Jr., AMCCOM CG, to GEN Richard H. Thompson, AMC CG, 1 Nov 85. For additional information on the 9mm pistol, see Lawrence L. Leveque, et. al., Annual Historical Review: US Army Armament, Munitions and Chemical Command, Fiscal Year 1985, (Rock Island, IL: AMCCOM Historical Office, 1986), pp. I-1--I-4.

6/Routing and Transmittal Slip, Bruce H. Mauritzson, PM-9MM, to Hissong, 21 Jan 86; "White Tail," Hissong to Thompson, 21 Jan 86; "White Tail," Hissong to Thompson, 1 Nov 85.

7/HQ, AMCCOM, Record of Weekly Staff Meeting, 30 Dec 85, p. 54.

8/Ibid., 28 May 86, p. 48; Ibid., 9 Jul 86, p. 52.

9/Ibid., 11 Feb 86, p. 55.

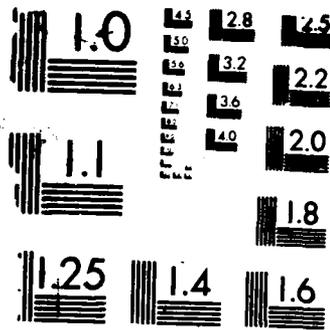
10/Ibid., 27 Nov 85, p. 65.

11/Ibid., 11 Jun 86, p. 48.

12/"White Tail," Hissong to Thompson, 9 Dec 85; Ibid., 22 Apr 86.

13/For a discussion of the congressional pressures brought to bear on the 9mm procurement, see chapter I.





MICROCOPY RESOLUTION TEST CHART

Weapon Systems Management

14/Unless otherwise noted, this section is based on the annual historical submission of the Weapon Systems Management Directorate, Colonel George T. Murray, Director, 10 Dec 86.

15/Staff Meeting, 22 Jul 86, p. 13; Ibid., 3 Jul 86, p. 1.

16/Ibid., 11 Feb 86, p. 13.

17/Ibid., 27 May 86, p. 13.

18/Ibid., 17 Dec 85, p. 12; 24 Jun 86, p. 14; Ibid., 26 Aug 86, p. 19.

19/Ibid., 5 Aug 86, p. 13.

20/US Army Armament Munitions & Chemical Command, New Developments in Armament and Munitions, ARDEC Circular 70-1, 13 March 1987, p. 5.

21/Staff meeting, 3 Jun 86, p. 14.

22/Ibid., 2 Sep 86, p. 12.

23/Ibid., 5 Nov 85, p. 14.

24/Ibid., 17 Jun 86, p. 12.

25/Ibid., 30 Sep 86, p. 5.

26/New Developments, p. 9; AMCCOM Defense Ammunition Directorate briefing, "Status of Modern Munitions," February 1987, n.p.

27/Staff meeting, 30 Dec 85, p. 1.

28/Ibid., 8 Oct 85, p. 1; 17 Dec 85, p. 1.

29/Ibid., 17 Jun 86, p. 2.

30/Ibid., 1 Aug 86, p. 1.

31/New Developments, p. 71.

32/New Developments, p. 25.

33/"White Tail," BG James R. Klugh, AMCCOM DCGCM, to Thompson, 27 Feb 86; New Developments, p. 3.

34/Staff meeting, 13 Oct 85, p. 2.

35/Ibid., 6 May 86, p. 2.

36/Ibid., 22 Oct 85, p. 2.

37/Ibid., 15 Apr 86, p. 3.

38/Ibid., 6 May 86, p. 2.

39/New Developments, p. 28.

40/Staff meeting, 22 Oct 85, p. 1.

41/Letter, James B. Hall, Deputy Assistant Secretary of the Army (Acquisition), to Harold L. Brownman, Lockheed Electronics Company, Inc., 16 Jul 86; Staff meeting, 11 Mar 86, p. 1.

42/Staff meeting, 15 Apr 86, p. 1.

43/Ibid., 13 May 86, p. 1; 27 May 86, p. 1; 24 Jun 86, p. 1; 12 Aug 86, p. 1.

44/Ibid., 16 Sep 86, p. 1.

45/Christopher F. Foss, "Munitions Developments," Jane's Defense Weekly, 13 Dec 86, p. 1391.

46/Staff meeting, 11 Feb 86, p. 2.

47/Ibid., 29 Apr 86, p. 3; Foss, p. 1391.

48/Staff meeting, 26 Aug 86, p. 2; Foss, p. 1391.

49/"Fixes to Automatic Weapon Nearly Done," Army Gazette, 16 May 86, p. 3; "Infantry News," Infantry, Nov-Dec 86, p. 10.

50/"White Tail," Hissong to Thompson, 21 Apr 86; Staff meeting, 11 Mar 86, p. 4; 9 Sep 86, p. 1.

51/Staff meeting, 10 Jun 86, p. 3; 29 Jun 86, p. 2.

52/Ibid., 4 Feb 86, p. 4; "Status of Munitions," n.p.

53/Tony Capaccio, "New AT-4 Armor Killer Under Fire," Defense Week, 11 Aug 86, p. 15.

54/Staff meeting, 4 Feb 86, p. 3.

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57/New Developments, p. 47.

58/Ibid., p. 11.

59/Staff meeting, 12 Nov 85, p. 6.

60/Ibid., 22 Jul 86, p. 4; "White tail," Hissong to Thompson, 15 May 86.

61/New Developments, p. 12.

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63/Ibid., 17 Dec 85, p. 4.

64/Ibid., 21 Apr 86, p. 3.

65/Ibid., 30 Dec 85, p. 5.

66/Ibid., 9 Sep 86, p. 3.

67/"Status of Munitions," n.p.

68/Staff meeting, 30 Dec 85, p. 5.

69/Ibid., 29 Apr 86, p. 6; 6 May 86, p. 6.

70/Ibid., 27 May 86, p. 4; 5 Aug 86, p. 7.

71/Ibid., 10 Jun 86, p. 9.

72/"White tail," Hissong to Thompson, 11 Jun 86.

73/Ibid.

74/Staff meeting, 4 Mar 86, p. 8.

75/Ibid., 3 Jun 86, p. 10.

76/Ibid., 23 Sep 86, p. 4.

77/Ibid., 4 Feb 86, p. 7.

78/Ibid., 5 Nov 85, p. 10.

79/Ibid., 30 Sep 86, p. 3.

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81/Staff meeting, 11 Feb 86, p. 11; FONECON, author with  
Mr. Elton Sheets, Engineering Support Directorate, 9 Jul 87.

82/Staff meeting, 22 Jul 86, p. 11.

83/New Developments, p. 43.

84/Staff meeting, 29 Oct 85, p. 10.

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86/Ibid., 21 Feb 86, p. 11; 18 Mar 86, p. 9; 24 Jun 86,  
p. 10.

87/Ibid., 12 Aug 86, p. 9; 2 Sep 86, p. 8.

88/Ibid., 13 May 86, p. 9; 10 Jun 86, p. 7.

89/Ibid., 19 Aug 86, p. 8.

90/Ibid., 21 Apr 86, p. 9.

91/Ibid., 14 Jan 86, p. 7; 29 Jan 86, p. 7.

92/Ibid., 5 Aug 86, p. 10.

93/Ibid., 21 Feb 86, p. 7.

94/Ibid., 8 Jul 86, p. 7; 5 Aug 86, p. 11.

95/Ibid., 15 Oct 85, p. 6.

96/Ibid., 17 Jun 86, p. 8; 24 Jun 86, p. 12; 19 Aug 86,  
p. 9.

97/Ibid., 16 Sep 86, p. 5.

98/Ibid., 5 Aug 86, p. 7.

99/Ibid., 19 Aug 86, p. 9.

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101/Ibid., 8 Jul 86, p. 7.

102/Ibid., 2 Sep 86, p. 8.

## CHAPTER III

### PROCUREMENT AND PRODUCTION

#### Mission

The deputy for procurement and production (DP) acted for the commanding general and deputy commanding general for procurement and readiness in exercising directional authority over the integration and execution of the AMCCOM procurement and production (P&P) missions. It also directed and integrated AMCCOM elements in the assigned mission areas.<sup>1/</sup>

#### Organization

The DP community consisted of three procurement directorates located at Rock Island, Dover, and Edgewood; the Production Directorate at Rock Island; and the Procurement and Production Policy and Management Directorate at Rock Island.

#### Staffing and Personnel

Mr. Jimmy Morgan served as the deputy for procurement and production during FY 1986, and Colonel Stanley Fonken served as his assistant. Mr. H. James Spangler, the DP ombudsman, retired, and in FY 1987 Mr. Craig Colledge was appointed to fill that position. The authorized personnel level for the deputy's office was reduced from 12 civilians and 1 military to 8 civilians and 2 military.

#### Deputy's Overview

FY 1986 in the DP community was a period of adjustment. Constraints placed upon the DP community by congressional legislation, and detailed management by various levels of higher authority, seriously impaired the flexibility and freedom required in the performance of the procurement and production missions. In an effort to offset these constraints, the DP directorates engaged in projects to streamline small purchases, contract distribution, and the procurement automated data and document system (PADDS).

Effort was also directed to systems automation. There was significant progress in establishing the materiel acquisition requirements and validation system (MARVS). The DP directorates were also major participants in the development of the integrated procurement system (IPS) and the defense standard ammunition computer system (DSACS).

## Procurement and Production

FY 1986 was also an extremely turbulent year for both procurement appropriation (PA) and conventional ammunition working capital fund (CAWCF) program management. The planned program for PA was \$3.7 billion, and the CAWCF planned program was \$4 billion. Because of the programs' instability, induced largely by congressional actions, the PA program received for execution was only \$2.8 billion, and for CAWCF only \$3.8 billion. Despite the required acquisition planning changes necessitated by the program reductions, the DP community obligated \$2.4 billion (85%) of the PA program and \$3 billion (80%) of the CAWCF program.

Efforts of the contract management center, in conjunction with other AMCCOM organizations, resulted in several significant achievements during FY 1986. The on-time delivery percentage was improved from 89.53 percent at the end of FY 1985 to 94.7 percent at the end of FY 1986. Secondary item stock availability improved from 78.8 percent in the first quarter to 87.1 percent in the fourth quarter. The contractors requiring special attention (CRSA) program was implemented and showed a steady decline in the number of contracts being awarded to contractors in the program.

AMCCOM, through its value engineering program, accumulated a savings in excess of \$166 million. This was \$59 million over the AMC-established goal. Also, the Production Directorate cost estimating program was instrumental in reducing the acquisition cost of spare parts by \$3.2 million.

Fuze and detonator line updating in the People's Republic of China progressed on schedule. Also, the US government's interest in foreign sales resulted in significant increases in the direct sales area.

The goals established for the DP community were to develop a better understanding of complex issues, to examine procedures and practices in an effort to increase mission awareness, and, through the use of studies, streamlining, and development of new programs, to increase productivity to the level required to offset existing or future constraints and decrements in the DP's resources.

### PROCUREMENT AND PRODUCTION POLICY AND MANAGEMENT DIRECTORATE

#### Mission

The primary mission of the Procurement and Production Policy and Management Directorate was to serve as the principal acquisition policy advisor to the commanding general, and to assure compliance with acquisition policies throughout AMCCOM procurement and production operations. The office served as principal staff advisor to the commanding general for mid and

long-range acquisition and production mission plans, interfaced with Dover and Edgewood on acquisition planning and procurement policy matters, managed the AMCCOM central procurement operations account, staff supervised automation systems applicable to AMCCOM procurement and production, served as the deputy activity career program manager for procurement, and coordinated the AMCCOM commercial activities program for new starts and expansions. Other responsibilities involved repair parts planning, which consisted of preparation of individual procurement packages and all other actions required prior to drafting the solicitation.2/

#### Organization

The directorate continued to undergo reorganization during FY 1986. A new division was formed, entitled the Acquisition Strategies Division. Its primary responsibility was the preparation of procurement instructions to carry out policies and procedures generated by higher authority on justifications and approvals (J&A).

In addition, the Systems Management Branch was removed from the Management Systems and Analysis Division and elevated to division status. Its primary function was to provide staff supervision and operational review of management information systems for the DP community, and to develop management information and automated systems pursuant to command and higher authority regulation. It also supervised implementation, operation, and use of the PADDS, and the military standard contract administration procedures (MILSCAP) system.

The remaining divisions in the directorate were the Policy, Plans, and Control Division; the Review and Compliance Division; and the Management Division.

#### Staffing and Personnel

Mr. David Herington continued to be the director during FY 1986. The deputy director position was filled by LTC Robert Mountz. Actual civilian strength at the end of FY 1986 was 180. High-grade authorization increased from 18 to 19 during the year. There was one military assigned to the directorate.

#### Director's Overview

FY 1986 was, once again, a year of change and reorganization in the directorate as two divisions were added with the establishment of the Acquisition Strategy Division and the Systems Division.

## Procurement and Production

The directorate, due to the austere atmosphere, accepted the challenge of imposed decrements and instituted measures to increase productivity to offset space reductions. These measures included increased emphasis on training programs, cross training, streamlining studies, and new policies. The directorate's goals were to continue to develop and implement new efficiencies for maximizing resources, enhancing acquisition strategies, and developing and implementing new or improved automated systems.

### Major Activities

#### Acquisition Strategies Division

During FY 1986 the Acquisition Strategies Division began its first year in operation. It was a year of growth not only in personnel strength, but organizational development as well. During the last quarter of FY 1986, the division assumed the responsibility of preparing procurement instructions to carry out policies and procedures generated by higher authority on J&As.

Due to problems encountered while preparing and processing the FY 1987 ammunition J&As over \$10 million, the division was instrumental in establishing a special review committee to streamline the staffing time at AMCCOM. Through the extensive coordination of the division, staffing time at AMCCOM was cut in half.

The division was responsible for restructuring materiel acquisition review board (MARB) procedures at AMCCOM. Instead of division staff traveling to Dover and Edgewood to attend MARBs, the VENUS network system and teleconference equipment were utilized. AMCCOM MARB schedules were also reported to AMC on a quarterly basis.

During FY 1986 the division was responsible for processing 737 J&As for other than full and open competition. Ninety-five J&As for actions exceeding \$10 million were staffed locally and then forwarded through AMC to DA for approval. The division was responsible for staffing 30 acquisition plans for FY 1986 and FY 1987 programs.

#### Policy, Plans, and Control Division

##### Staff Visits

During FY 1986 the Policy, Plans, and Control Division continued its oversight of the AMCCOM subordinate contracting offices with contracting staff visits to Pine Bluff Arsenal, Rock Island Arsenal, and Watervliet Arsenal. The staff visits were to evaluate management controls and operational effectiveness, and to

provide guidance and assistance. The division also performed staff visits to the AMCCOM sites located at Dover, New Jersey, and Edgewood, Maryland. The purpose of these visits was the same as those to the subordinate contracting offices.

#### Component Source

A procedure was developed by the division for the performance of an economic analysis to determine whether commercially available components of assemblages were to be government furnished or contractor furnished. The need for the procedure was determined after it was revealed that AMCCOM had not been performing the required comparison of costs needed for that determination.

#### Subordinate Command Policy Conferences

The Policy, Plans, and Control Division continued its policy of having policy review conferences. While four were scheduled during FY 1986, two were cancelled due to lack of sufficient travel funds and one slipped to the first quarter of FY 1987. The one that was held was hosted by Pine Bluff Arsenal. The exchange of information and frank discussions were beneficial to all participants.

#### Administrative Contracting Officer Appointments

A special study was undertaken by a senior analyst in the Policy, Plans, and Control Division to review the need for delegation of administrative contracting officer (ACO) authorities to the plant commanders and civilian executive assistants (CEA) at active army ammunition plants (AAP). An initial study conducted in FY 1984 by the same individual and two other command personnel resulted in no delegation.

As a result of several months of effort and a decision briefing to the AMCCOM CG, it was determined to delegate selected ACO functions to the plant commanders/CEAs of the active AAPs. Implementation procedures were prepared and the delegations were effected.<sup>3/</sup>

#### Plant Utilization Policy

The Policy, Plans, and Control Division continued as the focal point for administrative actions relating to the plant utilization policy. The policy allowed operating contractors of the government-owned, contractor-operated (GOCO) AAPs to utilize AAP facilities to produce non-AMCCOM requirements as long as they did not interfere with AMCCOM requirements.

## Procurement and Production

The division continued to chair quick reaction team meetings, where requests from the operating contractors were reviewed. As a result of this responsibility, questions and problems from government and contractor personnel relative to the policy were normally directed to the division for response or resolution.

Renegotiations of blanket authorization agreements were completed in February and March 1986. Eleven GOCOs negotiated the agreements. These agreements allowed the operating contractors at participating GOCO AAPs to utilize facilities and equipment to perform DOD third party work without first obtaining case-by-case approval from the contracting officer. The blanket authorization served as the contracting officer's approval to use facilities. As long as the operating contractor could live within the parameters of this blanket authorization for any DOD third party order, it could be accepted. The existing blankets were approximately three years old and needed to be updated to address issues that developed since they were initially issued.

### Management and Analysis Division

#### Central Processing Point

The Central Processing Point Branch served as the screening and control point for all incoming procurement work directives (PWD) to determine adequacy and completeness. It also operated the standard automated bidders list (SABL) for the directorate.

FY 1986 workload figures were 17,334 basic PWDs processed; 10,089 initial preproduction engineering (PPE)/technical data package (TDP) changes; 45,513 amendments; and 2,284 total bidders mailing lists distributed.

#### Resource Management

The Resource Management Branch acted as program manager for the OMA central procurement operations account.

During January through April 1986, program and budget analysts expended much effort in developing and submitting the first budget program resource review (BPRR) for FY 1986 through FY 1993. This report replaced the program analysis resource review and the command operating budget of previous years. Extensive use of minicomputers enabled the analysts to prepare hundreds of pages of the report and to match the FY 1986 zero-based budget against the BPRR FY 1986 program.

Other major projects accomplished in FY 1986 were two mobilization exercises, monitoring the FY 1986 manpower "glide path" for the DP community, prioritization and justification of DP

community travel, and converting to IBM compatible minicomputers in order to be able to exchange data with comptroller computers.

The Resource Management Branch remained responsible for the AMC procurement career intern program. At the beginning of FY 1986 there were 40 AMC interns on board. Six of these interns graduated during the year, and one second-year intern received a compassionate reassignment to Fort Monmouth, New Jersey. Seven interns received permanent duty location (PDL) assignments outside of AMCCOM, while 12 were assigned to PDLs within AMCCOM at Rock Island. Twelve new AMC interns were brought on-board during the fiscal year. This brought the total interns in training at AMCCOM at the end of the year to 38.

#### Repair Parts Planning

The Repair Parts Planning Branch completed its first full fiscal year of operation. The branch prepared individual procurement packages for spare and repair parts, including all actions prior to drafting the solicitation. These actions involved determining the method of procurement and contract type, consolidating items, preparing and processing presolicitation reviews and approval including small and disadvantaged business considerations, noncompetitive procurement approvals, and justification for use of an option. The branch also prepared the synopsis of proposed procurement for publication in the Commerce Business Daily. Due to changes in the J&A procedure, it became responsible for initiating different forms of market surveys in other than full and open competition procurements.

In FY 1986 the branch processed 6,815 PWDs, 311 J&As, 5 class J&As, and 30 statements of applicability for the 5 class J&As. In addition, 35 J&As were processed for another directorate and were not in the normal scope of work.

#### Review and Analysis

The Review and Analysis Branch served as the principal advisor/staff assistant to the Management and Analysis Division. It developed and coordinated review and analysis briefings on the performance of the AMCCOM P&P community; designed, coordinated, and monitored the flow of PWDs at the Rock Island site; and was responsible for all DD form 350 actions and data. The office was divided into two sections with team leaders; however, their functions were interchangeable.

Special initiatives, accomplished and projected, included streamlining small purchases. This was accomplished in the early part of FY 1986 at the Rock Island site. A task force was organized to review existing procedures in the Small Purchase

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Branch, making recommendations to streamline the process, simplify the workload, and reduce procurement administrative lead time (PALT). The results were a number of policy and procedural changes, streamlining the PWD flow, and eliminating or automating many functions. One of the major changes involved the development of a letter quote for procurements under \$10,000 to be used when it was not feasible to solicit orally. Reductions were realized in the number of bid sets required, the workload for central reproduction, PADDs, and contract distribution. Additionally, as a direct result of these efforts, the command achieved a six-day PALT reduction for procurement under \$25,000.4/

Another accomplishment was the streamlining of the contract distribution function at Rock Island. The Contract Distribution Branch was responsible for the distribution and management of all AMCCOM solicitations, from receipt of the package for issue through bid opening, and distribution of various contractual documents. Sweeping changes were made which streamlined, automated, or eliminated many functions. New procedures included automated printing of labels and incorporation of a new technical data inventory of automated package and sealing machines. As a result of these procedural and streamlining changes, the average number of solicitations mailed out daily increased by 58 percent, while overtime was virtually eliminated. Additionally, a policy decision resulting in a reduction of the quantity of solicitations being mailed out, without impacting effectiveness, would produce an annual cost savings of \$893,000.

Another streamlining action was to consolidate the four separate PADDs modules servicing the AMCCOM Procurement Directorate at Rock Island. This centralization was designed to improve productivity and efficiency through standardization of PADDs procedures and output products, prioritization and balancing of the workload, and improvements in workload distribution and control. Reduction of PADDs personnel and improved utilization of PADDs terminals and printers resulted.

A task force was organized to identify problems with technical data packages and procurement package input (PPI). Areas to be studied included excessive return of TDP/PPI to engineering, PPI problems versus TDP problems, and TDP problems such as bad drawings, unverified TDPs, and the noninclusion of appropriate drawings.

### Review and Compliance Division

During FY 1986 there were 933 boards of award reviewed and/or chaired. Forty business clearance review boards (BCRB) were convened, of which six went to AMC, and two were Dover BCRBs reviewed at the Rock Island site. Seven boards were reconvened.

There were two request for proposal/contract requirement review boards (RFP/CRRB), one of which went to AMC for approval.

During FY 1986 review was conducted of 81 supply, service, and construction solicitations from subordinate installations. There were six contractor purchasing system reviews (CPSR) in FY 1986, conducted at Lone Star, Iowa, Indiana, Hawthorne, Louisiana, and Mississippi Army Ammunition Plants.

All AMCCOM inspector general findings and recommendations were resolved and implemented, or were on track for milestone accomplishment. Findings for subordinate arsenals and ammunition plants were at the same level of accomplishment.

In addition to having published in the Program Manager magazine an article entitled "The Industrial Base Under Siege," the chief of the Review and Compliance Division presented five research papers to three conferences. Papers on "Anatomy of Surge" and "Retaining the Procurement Careerist in the 1980s" were presented at the federal acquisition research symposium at Richmond, Virginia. Papers on "Contracting Without Paper" and "Two New Contract Types for Operation of Government-owned Facilities" were presented at the Space Congress in Cocoa Beach, Florida. Finally, a paper was presented on the "Industrial Base Under Siege" at the mobilization conference at Fort McNair, Washington, DC.

### Systems Division

#### Operational Systems

The Operational Systems Branch provided staff supervision and operational purview of operational management information systems in the AMCCOM P&P community. It developed, implemented, and coordinated training in both standard and non-standard P&P systems. The branch was the principal advisor on management information systems for the P&P community for AMCCOM, and the liaison with all DOD elements for AMCCOM P&P systems interfaces.

The branch made significant progress in establishing the materiel acquisition requirements and validation system (MARVS). The MARVS functional control group completed the definition and design phase and was preparing for prototype testing of the system.

#### Conceptual Systems

The Conceptual Systems Branch provided staff supervision and operation purview for the development of management information and automated systems pursuant to command and higher authority

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regulations, policies, and procedures. It developed, defined, and controlled concept requirements for integrated automated standard and unique management systems. It also developed local bridges to other automated systems, performed prototype testing, and assured system maintenance.

The branch was a participant in the development of two major systems. The integrated procurement system (IPS) was in the functional design phases, and when completed would automate practically every phase of the procurement process. The defense standard ammunition computer system (DSACS) was an automated system for AMCCOM to utilize in completing its single item manager mission for conventional ammunition. This system completed development and was ready for prototype testing.

### Systems Management

The Systems Management Branch supervised the overall implementation, operations, and use of the procurement automated data and document system (PADDS) and the military standard contract administration procedures (MILSCAP) system. It received and prepared all types of contractual instruments by keyboard input into computer data systems. It then reviewed all data for omissions, discrepancies, or changes to ensure corrections.

The branch served as MILSCAP field monitor, provided continuous overview to assure effective function of the data to MILSCAP and other functional system requirements, and controlled all input and output to the systems. The branch made significant progress in providing service to its customers by centralizing the work area and enabling a more efficient use of equipment and personnel.

## PROCUREMENT & PRODUCTION DIRECTORATE (DOVER)

### Mission

The Procurement and Production Directorate (Dover) was responsible for planning, executing, and managing the procurement and production programs supporting Dover-based AMCCOM elements, tenants, PMs, and other commands and agencies. It also served as the principal procurement advisor for ARDEC and other non-AMCCOM supported elements.<sup>5/</sup>

### Organization

The Procurement and Production Directorate was organized into an office of the director and seven divisions/offices: the Production Management Division, the Cost and Price Analysis Division, the Management Review and Compliance Division, the

Weapons and Armament Systems Procurement Division, the Procurement Operations Division, the Support Contracting Division, and the Administrative Office. All of the above were located at Dover.<sup>6/</sup>

#### Staffing and Personnel

Colonel David L. Dunham became the director of the Procurement and Production Directorate (Dover) in August 1985, and remained throughout FY 1986. Mr. William Stank remained deputy director. The directorate's authorized and actual strengths were 267 and 264, respectively, at the end of the fiscal year.<sup>7/</sup>

#### Major Activities

The directorate actively promoted competitive procurement. As a result, competition for R&D funded actions increased from 41 percent in FY 1985 to 48 percent in FY 1986. In the spare parts area, 67.8 percent of the dollars and 96.4 percent of the actions were competitive. Overall competition (all funds) was 23.9 percent in FY 1986, against a goal of 16 percent.

In the procurement performance area, 109.3 percent of the procurement actions forecasted, and 116.9 percent of the forecasted dollars, were awarded in FY 1986. Actions received exceeded the forecast due to late approval and receipt of funds. At the end of the year, actual receipts were \$1,022 million against forecast receipts of \$800 million. Actual awards were \$876.6 million against forecast awards of \$750 million.

In the research, development, test, and evaluation (RDTE) area, an unprecedented 99.2 percent of the RDTE requirements received in FY 1986 were awarded. This was 7 percent above FY 1985 performance of 92.2 percent, and represented a major achievement in the face of added regulatory and statutory constraints.

In the area of administrative leadtime, 85.9 percent of the actions over \$25,000 were within PALT. This compared to 82.2 percent in FY 1985.

In the socio-economic area, goals for small business awards were exceeded in FY 1986 by .4 percent, and set aside goals were exceeded by 2.5 percent. Goals for disadvantaged business were exceeded by \$3.8 million, and woman owned business awards exceeded the goal by \$3.3 million.

The director recognized that contract execution goals were often met at the sacrifice of other actions, such as contract close-out. Accordingly, he was instrumental in establishing, from existing resources, a small temporary contract close-out team.

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During the period 1 October 1985 to 2 February 1986 the team aggressively closed 383 contracts with a face value in excess of \$224 million, and deobligated \$156,887. An additional 4,145 purchase orders with a face value of almost \$14 million were closed. The success of that team resulted in the establishment of a permanent team beginning 1 October 1986.

A major accomplishment in FY 1986 was the publication of an updated AMCCOM regulation 715-1, which described to technical elements the various components of the complex research and development (R&D) procurement request package. This fostered more timely receipt of packages of higher quality and minimized time consuming return and rewrite.

### PROCUREMENT DIRECTORATE (EDGEWOOD)

#### Mission

The mission of the Edgewood-based Procurement Directorate was to plan, execute, and manage the procurement programs supporting Edgewood-based AMCCOM elements, the Ballistics Research Laboratory, the Toxic and Hazardous Material Agency, the Human Engineering Laboratory, and other assigned laboratories and agencies. It served as the principal procurement advisor for the CRDEC command group and other assigned missions of non-AMCCOM supported activities.8/

#### Organization

A reorganization of the directorate began late in FY 1986 which resulted in the elimination of the position of assistant to the director, but which created the position of deputy director/chief of the Management, Review, and Compliance (MR&C) Division. The MR&C Division was divided into two branches: the Review and Compliance Branch and the Acquisition Management Branch. The latter branch handled housekeeping chores, and was responsible for maintaining and implementing automation procedures.9/

#### Staffing and Personnel

Mr. Charles D. Sollaway remained as the director of the Procurement Directorate, and Mr. A. J. Lacombe III assumed the "dual-hatted" position of deputy director and chief of the Management Review and Compliance Division.10/

The Procurement Directorate was authorized 68 civilians and one military, but had an actual strength of 77 civilians and no military. This 77 included 5 CRDEC-funded spaces, 7 interns, 1 rehired annuitant, and 1 temporary.

During the fiscal year, eight additional spaces were authorized (effective 1 October 1986), but the vacant military position was eliminated, and one civilian space was lost because of the "glide path" reduction. The five CRDEC-funded spaces were also eliminated as of 1 October 1986. The actual net gain in spaces was, therefore, one.

#### Director's Overview

Major workload increases during FY 1986 were again accommodated only through the use of over 6,500 hours of paid overtime, AMC interns functioning at the journeyman level, and diversion of resources from other areas. Although employee morale seemed to improve slightly, the frustration level remained high. The directorate did, however, have some significant accomplishments during FY 1986.

The Procurement Directorate (Edgewood) hosted the first AMCCOM research and development acquisition conference on 23 April 1986. The conference was attended by 187 personnel from AMC and all the AMC major subordinate commands, as well as the navy and the army surgeon general's command. The theme of the conference was "Streamlining the Acquisition Process."

The directorate issued several broad agency announcements (BAA). They were the first BAAs issued by AMCCOM. BAAs were a means of soliciting proposals for research in broadly defined technical areas. They permitted offerers to focus their proposals on those areas in which they had the greatest expertise.

The directorate obligated over \$188 million, the highest amount in over a decade. In addition, over \$100 million in requirements were cancelled or deferred while procurement action was in process. The directorate had a total of 832 actions involving 907 PWDs, not counting those that were cancelled.

The directorate achieved a competition rate of 74 percent, well above the assigned 62 percent goal, and an extraordinary accomplishment for a R&D/first production mission.

Installation of central air conditioning in the building contributed greatly to keeping up employee morale during the busy summer months.

#### Major Activities

## Procurement and Production

### Operational Difficulties

In spite of the increase in the table of distribution and allowance (TDA), the continuing shortage of personnel resulted in some areas of procurement operations not getting the attention they required. The contract close-out team (2 people) was able to reduce the number of contracts completed but not closed out by only about 10 percent. The directorate, and especially the MR&C Division, continued to be inundated by requests from Rock Island Arsenal for information and reports. More often than not, suspenses were very short.

The acquisition tracking center (ATC) continued to require expenditure of significant manpower resources, although elimination of the requirement for directorate personnel to travel to Rock Island to attend ATC sessions was a great help. The length of time it took to get an acquisition plan approved continued to be a significant problem. Instability of the R&D program, which resulted in cancellation of many programs after the directorate had expended significant effort on them, continued to be a problem.

### Accomplishments

In spite of the above, the directorate obligated \$188.4 million during FY 1986. It managed 446 contracts worth \$648 million, and conducted 570 reviews.

The directorate initiated the use of electronic mail with several contractors on an experimental basis. Additional automated procedures were implemented as resources permitted.

## PROCUREMENT DIRECTORATE (ROCK ISLAND)

### Mission

The mission of the AMCCOM Procurement Directorate (Rock Island) was to plan, execute, and manage all AMCCOM procurement programs for the deputy for procurement and production, the DCG for procurement and readiness, and the commanding general. This included the national mission of single manager for conventional ammunition (SMCA) and all army and international logistics customers for weapons, chemical defense items, tools and equipment sets, and associated repair parts and equipment. It managed the transfer of systems procurement mission assignments from other AMCCOM activities to AMCCOM (Rock Island). It also coordinated and maintained should cost activities.11/

### Organization

The Procurement Directorate was made up of six divisions: the Major Weapons Systems Division, the Ammunition Division, the GOCO Division, the Special Weapons and Spares Division, the Procurement Management Division, and the Contract Pricing Division.

#### Staffing and Personnel

Colonel Carl N. Price remained the director of the Procurement Directorate, and Mr. Arnold S. Kublin remained the deputy director throughout FY 1986.

At the beginning of FY 1986 the Procurement Directorate had an authorized strength of 608 civilians and 26 military. There were 625 civilians and 18 military actually assigned. By the end of the fiscal year, the authorized strength had been reduced to 569 civilians and 25 military, with 575 civilians and 17 military actually assigned.

#### Major Activities

##### Major Weapons Systems Division

The Major Weapons Systems Division directed, managed, and controlled the execution of the assigned procurement mission, including planning through the entire acquisition cycle. It directed and accomplished the centralized procurement of major-item weapon materiel systems, services, and components, and the placement of facilities-type contracts. It executed staff supervision (second-tier contract administration) over all contracts transferred for administration. Finally, the division performed primary contract administration functions on those exceptional contracts not transferred.

During FY 1986, the division obligated funds totaling over \$1 billion.

#### Artillery and Armored Weapons

The Artillery and Armored Weapons Branch was divided into two sections. Section A was responsible for procurement of the turret drive system and provisioning parts in support of the Bradley fighting vehicle system, direct support electrical system test set (DSESTS) and provisioning parts in support of the M1/M1A1 tank and the Bradley, and the M119 105mm light howitzer and ancillary support requirements. Section B was responsible for procurement of self-propelled artillery systems including the M109A2 howitzer and the M110A2 self-propelled gun system including facility support, engineering support, and procurement of retrofit kits. The section was also responsible for the procurement of

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provisioning items in support of the M1/M1A1 tank and the procurement of special systems and provisioning in support of the M60A3 tank.

In addition to the placement of contracts and associated administrative activity, emphasis was placed on definitizing ceiling priced actions in a timely manner, resulting in a significant reduction in these type of actions over the year.

Emphasis was also placed in breaking out provisioning/spare parts in support of the M1/M1A1 tank and Bradley programs. Through identification of prime contractor suppliers, many items were broken out and procured from second or lower tier subcontractors. In a few cases, it was possible to compete between two or three suppliers, thereby reducing costs of parts through elimination of prime contractor mark-ups. It was also possible to better delivery through procurement directly from prime contractor vendors and subcontractors.

Reduction of contract delinquencies was emphasized, and actions were taken to reduce or minimize delivery delinquencies and to expeditiously close out completed contracts. Advance procurement plans and J&As were submitted and approved for multiyear procurement (FY 1987-88) of the M119 light howitzer. Procurement planning for a 4-year contract (FY1987-90) for the Bradley turret drive systems was coordinated with the project manager. During FY 1986, the branch placed contracts valued at \$195 million.

### Fire Control Branch A

Fire Control Branch A was also divided into two sections. Section A was responsible for procurement of fire control for air defense systems, boresight devices, binoculars, and other miscellaneous special optical systems. This included not only procurement of production and provisioning equipment, but also special test equipment, depot maintenance, and other activities in support of the major items. Section B was responsible for procurement of fire control for the M1/M1A1 tank, the Bradley fighting vehicle, and other miscellaneous special optical systems. This included special test equipment, depot maintenance, engineering support, and other activities as well.

In addition to placing contracts and associated contract management activities, emphasis was placed on definitizing ceiling priced actions. Emphasis was also placed on breaking out provisioning/spare parts in support of major weapon systems. Contract closeout became an area of immediate concern and specific initiatives were developed to promulgate timely closeout.

Of the 14 ceiling priced orders to be definitized under the terminated SGT York program, only 3 remained to be negotiated. The should cost team effort for the M1/M1A1 laser rangefinder/thermal imaging system multiyear production contract with Hughes Aircraft Company was concluded in FY 1986. Negotiations were in progress at the end of the fiscal year.

Fire Control Branch H

Fire Control Branch H, like the other branches in the division, was divided into two sections. Section A was responsible for the procurement of fire control for the M60 series of tanks, the M198 howitzer, the M109 howitzer, the M110 howitzer, and other miscellaneous special optical systems. During FY 1986 the section also assumed the responsibility to buy fire control for various mortar systems. The section also had single service responsibility for procurement of aircraft clocks and associated repair contracts. This included not only procurement of production and provisioning equipment, but also special test equipment, engineering services, and other activities in support of these major items. Section B was responsible for procurement of the remoted target system (RETS), the multiple integrated laser engagement system (MILES), and the unit conduct of fire trainer (UCOFT) training devices, plus their contractor support services. In addition, the section was responsible for the backup computer system and the training set, fire observation.

Through competition \$46 million was saved in the procurement of the MILES. Also a significant savings of \$21 million was saved through competitive procurement of the RETS.12/

The commander's periscope, long, and the commander's periscope, short, contracts were awarded on 3 September 1986 to CAI, a division of RECON Optical, Inc. This action was a first time "breakout" from the "sole source" status with General Dynamics for these items. CAI was in production of these items as a subcontractor for General Dynamics.

Contract DAAA09-86-C-1329 was awarded to the Prime Time Clock Shop on 11 August 1986. The contract was an indefinite quantity contract for the overhaul of mechanical aircraft clocks in support of tri-service requirements. This represented the first contract awarded by AMCCOM for the overhaul of clocks, and was also the first "breakout" from the "sole source" status with Waltham Precision.

Ammunition Division

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The mission of the Ammunition Division was to centrally procure specified ammunition items for all services on an international basis, including the placement of facilities contracts in support of the ammunition mobilization base. The division was divided into four branches and each branch was divided into three sections. Each branch provided total procurement management for a specified group of ammunition program items and services.

In spite of problems caused by implementation of the Competition in Contracting Act (CICA), and difficulties encountered in processing over 150 individual J&As, the division obligated \$1.641 billion dollars for FY 1986. It issued 268 solicitations and awarded 351 contracts. The average number of contracts administered by the branch was 252, and it received a total of 8,260 PWDs, including amendments.

### GOCO Division

The GOCO Division of the Procurement Directorate was responsible for directing, managing, and controlling the contract planning, execution, and administration of current production, modernization, and mobilization requirements for the army's GOCO ammunition plants. The division supported the SMCA program by obligating over \$1.3 billion during FY 1986.

#### Badger AAP

Badger received \$22 million for modernization and mobilization projects. There was \$1.4 million put on contract in September 1986 for the correction of acid plant deficiencies in the ammonia oxidation plant. The J&A on the remaining two projects were in the legal office in Washington. These two projects consisted of \$10.7 million for correction of nitric acid concentrator/sulfuric acid concentrator acid plant deficiencies and \$10 million for correction of mobilization deficiencies throughout the plant.

On 21 February 1986 Badger received an award of merit from the National Safety Council for not having a lost work day due to injury during 1985. This was the second consecutive presentation. Also, on 2 October 1986, Badger received the federal energy efficiency award.

#### Cornhusker AAP

Actual revenue received was \$237,481 for industrial leases and \$482,743 from agricultural leases for a total of \$720,224. Services from industrial leases were valued at \$7,124, while services from agricultural leases were valued at \$466,950.

Additional soil conservation efforts contributed by agricultural leases were valued at \$473,359.

Construction was completed on a water line to bring drinking water from the city of Grand Island to area residents whose water wells were found to be contaminated with army pollutants.

Modification P00088 to contract DAAA09-80-C-3005 dated 5 June 1986 outlined details of FY 1986 cost base and fee negotiations. A cost base of \$2,116,522 and a fixed fee of \$63,504 were agreed upon. The cost base and fee for FY 1987 were negotiated in September 1986 and were formalized in the basic contract DAAA09-87-Z-0004. A cost of \$2,242,937 and a fixed fee of \$63,504 were agreed upon.

Hawthorne AAP

Negotiations of the FY 1986 award fee criteria were concluded on 4 December 1985. The dollar amount and distribution of fee between base and award fee potential were concluded in August 1986. This was the final milestone in the FY 1986 negotiations. The negotiated cost base for the period 1 October 1985 through 30 September 1986 was \$21,381,632. The total fee potential was \$937,500. Of this amount, \$234,375 was the base fee and \$703,125 was the potential award fee.

An FY 1987 proposed scope of work was forwarded to the operating contractor on 25 February 1986 requesting a cost proposal be furnished to the contracting officer by 4 April. Based on technical evaluations of the contracting officer representative (COR) staff and AMCCOM should cost team, and the Defense Contract Audit Agency's (DCAA) audit report, the business clearance review board authorized the COR to enter into negotiations with the contractor to establish the estimated cost of work, award fee criteria, and dollar amounts for base fee and award fee potential. Negotiations began on 9 September 1986 and were concluded on 25 September. The estimated cost was \$20,308,265. Total fee potential was \$937,500. Base fee was \$275,000 and award fee potential was \$662,500.

Partial layaway of the western area demilitarization facility (WADF) was started in October 1985 and continued to the end of the fiscal year. Completion of this job was projected for January 1987. A team from AMCCOM was tasked to study the status of WADF and its potential future use. Due to the many complexities of the problem, completion of the study was planned for FY 1987.

Workload accomplished was primarily in the area of supply depot operations; with 40,376,573 short tons received. This increase resulted in the cost per short ton received being reduced

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from 6.9 man hours per short ton in FY 1985 to 1.2 in FY 1986.

Renovation of conventional ammunition focused on renovating 81mm high explosive cartridges for the marines. The contractor innovatively implemented changes in the method of moving the 81mm rounds from operation to operation, resulting in production increases and substantial cost savings to the government. As a result of those efforts expended, the government staff recommended approval of the contractor's value engineering change proposal.

### Holston AAP

On 1 August 1986 the commander of Holston AAP assumed responsibility for Volunteer AAP in Chattanooga, Tennessee, and the Phosphate Development Works in Muscle Shoals, Alabama.

During the year Holston set new standards for product quality. The product quality rating (PQR) of 98.7 percent was the highest ever and the plant finished the year with 6 consecutive months, July through December, with a PQR greater than 99 percent. Holston also achieved a 100 percent PQR for nearly 1,000 batches of composition C-4, the first ever for a major product.

A major environmental accomplishment was the successful delisting of the waste water sludge from the Environmental Protection Agency's (EPA) list of hazardous materials. This action eliminated future disposal costs, with a savings of over \$700,000 in 1987 alone.

### Joliet AAP

LTC Roddy of Iowa AAP assumed command of Joliet AAP as a satellite plant on 15 July 1986.

The US Department of Agriculture was granted permission to conduct a gypsy moth survey at Joliet AAP, releasing 7,500 sterile eggs in a closely monitored four-mile grid.

The operation of Honeywell, Inc., under its facilities contract, continued to be a dominant part of the Joliet operation. Honeywell continually needed more room, and had requests pending for additional buildings, access to the burning grounds, and additional land for testing to accommodate the contract for the AT-4, contemplated to be manufactured at Honeywell.

### Kansas AAP

FY 1987 operations and maintenance, army (OMA) funds were released to Kansas AAP in the amount of \$1,242,600 for September 1986 to March 1987. FY 1987 production funding provided was as

follows: \$5,729,376.61 for the M55 detonator; \$8,522,004.20 for the M77 grenade; and \$7,181,810.75 for the M483A1 projectile. The FY 1987 production support and equipment replacement (PS&ER) project 5875329 was funded at \$1,660,958.

Lake City AAP

Corporation reduced costs by \$11 million from the negotiated cost base of the contract period 3 November 1985 through 31 October 1986.

Lone Star AAP

In November 1985 an announcement was made to compete Lone Star AAP. The solicitation for the operation and maintenance of the plant was issued. On 5 June 1986 an announcement was made cancelling the solicitation, due to lack of industry interest.

On 6 March 1986 the National Safety Council recognized Day & Zimmermann's occupational safety record with an award of honor for the operation of 3,298,586 employee hours without an occupational injury or illness involving days away from work or death.

Louisiana AAP

Discussions were ongoing as to the status of the new research department explosive (RDX) facilities at Louisiana AAP. Louisiana was funded in FY 1986 at \$1.5 million for engineering support.

Mississippi AAP

The operation and maintenance contract for Mississippi AAP was rewritten and signed on 1 April 1986. The cumulative value of this contract was approximately \$149 million.

Over 20,000 projectile bodies were produced in one month for the first time during January 1986.

The first phase of the proposal to correct deficiencies at the plant in order to provide mobilization capability was placed on a separate contract and signed in December 1986. The amount of this first phase was approximately \$50 million. The entire mobilization proposal included purchase of equipment, design, and construction.

Projectile metal parts production progressed well; cargo metal parts production was just beginning. Load, assemble, and pack (LAP) operations were reduced because of an explosion in the LAP facility in August 1986. Execution of the mobilization proposal was designed to eliminate systemic production/support

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problems.

### Newport AAP

On 1 January 1986, Mason and Hanger, Silas Mason Company, Inc., assumed full responsibility for operation and maintenance of Newport AAP.13/

Much effort was expended by the Newport staff regarding the chemical stockpile disposal program and the binary chemical munitions program. No final decisions were made on either program.

Newport AAP accomplished a very successful surety operations inspection in May. Of six rated areas, four areas received "no deficiencies" and two areas received "deficiencies - none failing" ratings.

### Radford AAP

Contract rewrite was accomplished in February 1986 after much effort by the contractor, COR staff, AMCCOM personnel, and various other organizations.14/

A contractor procurement system review (CPSR) was conducted during 7-17 October 1986. The CPSR board met on 25 November and recommended disapproval of the system. The contractor had taken some action to correct cited deficiencies.

CY 1986 cost and fee negotiations for the operation and maintenance of Radford AAP were completed on 19 November 1986. The total negotiated cost base was \$186,334,380.

### Riverbank AAP

NI Industries initiated top management changes at Riverbank to include a new plant manager and a new quality assurance manager. Riverbank received contracts for 40mm cartridge cases and 60mm and 81mm mortar ammunition.

### Scranton AAP

Contracts for M509, M106, and M107 projectiles were obligated in FY 1986 for a total of approximately \$48 million (CAWCF funds). A facilitation project for the XM864 (omnibus engineering funds) was begun to help stabilize future workload at Scranton and to enhance its future value as a mobilization component.15/

St. Louis AAP

Donovan Construction Company elected not to renew its contract with the government for maintenance and surveillance of the St. Louis plant. Plant Facilities and Engineering, a St. Louis-based firm performing the maintenance and surveillance effort for Donovan, agreed to accept the FY 1987 contract. St. Louis AAP was to be competed during FY 1987.

Sunflower AAP

The contractor produced over 8,000,000 pounds of acceptable nitroguanidine. However, more effort by the contractor needed to be expended to reduce costs.

The contractor's lost-time accident safety record was broken four times during the year. Two safety reviews were conducted by the contractor at the plant regarding the nitroguanidine facilities and the safety program.

Negotiations for CY 1986 were held from 7 August 1986 through 21 November 1986. Results of these negotiations were a cost base of \$44,033,196 and a negotiated fee of \$1,408,462, for a total of \$45,441,658.

Volunteer AAP

ICI Americas Incorporated submitted a basic FY 1986 cost proposal of \$10,286,385 for operation and maintenance and project efforts at Volunteer. This proposal was negotiated downward by the COR staff to a base cost of \$9,592,220 with further reduction to \$9,343,320 due to the cutting of OMA funds and the Gramm-Rudman-Hollings Law. A total of \$9,074,205 was obligated for performance on the contract.

A facilities use contract to allow Raytheon Company, Missile Systems Division, Bristol, Tennessee, to utilize several buildings and bunkers at Volunteer AAP for final assembly of missiles was executed in January 1986. Remodeling and add-on construction work to the facilities was also involved.

Rewarehousing effort of approximately 7,000,000 pounds of TNT stored in 46 Corbetta-type magazines was begun on 22 July 1986 to reduce the maximum allowable explosives to no more than 250,000 pounds per magazine. This action was taken to assure compliance with DOD, DA, and AMC safety regulations. The rewarehousing effort was suspended on 28 August 1986 with the receipt of an order to ship 8,000,000 pounds of TNT to McAlester AAP, thus obtaining the same results with a considerable cost savings. Funding in the amount of \$530,000 was originally provided, and

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\$474,848.61 was returned.

Volunteer AAP employees completed FY 1986 with an impressive accumulative record of 2,918,201 man-hours or 3,022 days worked without a lost time injury. This record reflected back to 22 June 1978. The record on recordable motor vehicle accidents stood at 2,068,826 miles or 1,941 days since the last recorded accident.

### Special Weapons and Spares Division

The mission of the Special Weapons and Spares Division was to direct, manage, and control the execution of the assigned procurement mission, including planning through the entire acquisition cycle. It directed and accomplished the centralized procurement of special weapon materiel systems, services, repair parts components, support items, and tools and equipment, and placed facilities-type contracts. It executed staff supervision (second tier contract administration) over all contracts transferred for administration. It also performed primary contract administration functions on those exceptional contracts not transferred.

During FY 1986, the division had a gross obligation of \$599.8 million and a net obligation of \$352.7 million. The division executed 977 large purchases; 3,974 small purchase actions; and 2,729 contract modifications. It processed 15,600 procurement work directives, of which 9,229 were awarded.

#### Small Arms and Special Systems

There was an approximate 80 percent reduction in the issuance of unpriced ceiling instruments for the Small Arms and Special Systems Branch. For example, ceiling priced delivery orders on basic ordering agreement (BOA) and letter contracts were reduced.

#### Small Purchase

Small purchase procedures for the Small Purchase Branch were streamlined and the letter quote system was initiated in December 1985. Use of letter quotes resulted in a reduction in procurement administrative lead time, created a more efficient bidders mailing list, decreased the cost associated with preparing and reproducing technical data, and decreased the number of pre-award surveys for the contractor.

#### Chemical

The Chemical Branch placed additional emphasis in definitizing unpriced contractual instruments. As a result, only one contract was written during FY 1986 using this method of

contracting.

Primary Support

A greater amount of first-time "breakout" procurements were received and processed in the Primary Support Branch. These were a result of CICA philosophy, and were of interest to General Accounting Office (GAO) and Army Audit Agency (AAA) auditors.

Competitive/breakout savings by individuals in the Primary Support Branch resulted in favorable publicity. One individual received a large incentive award in FY 1986 for her savings, received a commendation from the secretary of defense, and was chosen as the AMCCOM contract specialist of the year.

Contract Closeout

The Division placed added emphasis on its contract closeout efforts. As a result, approximately 2,500 overaged contracts were closed out during FY 1986.

Procurement Management Division

The Procurement Management Division was responsible for controlling and managing a wide array of services in support of the acquisition mission. Assigned functions included processing solicitations, distributing contractual documents, coordinating should cost studies, and serving as command principal advisor on industrial relations pertinent to contracted operations. The division also performed analyses and prepared final technical reports and summaries on such subjects as obligations, bailment agreements, warranties, contract claims, failed first articles, and contract close-outs. It coordinated audit reports and notices of protest; served as directorate advisor and focal point on administrative matters related to the management of "people, money, and things" such as personnel, training, incentive awards, performance management, property, security, and mail; and provided directorate suspense control.

Contract Distribution

The Contract Distribution Branch issued initial solicitation packages and processed subsequent bid requests; maintained a centralized repository for technical data essential to processing solicitations; maintained a bid reception area, to include providing assistance to contractor representatives and maintenance of the bid board; distributed contractual documents to contractors and other government activities; transferred closed contracts to records holding; and conducted bid openings.

## Procurement and Production

In FY 1986, the branch opened 336 invitations for bids (IFBs); opened 1,597 requests for proposals (RFPs); received 245,000 bid requests; mailed 230,000 bid sets; mailed 2,484 new issues; sent 4,827 contracts to records holding; recalled 1,186 contracts from records holding; and distributed 21,250 contracts and modifications.

In December 1985 a streamlining task force comprised of representatives from the Procurement and the P&P Policy and Management Directorates was organized to review the solicitation process and recommend methods to increase the productivity of the Contract Distribution Branch as a service organization of the procurement community. Their recommendations resulted in the streamlining, automation, or elimination of a variety of procedures and work methods, all of which greatly enhanced the productivity and overall efficiency of the branch.

Since the introduction of the cost savings and efficiencies, the branch noticed a 90 percent increase in the average number of solicitations mailed daily. A cost savings of \$893,000 was realized, resulting from reductions in out-going mail, reproduction and printing, and document distribution. There was a significant reduction in overtime, and the time required to process requests for solicitation decreased from 2-3 weeks to 48 hours.

### Should Cost

The Should Cost Branch served as the AMCCOM focal point for formulating, establishing, and implementing policies and procedures governing should cost analyses.

Since the establishment of the Should Cost Branch in April 1982, a total of 64 formal should cost analyses were performed by the command. Five were completed in FY 1982, 12 in FY 1983, 23 in FY 1984, 14 in FY 1985, and 10 in FY 1986. These analyses dealt with \$5.5583 billion in proposed costs, producing a total negotiated cost avoidance of \$728.7 million. The administrative cost to conduct these efforts was \$11.5 million, creating an investment return of 63 to 1.

### Contractor Industrial Relations

The Contractor Industrial Relations Office served as the principal advisor to the commanding general in the area of industrial relations. It advised the CG and staff on the effect of strikes and labor disputes on the command's contracts. It recommended action regarding acceptance or disallowance for reimbursement purposes of GOCO contractor's wage and salary structures, compensation plans, individual salaries of key

employees, fringe benefit programs, and health and welfare programs. It conducted GOCO plant site reviews of contractor operations to assure compliance with labor regulations. The office determined contractor compliance with applicable federal and state labor statutes and regulations and instituted necessary enforcement actions. It prepared reports regarding significant reductions in contractor personnel and assured such actions, as necessary, mitigated impact on the local economy. It also participated in contractor and site selections.

The labor tranquility that existed for 22 months came to an end when the Oil, Chemical, and Atomic Workers' International Union at Radford AAP rejected Hercules, Incorporated's offer and voted to strike at midnight, 16 September 1986. On 6 October the union ratified a new contract. Personnel were phased into operations over the next several days. As of 13 October, all personnel had returned to work.16/

Negotiated and deferred increases applicable to hourly employees at GOCO installations averaged \$.20 per hour, while the median increase was 25 cents per hour.

Contractor employment at GOCO plants decreased during the fiscal year by 35. The plant population as of 30 September 1986 was 23,836, compared to 23,871 as of 30 September 1985.

<u>GOCO Plant Statistics</u>	<u>FY 1985 Year</u>	<u>FY 1986 Year</u>
Union Negotiations	36	12
Strikes	0	1
Man-Days Lost	0	38,646

The branch also performed 801 salary administrative approvals, 662 Davis-Bacon determinations, and 300 submissions. Site visits accomplished during the year were to Hawthorne, Lake City, Lone Star, Mississippi, Newport, and Iowa AAPs and Pine Bluff Arsenal.

#### Administrative Services

The Administrative Services Branch was responsible for administration of various functions, such as serving as directorate liaison on all personnel actions, equal employment opportunity, training, expendable property, and non-expendable property and equipment management. It maintained the directorate library of publications, TDA, and security procedures; tracked and submitted all requirements under the performance management system; administered the suggestion and incentive awards programs; provided the directorate mail service; and processed and maintained directorate records on overtime and travel.

## Procurement and Production

The branch assumed the directorate's mail service responsibility in April 1986. In addition, the administration of the suggestion program was implemented in June. Automation of the many and varied administrative records began late in FY 1986, and continued as a streamlining priority.

### Contract Pricing Division

The mission of the Contract Pricing Division was to direct and manage the AMCCOM contract cost and price analysis program; to establish liaison between AMCCOM and the DCAA, the Defense Contract Administration Service, and other procuring agencies; and to develop policies, plans, and methods for contract pricing and financial analysis in support of AMCCOM procurement.

During FY 1986 the Pricing Branch completed 1,413 cases with a dollar value of \$3.23 billion. The average completion time was 21.7 days. The average value per case was \$2.29 million, with the largest at \$216,354,401.

In addition, 368 DCAA audits were received, with an average time to receipt for an audit of 64.6 days. The average days to receive an audit decreased from 80 days to 64.6 days in a two year period, a decrease of almost 20 percent. This was a major effort, and aided in reducing PALT.

The Technical Branch performed 31 cost estimates, 70 technical evaluations, and 8 miscellaneous actions.

One of the most significant actions within the division was the task to "digest" the new DOD profit policy. After countless hours of analyzing the new policy and attending meetings at AMC, a training plan was begun to present to the procurement community early in FY 1987.

In FY 1986, the division integrated into the Intel computer system, which greatly enhanced the division's computer capacity. In addition, the division received several Wyse 75 and Wyse 1100-II systems, which significantly improved productivity.

### PRODUCTION DIRECTORATE

#### Mission

The mission of the AMCCOM Production Directorate was to provide production policy and staff supervision for the command. It directed and controlled the planning and execution of the single manager for conventional ammunition (SMCA) production mission for assigned conventional ammunition, including the development and implementation of plans, policies, programs, and

procedures relating to AMCCOM and SMCA production management. The directorate also controlled and directed the management of procurement appropriation, army, funds assigned to the deputy for procurement and production, except for production base and secondary items, and directed fund cited programs. Finally, the directorate served as the program and inventory manager of the conventional ammunition working capital fund (CAWCF).<sup>17/</sup>

#### Organization

The Production Directorate was organized into six divisions and one office. The divisions were the Ammunition Production Management Division, the Weapons Production Management Division, the Industrial Programs and Value Engineering Division, the Programs Division, the Production Operations Division, and the Integrated Conventional Ammunition Procurement Plan (ICAPP) and Workloading Management Division. The office was the Coproduction Office.

The only organizational change in the directorate in FY 1986 was to combine the ICAPP Office and the Ammunition Production Engineering Workloading and Industrial Stocks Branch to form the ICAPP and Workloading Management Division.

#### Staffing and Personnel

Colonel Joel E. Gregory and Mr. E. M. Craighead remained in the positions of director and deputy director of the Production Directorate during FY 1986.

The authorized strength for the end of FY 1986 was 375, representing a decrease of 15 spaces lost to manpower reductions. Actual on-board strength at the end of the fiscal year was 369.

#### Director's Overview

Resource reduction continued to be a major factor in FY 1986. Designated vacancies were left unfilled during the course of the year, so the directorate was able to meet established strength targets by year-end. These cuts were absorbed by the support missions so the primary mission areas could function normally.

Travel restrictions proved severe. Controls were established early in the year to fund production surveillance and command group/higher headquarters directed travel. Even with these restrictions the directorate depleted its travel budget before the end of the fiscal year. Additional funds were provided by the deputy to complete the fiscal year.

## Procurement and Production

Production problem resolution conferences (PPRC) were reemphasized as a tool to obtain directorate level decisions to resolve critical or long standing production problems. The results of a PPRC were a set of assigned taskings to the participating directors, which were managed until cleared. The PPRCs were well supported and would continue as a necessary tool to clear the books of long standing production problems.

The directorate took over the management of the production aspects of the defense standard ammunition computer system (DSACS) from the Procurement and Production Policy and Management Directorate. This project received a large portion of directorate level attention as DSACS would influence all aspects of future production management. The directorate met all FY 1986 milestones.

Obligations for the command did well in all appropriations because of the Production Directorate's significant contribution. Production of munitions for all DOD services, including foreign military sales, involved over \$3.7 billion in program, with an obligation of \$3.0 billion or 81 percent. Procurement appropriation comprised a program of over \$2.8 billion, with an obligation of \$2.4 billion, which equated to 86 percent. In spite of the late receipt of program dollars and additional workload imposed by numerous budget "drills," the command achieved an obligation of 83 percent of program dollars at the end of FY 1986. The production managers and analysts were key to this achievement.

The command met or exceeded AMC-imposed goals in value engineering and contract delinquencies. Both successes were due to command-wide efforts under Production Directorate management. Spare parts cost estimating activities were responsible for estimated savings of \$3.25 million in lower acquisition costs. Direct sales management increased, reflecting increased industry/customer interest in dealing direct. The China project to modernize their fuze and detonator lines proceeded on schedule, with anticipated contract award in early FY 1987.

### Major Activities

#### Coproduction Office

The mission of the Coproduction Office was to direct, coordinate, and control a comprehensive AMCCOM coproduction activity which considered and evaluated all aspects of coproduction. It formulated AMCCOM policy regarding coproduction, licensed production, and release of technology, and directed export of AMCCOM and single manager for conventional ammunition (SMCA) items. The office prepared or directed the preparation of all documentation required to establish an AMCCOM or SMCA position

regarding proposed coproduction projects, or for implementation of approved projects. It managed progress of implemented projects to ensure that all activities regarding technology, program execution, and delivery were implemented in accordance with established agreements and procedures. The office directed appropriate action to correct potential or existing problems in any of the above; served as the Production Directorate principal for all actions in support of rationalization, standardization, and interoperability (RSI); and served as contracting officer for sales of government owned, procured, or manufactured material or services.

#### Direct Sales

The direct sales law enacted in FY 1983 provided for the sale of some US material to specified, qualified domestic producers. These statutes were expanded in FY 1984 to include the sale of material from Watervliet and Rock Island Arsenals to US concerns for use in development of new weapons or incorporation into material to be sold to friendly foreign countries. There were 34 contracts consummated under these statutes, totaling \$113.5 million. In addition, sales under 10 US Code (USC) 2208(h) resulted in 64 contracts. The majority of these actions provided noncommercially available propellants and explosives to Department of Defense contractors. Sales totaled \$2.5 million.

The workload associated with the direct sales program increased as familiarity with the new procedure grew, but no additional manpower resources were authorized when the direct sales mission was assigned to the Coproduction Office.

#### People's Republic of China

In April 1984 a DOD team visited Beijing, China, to discuss possible People's Republic of China (PRC)/US military technology cooperative efforts. This meeting led to an exchange of visits with representatives of each country visiting production facilities in the other's country. The visits resulted in the US submitting survey reports detailing the extent of facility modernization necessary for the PRC to produce certain US-designed ammunition items.

As a result of the survey reports, the PRC submitted seven letters of request (LOR) in June 1985 initiating the foreign military sales (FMS) process. The LORs requested four technical data packages (TDP), two facility design and establishment efforts, and a project office to administer the facility efforts. The FMS cases generated were approved by Congress and COCOM (a coordinating committee for multi-lateral technology and business under NATO) in October 1985, and the formal letters of offer and

## Procurement and Production

acceptance (LOA) were issued in November.

To support the PRC/US technology cooperative effort, known as the large caliber ammunition modernization program (LCAMP), a project office was established in June 1985. The office consisted of technical personnel and a project officer at the Production Base Modernization Activity and procurement and programming support personnel at Rock Island. Overall mission responsibility for LCAMP rested with the Coproduction Office.

On 10 June 1986 the PRC formally signed three LOAs: one for the four-person management office to be funded annually by the PRC, one for the establishment of a facility to manufacture the M577A1 and M739A1 fuzes, and one for the establishment of a facility to produce explosive elements for the fuzes. The US items to be manufactured were not new and were of stable design; there were established facilities in the US which manufactured these items.<sup>18/</sup>

In September 1986 the PRC formally signed two LOAs: one for the production TDP for the M577A1 fuze, and one for the production TDP for the M739A1 fuze. A total of five LOAs were signed of the original seven submitted by the PRC, the two remaining LOAs for TDPs were cancelled.

During July and August 1986 a pre-solicitation conference was held in China between the PRC, US government personnel, and US fuze and detonator contractor representatives. As a result of this conference, a RFP was issued on 30 September 1986 to US contractors. It was expected that contracts would be awarded by 31 January 1987, after review of bid proposals received from contractors, and US government technical evaluation.

Total program dollars were approximately \$30 million. It was planned that the program would be completed by 1990.

### Other Activities

Other activities of the office included intensive management of the 105mm tank ammunition program with Egypt; the M483 program with the Netherlands; the M110A2 program with Japan; and the M109A2 program with the Netherlands, Switzerland, Korea, and other countries.

The following is a listing of active coproduction/cooperative programs:

Production Directorate

<u>Country</u>	<u>Item</u>
Denmark	M109 modernization
Egypt	105mm tank ammunition
Egypt	105mm M833
Germany	Patriot weapon system (M248 warhead)
Germany/Italy/Norway	M109G to M109A3G conversion
Japan	M735 105mm APFSDS-T
Japan	M110A2 SP howitzer
Japan	M167A1 VADS/DIVAD/PIVAD
Japan	Patriot weapon system (M248 warhead)
Japan	Sidewinder AIM-9L
Japan	M188A1 propellant charge
Korea	M68 cannon (ROKIT program)
Korea	M109A2 SP howitzer
Netherlands (NATO)	M483A1 155mm ICM M577 fuze
Netherlands	M109A2/A3 SP howitzer
Pakistan	M549A1 155mm HE RAP
PRC	Ammunition production technology (M739A1/M577A1 fuzes)
Switzerland	M109A1B SP howitzer
Taiwan	M60 machine gun
Taiwan	Miscellaneous ammunition
Taiwan	M48A5 Adaptor kit for stabilization system
Thailand	Propellant production facility
US/Germany/United Kingdom/Italy/France	Multiple launch rocket system

The following is a list of potential coproduction/cooperative programs:

<u>Country</u>	<u>Item</u>
Germany	M109G to M109A3G conversion
Germany	M109A2 SP howitzer
Greece	M114A1 upgrade
Italy	M109G/M109A1B conversion
Japan	M650 8-inch HE RAP
Korea	FASCAMS (ADAM/RAAM)
Norway	M109G conversion
PRC	Ammunition production technology (M82 primer/M107 projectile)
Turkey	M114A1 upgrade

Major direct sales programs were as follows:

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<u>Country</u>	<u>Company</u>	<u>Item</u>
Belgium	General Defense	M483A1 round components
Belgium	BYM	M185 cannon/M174 gun mounts
Canada	BYM	M185 cannon/M174 gun mounts
Egypt	Chamberlain	M456A1 round components
Egypt/Turkey	General Defense	M735 round components
Egypt	BYM	M185 cannon/M174 gun mounts
Greece	BYM	M185 cannon/M174 gun mounts
Greece	BYM	M201 cannon
Israel	BYM	M185 cannon/M174 gun mounts
Korea	BYM	M185 cannon/M178 gun mounts
Singapore	BEI	MK4 rocket motor components
Denmark	AAI	M88 76mm cartridge cases

### Weapons Production Management Division

The mission of the Weapons Production Management Division was to direct, control, plan, establish policy for, and execute the AMCCOM production mission relating to production management of weapons, fire control, and assigned materiel; to direct and control the AMCCOM production program at Rock Island; to direct production and corrective actions required; and to provide information and exercise operating control over administrative functions. It maintained a working file of TDPs for all managed major items and design agency items for which AMCCOM was the procurement activity. The division participated in configuration management of all assigned items, provided the production and program input to configuration management documentation, and advised affected contracting and supply personnel of changes to the TDPs. It also maintained the AMCCOM central serial number register for weapons items.

### Artillery, Air Defense, and Workloading

Production review and production coordination review meetings were held during the year to keep communication lines open between the arsenals and their customers, especially in terms of the arsenals' production plans and the customers' anticipated future orders. Two production review meetings were held with Rock Island Arsenal (RIA), item managers, and production managers in attendance. Four production review meetings were held with Watervliet Arsenal (WVA), item managers, and production managers. Production coordination review (PCR) meetings with RIA, WVA, project managers for the M60 and M1 tanks, AMC, and AMCCOM personnel were held four times during the year. During the second PCR meeting, which was held at Aberdeen Proving Grounds (APG) to observe cannon/gun mount testing, it was decided to invite representatives from APG to all future meetings.

Workload resulting from direct sales of AMCCOM-owned supplies to DOD contractors reduced significantly from FY 1985. Meetings with Production Directorate elements, RIA, and WVA were held three times during the year, at which the arsenals were advised of potential workload resulting from the direct sales effort.

There were three funded orders for M109A2 howitzers for a total of 154 vehicles: two FMS orders totaling 106, and a direct sale order for 48. These vehicles were scheduled for delivery in 1987.

In FY 1986 orders were received for a quantity of 50 M198 howitzers for the marines. Also, late M198 orders were received for 126 for the national guard and 29 for the special defense acquisition fund. During FY 1986 a total of 230 weapons were produced and shipped. The above orders were scheduled for delivery in 1989 and 1990.

At the end of the fiscal year, a total of 1,398 M198 howitzers had been produced at RIA.

#### Small Arms, Aircraft Weapons, and Defensive Chemical Systems

A full range of production planning and management activities was performed for assigned items in four major commodity areas: weapons, defensive chemical items, tools and equipment, and training devices. End item production was planned and completed at GOGO and COCO plants for multiple customer orders. This included liaison with the services and follow-up production status reporting to keep the customers informed.

Staff actions included coordination with other AMCCOM staff offices to integrate those technical, procurement, financial, and administrative activities required to get individual hardware/end item orders produced and shipped to the customer. Some of the more significant staff actions involved coordination with engineering, product assurance, procurement, comptroller, international logistics, industrial readiness, and materiel management staff offices.

Principal production programs placed at government owned and operated installations were the M85 .50 caliber machine gun at RIA, and the M24 chemical and biological protective aircraft mask and the M25A1 protective combat vehicle mask at Pine Bluff Arsenal.

#### Weapon Production Engineering and Fire Control

## Procurement and Production

A multi-year contract for FY 1985-87 was awarded to Hughes Aircraft Company for the AN/VVG-2 laser rangefinder and the M21 ballistic computer system. Quantities awarded equaled 1,169 AN/VVG-2s and 1,284 M21s, for a total value of \$81.8 million. Optic Electronic Corporation was awarded a contract for 94 AN/VVG-2s and 86 test sets, for a total value of \$9.9 million.

The UCFT was transitioned to AMCCOM from the program manager for training devices on 1 October 1985. UCFT was a training simulator for M1 and M60 tanks and the M2/M3 Bradley fighting vehicle. Total value for all three systems in FY 1986 was \$91.7 million; unit cost was approximately \$1.3 million each. Total value for FY 1987 was \$30.5 million.

Combined FY 1984-86 requirements of 7,514 muzzle boresight devices were awarded on a non-developmental procurement during September, for a total of \$4.4 million.

The Weapon Production Engineering and Fire Control Branch also provided complete production planning management for government furnished fire control required to support the following major aircraft, artillery, and combat vehicle programs: the Cobra helicopter; the M109, M110, and M198 howitzers; the M1 Abrams tank; the M60A3 tank; the Bradley fighting vehicle system; and the fire support team vehicle.

### Production Surveillance

During FY 1986 the surveillance units of the Production Surveillance Branch reviewed 1,063 notices from the Procurement Directorate that it was requesting preaward surveys. The branch recommended that it participate in 20 percent of the proposed surveys, but only participated in 60 percent (126 preawards) of those recommended.

The surveillance units performed onsite surveillance at 222 commercial contractors' facilities, involving 193 separate contracts. They monitored 764 contracts and participated in special assignments to support the Vulcan strike force and the CRSA program, monitoring 63 contracts with 11 contractors.

The support unit provided written synopses, delivery schedules, commodity codes, or sources for 3,687 procurement packages from the P&P Directorate, and reviewed 3,157 procurement packages from the Procurement Directorate for cost/price analysis, drawing clarification, or additional sources. Significant achievements in support of competition resulted in a documented cost reduction of \$852,603.

The branch participated in weekly material item review meetings that addressed the stock status/material availability of its highest priority items. It provided technical support during these meetings, as well as accepting tasks that were technical/production related. The branch also met weekly with the procuring contracting officers to discuss mutual interests and problems.

Industrial Programs and Value Engineering Division

Defense Materials Systems

During the fiscal year, the Defense Materials Systems (DMS) Branch maintained a centralized TDP repository for the Production Directorate. An automated TDP listing (TDPL) was maintained for total data base visibility, and a check-in and check-out system was adopted for accountability. Approximately 8,500 TDPs were on file. Due to cuts in the TDA for FY 1987, maintenance of the technical data library and the associated computer listing of available TDPs on the PRIME could no longer be accomplished for the directorate.

The branch maintained the data base for bills of materials (BOM) information. New lines (10,743) were added to the data base for an approximate 50,000 line total. The branch also assisted defense contractors in the preparation of BOMs provided to AMCCOM through computer printouts.

Because of the cuts mentioned in the previous paragraph, BOMs could no longer be reviewed in depth for accuracy prior to input into the data base. BOMs would only be requested for new items when transitioned, and existing bills would be updated on a 5-year basis. These changes were expected to effect availability of more than one source for materials and would limit the material and subcontractor information often requested at the DA and DOD level.

A Wang terminal was received in the branch in June 1986. Twenty-eight different types of data were input into the computer, including disposition forms, letters, TDA, regulation changes, mission statements, memorandums for record, and briefings.

The branch assisted defense contractors who were experiencing various material, component, or equipment supplier difficulties in accomplishing their AMCCOM contract commitments in 44 different priority assistance cases. Continued decreases in trained priority assistance personnel would limit the number of cases that could be handled during an emergency.

Value Engineering (VE)

To eliminate the "random happening" VE effort which resulted in unpredictable VE savings and uncontrolled actions, a long range life cycle VE plan was started in FY 1986 using the systems engineering approach. The model plan emphasized VE in the RDTE and early production phases, where the maximum opportunity existed for reducing item costs.

The technical director, through the program support office, was to task the close combat and fire support armament centers to nominate systems for VE plan application. Initially, two systems would be selected, and it was expected that draft plans would be available for review at the end of the first quarter of FY 1987. To be successful, some funding would have to be taken from the RDTE appropriation to finance either in-house or contractor efforts in developing the VE plan for these items. Efforts continued to have AMC fund this program out of the VE studies line, which was unfunded by the Department of the Army.

The DP community VE review board, which was initiated in August 1986, was to continue. A total of five review boards were convened through the end of FY 1986. The purpose of the board was to assure all DP pertinent data was available at the level II cost control board (CCB), and to insure personnel of the community fully understood the VE action before the CCB met. It also established the DP community position on approving or disapproving the VE action, based on good business judgement. Additional emphasis was to be placed on having cost data, fund availability, and delivery schedules as accurate as possible prior to CCB deliberations. This was expected to expedite both approvals/disapprovals and settlements, which were running above the AMC goals.

The AMCCOM monitoring and tracking system was to be expanded to include all remote offices, centers, and arsenals on a realtime basis. It would also eliminate the preparation of numerous forms and reports previously sent back and forth between the headquarters and remote sites, as well as between AMCCOM and AMC. The system was tried, and it functioned. After all sites were brought on-line, the program would be expanded to eliminate dual data bases and "stubby pencil" operations. Once totally implemented, one man-year of manual effort would be directed to more productive work. It would require the addition of two more PRIME "smart" terminals in the VE Branch, and disk space on the PRIME computer.

In August 1986 a decision was made to utilize the 12 spaces dedicated to VE repair parts to a VE "assistance program," since little payoff was being realized on the repair parts effort.

Assistance was provided to those organizations having difficulty in executing a sound VE effort. As of 1 September 1986, the directorate had four personnel assigned to work with the Rock Island Arsenal and command organizations.

The program was so successful at Rock Island Arsenal that more than \$4 million was realized in less than six weeks. It appeared over \$10 million would be realized from the Transportation and Traffic Management Directorate in FY 1987 because of the assistance program. Comments received from participating offices were very favorable.19/

Six of the 12 spaces were cut to meet FY 1987 civilian employment estimate objectives. It was originally planned to reallocate four of these to ARDEC and two to CRDEC. In order for this program to remain in place, the planned decrement of six spaces in FY 1988 would have to be abandoned.

#### Production Readiness and Spare Parts

The inactive/nonstandard items cost estimating section streamlined its operation and increased manpower (1 to 3 employees) during FY 1986 to accommodate an increased workload of 500 percent (116 units in FY 1985 versus 697 units in FY 1986). A historical file and cataloging system was established, which provided quick and easy reference to required back-up relative to each and every cost estimate developed.

The surge option clause selection criteria was further simplified by reducing the number of options from two to one. If the production surge plan was not required, then the clause requiring a surge delivery schedule was automatically included in the solicitation/contract of the PADDs. A computerized surge tracking report system was being finalized whereby all open contracts could be tracked for proper surge clauses, delivery schedules, and surge plans. It would further highlight those contractors who were delinquent in forwarding delivery schedules and plans.

The AMCCOM integrated workloading (AIW) function included developing, publishing, disseminating, and maintaining a total five-year plan covering all identified firm and potential workload and program requirements within each of the army industrial fund (AIF) installations. The AIW report was used in the development of the AIF annual budget.

On 7 July 1986 the AMCCOM CG was briefed on the FY 1986-88 AIF workload situation. This AIF workload study was conducted by the branch and the Management Directorate in conjunction with functional elements of AMCCOM and the AIF installations. The

study was directed by the DCG as a result of the AIFs expressing concern for their ability to meet workload commitments due to imposed resource constraints. The objective of the study was to find an acceptable solution to this problem. A computer program was developed and implemented to set up files for printing the automated AIW report. This new process took approximately 45 minutes versus the 4 hours previously required to manually put the files on tape.

The branch developed a total of 1,242 market survey/technical manufacturing independent government estimates (IGE) during FY 1986, as value analysis of spare parts prices became entrenched as a way of doing business at AMCCOM. As a result of the IGE efforts, a total acquisition savings of \$3,237,919 was recorded by the 18-man staff during the year. Continued strong utilization of IGEs in the spare parts program and scheduled manpower cuts were expected, prompting investigation into computer aided estimating techniques. Improvement in operations was expected with the adoption of industrial computerized manufacturing estimating practices.

#### AMCCOM Value Engineering Program Manager

The FY 1986 VE savings goal of \$117.5 million was met with performance of \$118.5 million. Total FY 1986 VE savings reported to AMC was \$166.7 million. This included \$48.2 million from actions originally reported in FY 1985 and revalidated as dollars that were saved in FY 1986. In addition, AMCCOM reported cost avoidances of \$108.8 million, for a total performance of \$275.5 million. This exceeded by \$57.3 million the total of \$218.3 million achieved in FY 1985.

VE change proposal (VECP) evaluation times improved as AMCCOM moved toward the AMC objective of 60 days. Strong pressure from the VE community caused the RD&E centers to reexamine ways to reduce this time. One major initiative, which would result in reducing time by 20 days, was to hold teleconference CCBs. It appeared that the AMC objective of 60 days from receipt to contractor notification could be met, on the average.

VECP settlements improved, with settlements ahead of approvals. However, it still took too long to financially settle VECPs. Improvements could be made in the settlement process through agreed upon implementation dates with the contractor before VECP approval, established time frames for pricing and audit review, and better monitoring and setting of priorities.

During FY 1986 the US Army Industrial Base Engineering Activity moved to change the Logistics System Support Agency system to report VE program performance to AMC. The new system

was to become operational during FY 1987. In addition to providing data to AMC, it would also provide data to the DOD value engineering data information storage and retrieval system.

Production Operations Division

Contract Management Center

During FY 1986 AMCCOM saw an increase in stock availability and a decrease in contract delinquencies. There were several reasons for this. The Defense Logistics Agency contractor alert list was widely distributed throughout AMCCOM and its subordinates. Awards to contractors in the contractor improvement program (CIP) required approval at a higher level than the contracting officer. To assure proper consideration was given prior to an award to a problem contractor, all notices of AMCCOM board of awards received within the Production Directorate were routed through the contract management center (CMC), which determined if that contractor was identified as needing special attention. The appropriate production manager was so notified by the CMC. DCG approval was required to award a contract over a negative pre-award. Contracting officers were required to notify the appropriate contract administrative office in writing of the rationale for the award.

The AMC-directed contractors requiring special attention (CRSA) program was showing results. There was a steady decline in the number of contracts awarded to contractors in the program. In many cases, performance improved. The CMC also updated the commodity command standard system (CCSS) for the five regions for which it had access to the DCAS data base. This significantly helped in reducing the number of contracts which were reflected as delinquent.

Additionally, in conjunction with the AMCCOM systems office, the CMC developed an extensive computer program which would allow the office to provide each PCO and item/production manager extensive advanced information concerning contracts coming due. This enhanced its ability to intensively manage those items having a potential of becoming delinquent.

The above activities, combined with many other tasks, allowed AMCCOM to realize an end of FY 1986 delivery effectiveness of 94.7 percent, which surpassed all AMC major subordinate commands in reaching the AMC imposed goal of 100 percent on-time deliveries.

Operations Support

The Operations Support Branch served as the principal point of contact for all directorate administrative functions. This included monitoring the TDA, providing changes to AMCCOM regulation 10-1, submitting requirements to the internal operating budget, monitoring the supply budget, managing an overtime budget of \$335,400 and a travel budget of \$247,600, and monitoring the incentive award program.

During FY 1986, 67 suggestions were submitted and 10 were adopted, resulting in a savings of \$491,900. 559 directorate employees attended 585 training classes. 437 requests for personnel action were processed. The branch also acted as the directorate point of contact for all audits, and for the internal control program.

#### Ammunition Production Management Division

The Ammunition Production Management Division was charged with a mission to direct, control, establish, and implement policy and plans, and to execute the AMCCOM and SMCA production mission relating to production management of propellants, explosives, pyrotechnics, small arms, bombs, missiles, mortars, selected and naval ammunition artillery ammunition, fuzes, tank recoilless rifle and other ammunition. The division consisted of four commodity branches. During FY 1986 the Ammunition Production Workloading and Industrial Stocks Branch was assigned to the ICAPP and Workloading Management Division.

The Ammunition Production Management Division made a major contribution to the command's mission of equipping the US Army, Navy, Marine Corps, and Air Force with munitions. The production management of munitions for all DOD services, including FMS, involved over \$3.4 billion worth of new production programs in FY 1986.

#### Mine Clearing Line Charge

Milan AAP and Louisiana AAP were in full-scale production on the mine clearing line charge. Milan was producing on a 3/8/5 shift basis to accelerate FY 1983-85 US Marine Corps requirements. Louisiana was producing on a 2/8/5 shift basis to complete FY 1985 requirements within the funded delivery period.

#### Applique Armor for M60A3 Tank

After eight months delay in approving J&A for Milan AAP, a contract was awarded on 12 September 1986. This contract involved 128,000 applique armor tiles worth \$14 million. Milan AAP was scheduled to begin production during the third quarter of FY 1987.

Radford AAP

Nitroglycerin (NG) production resumed on a limited basis during 1986. Production of double and triple base propellants was still affected, but, with careful inventory control and production scheduling, there was no impact on any LAP plant.

Production of M31A1E1 stick propellant began in July 1986. Adoption of an interim alternate process increased Radford's capacity from 75,000 pounds per month to 300,000.

Nitroguanidine

Full-scale production of nitroguanidine started at Sunflower AAP early in 1985. Though many problems were experienced in early production, the new continuous process explosive production continued at a slow rate. Middle to late 1986 production leveled off at approximately 666,666 pounds per month.

Holston AAP

Holston AAP was scheduled to produce 33 million pounds of explosives in 1985. This was an increase of 40 percent over previous years. Holston met the schedule with no significant problems, and at a lower unit cost. The 1986 cost proposal was for 32 million pounds. The planned schedule for 1987 was 30 million pounds.

M856 5.56mm Tracer Ammunition

M856 tracer cartridge production began in March 1986 at Lake City AAP. An aggressive ramp-up was initiated, and as of 31 October 1986, 34,537,000 tracer cartridges were produced and delivered. This aggressive production schedule eliminated the backlog of the FY 1983-85 programs. The large deliveries also enabled the continued fielding of the new squad automatic weapons system (SAWS).

M118 7.62mm Special Ball Ammunition

The M118 special ball cartridge was out of production for over one year at Lake City due to nonavailability of an acceptable propellant (IMR 4895). A tremendous amount of effort in developing an alternate propellant took place at Lake City. The propellant (WC846) was approved, and production of the M118 began in September 1986. The production and delivery of approximately 1 million rounds in September avoided a negative impact to the new sniper rifle program. 20/

Lake City AAP Competition

Lake City AAP was the first GOCO plant competed in quite some time. The cost plus award fee (CPAF) contract was initiated, and a marked efficiency increase in timely deliveries, quality, and cost was noted by the commodity branch. Delivery performance was rated at approximately 96 percent efficiency. Cost was reduced in most cases by approximately 12 percent.

M456A2 105mm Cartridge

Based on the failure of the XM815 development program, DA established an FY 1985 buy for the M456A2. The FY 1985 program rounds introduced the new "double-angled" cone proven to improve penetration capabilities, and were packed in containers designed by the PM for ammunition logistics. At the completion of the FY 1984 buy, Milan AAP had 375,419 cartridges accepted.

M549A1 155mm Projectile

Early rocket motor ignition was a significant problem area, and production was stopped at Iowa AAP from January 1985 through December 1985. After an intensive investigation it was determined that improperly pressed delay assembly composition was the cause of the problem.<sup>21/</sup>

As a result of rehabilitation and modification of the consolidating presses at Lone Star AAP, and the addition of microprocessors to independently monitor and control its operations, the problem of early rocket motor ignition appeared to be corrected. Production was resumed at Iowa AAP in January 1986. The total LAP quantity was 95,720 and total acceptance was 75,754.

M650 8-inch Projectile

The M650, like the M549A1, experienced the early rocket motor ignition problem, and production was stopped from July through December 1985. Improperly pressed delay assembly composition was also determined to be one of the causes of early ignition. Along with the rehabilitation and modification of the consolidating presses at Lone Star, Iowa AAP developed a new x-ray technique and standard to screen all in-house delay assemblies and reject those with various anomalies.

Production was resumed at Iowa AAP in January 1986. The total LAP quantity was 31,439 and total acceptance was 30,375.

M577A1 Fuze

Initial production of the M577A1 fuze, started in FY 1984, was completed on time in accordance with Hamilton Technical Incorporated's contract, which called for an average production of 52,000 per month for a total of 621,027. A VECP savings of \$11.72 was realized on each A1 configuration fuze produced. The FY 1985 program, despite difficulties in late start and late receipt of funds, was 90 percent complete as of October 1986.

A Bulova contract for 773,390 fuzes was completed in October 1986, and a late-receipt Bulova contract for 879,526 fuzes was to be completed in December--three months past FDP due to ballistics failures later resolved. The FY 1986 program was awarded in March 1986 on a split to Hamilton (704,842) and Bulova (513,364) for a total of 1,218,206. It was planned on a 12-month schedule for Bulova and a 15-month schedule for Hamilton, due to option increases.

The FY 1987 program was to be awarded in December 1986 on a split, mandated by Congress in the FY 1987 budget, to sustain Hamilton and Bulova as mobilization producers. Additional funds were authorized in order to run both producers at an economical 1/8/5 rate for the FY 1987 production period.

M732 Proximity Fuze

Contracts were issued for the power supply and metal parts on 25 September 1985 for completion of the FY 1983 buy of the M732 proximity fuze. LAP started in August 1986. First acceptance was in October.

Programs Division

Conventional Ammunition Working Capital Fund

Program dollars available for CAWCF were \$3,760,000,000. Total net obligations of \$3,006,000,000 were reported against a forecast of \$3,467,000,000, an obligation rate of 87 percent against the forecast.

Procurement Appropriation (PA)

The total PA program released to AMCCOM program managers was \$2,801,000,000. The PA obligation status for FY 1986 (in millions of dollars) was as follows:

	AMC Goal	Obligations	Percent
Direct Army	\$2,400	\$2,154	90
Reimbursable	288	216	75
Total	\$2,688	\$2,369	88

ICAPP and Workloading Management Division

Major Policy and Administrative Decisions

Briefings were presented on workload to significant army levels, and workload was established as a dominant factor in budget and industrial base project planning. It was determined that the workload goal should be 90 percent of the personnel level during January 1986. When that goal could not be achieved, a smooth "glide path" was established. To this end, semiannual scheduling was established in order to allow the plants more flexibility in managing their schedules for economies in production and leveling personnel. Also, 10-year planning (including 5 years beyond the program objective memorandum (POM)) was established, and several iterations were accomplished.

During FY 1986 the ammunition base, excluding the AIFs and Hawthorne AAP because of no production work, fluctuated by only 1 percent of the total plant population. In addition, an AIF staffing study determined that all work, including production supply depot operations and demilitarization, could be accomplished within the civilian employee estimate and annual financial targets. Ten year planning allowed the POM period to be adjusted in some cases to smooth workload for the majority of the active ammunition base.

With the implementation of the semiannual schedules, 10-year planning, and numerous iterations in the POM, closer coordination was improved between the Production Base Modernization Activity and the Industrial Readiness, Production, and Defense Ammunition Directorates to meet the leveling goal for current and future years. For the first time, complete coordination and planning was accomplished to maintain the active ammunition base with a level workload.

Adoption of Modern Industrial Practices

Early in the year, it was recognized that the lack of automation was an extreme detriment to accurate, quick responses to the numerous planning iterations for the budget and 10-year plan. Although all requirements were met, numerous hours were expended in a manual effort.

Automation to some extent was accomplished with the plant job scheduling model (JSM) under the responsibility of the Readiness Directorate. A task force, including a member from the division, worked with the responsible office to use the program as it was and recommend changes for future use.

Automation of the entire system was being accomplished with JSM and the DSACS. Personnel from the division spent numerous hours with contractors for the workload portion of DSACS. On a lesser level, workload determined that although these systems would include workload automation, due to the time estimated for complete implementation, a minimal automated system was necessary to meet current demands. An individual was assigned to develop a program to automatically calculate personnel at the plants.

ICAPP Office

A division was established on 24 February 1986 to oversee the Integrated Conventional Ammunition Procurement Plan Office and the Ammunition Workloading and Industrial Stocks Branch; this change moved the management of the ICAPP Office from the purview of the deputy to the Production Directorate.

Milestones coordinated with the directorate and the executive director for conventional ammunition were met, and three formal iterations of the ICAPP published. The quad-service review of the ICAPP was held in July 1986 and recommendations from the review were incorporated into the iteration submitted to the Office of the Secretary of Defense on 1 October 1986.

The ICAPP data base was expanded to accommodate service requirements from 1983-1999 and to provide for the publication of the ten year plan, 1988-99. The development of the expanded data base for the ten-year plan permitted purview of requirements for items transitioning to the SMCA in 1993-1999.

NOTES

1/This section is derived from the annual historical submission of the deputy for procurement and production and the Procurement and Production Policy and Management Directorate, Mr. David Herington, Director, 2 Jan 87.

2/Ibid.

3/HQ, AMCCOM, Record of Weekly Staff Meeting, 9 May 86, p. 52.

4/Ibid., 7 Jan 86, p. 45.

5/This section is based on the annual historical submission of the Procurement and Production Directorate (Dover), Colonel David L. Dunham, Director, 28 Jan 87.

6/AMCCOM Regulation 10-1, Mission and Major Functions of the Headquarters, AMCCOM, 1 Apr 86, p. 58-1.

7/HQ, AMCCOM, unofficial staff directory chart, 1 Dec 86; FONECON, author with Ms. Gigi Acri, Procurement and Production Policy and Management Directorate, 20 May 86.

8/AMCCOM Regulation 10-1, p. 59-2.

9/This section is based on the annual historical submission of the Procurement Directorate (Edgewood), Mr. A. J. Lacombe, Acting Director, electronically transferred 30 Jan 87.

10/AMCCOM staff directory chart; FONECON, author with Acri.

11/This section is based on the annual historical submission of the AMCCOM Procurement Directorate (Rock Island), Colonel Carl N. Price, Director, 30 Jan 87.

12/Staff meeting, 13 May 86, p. 40.

13/Ibid., 1 Oct 85, p. 37.

14/Ibid., 4 Mar 86, p. 40.

15/Ibid., 4 Feb 86, p. 38.

16/Ibid., 23 Sep 86, p. 35.

17/This section is based on the annual historical submission of the Production Directorate, Mr. E. M. Craighead, Deputy Director, 22 Dec 86.

18/Staff meeting, 17 Jun 86, p. 40.

19/Ibid., 2 Sep 86, p. 40.

20/Ibid., 2 Sep 86, p. 39.

21/Ibid., 15 Apr 86, p. 40.

## CHAPTER IV

### PRODUCT ASSURANCE

#### Mission

The mission of the Product Assurance Directorate was to manage life cycle product assurance functions; to act as staff advisor to the commanding general on all AMCCOM product assurance matters; and to provide the command's product assurance interface with other commands, higher headquarters, and other government and non-government activities. It established policy and procedures, and planned, developed, staff supervised, and directed life cycle product assurance programs for all AMCCOM managed materiel and worldwide assets. The directorate performed research and developed technology and methodology to improve the effectiveness of product assurance for AMCCOM mission materiel. It provided product assurance engineering and technical support in the areas of system safety, reliability, availability, maintainability, inspectability, testability, quality engineering, acquisition quality assurance, product quality management, software quality assurance, calibration, metrology, and materiel release. Finally, it managed the independent assessment program for AMCCOM materiel.<sup>1/</sup>

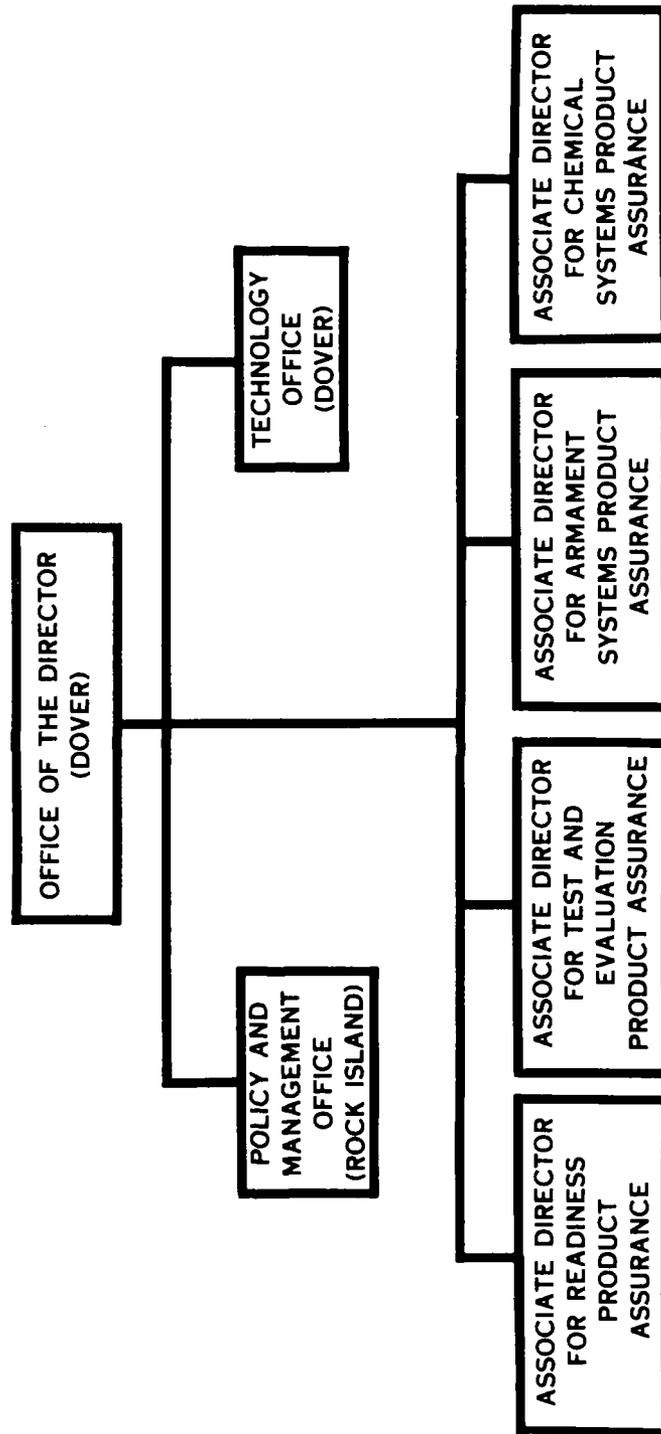
#### Organization

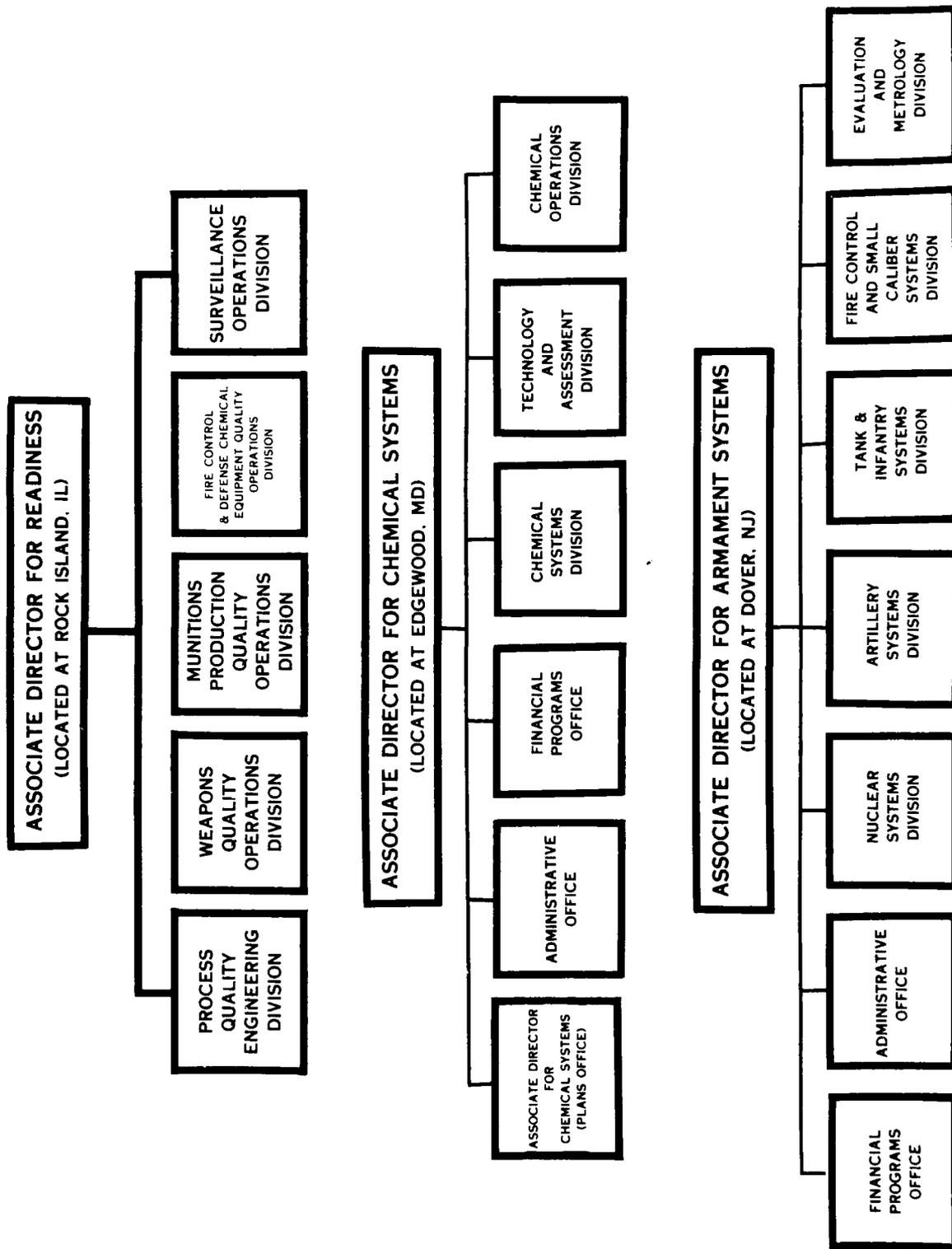
The Product Assurance Directorate was organized with four associate directors reporting to the director: the associate director for armament systems product assurance, located at Dover; the associate director for chemical systems product assurance, located at Edgewood; the associate director for readiness product assurance, located at Rock Island; and the associate director for test and evaluation, located at Dover, which was established on 4 August 1986. In addition, the Policy and Management Office, located at Rock Island, and the Technology Office, located at Dover, reported directly to the director. The organization of the directorate is shown on the charts on the following pages.

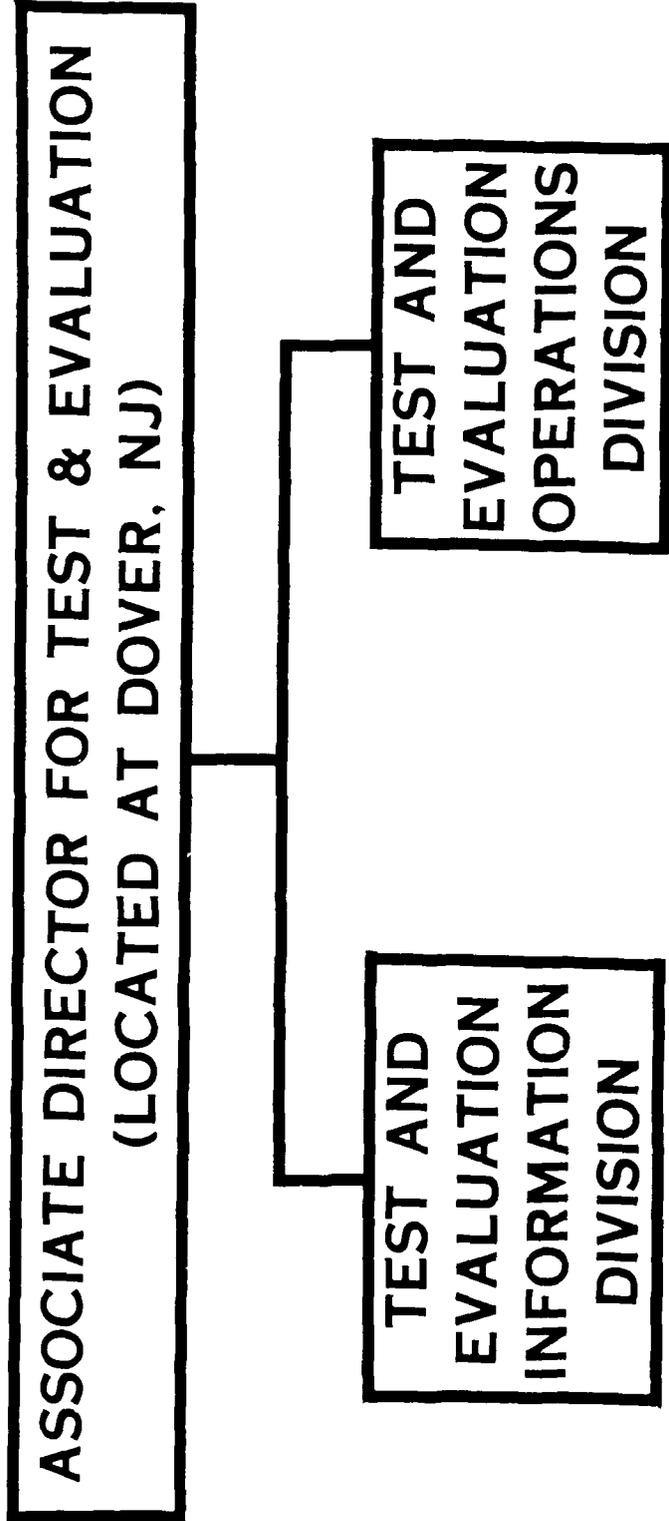
The Process Quality Engineering Division was established on 1 October 1986 as a result of combining the Large and Small Caliber Engineering Divisions. The combining of these divisions was to enhance continuity of control and guidance relevant to planning, controlling, and executing quality engineering functions.

In consonance with organizational restructuring at ARDEC, telemetry and electro-mechanical fabrication, comprising 49 personnel, were transferred to ARDEC's Armament Engineering Directorate.

# PRODUCT ASSURANCE DIRECTORATE







Mission responsibility for the AMCCOM Corrosion Prevention Control Office was assumed within the Technology Office of the directorate, which became responsible for the coordination of planning and monitoring of the AMCCOM corrosion prevention program.

Severe personnel reductions engendered by the directed "glide path" resulted in transfer, modification, and elimination of mission functions encompassing product quality management, nuclear stockpile reliability, and acceptance inspection equipment approvals. Use of task order contracting substantially increased along with other productivity enhancing efforts to maintain the level of support.

The office of the associate director for test and evaluation (T&E) became operational on 4 August 1986. The mission of the associate director was to provide staff supervision and management of the command test and evaluation mission; to act as staff advisor to the commanding general and the director of product assurance on all T&E matters; to represent the command for all T&E issues; to establish, interpret, and implement command T&E policy; to act as command arbitrator in resolving T&E issues; to assure AMCCOM centers' performance in support of testing and continuous evaluation; to manage an AMCCOM T&E information center; and to manage the command materiel release program.

The associate director's office had two divisions. The Test and Evaluation Operations Division had the mission to provide test and evaluation engineering support for ARDEC and local project managers, and proving ground support for all AMCCOM elements. The Test and Evaluation Management Division had the mission to manage the command T&E mission, to provide staff support for the AMCCOM T&E manager in the areas of policy and requirements from higher headquarters, and to develop, implement, maintain, and utilize a test and evaluation data base for AMCCOM.

#### Staffing and Personnel

Mr. Hugh F. Lazar served as director of product assurance, and Mr. Lester Griffin served as deputy director during FY 1986. Civilian personnel strengths were as follows:

	<u>Beginning FY 1986</u>		<u>End FY 1986</u>	
	<u>Auth</u>	<u>Act</u>	<u>Auth</u>	<u>Act</u>
Rock Island	338	341	319	327
Dover	505	499	474	474
Edgewood	137	128	129	127
Total	980	968	922	928

## Product Assurance

In addition, one military was authorized and assigned to the Dover element.

### Director's Overview

Significant product assurance efforts continued throughout the year in support of major ARDEC, project-managed, and AMCCOM matrix-managed armament systems. Four 120mm tank ammunition rounds were approved for materiel release to support M1A1 fielding. New materiel releases were also approved for the ground emplaced mine scattering system (GEMSS), the mortar ballistic computer, and four small caliber ammunition plastic training rounds.

Reliability, availability, maintainability (RAM), and quality engineering developmental efforts were concluded in support of type classification actions of the M119 lightweight howitzer, the XM139 multiple delivery mine system (Volcano), the modular pack mine system (MOPMS), and the improved 81mm mortar system. Major efforts on transition to production continued. Participation in nondevelopmental item (NDI) materiel acquisitions increased significantly on systems such as the 120mm mortar, the M119 light howitzer, the M9 bayonet, and the sniper rifle. Upfront RAM and quality engineering activities supported the ARDEC research and technology thrust of smart munitions, insensitive explosives, and robotics, and measurements and qualification of auto gages at Mississippi Army Ammunition Plant.

Major General O. Decker (retired) conducted an independent assessment of AMCCOM T&E and its functioning as a part of an AMC assessment of the implementation of AMC's T&E initiatives. MG Decker was very supportive of the efforts of AMCCOM T&E. AMCCOM T&E continued to take an active part in ad hoc working groups to implement AMC T&E policies in regulations, specifically, the working group rewriting DA pamphlet 70-21, Test and Evaluation Master Plan, and the working group drafting a handbook for continuous evaluation of both major and non-major systems. AMCCOM T&E was also actively involved in the AMC test and evaluation data base working group.

FY 1986 witnessed several major program contributions by the Chemical Systems Division to chemical item development and engineering.

A significant productivity increase was experienced by the adoption of teleconferencing between the Rock Island and Edgewood sites. This drastically reduced processing time for technical data package (TDP) revisions and waivers, improved technical inputs, and permitted a direct exchange of technical views between the two sites.

Valuable support was provided in all phases of the accelerated M43 chemical-biological aircraft mask development program. Efforts resulted in the training release of prototype units to allow AH-64 unit readiness training. A further conditional release for first unit equipped (FUE) masks was jointly prepared by the directorate and the Aviation Systems Command (AVSCOM).

A major role was played in the acquisition process to add a new chemical agent monitor (CAM) to the US inventory. Developed in the United Kingdom and evaluated as an international materiel evaluation item, the CAM was accepted as a nondevelopmental item for limited production by the US Army. Award of the limited production contract to the UK contractor, Graseby Dynamics, Ltd, resulted in many unique problems which had to be coped with, an extensive level of effort, and a high level of quality assurance and engineering expertise.

An automatic liquid agent detector (ALAD) was the expected end result of an ambitious joint army-air force development program. Directorate quality engineers made major contributions to the RAM and test requirements portions of the performance specification, and to the quality assurance portions of the production scope of work. Life cycle management of the item was expected to be transitioned completely to the army during the production phase.

All product assurance personnel at the Edgewood site were in proximity to a terminal capable of communicating with elements on the Defense Data Network. Two additional minicomputers were also procured: one dedicated to a computer aided design and manufacturing system, and one for a file storage and redundancy system.

Due to manpower and storage space constraints, the Depot Systems Command (DESCOM) became unable to meet its original commitment to the chemical materiel stockpile reliability program. A compromise agreement was reached between DESCOM and AMCCOM at the general officer level. Groundwork for the retail surveillance program continued to be laid with increased efforts to establish contacts with user field units.

Additional developments occurred which resulted in the establishment of policy and direction for the AMCCOM environmental stress screening (ESS) program. One was the publication of AMC regulation 702-25, Product Assurance AMC Environmental Stress Screening Program. AMCCOM completed and received approval of an ESS plan for implementation of the AMC regulation. The plan included initiatives and training, and established points of contact at GOCO/GOGO facilities and a command-wide reporting

## Product Assurance

system. AMCCOM initiated several ESS studies and value engineering proposals (VEPs) resulting in cost savings or avoidances totaling \$1.0926 billion.

The Product Assurance Directorate (Edgewood site) was designated administrator of the chemical agent standard analytical reference materials program. This program coordinated the synthesis, purification, analyses, aggravated storage, surveillance, and distribution of agents of certified high purity to be used as reference standards for all projects under the auspices of the participating organizations.

An improved x-ray fluorescence (XRF) technique for determining the quality of silver in impregnated, activated charcoal was demonstrated. This improved procedure utilized a new micro-processor multichannel analyzer with a radioisotope source. The XRF technique was rapid, accurate, and reproducible, and reduced test time by over 80 percent while generating no hazardous waste residues.

The inclusion of MIL-Q-9858A requirements in contracts through contract modification or rewrite increased during the year. This was attributable to an intensified implementation effort on the directorate's part, as well as increased contractor acceptance of the program and the benefits derived from a quality program.

The Process Quality Engineering Division was designated as primary lead office for statistical process control (SPC) implementation. A 40-hour course of instruction was developed, and the Army Management Engineering Activity (AMETA) presented the first class on 24 March 1986.

On 7 August 1986, General Thompson sent a teletype to the MSCs directing the establishment of a customer feedback center (CFC). The CFC was to serve as the single focal point for receiving, processing, and analyzing quality deficiency reports (QDR), equipment improvement recommendations, reports of discrepancy, and warranty claims. Product assurance was to serve as the AMCCOM focal point.

### Major Activities

#### Policy and Management Office

The Policy and Management Office was responsible for directorate-wide policy and resource management.

Quality Systems Reviews

The directorate performed the army in-plant quality assurance program, and by mid-year the on-site reviews resulted in a change from official quality systems reviews (QSR) to quality system assistance visits. These visits were to assist contractors in the implementation of MIL-Q-9858A, Quality Program Requirements. A total of 11 QSRs were performed at the GOCO/GOGO manufacturing facilities during FY 1986.

The implementation of MIL-Q-9858A continued with the requirement either introduced through contract modification or contract rewrite. As of August 1986, all GOCO contracts except Hawthorne AAP included clauses requiring MIL-Q-9858A.

AMCCOM Unissuable Materiel Visibility Program

During FY 1986 the directorate maintained the 50 percent reduction in the dollar value of unissuable stocks that was attained in FY 1985. As a result of an AMC subject matter assessment, the Product Assurance Directorate was to transfer management responsibility for the unissuable materiel visibility program to the Materiel Management Directorate.

Third-Party Contracting

The office received 113 requests for third-party contracting from the GOCO AAP contractors. There were no significant problems encountered as a result of the additional contracting officer's representative (COR) quality assurance workload. A potential for inadequate quality assurance coverage existed if third-party contracting continued its growth rate.

Quality Assurance Manpower at GOCO AAPs

Six GOCO AAPs experienced difficulties in maintaining the GS-1910, quality assurance specialist, grades under the existing classification standard. The Product Assurance Directorate developed GS-1910 job descriptions that accurately reflected and supported the desired grades.

Army In-Plant Quality Assurance Program Conferences

The Product Assurance Directorate hosted a quality assurance workshop/conference on 15-21 September 1986 for GOCO AAP COR quality assurance managers. Both formal and informal discussions were conducted with the implementation of MIL-Q-9858A as the major topic. Directorate personnel conducted workshops on topics that were pre-selected by the quality assurance managers.

## Product Assurance

### Warranty Program

AMCCOM completed two cycles of a draft supplement which described the responsibilities of each organization within the command for the successful implementation and conduct of the AMCCOM warranty program.

An AMCCOM memorandum was written providing guidance on warranty data collection by the command. Training for procurement specialists was conducted in July 1986 at Rock Island, and in September 1986 at Dover and Edgewood. A total of 219 procurement personnel at all three sites participated.

### Radioactive Program

Plans were developed to accomplish radioactive surveillance inspections (swipe testing) by on-site representatives, such as radiation protection officers and logistics assistance representatives (LAR), at installations with equipment to be tested for radioactivity. The on-site representative was to gather the samples (swipes) and mail them to Rock Island for laboratory analysis. Permission was received from the Field Services Activity (FSA) to use LARs to assist in this training.

### Contract History System

The contract history system continued to grow and evolve to meet management needs. Significant events included the development and teaching of a two-hour introductory course, the creation of a steering committee, and the migration of the system to the defense standard ammunition computer system (DSACS).

### Integrated Procurement System

The technical community working group met twice, on 4-8 August 1986 and 3-7 November 1986, to complete its functional requirements for inclusion to the integrated procurement system (IPS) functional description. AMCCOM provided a presentation on the technical data module of the DSACS. It was determined that the development contract for DSACS could be modified to incorporate IPS additional requirements.

### Ammunition Lot Reporting and Malfunction (ALRAM) Program

The ALRAM computer program was developed and tested to allow ammunition data cards to be created on a personal computer by an AAP, and then transmitted to AMCCOM in a computer-readable format. Milan and Lake City AAPs were given a demonstration of the system, and both agreed to give the system a trial.

Micrographics of Ammunition Data Cards

The directorate received written approval from the Adjutant General to place ammunition data cards on microfiche. It prepared a plan of operation for a micrographics project that included filming and indexing. Camera and processing equipment were received and installed.

Resource Management

The Policy and Management Office updated the directorate's FY 1987-88 table of distribution and allowances (TDA) to reflect authorized strength changes resulting from a 10 percent manpower decrement assessed all command elements. The revised TDA also reflected the establishment of the associate director for test and evaluation.

The office also installed various automated procedures for resource tracing, including the directorate travel program, the status of open procurement request order number (PRON) reports, workload data submitted in program analysis resource review packages, and directorate hiring plans and tracking systems.

Technology Office

The Technology Office was responsible for promulgating the leading-edge technologies in the quality assurance engineering and assessment disciplines. It performed this in product assurance engineering policies; inspection technology; software quality assurance, mathematical/statistical analysis; and automation of quality information systems.

Software Quality Assurance

The software quality assurance group was selected as the AMC center of excellence. The group was extremely active in transferring its knowledge and expertise to other MSCs.

Computer Integrated Engineering

Computer integrated engineering (CIE) became a new thrust area for the office. Through several subgroup chairmanships in ARDEC, CIE committees, and army representation on the joint logistics commanders' RAMCAD (reliability, availability, maintainability computer aided design) working group, the Technology Office became very active in this area. A joint effort with the air force was initiated on RAMCAD which would put AMCCOM in the forefront of army involvement.

## Product Assurance

### Statistical Process Control

Statistical process control (SPC) became a contractual requirement on many ammunition buys. The Technology Office led the effort to define the methodology needed to evaluate the SPC programs and continued work to assess the potential of using SPC as an acceptance criteria for ammunition.

### Magnetic Flux Leakage Testing Technology

This emerging technology was implemented on automated inspection systems for ammunition. A particular accomplishment involved the delivery to Milan Army Ammunition Plant of a machine for screening loaded M384 40mm projectiles which were suspected to contain cracked bases. This type of inspection was impossible without magnetic flux leakage.

Similar testing of M42/M46 grenade metal parts was completed at Riverbank Army Ammunition Plant. This technique was considered a viable alternative to ultrasonics for use in detecting cracks.

### Depot Modernization

In support of the Production Base Modernization Activity, the Technology Office visited several army depots to provide advice in modernizing the quality assurance function at each site. Response at Corpus Christi Army Depot was extremely positive.

### Automated Soldering Technology

In conjunction with a Harry Diamond Laboratory manufacturing methods and technology (MMT) project, a program was undertaken to compare visual soldering inspection with x-ray and infrared automated inspection technology. This effort, which relied heavily on industry participation and information sharing, was briefed at AMC headquarters and at Department of the Army levels. Value engineering channels were to be used to implement these new technologies on electronic systems.2/

### Weapons Quality Operations Division

The Weapons Quality Operations Division planned, scheduled, and implemented worldwide product quality assurance and liaison operations in all logistics phases for command assigned major and secondary items. This involved providing services prior to and during procurement and production actions, and quality assurance technical assistance and support to contractors, US and foreign military equipment transactions, and other government activities. Several activities normally performed in support of the division's mission were discontinued or reduced due to a ten percent manpower

reduction. Examples of these activities included up-front quality planning reviews with the Defense Contract Administration Service (DCAS), handoffs, pre-award surveys, QSRs, training, and should cost teams.

#### Air Defense

The air defense weapons system function was transferred from the Small Caliber Systems Branch to the Mortars, Recoilless Rifles, and T&E Branch in July 1986. This action involved the transfer of two personnel to support these weapon system programs. It was anticipated that additional personnel would be needed to support fielding of the product improved Vulcan air defense system (PIVADS) in FY 1987.

#### Division Guidance

Division guidance was developed by the Mortars, Recoilless Rifles, and T&E Branch and distributed to all product quality managers (PQM) on such subjects as processing depot generated requests for deviation/waiver (RFD/W), QDR resolution actions, functional manager interface, first article test (FAT) report evaluations, TDP reviews, processing of co-location PRONs, and estimating costs of government FATs. Also the division standard operating procedure on quality assurance letters of instruction was revised and published. The new and revised guidance assured that all PQMs in each branch performed these functions the same way in support of AMCCOM mission.

#### Product Quality Analysis and Liaison Operation Visits

During FY 1986 the division accomplished 30 product quality analysis and liaison operation visits to contractor plants, depots, arsenals, and field users in support of AMCCOM mission items. This travel consisted of 15 first article tests, 4 post awards, 7 prevention, 1 pre-award, 2 initial production tests (IPT), and 1 deprocessing visits.

#### Combat Vehicles

During FY 1986 the Product Assurance Directorate's efforts to reduce the amount of resources expended in deprocessing/hand-off support resulted in agreements with the various program managers.

Production of the M1 tank was completed, as was the production of the product improved M1 (IPM1), although IPM1 hand-offs to first time customers were supported with one AMCCOM representative covering both turret and fire control functions. This was to continue into the second quarter of FY 1987 for new customers of the vehicle. First deliveries of M1A1 vehicles were

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also supported by a single representative, and would continue until receiving units were adequately trained and vehicle quality was assured. After these milestones were reached, support was to be on a sampling basis.

Hand-off support to the Bradley fighting vehicle was reduced to a sampling basis until the A1 versions began to be fielded. These would again be supported, but only until training and vehicle quality was assured, then on a sampling basis.

The M60A3 tank thermal sight (TTS) was supported, on a sampling basis only, by one AMCCOM representative who was responsible for both turret and fire control functions.

Support to light armored vehicle (LAV)-25 hand-off activities continued due to a specific request from the marine corps program manager (PM), who advised that only 58 vehicles remained to be handed-off and that production would then be on the tube-launched, optically-tracked, wire-guided (TOW) derivative vehicle. The division agreed to participate in hand-off of the last LAV-25s, but recommended the PM contact MICOM for support for the TOW vehicle.

### Chemical Agent Resistant Coating Paint

The division requested use of single component CARC paint to comply with Pennsylvania requirements, and was authorized to use it for one year. On 13 June it was determined that Letterkenny Army Depot had not qualified its procedure, so acceptance was stopped. On 18 July acceptance was resumed, subject to further tests. A draft procedure was under review by AMCCOM.

### Howitzers

The IPT started 4 April 1986 on M109A2 howitzers S/N6569 and S/N6570. As of 30 September 1986, 99 test incident reports (TIR) had been generated on these howitzers, the majority of which were minor or informational in nature. Investigation of the TIRs was ongoing. Completion of testing and resolution of TIRs was forecast for October or November 1986.

The problems with Bowen-McLaughlin-York's (BMY) weld procedures on M109s were subject to extensive review, resulting in BMY agreeing to accept a contract modification incorporating more stringent weld inspection procedures.

During the first quarter, the XM119 howitzer was classified code A making it the M119 howitzer. The division participated in meetings at Dover and at the Royal Ordnance Factory, London, to support the ongoing acquisition of the system.

During October and November 1985, the M198 pilot overhaul was successfully assembled and tested at Letterkenny.

#### Plastic Magazines

The testing by Aberdeen Proving Ground (APG) to determine the feasibility of producing a 30-round magazine for use in lieu of the metal magazine for the M16 rifle was completed. The results indicated the plastic magazine could be used with the M16. However, it was not recommended for use with the XM4 carbine or the M249 squad automatic weapon system (SAWS).

The Infantry School, Fort Benning, Georgia, had not recommended army development of a 30-round plastic magazine for army use unless it could be used in all applications of 5.56mm weapons systems.

#### Process Quality Engineering Division

The Process Quality Engineering Division's mission was to provide readiness quality and process engineering support to procurement, production, and maintenance programs during the readiness portion of the life cycle of assigned items. The scope of the mission was to perform RAM assessments; manage materiel release and malfunction investigation programs; manage SDC database assessments, analyses, and closed-loop corrective action activities and programs for fielded systems; manage, direct, and/or provide technical support to statistical process control activities; provide for centralized direction and management of ESS activities; perform functional quality management for assigned items; provide quality engineering technical support to rebuild and reconditioning programs; and, provide development and readiness quality engineering support for assigned tool and equipment items.

#### Transfer of Nuclear Item Quality Engineering Functions

As a means of improving Product Assurance Directorate effectiveness and reducing report publication times, the nuclear item quality engineering functions were transferred to the Nuclear Systems Division at Dover. This transfer freed up added manhours for the statistical process control (SPC) and environmental stress screening (ESS) programs, which became major directorate efforts during FY 1986.

#### Sample Data Collection

During FY 1986, AMCCOM continued to place emphasis on analysis, action, and feedback in regard to the artillery SDC program. Data on the M102, M109A2, M109A3, M110A2, and M198

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howitzers was collected. Data collection on M102s at Schofield Barracks in Hawaii was initiated to evaluate corrosive effects on the weapons and any effects due to on-site applications of the mid-life product improvement program (PIP) kit.

Cumulative projected savings resulting from the artillery SDC program reached \$17 million. These benefits included annual savings from PIPs and engineering change proposals (ECP), as well as one-time cost avoidances.

During FY 1986 SDC data supported the need for nine ECP and five PIP actions. One one-time savings of \$725,000 was also projected, based on the fact that SDC data demonstrated that the warranty clause in the M109A2 production contract was not cost effective. This clause was to be renegotiated to a no-cost/part failure threshold warranty. SDC data also supported the need for 16 technical manuals, 1 safety change, and 3 supply and manufacturing changes. In addition, SDC data was used to respond to 84 different data requests from numerous data users.

As initiatives, AMCCOM planned to standardize data base management and analysis practices for data derived from all of AMCCOM's SDC programs, as well as other command's programs. AMCCOM was also coordinating with DESCOM and Letterkenny Army Depot to initiate a depot data collection effort.

An initiative undertaken and completed in FY 1986 was the addition of special safety codes to all SDC reported incidents to identify actual and potential safety problems. Serious safety problems and incidents were forwarded to the affected safety offices.

Planning for the remoted target system (RETS), the PIVADS, and the mortar SDC programs continued in FY 1986.

### Statistical Process Control History

Early in the year the division worked with AMETA to develop a 40-hour course on SPC. The first session was held 24 March 1986. It also worked with the operations divisions within the directorate to put the section "E" clause in contracts. As more contracts had SPC included, personnel within the division provided on-site assistance to both contractors and army ammunition plants. The number of SPC plans submitted for review increased and comments were provided to the PQMs in the operations divisions.

A command policy statement for SPC was under development and, following necessary coordination with Dover and other AMCCOM directorates, was to be presented to the commanding general for signature.

The AMC contractor performance certification program (CP2) was reviewed, and initial on-site visits were made to some contractors.

Pareto Analysis and National Stock Number Tracking System

This system, which was completed in June 1986, was an automated RAM-durability (RAM-D)/readiness productivity initiative that could be used to identify weapon/supporting system cost/quantity drivers by national stock number (NSN) with Pareto analysis and to help reduce significant operations and support (O&S) costs. The demands for selected parts could then be tracked quarterly worldwide by theater of operation at the retail (user) level by the NSN tracking system.

It was a user-friendly, custom designed, generic computer program which enabled and facilitated the selection and generation of high potential VEPs to improve system RAM-D/readiness and reduce total acquisition and O&S costs on a life cycle basis. It could support the AMC component safety program by identifying worldwide demand of critical mission/safety items, and improve the life cycle support of other AMC programs such as reliability improvement of selected equipment, ESS, design-to-cost, planning-programming-budgeting, cost analysis, cost estimating, and quality deficiency reporting. The system was submitted as an input to the FY 1986 annual report to Congress.

Environmental Stress Screening

There were several developments which resulted in the establishment of policy and direction for the AMCCOM ESS program. Among these were the publication of AMC regulation 702-25.

AMCCOM completed and received AMC approval of an ESS plan for implementation of the regulation. The plan included initiatives and training, and established points of contact at GOCO and GOGO facilities and a command-wide reporting system.

AMCCOM initiated several ESS studies and VEPs resulting in cost savings and avoidances totaling \$1.0926 billion. The systems involved were the M1 tank thermal imaging system/laser range finder, the Bradley fighting vehicle system integrated sight unit and turret drive, the AH64A Apache, chemical agent alarms (M8A1 and chemical agent monitor), the M712 155mm Copperhead, and the small arms transmitter.

Efforts to implement ESS on the M1 and Vulcan air defense system (VADS)/PIVADS overhaul programs at Sacramento and Red River Army Depots were also initiated during the past year. Additional ESS study candidates included the multiple integrated laser

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engagement system (MILES), RETS, PIVADS, the integrated helmet and display sighting system, and the conduct of fire trainer (COFT), all of which were under production contracts.

### Munitions Production Quality Operations Division

The Munitions Production Quality Operations Division provided product quality management in direct support of the munitions procurement program to assure that all mission items conformed to established requirements for entry into the stockpile. It provided completed liaison operations with the Test and Evaluation Command (TECOM), proving grounds, and other services test activities regarding workloading and scheduling of ballistic testing; proof and acceptance cost for budget submission; and logistic support in providing all required testing components, equipment, and reference/calibration lots.

#### Division Reorganization

The division was reorganized to achieve a more equitable workload distribution. Small caliber munitions items were transferred from the Improved Conventional Munitions Branch to the Proving Ground Liaison and Technical Services Branch. This reorganization caused a reassignment of personnel and commodities. Physical consolidation, within available space of personnel and equipment, was postponed due to insufficient funding.

#### Munitions Calibration Activity

A ballistic comparison test of the M67 105mm propelling charge was conducted at Jefferson Proving Ground. Also, a master calibration test of the M833 105mm armor piercing, fin stabilized, discarding sabot-tracer (APFSDS-T) cartridge was held. In the latter, the candidate calibration material failed to meet specification requirements of 9.6 feet per second velocity standard deviation. It was recommended that this material not be used for calibration purposes due to this nonconformance.

Jefferson also tested the substitution of black powder for the M188A1 8-inch propelling charge, and the substitution of the M106 8-inch projectile for the M188A1.

Testing was completed on the M490A1 105mm target practice-tracer (TP-T) cartridge. The data was being reduced, and a calibration lot firing record was to be published in the near future.

An attempt was made to conduct an interim calibration test for the 105mm, M760 cartridge. This cartridge was for the new M119 howitzer (British). However, the weapon broke down (bent

buffer rods) while firing conditioning rounds prior to starting the second phase of the scheduled test. The weapon was at Rock Island Arsenal for repair. In the meantime, Jefferson Proving Ground received another weapon to continue testing.

Calibration test plans reviewed and updated included the master calibration test for 120mm tank cartridges and the master calibration test for the M203A1 propelling charge. A review of the progress on development of new ammunition requiring calibration was made on the following items: the M252 improved 81mm mortar system, the XM900E1 105mm APFSDS-T, the 120mm mortar ammunition family, and the XM456A3 105mm high explosive antitank (HEAT) cartridge.

#### MIL-Q-9858A

Progress continued to be made in 1986 with implementation of MIL-Q-9858A into AMCCOM contracts for munitions. There were 374 open contracts that contained MIL-Q-9858A as a requirement. Eventually, most contracts for munitions were to have the requirement. Exceptions were made for small-dollar value contracts of short duration, where insufficient time existed for implementation of a quality program. The other exceptions were for air force-managed single manager items. The air force continued to require the use of MIL-I-45208A for most of its contracts.

Not only were more contracts being awarded with MIL-Q-9858A, but the level of implementation was on the rise, as was acceptance of use of quality programs. This latter phenomenon seemed to be taking place as contractors realized some of the benefits of MIL-Q-9858A. Perhaps one negative element was that some contractors perceived the use of MIL-Q-9858A as a tool to limit competition by eliminating marginal producers who could not qualify.

#### Statistical Process Control

Some retrenchment of AMCCOM's absolute position that MIL-Q-9858A mandated SPC became necessary during 1986. MIL-Q-9858A did require process control and did address SPC, but only to the extent of permitting the use of SPC.

To buttress the AMCCOM position, a contract clause was developed which detailed the level of statistical process control required of the contractor. By the end of the fiscal year, 15 contracts contained the SPC clause, and 30 more solicitations with SPC were in process.

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The clause required contractors to consider all characteristics for possible control chart application. A revised clause required that only critical, major, and special defects be considered. Rationale for exclusion of a characteristic had to be provided by the contractor, and the SPC plan was subject to government approval.

It was hoped that inclusion of the clause in selected contracts would eliminate any possibility of ambiguity with respect to the MIL-Q-9858A clause regarding process control. The clause could also be used on MIL-I-45208A contracts, if desired.

### Contractor Performance Certification Program

Contractor performance certification program (CP2) efforts were well established within the division, which took the directorate lead in promoting and supporting the endeavor. Ten contractors were given an initial program briefing. These contractors represented the commodity spectrum of the division, and ranged from small to large business.

Several contractors were given an initial program audit. It was anticipated that one contractor would have met all the requirements for the final audit exercise by February 1987, with full certification likely.

Division representatives were very active in presenting executive briefings on CP2, with very positive feedback relative to progress and methods used in program development. Additionally, division personnel worked closely with members of its sister operations divisions in sharing experiences and in promoting a standard program methodology.

### Surveillance Operations Division

The Surveillance Operations Division planned, directed, and provided quality assurance management to class "V" munitions, including conventional ammunition, non-lethal chemical munitions, lethal chemical agents, and nuclear weapons assigned to AMC in the wholesale, retail, and consumer phases. It executed and applied the quality program at specified subordinate AMCCOM installations.

### Propellant Stability Program

The propellant stability program was extended to test lots previously excluded. It included approximately 200 test and experimental lots owned by TECOM and AMCCOM. A study was in progress to include fixed and semi-fixed rounds in the program.

Small Caliber Stockpile Reliability Program

Initial testing of 25mm ammunition was added to the small caliber stockpile reliability program (SCSRP), and was to be performed at Aberdeen Proving Ground in FY 1987/88. A stratification procedure for SCSRP lot selection was developed so test results could be applied to untested lots with common background data.

Malfunctions

At the close of FY 1986, 116 malfunction investigations (MIF) were open. This was an increase of 52 MIFs over FY 1985, and represented 28 class "A" and 88 class "B" malfunctions.

Centralized Control Function Test Program

During FY 1986, 528 ammunition lots were tested, and 546 were selected for FY 1987. Two new computer programs were developed for the centralized control function test program, which was to save approximately 80 manhours per year of inputting time. Joint army-marines testing and exchange of information was initiated beginning with army repositioning and marines maritime repositioning ships.

Large Caliber Stockpile Reliability Program

During FY 1986, 290 lots were tested, and 198 lots were selected for FY 1987.

Defense Standard Ammunition Computer System

Six existing computer programs were migrated into the DSACS mainframe computer. Secure DSACS progressed through the initial requirements stage.

Ammunition Stockpile Reliability Laboratory Test Program

One DOD identification code (DODIC) was tested in FY 1986, the third-cycle testing of the M483A1 projectile. Testing of the M774 105mm APFSDS-T cartridge was scheduled for FY 1986, but was delayed pending location of lab facilities licensed to handle radiological material.

Seven DODICs were identified for the FY 1987 program. Overall, more than 20 DODICs were identified for inclusion in the large caliber laboratory testing program.

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### Technical Study Review Actions

A special AMC fuze review meeting report identified seven modules of fuzes with serious safety problems. After evaluation of defects and stockpile impact, a letter was drafted to AMC for approval of block suspension action on the M48, M51, M501, and M526 fuze models. Approval was granted, and a supplement to technical bulletin (TB) 9-1300-385 was transmitted.

### Prepositioned Ships

Ammunition assessment determined that certain types of mortar and 105mm ammunition had drastically reduced service life when stowed on board ship without temperature and humidity control. Steps were underway to implement ship contract changes to control the storage environment to no higher than 85 degrees F and 40 percent relative humidity, and to lower the effect of solar radiation on above deck barges.<sup>3/</sup>

### "Hardin Study"

An individual was assigned to a command functional task group organized to implement recommendations made by the AMC independent review of demilitarization and stockpile management. Implementation of recommendations was monitored by on site visits to subordinate installations. Accomplishments included revision of AMCCOM regulation 702-9, and individual plant contracts.

### Lethal Chemical Agents and Munitions Surveillance Program

The division initiated cycle II sampling of M55 rockets, M23 mines, nerve agent (GB) projectiles, and GB and distilled mustard ton containers.<sup>4/</sup>

### System Safety Program

As directed by AMCCOM's DCG for chemical materiel, a program was implemented to identify potential safety problems resulting from component aging. Testing was completed on M55 GB rockets, 4.2-inch mortar propellant, and 105mm propellant. Future expansion of this program was anticipated into areas such as fuze and burster testing.

### Propellant Aging Test Program

First year milestones were completed for AMCCOM's program to broaden the basis of propellant aging tests by expanding temperature ranges for accelerated aging to 50 degrees C, 90 degrees C, and 120 degrees C. Other accomplishments of the program included an annual retest of M55 propellant samples,

testing the effects of toxic chemical agents on propellant stabilizer, and identification and quantification of stabilizer reaction products.

Draft Binary Storage Inspection Program

The program was completed for the M687 155mm GB projectile. An approved inspection program for the M687 projectile was expected in FY 1987.

Stockpile Reliability Program (SRP)

Requirements and procedures were developed for implementation of the SRP for the weapon access delay system smoke generator systems, and for the new, general purpose, web strap tie down. The first cycle for both programs was set for FY 1987. Field notification of FY 1983 army nuclear weapon SRP samples was delayed two months due to slippage in the Department of Energy sample selection.

First Article Initial Receipt Inspection

Procedures were witnessed and certified at depot level for two nuclear weapons items: the M74E1 mod B trainers (Nike Hercules) and shield assembly kits (155mm).

Nuclear Weapons Surveillance Technical Bulletins

The division conducted one surveillance inspection procedure checkout which resulted in revision, printing, and distribution of a Pershing II technical bulletin. Five additional TBs were revised, with printing and distribution accomplished on four.

Nuclear Weapons Field Data Feedback Program

Hardware facilities were established at Dover with software loading complete. Processing of classified material was delayed pending final site security approval. Fielding of a new maintenance report form was delayed at AMC. Supporting documents (TB 9-1100-803-15) were to be updated and the package resubmitted. Approval, printing, and distribution of new forms was expected in the fourth quarter of FY 1987. Full operational status was anticipated in the first quarter of FY 1988.

M60A3 Tank, Tank Thermal Sight

Materiel fielding team responsibilities were reduced, thereby allowing greater concentration of resources at contractor facilities. Two major contractors were added for the AN/VVG-2 laser rangefinder and the M21 ballistic computer system. The

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division assisted in the resolution of a ballistic shield casting defect, and in the transition of technical data for the TTS to ARDEC.

### M1/IPM1 (105mm) Tank

Production and fielding of the M1/IPM1 tank was completed in March 1986, with concurrent production commencing on the upgraded M1A1 (120mm) tank configuration, which was in the early stages of fielding. Feedback information from the materiel fielding sites was positive on the fire control equipment, with only random failures being experienced. A major spare parts program was initiated, and warranty incentive programs placed on major government furnished equipment fire control contracts.

### Unity Power Daylight Periscope Family (Plastic)

Throughout the life cycle of the plastic periscopes, various problems with both design and performance were noted. Little had been accomplished, despite numerous attempts for correction to update or change the periscope-governing documents.

Engineering change proposals (ECP) were added to the specification which addressed the on-going problem of leakage. First article tests were required on all new contracts, for contractors in continuous production for up to five years, to assure both the effectiveness of the ECPs, and that manufacturers adhered to contractual requirements.

Test plans were being developed to determine the cause of another on-going problem, the deterioration of the glass-to-plastic laminating material.

### Test Sets

The direct support electrical system test set (DSESTS) was the most comprehensive test set available for combat vehicle systems. Directorate personnel participated in qualification testing of the most recent addition to DSESTS, the thermal imaging system DSESTS, which was to replace the thermal system test set.

### Remoted Target System

Activity increased on the remoted target system (RETS) as first article testing was conditionally approved pending user acceptance of revised infantry moving target carrier speeds. Extensive fielding of RETS began, and the first competitive RETS contract was signed.

Conduct of Fire Trainer

Participation in COFT materiel fielding dropped from 1985 levels due to the limited amount of quality assurance work required during each fielding. The mobile COFT was transitioned to AMCCOM on 1 October 1986. The division participated in the institutional COFT (ICOFT) first article test during November 1986.

Multiple Integrated Laser Engagement System

The first competitive MILES contract was let in FY 1986. Cost savings through competition were estimated at \$20,000,000. Efforts to compete contractor logistic support also commenced. The MILES small arms transmitter first article units were delivered, and failed initially. Technical data for MILES was a major problem throughout the year, with incomplete data packages being common.

Chemical Materiel Surveillance Program

Per AMC directive, a life cycle system for materiel surveillance, patterned after ammunition surveillance, was developed. Army regulation 350-XX, Training and Certification of Defensive Chemical Test Equipment Operations/Maintenance Personnel, was drafted by the division. It was staffed at AMCCOM, and was sent to AMC during the fourth quarter of FY 1986.

There was a training and certification program for operations and maintenance personnel using M4A1, M14, Q179, and Q204 testers. This program was administered by the division and implemented by Pine Bluff Arsenal training personnel. Supply bulletins required defensive chemical materiel inspectors to be qualified. To meet this requirement, a training program for DESCOM inspectors was being developed by the division and the Defense Ammunition Center. This training was scheduled to begin by the first quarter of FY 1988.

M12A1 Decontaminating Apparatus

AMCCOM experienced a lack of production and first unit test completion with GIL, Inc., the existing contractor. Although GIL failed first production lot testing (FPLT) three times, it had been paid approximately 80 to 90 percent of the contract value. The first attempt at FPLT passage was in November 1985. Subsequent attempts were in February and July 1986. As of 2 December 1986, FPLT had not been successfully completed, nor had any production been accepted.

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### Product Improved Vulcan Air Defense System

A PIVADS contract was awarded to Lockheed Electronics Company (LEC) on 17 September 1982 for the RDTE of a modification kit for the M163A1 and the AN/TSM-115B shop set. Due to delays in the development of the lightweight air defense system, the PIVAD program was expanded. On 23 September 1983, LEC was awarded a contract to produce a towed version of PIVADS.

In October 1984 the production option was exercised despite several deficiencies and shortcomings in the demonstrated performance of PIVADS during the developmental testing. The contractor subsequently applied fixes for most of the problems, and additional tests were performed during January through March 1985.

Six VADS, three M163A1s and three M167A1s, were modified to PIVADS by applying the modification kit in April through June 1986. These systems were utilized for various government testing including initial production testing, physical teardown-logistics demonstration, follow-on evaluation, and validation and verification of the maintenance work order.

During government testing the following problems were identified: M16A1 director sight failures due to poor workmanship, and voltage converter failures due to design deficiencies, poor workmanship, and subcontractor problems. These problems had to be resolved before a complete material release. Problems with the prime contractor were an incomplete and unapproved technical data package, and quality problems. The field application of the PIVADS modification kit was scheduled for the fourth quarter of FY 1987.

### Advanced Attack Helicopter

The division supported PM, Apache (AVSCOM) on the resolution of deficient material reported during field maintenance of the AH-64 Apache. Concurrently the division participated on the acquisition strategy developed by AMCCOM for procurement of spare parts for fielded units. AMCCOM was to acquire full responsibility for support of the Apache on 1 February 1987, and on that date conversion would take place from contractor logistic support to organic logistic support.

## Tank Infantry Systems Division

### TOW Missile

Although desirable and planned for FY 1986, a contract to develop a long-standoff probe was not let due to lack of money. It was hoped that this would occur during FY 1987.

First article inspections and tests of the new probe were completed. The probes met all the inspection requirements but failed two of the functional requirements: extension time and ability to extend at all. A modest process change in the assembly of the wedges was expected to solve both problems, which appeared to be related.

New M48 electric detonators were introduced into the M114 safe and arm (S&A) device. First article inspections and tests for these were passed by the contractor on the third try. The new detonators contained colloidal lead azide instead of dextrinated lead azide.

The M114 S&A device was modified to function properly in the new E5 warhead. This change would include a new contact, the new detonator, and a new spring.

#### M734 Fuze

Kodak agreed to rework the interfix-2 fuzes (approximately 136,000), saving the "E-Head" and replacing everything else. A new requirement for testing the height of burst over a chicken wire target area was added to the specification. This was expected to result in more precise measurements of this performance characteristic than before.

The new producer for the fuze was Accudyne, Inc. For the first time the amplifier would be built off-shore, in Taiwan. Special inspection personnel were hired to assure that the government's quality requirements were met.

#### 120mm Tank Ammunition New Material Release

The 120mm tank ammunition family consisted of four cartridges: the M829 APFSDS-T; the M830 HEAT, multipurpose with tracer (HEAT-MP-T); the M831 TP-T; and the M865 target practice, cone stabilized, discarding sabot with tracer (TPCSDS-T). Three of the rounds, the M830, M831, and M865, were a translation of German cartridges developed for use with the M256 smooth bore 120mm cannon. The M829 was a US-developed item. Honeywell, Inc., who was responsible for the translation of the German technical data package, also produced the initial production under a sole source system contract.

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A training release was issued for the M865 and the M831 in the first quarter of FY 1986 to support new equipment training at Fort Bliss. The deficiencies that precluded full release were three lots not yet produced, surface danger not finalized, and life cycle environmental assessment not approved. Also, for the M865, there was concern about the potential for late burning propellant.

A full release was issued for all four rounds in the fourth quarter of FY 1986 to support M1A1 fielding. An initial Dover-site material release board was convened on 24 June 1986. The issues raised at this meeting included technical manual changes needed to minimize the occurrence of flareback, to provide warnings about noise and toxic fumes, and to provide warnings about firing the M830 cartridge over friendly troops. There were also issues relative to the metal packing container for the M830 and M829. The board reconvened on 24 July 1986 when it was concluded that the unresolved issues had been adequately addressed, and full release was recommended.

### XM86 Pursuit Deterrent Munition

The XM86 was a modification of the area denial antipersonnel mine (ADAM) used in the 155mm ADAM projectile. The modification consisted of the addition of a striker plate firing mechanism. It was to be used by selected forces such as special forces, underwater demolition teams, and rangers.5/

Preliminary specifications for both fuzing and LAPing were finalized. Engineering testing was started during the last quarter of FY 1986.6/

### Tactical Explosive System

The tactical explosive system (TEXS) made possible preplanned and prearranged barriers by embedding hollow pipes in structures or in the ground. The TEXS blasting agent could then be pumped into the pipes and detonated at will.7/

TEXS concept testing was conducted, and a demonstration prepared for potential system contractors. Evaluation and selection of potential contractors was scheduled for the first quarter of FY 1987.

### M128 Mine Dispenser (GEMSS)

Two M128 mine dispensers were fielded with FORSCOM at Fort Lewis, Washington. USAREUR fielding of 22 M128 dispensers was also completed. The Product Assurance Directorate effort involved support of production, testing, and acceptance of a production run

of 41 dispensers.

The directorate also provided quality engineering and PQM support to twelve M74/M75 GEMSS mine contracts.

M138 Mine Dispenser (FLIPPER)

Developmental testing II was conducted at several locations, while operational testing II was performed at Fort Knox, Kentucky. The FLIPPER exceeded all RAM requirements in this testing program.

The Product Assurance Directorate actively participated in all test activities and developed three specifications for the fabrication of the mine dispenser that were released in the first quarter of FY 1987.

BLU 91/B, BLU 92/B GATOR Mines

The Product Assurance Directorate provided support on 25 production/PIP GATOR contracts.

Effort continued in the preparation of the GATOR stockpile surveillance plan. An evaluation plan was completed and coordinated with tri-service representatives. Future contracts were to contain requirements for the submission of parts and subassemblies for surveillance testing. Electronetics Corporation was tasked, through an existing service contract, to identify inspection and test equipment required to perform evaluation of components.

The ARDEC/directorate representative met with the proposal evaluation team which would review future GATOR bids (total system performance responsibility concept), and an evaluation criteria was established. Additional meetings were planned for the first quarter of FY 1987.

Simulator, Flash Artillery, M21

The FY 1986 procurement of the M21 simulator was awarded to Israeli Military Industries under contract DAAA09-86-C-0701 for 2.5 million items. This was the first procurement utilizing the M21 performance specification with developmental-type test requirements in lieu of the army TDP.

Wide Area Side Penetrating Mine (WASPM)

The XM84 WASPM was a self-contained, man-portable, off-route mine capable of defeating main battle tanks 50 meters away. The WASPM system continued in full scale engineering development (FSED) in FY 1986. The directorate provided continuous program

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support at test integration working group (TIWG) meeting and quarterly design reviews.8/

### XM139 Multiple Delivery Mine System (Volcano)

The program advanced into type classified limited production/FSI. During the entire advance engineering development (DT/OT I) phase, the Product Assurance Directorate provided RAM management involvement and technical support.

### M718A1/M741A1 Product Improvement Package

The remote antiarmor mine system PIP was type classified during the fiscal year. The PIP was an electronic design change to the timer and sensor circuits to improve operational capability, performance, reliability, and safety. The TDP was prepared for the FY 1987 procurement.9/

### Modular Pack Mine System

The modular pack mine system (MOPMS) was a man-portable mine dispensing system containing 17 antitank and 4 antipersonnel mines. The mines were ejected from launch tubes on command, armed themselves, and self-destructed after a period of time.10/

The physical configuration audit (PCA) of the MOPMS was completed, and the AMC fuze board certified the item to be safe. MOPMS M131, M136 was type classified standard in June 1986, with follow-on fixes to be incorporated and tested at IPT in 1987.11/

### Contractor Operated Test Facilities

In support of the AMC commander's continuous evaluation/facility certification thrusts, the Instrumentation Engineering Branch undertook the command's first effort to certify a contractor operated test facility. Honeywell's 120mm tank ammunition ballistic acceptance test ranges at the Naval Weapons Center, China Lake, California, and the TERA facility at Socorro, New Mexico, were both certified as acceptable to conduct such testing.

### Device for Automated Thread Evaluation

This first phase of MMT project 5854781 was executed by the Instrumentation Engineering Branch. The technology required to measure screw threads was successfully demonstrated by the contractor, Perkin-Elmer. The next phase was to provide a completely automated inspection device capable of measuring internal and external threads from 3/4 to 6 inches in diameter. Utilization of this equipment would provide variables data for

threading operations, allow easy implementation of statistical process controls, reduce or eliminate the use of costly thread rings and plug gages, and eliminate inspection judgement problems associated with existing thread gaging practices.

#### Evaluation and Metrology Division

The mission of the Evaluation and Metrology Division (pending name change to Quality Evaluation) was to provide technical and test operations support to the Product Assurance Directorate's engineering divisions and to AMCCOM at large. Major functions included execution of the nuclear weapons stockpile laboratory test program, actual conduct of first article tests in support of Dover and Rock Island contracts, Dover-site installation support for shipments and receipts of mission material, and the conduct of nondestructive tests.

#### Fire Control and Small Caliber Armament Systems Division

The mission of this division was to manage the life cycle product assurance program for AMCCOM fire control and small caliber weapons systems, which included sighting and tracking systems; sensing and computation systems; control and stabilization systems; aircraft rocket systems; weapons, ammunition, links, and related equipment for all systems 40mm and smaller; and associated test, measurement, and diagnostic equipment.

#### Small Caliber Ammunition Gages

The Management Directorate of AMCCOM released a report entitled, Management Study of Ammunition Gages, dated September 1985. In this report, numerous problems related to the procurement of profile and alignment were detailed. One problem area identified was the TDP for production and acceptance (P&A) gages. The division revised all designs for small caliber ammunition P&A gages during FY 1986 to correct all deficiencies uncovered by the management study.

#### Materials Testing Technology (MTT) Project 117

An MTT project to develop a stable light source for testing tritium lamps was completed by the division during the year. The design was tested and met all uniformity, stability, spectral distribution, and luminance requirements.

The project was to be implemented by incorporating the design into existing technical data packages that included tritium lamps. The benefit of the project included cost savings in fire control maintenance and production acceptance testing.

Improvements in Small Caliber Barrel Chamber Measurements

The Instrumentation Engineering Branch developed a new method to verify cartridge chamber configuration using high-precision steel balls. The steel balls replaced tapered flush pin gages, and offered a variety of advantages. These included simplification of calibration, elimination of the subject "feel" error in the flush pin measurement, immediate availability, and a significant reduction in cost.

Ballistic Piezoelectric Transducer

The pressure transducer approved for NATO small caliber ammunition ballistic measurements was a sole source, Swiss-made device. The transducer was not considered optimum for this application, as evidenced by the poor reliability experienced by the entire NATO community. In addition to the reliability problem, high cost and restricted availability prompted the Instrumentation Engineering Branch to investigate alternatives. Two US sources developed alternate devices which were successfully tested for SAWS 5.56mm applications.

Small Arms Transmitter for MILES

A new small arms transmitter was to be incorporated into the MILES training system, and would be used on M16A1 and M16A2 rifles, and on the M249 SAWS.

The division's participation began with the development phase of the program. It was intensely involved in the critical design review, drawing and specification review, and in the preparation and modification of quality assurance provisions. These efforts established the foundation of level III TDP baseline for competitive procurement.

Product Assurance Forum '86

Over 200 leading industry and government executive and operating officials in product assurance quality control and manufacturing engineering attended the AMCCOM product assurance forum conducted on 15-16 April 1986 at ARDEC. The forum was jointly sponsored by the Product Assurance Directorate, the Society of Manufacturing Engineers, and the American Society for Quality Control.<sup>12/</sup>

Brigadier General Richard D. Beltson, the ARDEC commander, provided the welcoming address in which he stressed that quality and productivity were synergistically interlocked. Adequate quality drove yield and productivity. Si Lorber, AMC's deputy chief of staff for product assurance and testing, highlighted the

importance of quality receiving the same emphasis as cost and schedule.

The guest speaker at the banquet was Willis Willoughby, Jr., the executive director for reliability, maintainability, and quality assurance at the office of the assistant secretary of the navy, who provided a dynamic presentation on innovative techniques in product assurance planned by the US Navy.

#### M9 Multipurpose Bayonet

The division provided significant support on this NDI program, leading to contract award in the fourth quarter of FY 1986. The effort started with drafting the RAM rationale report, which was finalized after numerous meetings with the users, and led to preparation of the specification included in the bid packages. Once samples were received and tested, the division participated on the source selection evaluation board in the evaluation of test results and in making a recommendation to the selection authority.

#### M249 Squad Automatic Weapon System

From 10 February to 14 May 1986 the division coordinated, managed, and monitored the rework program for the OCONUS produced M249 SAWS.

After preparation and agreement on the rework procedures, representatives from Fabrique Nationale began work at Letterkenny Army Depot and continued on to Fort Bragg, Camp Lejeune, and Camp Pendleton. Through the coordinated efforts of all concerned, the rework program went smoothly and was completed one month ahead of schedule.

#### Hydra 70 Rocket, Multi-purpose Submunitions Warhead

Intensive product assurance engineering support was directed towards initial production of the M267 training round, which led to the successful materiel release of the M267. In the case of the HE round, RAM engineering failure analysis was conducted on the safety retaining ring. In addition, on the M433 fuze, utilized in the M151 high explosive remote settable rocket, representation on a blue ribbon panel was provided for the purpose of determining the safety of rounds in the stockpile.

#### Conduct of Fire Trainer

Product assurance engineering provided a technical review of the COFT technical data package and served in a product assurance liaison role with AMCCOM. On-site support was provided at General

## Product Assurance

Electric, Orlando, Florida, for evaluations, audits, TDP reviews, and test monitoring for COFT. In addition, product assurance engineering support was provided to the M1 ICOFT at the General Electric site in Orlando. This also included technical support and guidance with respect to ICOFT for DCAS activities at General Electric.

### M60A3 Fire Control

Technical support was provided at Opto-Electronic Corporation in Dallas, Texas, with respect to technical data requirements, test equipment capability, and testing requirements. This support was essential in assuring that a third competitive bidder would be available for manufacturing.

### M23 Mortar Ballistic Computer (MBC) Contractor Review

Product assurance engineering conducted design and program reviews of the MBC production process and facility at Magnavox, Fort Wayne, Indiana. This review uncovered several discrepancies between the contract and Magnavox test procedures, which were corrected.

### Product Improved Vulcan Air Defense System

A PCA was completed for seven PIVADS modification kit items. These seven items were the most critical for which complete TDPs were required for procurement. A safety report was written evaluating the safety data collected on PIVADS.

### Forward Area Air Defense (FAAD) System

A preliminary product assurance program plan was developed. The directorate provided the FAAD gun team manager with a coordinated preliminary product assurance program plan. This preliminary plan was provided to the MICOM PM for the line of sight forward heavy vehicle. Directorate engineers evaluated the NDI proposals of twenty prospective contractors.

### Howitzer Improvement Program

The division supported the source selection process that ultimately led to a contract award to BMY, Inc. It also supported the fire control and institutional training device effort through the concept of definition phase by analysis and evaluation of various concepts and trade-off studies presented in design reviews, and by review and analysis of contract data submitted by the contractor.

Howitzer Extended Life Program

The division provided the product assurance functional manager for the HELP and supported the HELP throughout development. The more significant support activities were developing the failure description and scoring criteria for the automatic gun positioning system, chairing the scoring conferences, witnessing tests, evaluating RAM data, monitoring and preparing quality assurance documentation for the technical data package, and chairing the functional configuration audit.

M119 Lightweight Gun

The division supported the M119 procurement by establishing technical data needs and visiting the UK to establish quality requirements on the fire control. The division also was integrally involved in the US fire control effort by participating in developing the program milestones and test and evaluation requirements.

Artillery Systems Division

The Artillery Systems Division provided quality/RAM engineering support to procurement, production, and maintenance programs during the life cycle of assigned items. Production support on assigned items included reviewing RFD/Ws and QDRs, preparing and reviewing ECPs, and maintaining military specifications and quality audits of contractors. The division also performed safety assessments, stockpile reliability assessments, and independent and test design reviews, and coordinated new materiel release documentation and malfunction investigations on assigned items and systems.

Copperhead

Lot acceptance testing for Copperhead in FY 1986 resulted in the acceptance of six consecutive lots with an average reliability of 89.2 percent.

Special demonstration firings took place in Germany in October 1985, resulting in 10 successes out of 12 firings. Remotely piloted vehicle firings at Fort Huachuchoa in January 1986, and at Fort Sill in September 1986, resulted in 8 successes out of 9 firings and 8 successes out of 8 firings, respectively. Stockpile surveillance testing for fiscal year 1986 consisted of firing October 1982 rounds, May 1983 rounds, and June 1984 rounds in the ballistic and soft recovery modes. The average reliability for these firings was 81.4 percent.

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Efforts were under way to replace the existing Copperhead guidance section with one under microprocessor control. This would ultimately increase the reliability of the Copperhead, and add new capabilities to the round.

### SADARM Artillery Munitions

Efforts toward the development of the XM836 8-inch sense and destroy armor (SADARM) projectile were terminated based upon DA direction, and SADARM technology was directed towards employment in a 155mm projectile and a SADARM warhead for the multiple launch rocket system (MLRS) rocket.

The division oversaw the development of the RAM rationale for the SADARM artillery munitions, participated in the formulation of the required operational capability (ROC), and supported program management in promulgation of the acquisition plan, FSED scope of work, and contractor source selection. Contracts initiating FSED were let with competing development contractors, AEROJET Electro Systems and Honeywell, on 24 September 1986. Additionally, the division supported the efforts on 10 SADARM related MMT projects which were initiated to provide high-rate production capabilities in time for phase-in to SADARM production.

### M119 Howitzer

In December 1985, as a result of a milestone III IPR, the M119 howitzer was type classified standard LCC-A. Relative to the IPR, the Product Assurance Directorate provided a functional purchase description and input to the RAM rationale report of the ROC during the fiscal year. The directorate also participated in TIWG meetings, monitored system testing, and provided quality assurance/RAM input to the TDP and the contract for the UK production of the howitzer for the US.<sup>13/</sup>

### Howitzer Improvement Program

The contract definition phase of the HIP contract awarded to BMY in October 1985 was successfully completed and the full scale development phase initiated. In support of the program, the Product Assurance Directorate provided input to the logistic support analysis, calculated RAM predictions, prepared quality assurance provisions for the assessment systems, participated in program reviews and RAM working groups, reviewed and approved contractor quality assurance/RAM data submittals, and monitored government testing.

### M650 8" Projectile

The division, reacting to field reports of loose obturating bands, conducted an investigation into the cause, effect, and fix of the problem. It was discovered that field storage of ammunition exposed the unprotected external components to the equivalent of submersion in water.

A method to "temper" the nylon bands was developed and implemented to fix bands in the inventory. A new TDP requirement for future procurement was released to eliminate loose bands in any possible storage condition.

#### M549 155mm Projectile

The division completed investigation of the cause of early rocket motor ignitions which had caused lot rejections and load line shutdowns. The problem was traced to a defective rocket propellant grain inhibitor joint, which allowed the grain to contact the rocket motor body cavity surface during firing. The friction between grain and steel during spin-up caused grain ignition early in the flight, which resulted in short rounds. TDP modifications were implemented to improve the joint design and quality.

#### XM864 Projectile

In FY 1986 the Product Assurance Directorate convened a root cause analysis team to investigate the XM864 high dispersion problem. Design changes resulted in excellent range probable error results.

In accordance with the recommendations of the independent design test review team, 338 final design XM864s were fired at Yuma Proving Ground. Test results were analyzed and presented at the review meetings.

The projectile met all ROC requirements, with one exception. One round fired in worn tube tests fell 1,400 meters short of its group. Since the round failed to achieve 97.5 percent of the target range, it was being treated as a safety failure. The apparent cause of the short round was breakup of the base burner propellant on launch. Relatively poor quality propellant, coupled with the high stress of a worn tube test, appeared to have precipitated grain failure. The directorate, together with the FSA, prepared a test program to determine definitely the cause of the failure and to assess whether it was unique to a particular batch of propellant.

The directorate's position was that until the cause of the short round was assessed, DT tests should not begin. Tests indicated the M864's reliability to be at least 98.98 (80 percent

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confidence). First article inspection of the DT contractors was completed.

### M483 Confirmatory Testing

In March 1986 a confirmatory test was conducted at Dover on the M483A1 metal parts. This test involved critical, special, and major inspections on two bodies, bases, and ogives from each producer. Mississippi and Louisiana AAPS, and Chamberlain, New Bedford, were chosen as producers to be tested. NI Industries had been tested in December 1985, with no deficiencies noted, and was excluded from the March testing.

The Product Assurance Directorate performed the testing and found that both of the Louisiana ogives failed the mechanical properties test for yield strength. Once all testing was completed and the failed parts were retested, an investigation was launched to determine what had gone wrong. The Louisiana COR staff investigated the failed ogive lot history and could not find any unusual conditions. The investigation continued.

### Low Vulnerability Ammunition

M39 propellant, known as low vulnerability ammunition, was awaiting TRADOC's signature for type classification. The propellant had a lower velocity cold (-25 degrees F), higher velocity standard deviation, and higher pressure coefficient than the M30 propellant it was replacing in the M452A2 105mm tank cartridge. The M39 propellant could survive attack by hot spall fragments. Therefore, the army felt that this vulnerability against performance tradeoff was acceptable.

### Automatic Verification of Ultrasonic Test System

An MTT was performed during FY 1986 to determine the feasibility of verifying ultrasonic equipment setup on each inspection cycle. Under government contract, Rompas NOE performed a study to demonstrate verification at each cycle using direct and indirect reflectors and a signal generator. This developed method was expected to eliminate the requirement for storage of inspected material until verification was performed by running calibration standards, normally on a four hour basis. It also provided for immediate detection of the system going out of calibration. This would permit the immediate release of inspected parts which were accepted and verified as defect free.

Nuclear Systems Division

The Nuclear Systems Division managed the life cycle product assurance program for AMCCOM/ARDEC nuclear weapon systems and associated test, measurement, and diagnostic equipment. It also managed and conducted the army nuclear weapons stockpile reliability program.

#### Coordinate Measurement Machines

The division was responsible for a major effort in utilizing coordinate measuring machine (CMM) technology in lieu of hard gages. A value engineering proposal was submitted showing potential savings of better than \$300 million. A series of tasks were let to utilize a CMM that had been government-furnished to a contractor to measure metal parts. Based on this limited application, cost savings showed the CMM to have an advantage of at least 10:1, and in some cases 30:1, over mechanical hard gages. Plans were being developed to expand in order to service the AMCCOM development and production base.

#### Pershing IA, Phase 2A Study

A request for an advanced development study for modifying the stockpiled Pershing IA nuclear warhead section was approved. This study was being prepared by PM-NUC, the Pershing project office, ARDEC, Sandia Labs, and the division. The first phase of the effort was completed in February 1986. The second phase was initiated in September 1986, with a final report scheduled for completion in June 1987. The division provided RAM engineering support for this study.

#### M735/XM749 Fuze Quality Working Group

Recertification testing of the M735 fuze was initiated in July 1985, and incidents of quality assurance (workmanship) deficiencies were found. In order to prevent similar deficiencies in the XM749 fuze scheduled for production, the division took action to establish an M735/XM749 fuze quality working group to investigate the problem. The objective of the working group was to identify the causes for the quality assurance deficiencies in the production of the M735 fuze, identify measures for the prevention of similar quality assurance deficiencies in the production of the XM749 fuze, document the cause and prevention of the quality assurance deficiencies in the production of the M735 fuze, and forward the document as recommendations for the XM785 program with respect to TDP inputs and contractual necessities.

A proposed charter for the working group was prepared by the division and submitted to PM-NUC for approval. PM-NUC approved the charter, and the first meeting of the group was scheduled for January 1987.

Mark 74 Shaped Charge

Action was initiated in FY 1986 to obtain materiel release of the MK 74 shaped charge. The MK 74, a navy-developed item, was adopted by the army to replace the M2A3/M2A4 shaped charge. Once materiel release was obtained, the MK 74 would support the nuclear munitions mission by providing emergency destruct capabilities.

During preparations for the presentation of the MK 74 to the AMCCOM materiel release board, it was determined that there was insufficient test data available to properly assess its functional reliability. In view of this deficiency, the division prepared a test plan which would provide the necessary test data. The test plan was reviewed and approved by PM-NUC and by TECOM. In addition, a cost estimate to perform the test was obtained from ARDEC's Armament Engineering Directorate. Both the test plan and the cost estimate were forwarded to PM-NUC, along with a request for funds to conduct the test. It was anticipated that funding would be provided in FY 1987.14/

PREDICTOR Reliability Analysis Software

During FY 1986 the Nuclear Systems Division arranged with Management Sciences Incorporated to have courtesy use of the PREDICTOR software at ARDEC for a hands-on evaluation by product assurance engineers. The software provided for automated reliability and maintainability analysis of any modeled system.

The evaluation proved PREDICTOR to be a useful tool for the RAM analyst. Once a UNIX edition of PREDICTOR was available, the Product Assurance Directorate would take action to procure it. Procurement was anticipated in FY 1987.

ARDEC Lessons Learned Manual

Efforts were begun in August 1986 to complete the second comprehensive issue of the lessons learned task at ARDEC. The lessons learned effort at ARDEC was continuing, and was considered in the daily operations of both management and the technical community. The prime intents of this program were to prevent repeat mistakes from occurring in an operation as critical as the one that existed at ARDEC, and to capitalize on all past experiences for improvement of future methods and operations in all ARDEC armament program activities. The second issue was expected to be distributed during January 1987.

Chemical Systems Division

Teleconferencing

With the adoption of teleconferencing between the Rock Island and Edgewood sites, a significant producibility increase was documented. Teleconferencing drastically cut the time required for disposition of engineering change proposals, waivers, and deviations. In addition, both quality assurance sites benefitted from a technical point of view. The engineering community had more time to prepare responses and positions, which resulted in improved technical inputs. The procuring site benefitted by becoming more thoroughly informed of technical data package changes being adopted.

Future improvement in teleconferencing would be achieved with the addition of video capability to allow drawings to be displayed for mutual discussion. This addition would allow items requiring immediate attention to be addressed without waiting for paperwork to flow between the sites.

M43 Chemical and Biological Aircraft Mask

The M43 mask was developed to provide individual protection to crew members of the AH-64 attack helicopter. AVSCOM, the user command, was tasked to meet ROC requirements for combat readiness by FY 1986. A four-year accelerated life cycle program was initiated to develop the M43 mask, and type classification for limited production occurred in the second quarter of FY 1986.

The Product Assurance Directorate supported CRDEC throughout the development cycle. Directorate personnel assisted the contractor during the development of the TDP. A physical configuration audit was conducted on the components to assure they met the TDP and were adequate for developmental and operational tests. Product assurance labs supported physical and chemical agent testing of the various components. The division also supported preparation of the training release of prototype units to allow for AH-64 unit readiness training. A conditional release for first unit equipped masks was being prepared as a joint effort between the Product Assurance Directorate and AVSCOM.

Binary Chemical Weapons Program

The binary chemical weapons program required an extensive effort by the Product Assurance Directorate during FY 1986.

Phase I of the program was nearing completion. The M687 binary projectile and domed steel base FIP were in the final stages of TDP-update prior to contract award. Numerous problems with the M20 canister fill/close and methylphosphonic difluoride facilities were being addressed in negotiations, prior to contract

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award. Contractor proposals were being reviewed for the methylphosphonic dichloride reclamation project at Rocky Mountain Arsenal.

Phase II was near the end of the design phase. The Bigeye bomb was in operational testing IIB. Problems with the test program led Congress to mandate that the General Accounting Office certify the test results. A final design was approved for the Bigeye fill/close facility, and a contract for equipment installation and testing was awaiting funding. A decision on the location of the ethyl 2-diisopropylaminoethyl methylphosphonite facility was in process.

Phase III was in the early design phase. The MLRS binary chemical warhead design was incomplete and required extensive testing. The injector assembly fill/close facility design contract was awaiting funding.

### Chemical Agent Monitor

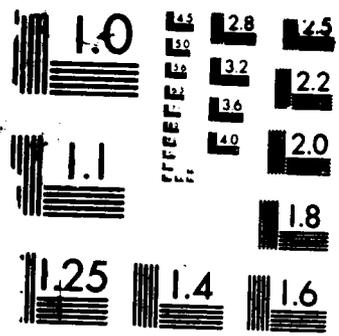
The Chemical Systems Division played a major role in the acquisition process to add a new chemical agent monitor (CAM) to the US inventory. The CAM was developed jointly by the United Kingdom Ministry of Defence and a UK contractor, Graseby Dynamics, Ltd. Jointly evaluated by the US and UK governments under an international materiel evaluation (IME) program, the CAM was accepted as a nondevelopmental item for limited production by the army. A limited production contract was awarded to Graseby Dynamics for 1,261 CAMs in January 1986. The Chemical Systems Division prepared a significant portion of the contract, incorporating expanded first article test requirements to verify the correction of deficiencies uncovered during the IME program.

The division met the unique problems of obtaining adequate inspection services from the understaffed US Army Contracting Agency, Europe (USACAE); dealing with a foreign contractor not familiar with US Department of Defense regulations, standards, specifications and procedures; and dealing with the restrictive policies imposed on OCONUS travel. The combination of a continued high level of effort and satisfactory performance of the CAM in the expanded first article tests was expected to result in the accelerated fielding of a new item that met an urgent need.<sup>15/</sup>

### Automatic Liquid Agent Detector

The US Army and US Air Force combined efforts to produce an automatic liquid agent detector (ALAD) which met the requirements of both services. To accomplish this, the USAF handled the procurement of the ALAD to a critical item performance specification. To develop this program, the army and air force





MICROCOPY RESOLUTION TEST CHART

counterparts worked closely together in developing the scope of work (SOW) and the performance specification. To this end, the Chemical Systems Division played a major role in identifying the RAM and test requirements of the specification and in developing the quality assurance portions of the SOW.

The directorate intended to continue to play an active role in this program, as plans were to transition life cycle management of the ALAD from the USAF to the US Army during the production phase. The Product Assurance Directorate initiated contact with the USAF quality assurance/manufacturing group to begin work on a memorandum of agreement (MOA) between these two quality assurance organizations. This quality assurance agreement was to establish the joint service quality assurance management of the program. The quality assurance agreements would form a part of the overall ALAD MOA between the two services.

#### Technology and Assessment Division

A proposed change to AMCCOM regulation 10-1 was submitted to reflect the establishment of a surveillance function in the division. The surveillance personnel were to manage and execute the chemical materiel stockpile reliability program (CMSRP).

#### Automation

The workplace automation effort accomplished the housing of a minicomputer within the Product Assurance Directorate. All Edgewood personnel were in proximity to a terminal capable of communicating with elements of the Defense Data Network. Two additional minicomputers were purchased: one dedicated to a computer aided design (CAD) system, and one as a file storage and redundancy system.

#### Chemical Materiel Stockpile Reliability Program

The Surveillance Branch expanded its operation following staff increases and approval of the operation regulation, AR 702-XX, Chemical Materiel Stockpile Reliability Program (CMSRP). Quarterly working group meetings were instituted to monitor program status. Annual meetings for coordination with other services were started, and were met with positive responses from all participants. Test plans and functional descriptions for complex computer data bases were prepared and staffed.

Due to manpower and storage space constraints, DESCOM became unable to support their original commitment. The situation was elevated to command level and resolved with a compromise agreement. Ground work for the retail surveillance program continued to be laid down with increased efforts to establish

## Product Assurance

contacts with field units.

### Test Technology

Three significant happenings occurred in 1986 in the testing technology area: the development of the orifice calibration apparatus, the delivery of the CAD system, and the delivery of the improved protective mask leakage tester (IPMLT).

A calibration apparatus using a microcomputer was developed which, in a few minutes, calibrated orifices and flowmeters. This method, when operational, was estimated to save the government a minimum of \$175,000 per year.

The CAD station was designed to be interactive with the engineer, who would be able to make drawings of individual components in a fraction of the time required using conventional drawing techniques. Three dimensional viewing minimized the need for extensive prototype fabrications.

The IPMLT was delivered and demonstrated to General Thompson at the joint logistics commanders meeting at Aberdeen Proving Ground. This tester was being developed as a replacement for the M14 mask leakage tester. It was also presented at the 1986 manufacturing technical advisory group meeting in New Orleans as an example of a successful manufacturing methods and technology project.

### Reliability, Availability, and Maintainability

RAM personnel were heavily involved in two command-thrust areas: RAM rationale reports, to establish system effectiveness and operational and support costs; and environmental stress screening, to save life-cycle costs by eliminating "infant mortality" and latent defects.

## Chemical Operations Division

### Chemical Agent Standard Analytical Reference Materials

The Chemical Test Branch was charged, through an interagency memorandum of understanding, with the administration of a program for making available chemical agent standard analytical reference materials (CASARM). The program was to compliment the standard analytical reference material program, which the branch operated for the army's Toxic and Hazardous Materiel Agency for many years.

The CASARM program coordinated the synthesis, purification, analyses, aggravated storage, surveillance, and distribution of agents of certified high purity to be used as reference standards

for all projects conducted under the auspices of the participating organization.

#### Determination of Silver in Charcoal

An improved x-ray fluorescence (XRF) test procedure for determining the amount of silver in impregnated, activated charcoal was demonstrated. A series of charcoals with several levels of impregnation were analyzed using XRF and a standardized acid extraction/atomic absorption technique. XRF was rapid, accurate, and reproducible. Testing time using XRF was reduced by more than 80 percent, and the technique generated no hazardous waste residues.

The improved XRF procedure utilized a new microprocessorbased multi-channel analyzer with a radioisotope source. Matrix effects were eliminated by virtue of the non-interfering carbon substrate. The microprocessor deconvoluted the spectrum, calibrated the instrument using a built-in calibration/multiple regression program, and calculated the silver concentration in the sample.

The effects of grinding the charcoal and varying x-ray exposure time were investigated. Sub-sampling errors were minimized by riffing and grinding the charcoal. Analysis times of three and six minutes gave similar results.

#### Filter System Up-grade

There was an on-going major construction, army, project at Edgewood for the up-grade of gas filter systems. This effort was for correction of identified OSHA deficiencies.

Renovations were active in the south end of building E5100. Charcoal testing and instrumental analytics were transferred from the southern end of the building to the northern end, and to building E5695. Most major building modifications were completed. Removal of in-place filter systems was accomplished by government personnel. The Corps of Engineers (COE) contractor constructed new change room facilities, laid down a new roof, installed and tested an emergency power generator, and installed new duct work, ventilation controls, and filter housings. Thirty-two new hoods were expected to be installed early in 1987. Following acceptance of the renovated area by the COE, the contractor was to upgrade the north end of E5100. Again, operations would be suitably transferred to minimize interruption of workflow.

#### Surveillance Testing

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Support of the chemical materiel stockpile reliability program continued with a high level of test support. Testing was maintained at acceptable levels through the use of overtime. Overtime at peak times would be required to maintain this backlog control.

## NOTES

1/Unless otherwise noted, this chapter is based on the annual historical submission of the Product Assurance Directorate, Mr. Hugh F. Lazar, Director, 6 Jan 87.

2/HQ, AMCCOM, Record of Weekly Staff Meeting, 2 Sep 86, p. 34.

3/Ibid., 16 Sep 86, p. 24.

4/Ibid., 9 Sep 86, p. 26.

5/Defense Ammunition Directorate briefing, "Status of Modern Munitions," Feb 87, n.p.

6/Staff meeting, 5 Aug 86, p. 34.

7/"Status of Modern Munitions," n.p.

8/Ibid.

9/Anon., New Developments in Armament & Munitions, (Dover, New Jersey: US Army Armament Munitions & Chemical Command, Dec 85), p. 61.

10/"Status of Munitions," n.p.

11/Staff meeting, 17 Dec 85, p. 6

12/Ibid., 29 Apr 86, p. 33.

13/Ibid., 3 Jul 86, p. 34.

14/Ibid., 4 Mar 86, p. 37; 20 May 86, p. 34.

15/Staff Meeting, 19 Aug 86, p. 32.

## CHAPTER V

### LOGISTICS READINESS

#### Mission

The deputy for logistics readiness acted for the commanding general and the deputy commanding general for procurement and readiness to provide centralized policy and direction for the integration and execution of the AMCCOM mission for integrated logistics support, supply, maintenance, transportation, and international logistics. The deputy provided principal logistics and readiness input to long range and mobilization planning for the command, coordinated with the deputy for resources and management to assure personnel and funding resources were available to staff and execute planned logistics readiness programs, and consulted and "consorted" with the deputy for procurement and production on acquisition policy and planning. In coordination with assigned project managers and weapon systems managers, he assured attainment of established readiness objectives and executed the planning for and generation of support products for systems and items to be assigned AMCCOM readiness proponency.1/

#### Organization

The deputy supervised the operations of his own office, the Integrated Logistics Support Office, and the Defense Ammunition, Materiel Management, Maintenance, Transportation and Traffic Management, and International Logistics Directorates. The organizational concept of the deputy's community remained stable throughout FY 1986.

#### Staffing and Personnel

Mr. Perry C. Stewart became the deputy for logistics readiness on 21 October 1985. Colonel L. W. Stock, who had served as acting deputy since May 1985, resumed his duties as assistant deputy. The deputy's office was composed of five civilians and two officers.2/

#### Deputy's Overview

Under the new deputy's guidance, many policies and procedures for the office were revised and promulgated during 1986. The effort to control the use of administrative office space in order to maximize the efficiency of the logistics readiness community continued throughout the year. Tighter control over travel funds for total package/unit materiel fielding was also instituted.

## Logistics Readiness

In January 1986 the commanding general of AMC directed all major subordinate commands to perform a vulnerability assessment of non-combat threats. The deputy for logistics readiness was appointed to lead this effort for AMCCOM. The final briefing to General Thompson occurred in March 1986.

### Major Activities

On 1 October 1986 an Ammunition Program Management Office was established under the deputy for logistics readiness. There were many minor directorate reorganizations due to high grade and personnel reductions during the year. A great deal of emphasis was also placed on PM matrix management support.

Among other accomplishments and activities were gathering, analyzing, interpreting, and verifying facts and information; preparing staff studies; developing and presenting plans, policies, and programs; assisting in implementing plans; assisting with other tasks crossing functional lines; and compiling a single report for the deputy and assistant deputy in controlling, developing standards, reviewing performance, and recommending corrective action.

## DEFENSE AMMUNITION DIRECTORATE

### Mission

The mission of the Defense Ammunition Directorate was to perform supply and maintenance functions for all assigned conventional ammunition. It served as national inventory control point (NICP) and national maintenance point (NMP) for army items of conventional ammunition, and directed all integrated materiel and financial inventory management activities of the defense inventories. It managed the maintenance program for the life cycle of assigned materiel to include maintenance engineering, maintenance readiness, maintenance support planning, materiel fielding plans, depot maintenance programs, and worldwide technical (logistical) assistance. The directorate also managed the single manager for conventional ammunition (SMCA) depot level maintenance program, and ammunition peculiar equipment (APE) program; directed the command readiness program; and provided integrated logistics support during the operational phase through demilitarization and item phase out. The directorate provided this materiel support to all services, other Department of Defense (DOD) activities, military assistance program (MAP) customers, and other customers for conventional ammunition items assigned to AMCCOM. Finally, it served as an associate worldwide ammunition reporting system (WARS) manager for assigned modules.3/

Organization

The Defense Ammunition Directorate consisted of four divisions and one office. These were the Resources Management Office and the Policy, Plans, and Systems; the Defense Accountability and Logistics Data; the Defense Supply Management; and the Maintenance Management Divisions.

Staffing and Personnel

Mr. J. B. Barker served as acting deputy director until December 1985 when Mr. M. Kojima came on board as deputy director. Colonel Wayne C. Boyd served as director until January 1986. Mr. Kojima served as acting director until Colonel James McAllister came on board as director from February through May 1986. Mr. Kojima again served as acting director until the end of the fiscal year.

During FY 1986 the Defense Ammunition Directorate had an authorized personnel strength of 33 military and 292 civilians. However, the actual strengths were 17 military and 288 civilians.

Director's Overview

The deputy commanding general for procurement and readiness directed an Ammunition Program Management Office be established. This new office was tasked with coordinating the many and diverse functions involved with program objective memorandum (POM) preparation. This action decentralized operation and maintenance army (OMA) financial management responsibilities in the Resource Management Office.

To provide users access to defense standard ammunition computer system (DSACS) programs, IBM personal computers (PC) and display terminals were purchased. A total of 13 PCs, 13 letter quality printers, and 5 color printers were delivered in the fourth quarter of the fiscal year. Completion of the local area network would allow users the capability to inquire and modify their applicable programs through a terminal. This action brought state-of-the-art techniques to the Defense Ammunition Directorate.

During FY 1986 the directorate provided logistics support to ten command post and field training exercises. Also, the AMCCOM chief of staff assigned the directorate the mission to address all tasks associated with the munitions and demilitarization study functional task group (MADS FTG).

The final FY 1986 executive director for conventional ammunition (EDCA) approved savings amount was \$280.8 million. The Logistics Control Activity established a logistics intelligence

## Logistics Readiness

file (LIF) for ammunition.

The project asset update system (PAUS) evolved to continue improving the analytical process of total logistics readiness/sustainability-army logistics assessment (TLR/S-ALA) studies. This system automated the manual process used in the past to support TLR/S-ALA efforts to estimate the future asset posture of army class V items.

Centralization of accountability for 11P (demilitarization) accounts at army depots occurred, involving some 150,000 short tons for munitions and explosive materiel. These assets were visible to inventory managers and other interested personnel at AMCCOM under the B5A account.

### Major Activities

#### "Hardin Study"

On 26 September 1985 the AMCCOM chief of staff assigned the directorate the mission to address all tasks associated with the Hardin independent review of munitions, demilitarization, and stockpile management. On 16 October the MADS FTG was established within the directorate, chaired by the director.<sup>4/</sup>

A computer data base was established to track all actions identified in the three phases of the MADS FTG which included in excess of 185 recommendations and 2,000 issues from the installations visited. Verification visits were also performed by DESCOM, TECOM, and AMCCOM staffs to ensure institutionalized "fixes" were effected at each installation.

All MADS FTG actions were to be completed by FY 1987.

#### Savings and Cost Avoidances

Directorate savings and cost avoidances were reported quarterly to the Management Directorate for the AMCCOM cost control initiative program (CCIP), and were subsequently forwarded to the EDCA who tracked ammunition SMCA cost savings initiatives. The final FY 1985 EDCA approved savings credited to the directorate were \$280.8 million.

The directorate FY 1986 goal was set in coordination with EDCA at \$80,175,000. Final total directorate validated savings/cost avoidance initiatives were \$239,350,000. Significant FY 1986 savings/cost avoidance initiatives included ammunition inventory management, \$229.1 million, and maintenance management, \$10.25 million.

Depot Operations

During FY 1986 \$63,176,638 were expended for supply depot operations at the AMCCOM arsenals and ammunition plants. The total tons shipped and received in FY 1986 were 85,052 and 98,384, respectively.

In addition to depot operations at AMCCOM installations, \$20,334,692 was expended for care of supplies in storage (COSIS) for conventional ammunition at Depot Systems Command (DESCOM) depots. The COSIS was a two part program: the cyclic inspection of stocks in storage, and the upgrade of condition code "E" materiel. During FY 1986 all required inspections were made and 14,227 short tons of condition code "E" materiel were upgraded.

Major maintenance worldwide accomplishments for FY 1986 were 70,063 tons at a cost of \$32,166,522. Of this total, 23,609 tons were completed at DESCOM installations and 46,454 tons were completed at AMCCOM at locations outside the continental United States (OCONUS). The demilitarization of 16,652 tons of ammunition was accomplished in FY 1986 at a total cost of \$11,501,000 (for ammunition only). DESCOM demilitarized 9,911 tons, and AMCCOM demilitarized 6,741 tons.

Logistics Information File

In accordance with an AMC CG initiative, the Logistics Control Activity (LCA) was to establish a separate LIF to accomodate ammunition requisitions status, intransit transportation data, and ammunition unique data. Ammunition items were not previously recorded on the LIF.<sup>5/</sup>

The Defense Ammunition Directorate and the Transportation and Traffic Management Directorate worked together with the LCA, the Automated Logistics Management Systems Activity (ALMSA), and the Logistics Systems Support Activity (LSSA) to effect the initiative.

The LIF provided for status of supply transactions to units in the field. The development and maintenance of the LIF involved the receipt of images of army supply and transportation documents provided by the defense automatic addressing system (DAAS), which allowed LCA to monitor supply requisitions placed on the wholesale supply system and to report on the performance of the logistics pipeline.

In addition to tracking army ammunition requisitions, permission was obtained to include navy, marine corps, and air force data at the joint ordnance commanders group (JOCG), munitions supply subgroup (MSSG) meeting held on 21-23 October

1986.

It was established that the most expeditious method of getting the ammunition requisition data into the LIF, without creating a manual workload, was for ALMSA to furnish the data from the commodity command standard system (CCSS) to DAAS for LCA. The transportation data was being automated for the DSACS by the LSSA. The LSSA would provide intransit transportation data via DAAS to both AMCCOM and LCA.

By adding ammunition to the LIF, LCA could provide for customer visibility of ammunition items requisitioned under military standard requisitioning and issue procedures (MILSTRIP), and materiel shipped under military standard transportation and movement procedures (MILSTAMP). The LCA could extract selected data for customers and managers alike, and provided for a single source of logistics information.

#### Toxic Chemical Munitions

Annex "F" of the joint strategic capabilities plan tasked the army chief of staff to ensure the development and publication of coordinated contingency support and movement plans for the rapid deployment of chemical munitions. The joint chiefs of staff (JCS) tasked the commander in chiefs, unified and component commands, to submit a 30-day requirement for toxic chemical munitions (TCM), and AMCCOM to source requirements and advise all concerned of the publication dates for coordinated plans.

The TCM requirements were sourced and command coordinated milestones were established for development and publication of an AMCCOM contingency support and movement plan. This information was forwarded to JCS through AMC and DA.

DA requested that AMC place the highest priority on developing the coordinated TCM movement plan and submit a draft of the plan no later than June 1986. AMCCOM responded by providing a draft in March 1986.

Upon receipt of the draft TCM contingency support and movement plan, DA established a joint logistics workshop whose goal was to produce a common document to be used by all services and agencies. The AMCCOM draft was used as the base document for the working group.

The TCM logistics, joint guidance, and procedures final draft was completed in September 1986 and submitted to JCS for approval in October 1986. It was the culmination of many hours of hard work in which directorate ammunition expertise played a major role. It provided overall guidelines for TCM logistics, CONUS to

place of destination (POD).

#### TLR/S-ALA

The total logistics readiness/sustainability-army logistics assessment was one of the tools used by the army to identify and highlight logistics deficiencies in peacetime which could impact combat operations in war. This was a yearly analysis, of which a portion assessed AMCCOM's wholesale ability to support assigned class "V" combat requirements.

During FY 1986 it became apparent that in order to continue improving the analytical process of TLR/S-ALA, automation of the class "V" projected asset portion of the study was required. Thus, evolved the PAUS. This system automated the manual process used in the past to support TLR/S-ALA efforts to estimate the future asset posture of army class "V" items.

Through coordination between the Defense Ammunition Directorate and the Systems Analysis Office, PAUS was developed, programmed, and successfully implemented during FY 1986. This saved approximately \$27,000 in manpower data processing and reduced the need for overtime usage. PAUS was revised to support a two-year projection for the on-going TLR/S-ALA study.

#### Report Automation

Requirements were received from higher and local authorities for data pertaining to mobilization exercise (MOBEX) demands received, and shipments directed and accomplished during mobilization exercises. This data was previously compiled manually and submitted to the requesting organization by telephone or message. As a result, a study was made to automate this data.

Initially, seven automated data processing output products were developed to provide data based on ammunition required and shipped by item and service/agency of requisitioner; item and service/agency of ship-to activity; item and state/country code of ship-to activity; state/country code and service/agency of ship-to activity; MOBEX depot workloading report; and ammunition shipped to surface and aerial ports of embarkation.

After the initial development, two other reports were submitted for computer programming, with a target date of 1 March 1987. These two reports were ammunition required and shipped by requisitioner, and item and ammunition required and shipped by ship-to activity and item. All nine reports contained both quantitative and tonnage data.

## Logistics Readiness

Automation of the stratification report system (SRS), involved the preparation of the inventory report of principal or secondary items (DD Form 1138-1), and the requirements and asset stratification report. Data input by Defense Ammunition Directorate inventory managers to the AMCCOM business computer system was compiled, stratified, and displayed on an item-by-item basis, and system printouts were in the required reports formats. The DD Form 1138-1 was used to report the dollar value of army requirements and material assets stratified against those requirements. Army requirements and asset data were consolidated with other services' data to form the requirements and asset stratification report, which was forwarded to the EDCA and to each service. The purpose of this report was to identify existing or potential excess assets and corresponding asset shortages among the services.

This automated system utilized one common data base to produce both reports, ensured on-time submissions, enabled item inventory managers to devote time to other projects, and eliminated overtime. Annual cost savings to be realized from the automation of these reports was estimated at \$44,000. The SRS was being evaluated for implementation within the Materiel Management Directorate.

### Call Forward Program

Call forward programs were established for both Europe and the Pacific to enhance logistical support to the soldier in the field. During FY 1986, 68,400 tons of ammunition were shipped to Europe against a 69,000 ton goal, for a 99.1 percent fill. The war reserve stocks for allies goal of 21,000 tons was met by shipments of 20,800 tons, for a 99.4 percent fill. The Pacific call forward goal of 10,000 tons was met by shipments of 8,100 tons, for a 81 percent fill.

### Committee for Ammunition Logistic Support

Total package unit materiel fielding (TP/UMF), prepositioned ammunition (PREPO), call forward, and retrograde programs were served by the committee for ammunition logistic support (CALs). The CALs was established in 1974 to control the allocation, distribution, and redistribution of items identified as being in short supply during the subsequent 12-month period. The committee members represented the four military services and worldwide army elements.

Two CALs were scheduled each year, with provisions for emergency meetings if required. In February 1986 115 items were discussed. In August, the number had risen to 118. In the early years, the CALs discussed an average of 45 items. The

modernization of army weaponry, coupled with a decline in funds, caused a steady increase in the number of CALS items.

Program Objective Memorandum (POM)

The army acquisition programs for the POM FY 1988-92 was marked with many changes in guidance, methodology, and requirements. New packages were added to the stratification of requirements. Among these were new equipment fielding and ammunition initial issue quantity. The "living POM" was implemented. This changed the way of doing business from a cyclic approach to that of constant updates. Much turmoil, overtime, and numerous temporary duties (TDYs) were required to make the transition.

In the past, requirements were the driving factor in constructing the POM. In FY 1986, per VCSA guidance, manpower at the plants became a prime concern. One factor that had to be considered was the maintaining of 90 percent stability in the work force. The recommended acquisition program for FY 1987 as submitted to the Office of the Secretary of Defense (OSD) was \$2.254 billion. Of this, \$1.9001 billion was for appropriation 1, hardware.

Stockpile Purification

The stockpile purification effort initiated in FY 1979 to purge the ammunition system of old, obsolete and otherwise unneeded items continued in FY 1986. Based on the results of past proliferation studies, and enlisting efforts of ammunition personnel in all services and at all levels, the effort further reduced the number of line items cataloged and stocked. By the end of FY 1986 8,398 NSNs had been reviewed with 1,599 of those being purged from the system.

The annual stratification of principle items was produced for the first time as an automated system. The total dollar value of army ammunition assets was \$17.1401 billion. Of that approximately \$126 million was identified as potential DOD excess stock. The significant increase in excess was due to many items being declared excess that were previously held for contingencies.

Other Service Acquisition Program

The FY 1986 air force, marine corps, navy, and other customers' original acquisition program forecast was \$1.2768 billion. A total of \$1.4164 billion was actually received.

Military Interdepartmental Purchase Requests

A total of 1,018 basic military interdepartmental purchase requests (MIPR) and purchase orders, and 677 amendments were processed for the FY 1986 conventional ammunition acquisition and maintenance programs. The total dollar value was \$1,419,744,421.66, a decrease of \$250 million over the preceding year. In addition, another 1,017 amendments were processed on charges to prior year MIPRs.

A total of 1,016 conventional ammunition acquisition MIPRs were completed during FY 1986, an increase of 124 over the proceeding year.

There were two formal MIPR reviews held with each major service. The air force reviews were held at AMCCOM in November 1985 and at Hill Air Force Base, Utah, in May 1986. The marine corps reviews were held at marine corps headquarters in Washington, DC, in January 1986 and at AMCCOM in June 1986. The navy reviews were both held at AMCCOM in February and July 1986. There were also "correspondence type" reviews with other air force customers, other navy customers, and other DOD agencies when situations warranted amendments to MIPRs and purchase orders.

There was a total of \$148.5 million in excess funds returned to the services and federal customers in FY 1986. The breakout was as follows: \$55.1 million to the air force, \$41.1 million to the marine corps, \$47.6 million to the navy, and \$4.7 million to the federal customers. These funds were from FY 1986 and previous year MIPRs and purchase orders.

Ammunition Peculiar Equipment (APE)

The APE program for both the Department of the Army and the SMCA was managed by the APE Management Section. The army program was established and discharged under the direction of AR 700-20, with AMC supplement 1. The single manager APE responsibilities were directed by chapter 8, DOD 5160.65M. The DOD manual required the single manager to provide, fund, budget, and authorize APE in support of the services' retail maintenance requirements on a reimbursable basis. Inactive APE items were loaned to the services for retail maintenance on a cost free basis except for packing, crating, handling, and transportation charges.

During FY 1986 the SMCA effected cost avoidances in the APE program totaling \$4,808,131. A FY 1986 cost avoidance of \$1,816,011 was generated, with additional savings expected to follow.

During FY 1986, the army and single manager inventory of APE reflected 423 separate lines of equipment totaling 5,027 assets. This number of assets represented a loss from the 5,073 assets the previous year due mostly to deletion of APE 1952 lightning protection system equipment from the APE inventory. The value of the inventory was placed at \$75,867,609.

There were 5,928 usage reports received as input into the APE management information system computer during FY 1986. These reports assisted managers in selecting equipment for loans, especially to overseas destinations; establishing and identifying assets for rebuild actions; and, to a limited extent, identifying the need for procurement or fabrication of replacement items.

A total of 1,070 requisitions involving 3,265 items were processed in support of ammunition programs. There were 402 requisitions for a quantity of 596 major equipment items, and 668 requisitions for a total of 2,669 parts, kits, and assemblies which comprised this supply activity to and from worldwide locations.

An on-site inventory by the accountable officer for APE was performed at Sierra Army Depot in February 1986. Discrepancies between this installation and AMCCOM records were reconciled on all APE major end items, parts, kits, and assemblies. Inventories were also conducted on the NICP at Savanna Depot Activity in August 1986, and Tooele Army Depot in September 1986, with satisfactory results.

Foreign military sales of APE during FY 1986 involved four cases. These cases were Korea, four APE items totaling \$32,394; the Netherlands, three APE items totaling \$26,751; Ecuador, three items totaling \$26,751; and Jordan, one APE item totaling \$4,842.

The APE program received the following funding during FY 1986. OMA funds were provided for maintenance engineering studies, travel, technical support, concepts, drawing and manual updates, and rebuild of APE equipment. A total of \$1,100,000 was provided for this effort. Procurement appropriation (PA) funding was provided under fund code 4113 in the amount of \$4,945,000. This funding was for the procurement or fabrication of APE in support of worldwide ammunition operations. All of the OMA funding and all but \$8,000 of the PA 4113 funding were obligated to APE actions. The \$8,000 PA 4113 was being retained to provide for any cost growth in existing projects.

The APE program was subjected to a DOD inspector general audit of the management of APE. The survey phase of the audit was completed on 15 August 1986. Several shortfalls were detected at user activities; however, they were not considered significant.

## Logistics Readiness

The project was officially terminated without proceeding to the audit phase.

Army regulation 700-20, Ammunition Peculiar Equipment, was revised and submitted for approval and publication/distribution in March 1986. This was the first revision since the regulation was published in April 1979. Major changes involved the loan of APE to government-owned, contractor-operated (GOCO) plants; accountability of parts, kits, and assemblies at the local level; new requisition and budget provisions; and hazard analysis provisions for APE and nonstandard tools, jigs, and fixtures.

The APE management section was tasked to implement the provisions of the AMCCOM management study of ammunition gages. Two personnel worked full time on this task. Implementation of the study provisions involved mission function changes from the development of gage drawings through procurement or fabrication with the small business contractors. Supply, accountability, budgeting, certification, and maintenance responsibilities all needed to be upgraded to establish a viable ammunition gage program.

Through the efforts of the implementation personnel, scores of unnecessary gage procurements were cancelled. Users were ordering gages which had no valid field requirement. The team was in the process of upgrading TB 43-0195 to clarify for users those gages which had field applications. This effort was expected to continue for 1.5 years to achieve the goals of the study recommendations.

The APE program actively supported a project for a dud destroyer/retrieval system (DDRS). This system would be telerobotically operated to eliminate human contact with dud ammunition. The Human Engineering Laboratory (HEL) had an ongoing robotic test project called the soldier robot interface project (SRIP) which was to accomplish specific explosive ordnance detachment (EOD) functions. Representatives of the APE design element and HEL met to exchange ideas and technology on the SRIP and the DDRS. A comprehensive purchase description was written, approved, and used for procurement of the required item.

Many priority renovation projects were supported with equipment developments. Equipment for removal of ogives on 155mm and 8-inch projectiles, renovation equipment for M16 series mines, crimping equipment for M60 105mm cartridges, and automatic inspection equipment for loose fuzes on the M433 40mm cartridge were some examples.

New technology innovations such as a water jet cutting device was explored for use in demilitarization of rocket assisted projectiles and improved conventional munitions. Robots were employed on a test basis to operate APE machines where exposure to explosive hazards existed or where expensive suppressive shielding would be required.

#### M483A1 Projectile

A total of 53,376 M483A1 projectiles required base plate replacement in USAREUR and were being repaired under contract with Eurometaal at Liebenau, Germany. Eurometaal was a Dutch-based firm having NATO co-production rights for the M483A1. Completion of this quantity was expected during March 1987.

An additional quantity of approximately 40,000 M483A1 projectiles was added to the contract for base plug replacement. This group was suspended from issue and use for base plug replacement due to potential flaws in the bases. Eurometaal was to start rework upon completion of the original 53,376 projectiles and was to conclude renovation by December 1987.

From Korea's effort of 11,000 rounds, 914 rounds were identified as requiring new bases and were subsequently returned to Kansas Army Ammunition Plant (AAP) and repaired.

In addition to base defects, an estimated 5,000 rounds were identified for ogive replacement due to excessive metal loss on the ogive from corrosion. This corrosion condition was aggravated by pallet top/ogive contact abrasion. The situation was corrected by a redesigned pallet top with which this contact was eliminated, and the application of a polyurethane corrosion inhibiting coating after glass bead cleaning on rounds found with corrosion.

Ammunition peculiar equipment was being developed that would be capable of ogive and base replacement and was to be fielded for use in USAREUR in the first quarter of FY 1988. This equipment would allow for depot level replacement of these components, thereby improving the overall readiness posture through improved maintenance capability and mobility.

#### Unstable Propelling Charges

The downloading of unstable propelling charges in 105mm GB cartridges began at Anniston Army Depot on 10 September 1985. Though projected to run five months, it was, with technical assistance provided by the directorate, completed on 6 January 1986. Funding for the program totaled \$1,675,000.6/

## Logistics Readiness

The US Army Chemical Activity, Western Command, (USACAW) operation began in October 1985 and was projected to run for at least 19 months. This project was approximately 90 percent finished with completion expected in early FY 1987.

### Johnston Atoll

The Johnston Atoll Task Force (JATF), formed in 1984, halted construction of building 706 because the site plan and safety submission had been rejected by the DOD Explosive Safety Board (DDESB).

Directorate personnel actively participated in the preparation of the revised site plan and safety submission, and presented these finalized documents, plus the building design, to the DDESB. They were approved without change. As a direct result of the above efforts, a new construction contract was let and the building was scheduled to become operative in May 1987.

### MK 94 Bombs

The Department of the Navy requested all MK 94 bombs at USACAW be upgraded to serviceable condition in FY 1986 as opposed to the previous FY 1987 schedule. Directorate personnel prepared a scope of work and expended extensive effort to locate and effect delivery of parts, equipment, and supplies to support the project.7/

The directorate coordinated efforts to provide a trained and well qualified team of chemical operating personnel from Tooele Army Depot to accomplish this project, which was completed two weeks ahead of schedule.

### Demilitarization

The XM221/XM222 universal demolition charge (UDC) was being evaluated as an initiating or donor charge for detonating explosive D-loaded navy gun ammunition. Demilitarization of this ammunition using existing technology and methods was marginally successful. Explosive D was difficult to initiate due to its low sensitivity and low order detonations. Nonfunctioning and kick outs were common results. A reliable and environmentally acceptable demilitarization method was required.

Phase I testing was conducted at Sierra Army Depot in June 1985 with support of the 34th EOD, ARDEC, and the Maintenance Engineering Branch at Dover. Subsequent to determining optimum UDC to projectile placement and UDC standoff distance, 10 each 6-inch armor piercing (AP) and high capacity (HC) projectiles were tested and resulted in 20 high order detonations.

Encouraged by these preliminary results, a decision was made to expand efforts into a phase II program which included establishing demilitarization methods for 8-inch AP and HC projectiles and to determine, with US Army Environmental Hygiene Agency (AEHA) assistance, levels of soil contamination generated by these detonations.

Phase II testing started in October 1985 but was not completed. While several difficulties were encountered, the most significant was that consistent high order detonations of HC projectiles were not achieved as expected. Preliminary results of soil analyses indicate zero picric acid contamination of immediate detonation areas where HC projectile high order detonations occurred. High order functioning of AP projectiles resulted in 15 to 28 parts per million contamination which was considered low level by AEHA.

Problem areas were addressed and Phase II testing resumed in October 1986. High capacity 6-inch and 8-inch projectiles were very successfully tested. Optimum results were obtained by removing the projectile nose plugs, placing the XM 122 in the cavity in direct contact with the auxiliary detonating fuze (ADF), and initiating the donor with either a blasting cap or detonating cord. The largest stack of projectiles detonated at one time was 32.

Testing of AP projectiles was planned for the second or third quarter of FY 1987. Preliminary test results indicated the best success would be attained by shape charge jet penetration of the projectile base fuze and subsequent booster initiation. Fixtures were designed and fabricated to assure optimum UDC to fuze alignment and standoff for the tests.

The installation of a white phosphorus-phosphoric acid conversion plant at Crane Army Ammunition Activity was 95 percent complete. The plant was scheduled for inert proveout in the second quarter of FY 1987. A production schedule had not been finalized, pending the availability of funds.

#### Level "C" Integrated Logistic Support

Toward the end of FY 1985 there was a movement to return "Level C" ILS management responsibility to the Defense Ammunition maintenance branches located at Dover as the numbers of "Level C" items increased and could not be adequately supported by the ILS Office. Final agreements were staffed. The maintenance branches accepted certain "Level C" items which were ammunition related and required a minimum ILS effort commensurate with the activities performed by the maintenance branches prior to the formation of the ILS Office.

## Logistics Readiness

A memorandum of agreement was enacted in October 1986 between the ILS Office, the Maintenance Directorate, the Defense Ammunition Directorate, and the Materiel Management Directorate outlining the proposed areas of responsibility. The maintenance branches were managing 38 "small" or "Level C" programs.

### Mine Dispensers

Maintenance engineering support for system maintainability was provided to ARDEC in the full-scale engineering development of the XM138 mine dispenser (Flipper). Technical data was provided to update technical manuals. The in-house logistics support analysis record (LSAR) was updated to reflect final design. Input for the provisioning master data record (PMDR) file was updated for cataloging and initial provisioning efforts.

Maintenance engineering provided support to the XM139 (Volcano) to meet the following milestones: system support package to support DT II, air manual validation, maintenance demonstration, and logistic demonstration. It also reviewed the LSAR, selection work sheets, and technical manuals.

The M131 dispenser and mines, the M136 practice dispenser, and the M71 remote control were type classified standard. The technical data package was completed and entered into configuration management control.

During the year, the mine clearing line charge (MICLIC) provisioning file was built from zero. It was later converted for marine corps system compatibility. Following this, the file was reconverted to army format so that the army prescribed load list (PLL) could be properly built. Since the marine corps had decided to assume primary inventory control activity (PICA) status, the file was reconverted to marine corps compatibility. The MICLIC TM draft received from the contractor was reworked, validated at Fort Knox, and refined to reflect engineering changes to the launcher and procedural improvements developed in testing and training. The first unit equipped was accomplished in November 1986 to the 9th Infantry Division at Fort Lewis, Washington.

### Malfunction and Deficiency Investigations

There were 105 new malfunction investigations (MIF) and 16 deficiency investigations (DIF) opened in FY 1986. Seventy MIFs and ten DIFs were completed in the same time frame.

Several actions were taken in FY 1986 to reduce obstacles to timely close-out of malfunction and deficiency investigation.

The system for requisition of ammunition test samples for the Dover site was changed. Malfunction samples were requested by teletype direct to the Quality Assurance Directorate at Rock Island. To reduce delays in the receipt of test samples, follow-up requests were elevated. Finally, a malfunction investigation priority system was developed, based primarily on the MIF classification (Class A or Class B) and the impact on readiness.

#### Prepositioned Ammunition

Army and marine corps ammunition items loaded aboard prepositioned ships were found deteriorated during the 1984-85 ships maintenance cycles. This raised very high level concern as to the serviceability and combat readiness of the stocks stored afloat.

As a result, the entire stockpile of M84A1 HC smoke cartridges were being defuzed for issue with closing plugs and bulk pack fuzes. The TDP was being amended at CRDEC, and depot work was scheduled.

In addition, investigations were initiated on excessive duds on the M577 MTSQ fuze and deterioration of the M4A2 155mm propellant charge.

#### Automated Maintenance Procedures Engineering Data Base

The automated maintenance procedures engineering data base (AMPED) was an engineering program designed to provide the ammunition maintenance engineer control of the latest repair parts, materials, drawings, specifications, and APE specified in depot procedures prepared by the Maintenance Engineering Branch.

FY 1986 passed with little progress being made toward hardware acquisition, even though the directorate provided DSACS with requested information concerning hardware/software requirements in January 1986. It was uncertain whether or not a contract could be let in 1987. A goal of September 1987 had been established at Rock Island for this program.

### INTERNATIONAL LOGISTICS DIRECTORATE

#### Mission

The mission of the International Logistics (IL) Directorate was to direct and control the AMCCOM IL program worldwide. This mission included managing materiel for foreign military sales (FMS), grant aid, cooperative logistics programs, and the special defense acquisition fund. The directorate served as the focal

## Logistics Readiness

point for the commander in support of IL programs and related activities, including major item materiel excesses and offers.8/

### Organization

Due to the "Major Frost" study conducted during FY 1986 the deputy director's position in the directorate was abolished and the director's position was converted from an O6 officer position to a GM-15 civilian position. Additionally, the two regional divisions were consolidated into one division, with one division chief and one branch chief position being abolished. The Geographic Division changed to three branches, and the Operations and Program Division changed to four branches, since the total package support mission was added.

The Operations and Program Division served as the focal point for all audit and inspection activities, developed all internal reports, controlled the quality assurance program, and managed the special defense acquisition fund. The Geographic Division was responsible for all military materiel assistance in 88 countries worldwide. The Egyptian Air Defense Office directed, coordinated, and controlled the overall AMCCOM FMS program for Egyptian air defense, and exercised full time authority of the director for international logistics for the development, justification, and allocation of the program's fiscal resources.

### Staffing and Personnel

Mr. Richard E. Harris served as the director of IL for FY 1986. A total of 90 civilian spaces and 18 military spaces were authorized at the end of the fiscal year, but the actual personnel strength was 111 civilians and 10 military.

### Director's Overview

The International Logistics Directorate had the responsibility for managing, controlling, monitoring, and reporting on the special defense acquisition fund (SDAF) for AMCCOM. Established by Congress in 1981, the SDAF was a program to acquire defense articles in anticipation of foreign requirements, thereby providing for delivery earlier than normal procurement leadtimes would allow. The SDAF enhanced the US government's ability to satisfy urgent military requirements for allied and friendly nations. At the same time, the program reduced diversion from production for US forces and prevented withdrawal from US stocks. Since its creation in 1981 the SDAF portion of the program for AMCCOM consisted of about \$252 million for defense equipment. Materiel procured included heavy weapons, small arms, support equipment, tool sets, and supporting

ammunition.

The directorate continued its aggressive campaign for the prompt closure of all FMS cases in FY 1986. The headquarters of the US Army Security Assistance Center (USASAC) established the AMCCOM goal of 553 case closures for 1986. As of 7 November 1986, AMCCOM had completed 555 cases. For 1985, the goal was set at 527. AMCCOM met the goal.

Many of the major FMS shipments were accompanied by a quality assurance team. Although the members of these teams were drawn from the Maintenance and Product Assurance Directorates, other major subordinate commands, and the Depot Systems Command's depots as required, they were coordinated by the IL Directorate. These teams corrected minor shipment damage, supervised equipment setup, and performed preoperational testing. During FY 1986, eight teams were fielded.

#### Major Activities

##### Munitions Control Cases

During FY 1986 the directorate processed 306 munitions control cases. These consisted of 47 requests for direct sale and export of defense articles or technical data, 87 requests for advisory opinions concerning potential sales, 147 manufacturing licenses or technical assistance agreements, 22 requests for temporary export of defense articles for demonstration, and 15 requests for commodity jurisdiction determination. The IL Directorate staffed recommendations that resulted in AMCCOM objecting to 78 of the requests.

##### International Logistics Program

The international logistics program consisted of FMS, the cooperative logistics supply support arrangement (CLSSA), and the grant aid program. The total dollar value of these programs as managed by AMCCOM during FY 1986 was \$1.43 billion. The FMS portion of the program totaled \$1.40 billion in FY 1986 and accounted for 98 percent of the program. The grant aid portion of the program amounted to less than 1 percent.

##### Grant Aid Program

The only countries with open aid programs at AMCCOM during FY 1986 were Greece, Jordan, Lebanon, Portugal, Spain, Chad, and Honduras (Federal Assistance Act, Section 506 program). The value of grant aid materiel previously ordered, but not delivered decreased from \$2 million in FY 1985 to \$1 million in FY 1986.

## Logistics Readiness

The grant aid program was completed in FY 1986 for Jordan, Lebanon, and Spain. The program was in the process of termination, and was being replaced by FMS credits.

During FY 1986 AMCCOM processed grant aid closeout certificates for 15 lines and document numbers. A total of 6 RCNs remained open for supply action.

### Foreign Military Sales

After a letter of offer and acceptance (LOA) was established, it could require modification or amendments before full agreement with the customer was attained. There were 223 such modifications and 71 amendments during the year.

In all, there were 348 international logistics cases implemented in FY 1986. Each case could consist of a number of separate requisitions for different types of items. The 348 cases for FY 1986 totaled 20,158 requisitions. FMS accounted for 9,257 requisitions. The directorate processed 10,654 requisitions as part of the CLSSA, 53 percent of the total received, and 247 for grant aid. Of those 247 requisitions, 200 were processed for Honduras.

All foreign requests for military materiel were directed to USASAC. A Department of Defense LOA was then initiated and forwarded to the appropriate major commodity command. The commodity manager established price, availability, and other information relative to the items or services requested. The LOA was then returned through USASAC to the requesting country for their approval. During FY 1986, AMCCOM submitted 498 cases to USASAC.

### Geographic Division

During FY 1986, the Mideast/Africa/Pacific Division and the Europe/Americas/Mediterranean Division were combined into one Geographic Division. This action was deemed necessary as a result of the reductions sustained due to the Gramm-Roachman-Hollings Act. This reorganization also reduced the number of geographic branches from four to three.

The number of letters of offer processed by the division increased over the previous year. This placed an increased workload on a declining workforce. Grant aid activity was relatively static.

### Egypt

There were 47 open cases for a total dollar value of \$197.8 million. Twenty-four of these cases involved the M60A3 tank, the M901 improved TOW vehicle, the M88A1 recovery vehicle, and ammunition. Seventeen implemented cases pertained to equipment and materiel for coproduction of 105mm tank ammunition. Five cases were for air defense. There were 12 pending cases for a total value of \$77.4 million.

The largest of these cases provided shop equipment selected by the government of Egypt to establish a zone workshop to perform depot level repairs on major components of its fleet of M113 and M109 vehicles, M60A3 tanks, and M88A1 track recovery vehicles, and to perform intermediate level repairs on M60A3 tanks, M88A1 track recovery vehicles, and their engines.

During 1985, Egypt requested US assistance to activate the workshop facility. A contract was awarded to write a scope of work to solicit bids for an activation contractor for the zone workshop. Milestones established by Egypt called for construction to be completed in July 1987, the first test production line in December 1987, and the workshop to become fully operational in July 1988. There were a total of 1,345 defined lines on the case. FMS case UHL was written for a project manager and the activation contractor.

#### El Salvador

As a result of the sensitivity of the situation in El Salvador, considerable demands were placed upon AMCCOM during FY 1986 to provide emergency support. These requests were for various types of small arms weapons, support equipment, tool sets, concurrent spare parts, and ammunition.

From October 1985 through September 1986, approximately 179 line items of materiel, with an estimated value of \$36.7 million, were provided. Most of these shipments required expedited transportation to meet critical commitments to the government of El Salvador.

#### Korea

Continued support of the Republic of Korea indigenous tank (ROKIT) program remained active. Requirements for US furnished materiel included cannon assemblies, mounts, and gunners' telescopes for a total of \$16.5 million. One major case for ammunition was implemented by Korea during FY 1986 for \$10.9 million.

The Netherlands Production Consortium

A memorandum of understanding (MOU) between the governments of the Netherlands and the US was signed on 22 October 1980. The MOU provided for NATO countries to cooperatively produce the M483A1 155mm projectile for indigenous (European) use. The participating countries were the Netherlands and the United Kingdom. However, negotiations were underway to include Turkey in the consortium.

Production of approximately 200,000 projectiles began in April 1986 and was scheduled to continue through 1990. Initial production tests were performed in the US in June 1986 and successfully completed. Test results were forwarded to the Netherlands to aid its government in performance of future tests. AMCCOM participation was advisory in nature and mostly technical assistance, with the exception of two FMS cases for the M577A1 PD fuze.

This program resulted in 14 FMS cases. During FY 1986 the cases were NE-B-VPY for technical assistance and travel by US personnel; NE-B-VQZ for training of consortium personnel in US quality assurance procedures, which was completed in December 1985; NE-B-VOV and VQQ for the automatic distribution of revisions and changes to the technical data package (CY 1985 and 1986); NE-B-VRB for CONUS testing of production samples from 1986 to 1990; NE-B-VPP and VQE for sales of 20,000 and 40,000 M577A1 PD fuzes; and NE-B-VRU for quality assurance training of three consortium personnel at Kansas Army Ammunition Plant in November 1986.

An amendment to the M483A1 MOU was being negotiated to add the XM864 155mm ICM projectile. The production of the XM864 would begin in 1990 when M483A1 production ends.

Pakistan

The total program for Pakistan had an estimated value of \$142 million. The emphasis remained on purchase of major equipment, ammunition, support equipment, and technical data. There were 12 pending cases for the purchase of M109A2 howitzers, ammunition, and technical data with a total value of \$21 million.

People's Republic of China

Of the seven FMS cases for modernization of ammunition production facilities, five were implemented and two were declined. Total value of the program was \$28.5 million.

Taiwan

There were 38 open cases for a total dollar value of \$134.4 million, and three pending cases for \$686,208. Twenty-eight of the open cases were for tool sets, equipment, machine guns, and ammunition. Ten cases were for the hybrid tank program.

Thailand

Efforts to upgrade the Thailand manufacturing plant resulted in four FMS cases with a total program value of \$6.4 million. Requirements were for increased production capability of small arms (5.56mm and 7.62mm) ammunition within the country. The shipment of requirements was completed during FY 1986.

Turkey

The Turkish FMS program at AMCCOM picked up as a result of the Turkish Land Forces Command (TLFC) decision to upgrade 760 M48 tanks to the M48A5T2 configuration. The modern fire control system would consist of the tank thermal sight (TTS), a laser range finder specially designed by the contractor for the TTS, the add-on stabilization system, and the M1A1 ballistic computer.

Termination of the M60 TTS multiyear contract, due to phasedown of the M60 tank line, gave Turkey an opportunity to buy into the fourth and fifth year contracts. This helped to decrease termination costs for the US Army and provided Turkey a reasonable price and availability. Deliveries were to commence in March 1987 and continue until April 1989. The estimated total value of the program was \$201.1 million.

Iran

When all sales to Iran were suspended in February 1979, \$166 million worth of howitzers, ammunition, tool sets, and equipment were frozen in various stages of procurement and shipment. Since then, \$149 million worth of this materiel was reallocated to the US Army and other customers or canceled. Efforts were ongoing to reallocate/dispose of the balance of \$17 million worth of nontitled assets. Of this \$17 million, approximately \$8.2 million worth of materiel was approved for disposal.

Niger

The Military Airlift Command airlifted \$2.1 million worth of weapons, spare support equipment, and ammunition to Niger during FY 1986 in support of the military assistance program-funded FMS program.

## Logistics Readiness

### Somalia

The first increment of six SDAF-produced M198 towed howitzers was supplied to the government of Somalia on an expedited basis in the fourth quarter of FY 1984. The LOA for the remaining 12 was accepted by Somalia and the second increment of 6 howitzers were expedited to Somalia in the fourth quarter of FY 1985. The final increment of six was delivered at the end of FY 1986.

### Chad

During FY 1986 requirements for Chad consisted of miscellaneous small arms weapons and ammunition. All materiel was shipped during the third and fourth quarters and executed against 506A funding authority.

### Saudi Arabia

Major weapon systems delivered to the government of Saudi Arabia in FY 1986 included 42 M198 howitzers valued at \$245 million, and 72 M134 machine guns valued at \$240,000. Ammunition deliveries in support of 155mm howitzers totaled \$14.6 million.

Weapon systems placed on contract in FY 1986, with delivery scheduled in FY 1987 and FY 1988, included 18 M109A2 howitzers, 24 4.2-inch mortars, 62 81mm mortars, and 104 .50 caliber machine guns valued at \$24.7 million. At the close of FY 1986 the estimated value of pending cases was \$18.1 million, which included \$13.3 million for 105mm tank ammunition.

### Egyptian Air Defense Office

The Egyptian Air Defense Office continued with the long range program to assist the Egyptian government to develop the capability to repair and maintain non-US, non-NATO, gun air defense systems.

Spare parts shortages and the deteriorated condition of the vehicles continued to be major problems, affecting both schedule and cost. Installation of the test and repair stations was completed in the workshop. The first two vehicles were in the final stages of repair.

Technical assistance was to continue for one year to help the Egyptian military in establishing a production control system, quality techniques, and a consolidated supply system. The technical assistance program would also assure maintenance and operation of the test and repair stations.

INTEGRATED LOGISTIC SUPPORT OFFICE

Mission

The Integrated Logistic Support Office served as the AMCCOM principal for integrated logistic support (ILS) and manpower and personnel integration (MANPRINT). It provided command policy guidance and program assessments, established and provided logistic skills to support development, provided ILS management for level I, II, and III AMCCOM programs, and ILS management assistance for assigned non-AMCCOM programs.<sup>9/</sup>

Organization

The AMCCOM ILS Office was located at the three principal AMCCOM duty sites. The office chief was stationed at RIA.

Five divisions existed within the ILS Office. A RIA office contained two ILS management divisions, and the Policy and Analysis Division. A Dover-based division provided ILS management capability for ammunition acquisition programs, and an Edgewood-based division provided ILS management capability for chemical system acquisition programs. This new organizational structure became effective 1 October 1986.

Staffing and Personnel

Mr. John H. Allcott served as ILS Office chief during FY 1986. The position of Mr. William H. Carthage as the deputy chief was abolished.

Civilian authorization for the ILS Office was increased by one person during FY 1986, from 72 to 73. However, actual strength declined from 71 to 68.

Director's Overview

Since the formation of the ILS Office in FY 1984, several initiatives were undertaken to provide AMCCOM with a singular and responsive capability to address the logistic support requirements of evolving materiel systems. These initiatives were undertaken with recognition of ongoing manpower shortages, increasing workload demands, and geographical separation of office personnel.

In accomplishing the ILS Office mission, considerable coordination was required within the AMCCOM logistic readiness community and with the technical directors of ARDEC and CRDEC. Establishment and conduct of quarterly ILS executive council meetings at RIA, Dover, and Edgewood served to enlighten all AMCCOM higher-grade personnel on ILS requirements. These meetings

## Logistics Readiness

served as an effective platform for resolving issues, introducing new or improved ILS elements and considerations, and addressing concerns of other AMCCOM functioning bodies.

The primary objective of the AMCCOM ILS Office was to provide centralized, standardized, and meaningful management of ILS programs for AMCCOM materiel systems. ILS managers within the office continued to exert positive leadership of proponent ILS management teams. These actions were oriented towards recognizing, planning, integrating, and executing the requirements of all ILS elements and considerations commensurate with proponent materiel system acquisition and program management strategies. The relative success of AMCCOM ILS management could be measured by the FY 1986 AMC ILS quarterly reviews and analyses, wherein AMCCOM routinely was the most favorably rated AMC major subordinate command.

Although these actions and accomplishments reflected a positive trend, room did exist for improvement. Certain initiatives undertaken in FY 1986 would prove out during the outyears via improved productivity. A specific example was the evolution of the integrated management system (IMS) which provided automated communications and data link among the three ILS Office duty sites.

The ILS Office recognized a strong outperiod challenge at the end of FY 1986 to continue improving AMCCOM logistic support capabilities. Given the quality and dedication of office personnel, positive ILS management within AMCCOM should continue even with additional workloads.

### Major Activities

During FY 1986, the AMCCOM ILS Office achieved many short and long range office objectives/goals. These achievements resulted from the dedication and effective management demonstrated by the AMCCOM ILS managers. Each ILS manager was assigned to several evolving AMCCOM materiel system acquisition programs, whether developmental, non-developmental, or product improved. The ILS managers' ability to communicate between each other and with the entire army community, contractors, and where necessary, other services, contributed greatly to the success of the AMCCOM ILS Office.

The ILS Policy and Analysis Division supported AMCCOM ILS managers with information documents such as the ILS managers list, ILS policy and procedures, ILS status/ratings reports, and the ILS milestone reporting system (ILSMRS).

Subject Matter Assessments

The AMCCOM ILS Office was delegated as the responsible organization for administering the initial provisioning subject matter assessment (SMA). The purpose of the SMA was to identify initial provisioning problems and conduct a workshop to discuss solutions and decide the best course of action to remedy those problems.

After final agreement between the major subordinate commands (MSCs) regarding which problems and courses of action would result in a productivity gain, a briefing was presented to General Thompson for his approval or disapproval. The office would then implement those recommendations approved by General Thompson.

The office also participated in a subject matter assessment of ILS conducted by the AMC Management Engineering Activity. Participants in the SMA included all MSCs, PMs, and TRADOC. The overall intent of the SMA was to identify the processes and organization responsible for ensuring ILS was accomplished for weapon systems. The thrust was to identify potential weaknesses in the ILS area through investigations and workshops. Possible improvements for each weakness were developed as enhancements to the ILS process.

The enhancements were grouped into the following categories: ILS considerations in the requirements/technical base activities and proof of principle phases of the acquisition process, ILS considerations in the development-production prove out phases of the acquisition process, ILS requirements in support of DESCOM, ILS processes and procedures, acquisition management milestone system, ILS community needs, and ILS organization.

ILS Office personnel actively participated through on-site interviews and attendance at a two-week workshop. The SMA results were presented to General Thompson on 31 October 1986, who approved the SMA with minor changes. Implementation was to begin in FY 1987.

Logistics Supportability

The AMCCOM ILS Office participated in three major efforts related to logistic supportability: independent research and development (IR&D), Logistics research and development (Log R&D), and MANPRINT. The ILS Office enhanced its activity particularly in IR&D, and became an integral part of the IR&D evaluation process.

## Logistics Readiness

During FY 1986, 58 IR&D packages were evaluated. Also, a paper on logistics consideration in IR&D was prepared and presented at the advanced program briefings for industry.

The ILS Office also increased its efforts in MANPRINT application. It conducted a survey of industry's IR&D and the AMCCOM technical base and identified programs with MANPRINT implications. It also prepared an AMCCOM action plan for ensuring consideration of MANPRINT and logistics in the IR&D evaluation process, established MANPRINT POCs at various Dover organizations, and integrated MANPRINT requirements into the ILS management process.

Other MANPRINT activities during FY 1986 included providing the AMCCOM CG with a MANPRINT IPR briefing. The AMCCOM MANPRINT POC attended the first MANPRINT staff officer course on 7-31 January 1986. The office provided quarterly submissions of MANPRINT data to AMC, and established MANPRINT status reporting as a separate annex to quarterly ILS status evaluations.

### Integrated Management System

Work progressed on the IMS functional description (FD). The biggest advance occurred when INTEL computers were networked together so their capability could realistically be assessed.

ILS Office personnel received contractor-sponsored training on the operation and use of INTEL automated equipment. It was discovered that IMS could be started as a series of menus and pathnames linking files already established in the INTELs by the functional users. The FD was still needed as a "bench mark" document to control the growth of the IMS to meet the needs of management.

### Streamlined Acquisition Requirements System

The AMC Materiel Readiness Support Activity (MRSA) expanded the computer aided milestone system (CAMS) to include the review and analysis (R&A) and the acquisition milestone management system (AMMS). This combined system was called the streamlined acquisition requirements system (STARS).

The AMCCOM ILS Office worked to improve accessibility to STARS. Ultimately, this system could improve AMCCOM's ratings at the R&A by permitting the user to identify errors and submit corrections to the central data base at MRSA prior to the R&A presentation.

Logistic Development Contract

A logistic development contract was awarded. Products of the contract included further Palman model development, and the preparation of portable self-contained training. The Palman model assisted designers and logisticians in repair-versus-discard decisions. The contract also would procure extensive electronically-developed structured systems analysis and design of the logistic life cycle. These computer aided logistic support (CALS) products were to be experimentally distributed via electronic file transfer as a pilot for future weapon system acquisition contracts.

Integrated Logistic Support Task Contract

The ILS task contract effort schedule slipped, although it was a priority project. Part of the slippage was due to the contract's complexity. Also, the contract language was primarily original work instead of material from existing contracts. Plans were initiated to make a multiple award (three contractors) in the second quarter of FY 1987. The use of several contractors was intended to allow for competition after the award of the contract.

The ILS expert system effort was effectively halted due to a lack of manpower. The ILS task contract might be used to restart the effort.

Center of Expertise

The AMCCOM ILS Office center of expertise (COE) lost manpower during FY 1986. Of the originally intended seven manyears of effort available per year, there was effectively about one manyear expended on LSA-COE responsibilities. This time was primarily devoted to the generation of the logistic development contract, the ILS task contract, and on-call logistic consulting.

Training

The ILS Office continued to assume a role of initiator and promoter of supplemental (nonprogrammed) ILS training at Dover. Accordingly, a seminar on LSA/LSAR was sponsored for Dover's executives and senior managers. The office also continued to participate in the ARDEC materiel acquisition management training course, and provided five ILS orientation briefings. As an in-house effort, an orientation training on level of repair analysis (LORA) was initiated.

Logistic Support Analysis

## Logistics Readiness

In the area of logistic support analysis (LSA) activities, the ILS Office participated in AMC's functional process assessment (FPA) for LSA. Also, to enhance LSA application within the command, a LSA COE action plan was developed for FY 1987-88, and a services contract was awarded for the purpose of developing new LSA management tools and LSA execution procedures.

### Advanced Field Artillery System

The office provided extensive ILS and MANPRINT support to the advanced field artillery system (AFAS), including its gun solution candidates. This program was selected as the AMCCOM MANPRINT "Lead the Force" system. ILS support included establishment and promulgation of early working interfaces with the AFAS Office, TRADOC, MRSA, and contractors. Strong emphasis was placed on consideration of MANPRINT and supportability factors in the evaluation of various AFAS conceptual approaches.

### Other Activities

The office provided ILS support to acquisition programs in their preliminary, pre-concept and concept phases. This support emphasized input to requirement documents and early ILS planning. A logistics status of over 30 preliminary ILS programs was developed.

The ILS Office basis of issue plan (BOIP), qualitative and quantitative personnel requirements information (QQPRI), and data interchange (DI) focal point exceeded the quarterly 90 percent error-free processing goal.

The ILS Office achieved \$1,253,000 in value engineering savings.

## MAINTENANCE DIRECTORATE

### Mission

The Maintenance Directorate managed and operated a NMP that conducted maintenance engineering and maintenance support services for the life cycle of armament systems and assigned material, except conventional ammunition. This included maintenance readiness, maintenance support planning, new maintenance programs, and worldwide technical (logistical) assistance. The directorate prepared or coordinated equipment technical publications, conducted new equipment training, and prepared materiel fielding plans for all materiel including conventional ammunition. AMCCOM maintenance policies were established, and the following AMCCOM programs were managed: conventional ammunition for new equipment training (NET); materiel fielding; worldwide technical

(logistical) assistance; test, measurement, and diagnostic equipment (TMDE); sets, kits, and outfits (SKO); and automatic test equipment/post deployment software support (ATE/PDSS).10/

#### Organization

The Maintenance Directorate was divided into offices of the director and the deputy director and ten divisions/offices. The chart on the following page illustrates the directorate's organizational structure in FY 1986.

The Maintenance Management Division assumed operational control of the Maintenance Services Division in May 1986, including its mission of operating the AMCCOM maintenance operations and procedures (MOP) shop for all commodities except nuclear weapons, conventional ammunition, and chemical equipment. The Administrative Support Office assumed review and analysis, historical reporting, PS Magazine article follow-up, and responsibility for officer/warrant officer/noncommissioned officer administrative actions.

#### Staffing and Personnel

Colonel John S. Cowings served as director of maintenance from 1 October 1985 to 30 June 1986. Lieutenant Colonel Stephen Etzel served as director of maintenance from 14 July 1986 to the end of the fiscal year. Mr. Richard D. Husson remained as deputy director.

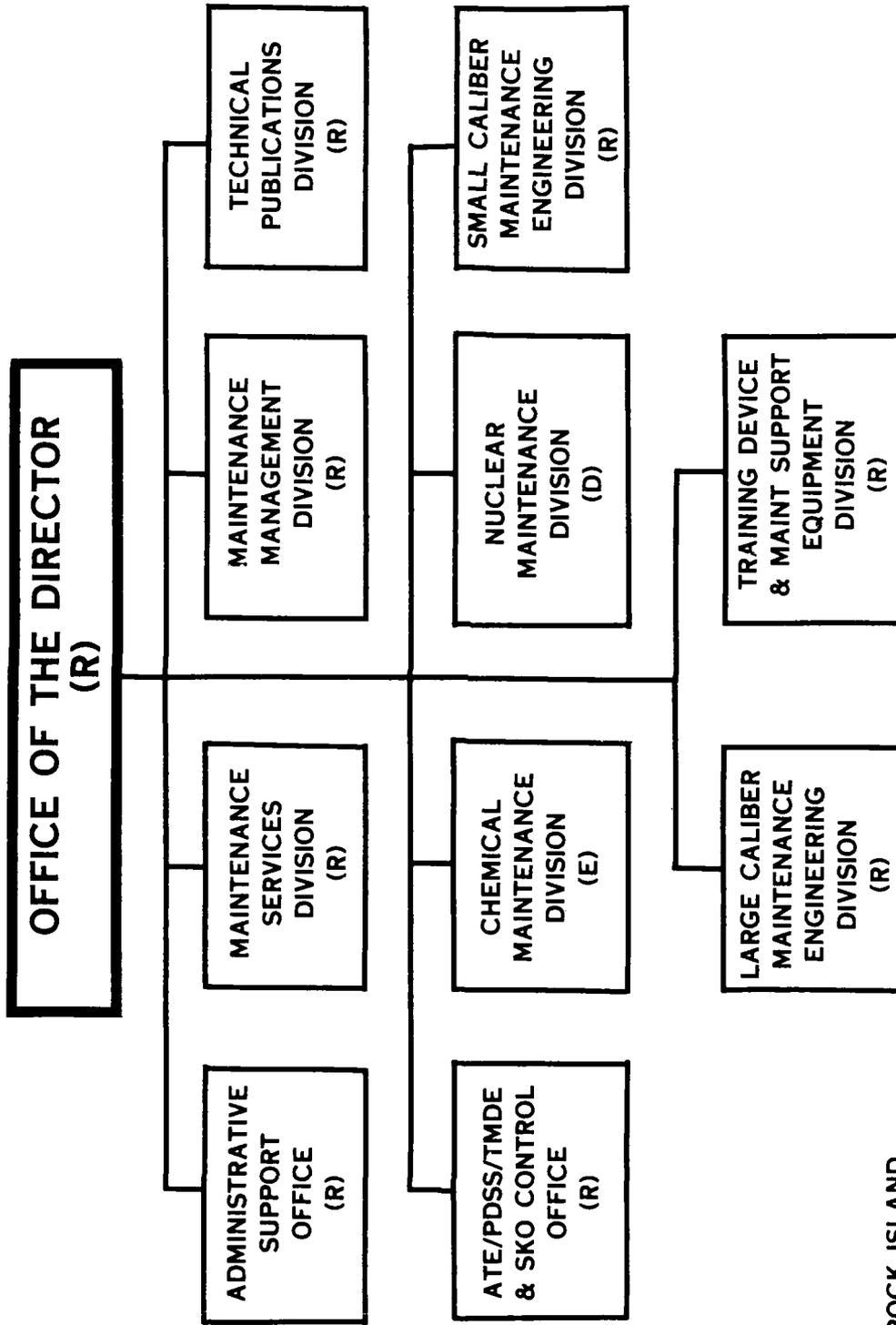
The Maintenance Directorate staffing levels as of 30 September 1986 were as follows:

	Civilian		Military		Total	
	Auth	Act	Auth	Act	Auth	Act
Rock Island Arsenal	455	453	45	39	500	492
Aberdeen	65	61	14	10	79	71
Dover	102	100	28	25	130	125
TOTALS:	<u>622</u>	<u>614</u>	<u>87</u>	<u>74</u>	<u>709</u>	<u>688</u>

#### Director's Overview

During FY 1986 Maintenance Directorate objectives were to extend the lives of systems, to ensure optimum availability, to increase cost effectiveness, and to assure personnel safety, with the bottom line being to maximize operational readiness of the equipment.

# MAINTENANCE DIRECTORATE



(R) ROCK ISLAND  
(D) DOVER  
(E) EDGEWOOD

Some of the methods of measuring readiness were through the equipment improvement recommendation (EIR), recommended changes to publications (DA Form 2028), modification work order (MWO), and sample data collection (SDC) programs as well as field technical assistance visits and support to logistics assistance representatives (LAR). The directorate's EIR program average completion time of 25.2 days in FY 1986 was well below the 60-day AMCCOM and 150-day AMC ceilings. A total of 4,077 MWO applications were planned in FY 1986. The directorate completed 98 percent of the total planned, which was within the AMCCOM goal of 95 percent. Directorate personnel maintained the AMCCOM goal of 45 days or less for completing 2028s, with an average of 17 days per 2028 in FY 1986. The improved processing time was a result of an automated tracking system for the evaluation phase. This system featured flags for alerting action officers when a 2028 became overaged.

The directorate continued its pursuit of state-of-the-art technology for preparing AMCCOM's equipment technical publications. The Technical Publication Division consolidated its effort in the automation of technical publications through the lease of two page-makeup workstations. The AMCCOM automated technical publication system was capable of creating manuals electronically from scratch, receiving manuals from contractors in electronic form, holding manuals in an on-line database, updating any on-line manual at any time, and outputting any manual in camera ready form.

During FY 1986 Maintenance Directorate personnel prepared and distributed a detailed functional provisioning guide. This guide contained provisioning guidance relating to LSAR, provisioning master record, and NSN data record data elements and their interrelationships. AMC requested AMCCOM to take the lead in preparing a standardized provisioning guide to be utilized by all MSCs. The Maintenance Directorate provisioning guide was to be the basis for preparing this standardized guide.

The Maintenance Directorate used videocassettes in NET. The advantages were reduced new materiel introductory briefing teams (NMIBT) and new equipment training teams' (NETT) TDY costs; increased in-office manpower availability; substantially increased audience coverage; reduced MACOM instructor requirements; a means for user sustainment training; and a uniform training/information base.

Project SMART (supply and maintenance assessment review team) at AMCCOM was part of an army-wide program that evaluated ideas submitted by both civilian and military personnel for improving and simplifying logistic procedures, policies, and directives for the benefit of the soldier in the field. Since the program's

## Logistics Readiness

inception in FY 1982, 526 SMART initiatives were evaluated by AMCCOM personnel. In addition to evaluating initiatives, AMCCOM personnel submitted 82 ideas in FY 1986, making a total of 256 AMCCOM ideas submitted to the program to improve support, save money, or increase efficiency.

### Major Activities

#### Administrative Support Office

The Administrative Support Office managed directorate personnel resources through the development of hiring plans, the preparation of reorganization documents, and the maintenance of the directorate TDA. It developed and reported on productivity enhancements such as, value engineering, cost control initiatives, productivity capital investments, suggestions, and sick leave conservation. The office managed the vulnerability assessment/internal control program, inspections and audits, travel target, and review and analysis. In addition, it performed common administrative functions in support of directorate personnel located at Rock Island Arsenal, and provided guidance and direction to the administrative support organizations of the Maintenance Directorate located at Dover and Edgewood.

#### Productivity Enhancement Program

A management improvement plan (MIP) for 1987/1988 was prepared by the directorate to conform with AMC requirements. The MIP established the directorate's strategy for the attainment of productivity goals. These goals provided for a realigned directorate structure, general office automation through the use of personal computers and electronic typewriters, and development of automation plans for technical publications production.

Through management action, the directorate would implement improved methods, planning, and scheduling of work to facilitate more proficient mission accomplishment, increase awareness throughout the directorate regarding productivity programs, and increase employee motivation.

#### Cost Control Initiatives Program

The Klystron power amplifier was the heart of the Vulcan radar system, and was in short supply. Maintenance Directorate technicians, in concert with Red River Army Depot (RRAD), developed a cost effective technique for remagnetizing this device, since the loss of magnetic properties was the cause of 50 percent of item failures. A recovery rate of 69 percent of Klystrons checked and 45 percent of all Klystron acquisitioned from supply was accomplished. A total of 225 units were recovered

by 15 September 1986, at a cost avoidance of \$1,171.87 per unit. Total FY 1986 savings were \$263,671.11/

Preparation of internal operating budgets (IOBs) was a labor intensive process involving a large number of calculations to derive projected costs. Automation reduced the amount of manual data entry to only 15-20 items per IOB, as opposed to the previous 195-260 items. The computer programs performed all the calculations, further reducing analyst and clerical function time. Implementation costs of \$834 occurred in FY 1986. Cost avoidance was to begin in FY 1987.

Reorganization of the Maintenance Directorate was identified as a productivity improvement program, and was reported through the CCIP. Cost avoidance reported was realized through decrease of 56 on-board civilians as a result of reorganization and implementation of new hiring ceilings for FY 1986. Total FY 1986 savings were \$999,399.72.

#### Internal Control Systems Program

There were 12 assessable units identified for the Maintenance Directorate. Eleven vulnerability assessments (VA) were completed in March 1985 and the twelfth was completed in November 1985. Of the 12, 4 were medium risk and 8 were low risk.

#### Automation of Maintenance Directorate Property Book

Through the use of WYSE personal computers, over 4,000 property records were transferred, via modem, from PRIME. Productivity was greatly enhanced by having the property records on the WYSE. Paper work was reduced, and there was no backlog of loading information concerning property received, turned in, or laterally transferred.

#### Maintenance Management Division

The Maintenance Management Division assessed directorate resource allocations. It also established and developed all directorate policy, procedures, and systems for functional and operational performance, and represented the directorate in policy meetings. The division managed directorate plans and special projects, and the directorate automated data processing (ADP) requirements and training program. It accomplished initial provisioning documentation and maintained provisioning files.

#### Manpower Requirements Criteria

## Logistics Readiness

Manpower requirements criteria (MARC) were standards used to determine the minimum essential wartime position requirements for combat support and combat service support functions in TOEs and MTOEs. MARC was transitioning from manpower authorization criteria (MACRIT), and the maintenance MACRIT data base was being upgraded to the new MARC format as MARC studies were performed. Both programs had the same general purpose. However, MARC was chartered to provide a clearer audit trail to the study data. As a result, MSC data collection and input requirements for the MARC studies became more complex and time consuming.

Direct productive annual maintenance manhours developed under MACRIT were retained and reviewed for accuracy until a MARC study was performed. In FY 1986, the Maintenance Directorate performed between 100 and 200 reviews a month of the MACRIT data base entries. The draft TRADOC/AMC supplement 1 to AR 570-2 was reviewed in FY 1986 and comments were made. Still another accomplishment of FY 1986 was the submission of the FY 87-88 milestones for MARC data collection. Additionally, maintenance personnel served on an expert panel review of MARC maintenance data collected by TACOM on the Bradley fighting vehicle.

### Demilitarization Review

In June 1985, as a measure to prevent the loss of technology to unfriendly countries, DA and the Defense Logistics Agency (DLA) directed all services to review all non-munitions list items and munitions list items not requiring demilitarization, and assign new codes requiring demilitarization to any items meeting a prescribed criteria.

A total of 54,586 items were reviewed and recorded between August 1985 and July 1986, meeting the August 1986 AMC target date. Approximately one-fifth of the 54,586 were recoded to require demilitarization.

### Battlefield Damage Assessment and Repair (BDAR)

The AMCCOM BDAR technical manual (TM) program consisted of air defense, artillery, and defensive chemical materiel (DCM) publications. FY 1986-87 programs included the product improved Vulcan air defense system, the M109/M110A2 self-propelled howitzers and M578 recovery vehicle change program, and DCM.

All of the manuals, except the DCM TM, were being prepared in-house by personnel in the Weapons Engineering and Publication Divisions. Letterkenny Army Depot (LEAD) was under contract to prepare the DCM TM. All of these manuals were scheduled for printing and distribution in FY 1987.

The M109E5 howitzer improvement program (HIP) included the requirement for BDAR in LSA task 303, alternatives and trade off analysis. Type classification for this system was scheduled for April 1988. The BDAR procedures for the HIP would be integrated into the M109 publication (TM9-2350-274-BD) as another change program.

In addition to the AMCCOM TM programs, technical manual writers and maintenance engineers coordinated with TACOM on BDAR procedures on applique armor used on the M60A3 tank and the Bradley fighting vehicle, and with AVSCOM on the BDAR TM for the Blackhawk helicopter.

#### Standardized Provisioning Guide

The Maintenance Directorate prepared and distributed a detailed functional provisioning guide in December 1985. The guide contained provisioning guidance relating to the logistic support analysis record (LSAR), provisioning master record (PMR), and national stock number master data record (NSNMDR) data elements and their interrelationships.

AMC requested AMCCOM take the lead in preparing a standardized provisioning guide to be used by all MSCs. The Maintenance Directorate provisioning guide was to be the basis for preparing this standardized guide. The milestone established for completion of this guide was 31 December 1987.

#### Program Funding

Original guidance for P723307 funds was \$179,414,000, with a revised guidance of \$134,999,000 and obligations in the amount of \$135,297,000.. The reduced guidance was the result of DESCOM unit price reductions as well as emphasis to reduce carry-over to a maximum of three months.

The original guidance for P738017 funds was \$85,807,000, with a revised guidance of \$78,589,000. All but \$5,000 of this was obligated. The decapitalization of ARDEC and CRDEC made a significant difference in the way PE managers budgeted and funded those installations. Funding was provided to ARDEC and CRDEC in accordance with the number of 7M spaces rather than project funded as AIFs.

Original guidance for P2 funds was \$37,885,000 with a revised guidance of \$21,643,000. All of these funds were obligated. A total of 14 changes resulted in the net reduction of \$16,200,000. Original estimates were overstated.

## Logistics Readiness

Original guidance for DMPE funds was \$3,337,000, with a revised guidance of \$3,377,000 and with \$2,453,000 obligated.

General Thompson, on 11 March 1986, directed that depot maintenance plant equipment programming, budgeting, and execution for FY 1987 and outyears be transferred from the MSCs to DESCOM. At a subsequent meeting at AMC, the decision was made that the FY 1986 and prior year programs would remain at the MSCs and that DESCOM would assume these functions as of 1 October 1986.

It was agreed 30 September 1986 that the Industrial Preparedness and Installations Program Management Office would assume responsibility for closing out the FY 1986 and prior projects. Thus, one space was abolished from the Maintenance Management Division, Maintenance Funds Section.

### Maintenance Data Management System

AMCCOM used microcomputers to convert information on over 3,000 program analysis resource review (PARR) cost data worksheets into MDMS format in preparation for PE 738017 data load. More than 15,000 records were to be generated by this process. When the data in the microcomputers was formatted for MDMS, the batch program would be used to load the MDMS data base.

The purpose of close-out and carry-over was to identify those depot programs for the fiscal year which needed to be either ended (closed-out) or continued (carried-over) and to institute procedures to perform the necessary steps. ALMSA provided four new programs and changes to others which automated the CO/CO process.

### Essentiality Coding Policy

Essentiality coding policy was changed by AMC in April 1986. The new policy primarily impacted items considered to be line replaceable units (LRU), which would be coded 1 (essential). The new LRU definition stated that an LRU was any essential item (repairable or nonrepairable assembly or piece part) that could be replaced in the operational environment. This included those items that were replaceable on the end item, on-site, by unit maintenance or intermediate direct support contact teams in four hours or less. The failure of these items would cause the end item to be nonmission capable.

### Sample Data Collection (SDC) Program

The Maintenance Directorate, AMCCOM's SDC program manager, requested and received approval to expand the artillery sample data collection program to Fort Shafter, Hawaii. The purpose of

this expansion was to collect data on the product improved M102 howitzers to be fielded there.

The start up for the SDC program on the PI M102 howitzers to the 82nd Airborne Division's artillery battalions at Ft. Bragg, North Carolina, was in January 1986. A briefing was given to unit commanders, chiefs of firing batteries, and selected maintenance personnel addressing AMCCOM's artillery SDC program, and the processes for collecting data within the division.

The directorate conducted an evaluation of the feasibility of terminating the M578 recovery vehicle SDC program. Evaluation conclusions were that there was ample data on-hand to support any further analysis of the M578. The contract termination was completed in February 1986.

#### Parts Explosion

In preparation for the first quarter FY 1987 parts explosion run, all repairable items scheduled for overhaul or repair in FY 1987 were reviewed for the existence of an overhaul consumption data (OCD) file. This review included end item and secondary assemblies. Those items lacking an OCD record were forwarded to MED and provisioning action officers for correction or addition of provisioning files. This generated the national stock number master data record (NSNMDR) and OCD file for use in parts explosion computations. Approximately 60 items were identified as being scheduled for overhaul with no OCD data.

The results of subsequent parts explosion were to be forwarded to the responsible item manager for review and use in supply control studies. Items affected by lack of other command reporting requirements were to be considered in the item manager review.

#### Maintenance Services Division

The Maintenance Services Division directed maintenance participation on system assessments. The division planned and directed NET programs and the materiel fielding program in coordination with ILS managers. It also operated the RIA MOP shop and assured MOP shops for all AMCCOM items were integrally utilized for the verification of technical publications, NET, and technical training. The division assessed directorate performance and managed fielded item reviews, subject matter assessments, functional areas assessments, modification work order (MWO) programs, and SMART (Supply and Maintenance Assessment and Review Team).

Senior Officers Preventive Logistics Course (SOPLC)

The Maintenance Directorate was responsible for maintaining four classrooms at the US Army Armor School and to update weapons and equipment displays as needed for the SOPLC. Renovation of the chemical and ammunition rooms was completed in FY 1986.

Completion of the large and small caliber classrooms was tentatively scheduled for the first quarter of FY 1987. Installation of a videocassette player, a monitor, a modular video cabinet, and a moveable display mount and storage cabinet for the M3 tripod and .50 caliber machine gun was planned. Lighted display cases and camouflage net false ceilings were installed.

AMCCOM Modification Work Order Program

During FY 1986 there were a total of 3,994 MWO kit applications to AMCCOM equipment. This represented 98 percent completion of scheduled applications and an OMA 732207 dollar application cost of \$4,209,000.

The following MWO programs were closed in FY 1986: the M110A1 howitzer headlink assembly/M13 loader rammer, battery computer system (BCS) brackets and kit 5 (RAM improvements), and the M198 howitzer BCS brackets.

Application of MWOs for the following programs was accomplished during FY 1986: the M3A3 smoke grenade mechanical pulse; the M12 decontamination apparatus update improvements; M102 howitzer mid life and BCS brackets; M109 howitzer M118A1 elbow telescope update, BCS brackets, and fire control data plates; and the M1 collimator radioactive illumination.

AMCCOM was commended for establishing the MWO control release board (MWOCR), preparing an AMCCOM supplement to AR 750-10 and a Maintenance Directorate operating procedure, resolving problems associated with the magnetic brake modification on the M728 combat engineering vehicle, and improved labeling of MWO kits and shipping documents.

Videocassettes in New Equipment Training

Two videocassettes were produced on the M9 9mm pistol. The videocassettes were developed at Fort Benning, using an AMCCOM representative as the weapon expert in the film. The cassettes were in two parts: operator level and unit/direct support level. FORSCOM reviewed and accepted these cassettes in lieu of a formal NETT. Handouts were developed to supplement these cassettes for worldwide use. 12/

The advantages to videocassettes and handouts were that they reduced NMIBT and NETT TDY costs, increased in-office manpower availability, substantially increased audience coverage, reduced MACOM's instructor requirements, provided a means for user sustainment training, and ensured a uniform training/information base.

New Equipment Training Plan Automation

Eighty percent of AMCCOM NET plan data was correctly transferred to the army modernization training automation (AMTA) data base from the Maintenance Directorate's data base. AMCCOM received a tape from CECOM which would transfer the remainder of its data base to AMTA.

AMCCOM Mission Area Development Plan (MADP)

The AMCCOM MADP was constructed from AMCLOG-21, mission area analysis deficiency reports, ending in December 1985. The AMCCOM MADP objective was to establish a plan of corrective actions to eliminate deficiencies in AMCCOM's future abilities to support the army in the field.

A review of the MADP by the Maintenance Services Division tentatively identified 16 maintenance deficiencies. The division worked to identify the directorates responsible for tracking and eliminating the deficiencies, and to establish points of contact within these directorates.<sup>13/</sup>

MRSA Field Evaluation on Sample Data Collection Program

AMCCOM was tasked by the AMC MRSA, the executive agent for SDC, to participate in a MRSA SDC field evaluation review of AMCCOM, TACOM, AVSCOM, and MICOM SDC programs as they operated at Fort Hood, Texas.

The MRSA representative found no deficiencies in the AMCCOM SDC operation. He made special note of the effort made by AMCCOM data collectors to identify root causes for equipment failures, and said that this was beyond the norm for other SDC programs in AMC.

In addition, an on-site visit to the artillery battalions was performed by the Maintenance Services Division in July 1986 to audit the AMCCOM on-going M109A2, M109A3, and M110A2 howitzer SDC program. The audit revealed all areas to be satisfactory.

Supply and Maintenance Assessment and Review Team at AMCCOM

## Logistics Readiness

Project SMART at AMCCOM was part of the army-wide program that evaluated ideas submitted by both civilian and military personnel for improving and simplifying logistic procedures, policies, and directives for the benefit of the soldier in the field. Since the program's inception in FY 1982, 529 SMART initiatives were evaluated by AMCCOM personnel. In addition, AMCCOM personnel submitted 82 ideas in FY 1986, making a total of 256 ideas AMCCOM submitted to the program to improve support, save money, or increase efficiency.

Approved SMART initiatives used the army suggestion program channels for processing awards. More than \$10,000 in awards were recommended for approval by AMCCOM's participation in the SMART program.

### MOP Shop Relocation

During FY 1986 construction of the new MOP shop facility in buildings 108, 109, 110, and 112 at RIA was completed. Equipment and personnel were relocated and functional areas were operational.14/

### M249 Squad Automatic Weapon

AMCCOM completed initial NET for USAREUR at the AMC-Europe Gensheim activity. The NET team was composed of two civilians from Anniston Army Depot.

NET was completed as follows: logistics assistance representatives, two classes, 10 students; operator maintenance, 11 classes, 132 students; organizational maintenance, 11 classes, 119 students; and direct support maintenance, 5 classes, 51 students. Students' comments indicated the training was outstanding.

## Technical Publications Division

The Technical Publications Division managed the AMCCOM training and technical equipment publication program. It prepared and consolidated AMCCOM publication programs as applicable to readiness activities, and provided publications support to the field.

### Automated Technical Publication Production

During FY 1986 the Technical Publications Division pulled together its efforts in the automation of technical publications through the lease of two page-makeup workstations from Information International, Inc. (III). This equipment did "paste up" on publication pages electronically, bringing together text data from

an IBM 5520 text processing system and illustrations created on an Auto-Trol graphics workstation.

The Technical Publications Division was preparing an AMCCOM automated publications plan to be distributed throughout the army during FY 1987. The plan would detail a complete picture of AMCCOM's automation program and future plans.15/

VADS DMWR Program at Red River Army Depot

Red River Army Depot (RRAD) was tasked to revise the VADS DMWR (17 volumes). Thirteen volumes were to be government furnished information (GFI) for the product improved Vulcan air defense systems (PIVADS) contract with Lockheed Electronic Corporation (LEC).

A meeting was held on 5 March 1986 between the commander of RRAD and Maintenance Directorate personnel. They discussed the late delivery of the VADS DMWRs, which would impact the PIVADS DMWR program, and the delivery schedule, which called for completion between September and November 1986.

Conversion to the Army Maintenance System Concept (TAMS)

The AMC CG directed that conversion to the TAMS concept be accelerated. TAMS converted the conventional five echelons of maintenance to a three-level concept. AMCCOM and the other MSCs received AMC's proposed plan for acceleration and were required to provide an individual plan as an addendum to AMC's master plan. AMC's proposal for acceleration was comprehensive, and stipulated a three-phase implementation.16/

AMCCOM completed the required TAMS conversion actions on Phase I items, which constituted the bulk of the maintenance burden in Europe throughout the 1990s. AMCCOM proceeded ahead of schedule for the remaining phases of TAMS conversion.

PIVAD Weapon System BDAR TM IPR

An IPR was held in February 1986 at RIA to review the progress of the PIVAD battlefield damage assessment and repair (BDAR) manual, and to bring MRSA personnel up to date on the BDAR program at RIA. MRSA personnel would be giving future BDAR briefings and training packages to maintenance assistant instruction teams (MAIT), logistic assistance offices (LAO), and logistic assistance representatives (LAR).

Using the M1 BDAR as a guide, attendees were tasked to develop such items as fault isolation trees, electronic equipment bypassing, and validation/verification requirements.17/

M21 Blank Firing Attachment Training Manual

The Technical Publications Division received a message from the TRADOC Training Support Center commending those connected with production of the draft TM for the M21 blank firing attachment (BFA). The M21 BFA was used for training purposes on various armor vehicles armed with the M240/M240C machine gun. It was used in conjunction with the multiple integrated laser engagement system (MILES). The 110 page draft TM was prepared in-house. TRADOC approved the draft TM "as written."<sup>18/</sup>

TRADOC requested the project manager for training devices to expedite full release action for the M21 BFA by April 1986. AMCCOM completed the publication on 7 March 1986.

Automated Tracking of Recommended Changes for Publications

AMCCOM's DA Form 2028 program consisted of two phases. Phase one was the evaluation of field recommendations, and phase two was the implementation of resultant changes to technical publications.

Phase one (evaluation control) listed all 2028s received into a PRIME data base. The date received was recorded. As field recommendations were evaluated, they were logged-out by the date the evaluation was completed.

Phase two (implementation control) listed all 2028s screened through the evaluation phase that required publications change action. This control utilized a new Intel PC system. 2028s requiring publication change action were those prepared by equipment specialists in-house and field recommendations that were concurred with. Date received for action was included in the data base.

Implementation control queried monthly each publication action officer pertaining to 2028 incorporation status. As print orders for resultant changes and revisions were requested, the 2028 actions were logged completed by date.

Small Caliber Maintenance Engineering Division

The Small Caliber Maintenance Engineering Division accomplished life cycle maintenance engineering, maintenance support planning, and maintenance readiness support for all weapons up to and including 40mm, and all recoilless rifles, aircraft weapons, armament subsystems, and air defense systems. This included fire control, tools, test equipment, and mounts as well as ancillary materiel such as targets, bayonets, blank firing attachments, assigned training devices, and fire control items that were not specifically system related.

Aircraft Armament Programs

During the first quarter of FY 1986 one AH-1S Cobra helicopter was loaned by the National Guard to AMCCOM for the revision of the TM 9-1090-203 series technical manuals. The aircraft was housed at the Mount Joy Airfield in Davenport, Iowa, and remained on loan until the fourth quarter.

Volume I of an update of pamphlet 750-11, Aircraft Armament, was released to field units during the first quarter. The update focused on aircraft armament program information as well as improvements to aircraft armament systems. Volume II was released during the third quarter, and volume III was scheduled for release during the fourth.

An AMCCOM contract provided for the design and manufacturing of modification kits for the M97 series helicopter armament subsystem and field level test set. At times, AH-1E and AH-1F helicopter pilots could not maintain alignment between the helmet sight and the gun turret during firing due to aircraft vibration. The coincidence band was changed from 1.5 degrees to 4.5 degrees to correct this problem. The modification kits provided new circuit boards with changed error gate limits for the turret, and additional testing capability for the test set.

During June 1986, the Maintenance Directorate received an XM147 RMS display unit (DU) to verify AMCCOM MWO 9-1090-207-55, modification of rocket management system (RMS) M138 for MK66 compatibility. This MWO was prepared in-house, and was found to be technically accurate.

During the period 10-17 September 1986, a Maintenance Directorate representative, in conjunction with AVSCOM, conducted a validation of blue-green light modification of Cobras at Fort Hood. AVSCOM validated MWO 55-1520-236-50-4 for cockpit lighting modifications. The Maintenance Directorate ensured that MWO 9-1000-259-30 (blue-green lighting for spares) contained the same technical data as the AVSCOM MWO for cockpit modification. This action ensured that AVSCOM's and AMCCOM's blue-green modifications were compatible.19/

Product Improved Vulcan Air Defense System

Vulcan systems were modified to improve gun pointing accuracy, ballistics solutions, and identification of system faults by the addition of built-in-test (BIT) diagnostics. Since funding constraints prohibited modification of the entire Vulcan fleet, plans were to modify 285 systems (40 percent of assets), and 17 AN/TSM-115 shop shelters. VADS to PIVADS conversions by fiscal year are as follows:

## Logistics Readiness

Fiscal Year	87	88	89	Total
Self-Propelled	33	84	39	155
Towed	10	72	48	<u>130</u>
				285

PIVADS modification was to be applied in the field by teams, either government or contractor. Scheduled first unit equipped (FUE) date was May 1987.

Technical manuals verification and physical teardown/logistics demonstration (PT/LD) were performed at Fort Bliss, Texas, and completed on 15 August 1986. The procurement of required PLL and ASL items was delayed due to inadequate or non-receipt of technical data packages (TDP).

The range phase of the initial product test (IPT) was completed on 31 July 1986. The environmental testing phase was scheduled through 31 December 1986. Solar radiation testing was being conducted at White Sands Missile Range, New Mexico, on the towed system.

### M16 Series Rifle

The draft operator's and organizational maintenance manual, TM 9-6920-746-12 and P, was completed. This manual was a high priority in order to meet scheduled type classification of the practice bolt. This use of plastic ammunition enabled realistic firing training to be carried out at shorter distances with reduced danger areas.

### M60 Machine Gun

In early December 1985 AMCCOM was notified of M60 problems at Fort McClellan, Alabama, caused by what was assumed to be bad ejector springs. Personnel from the Maintenance Directorate visited Fort McClellan and discovered that the springs were not at fault; the problem was improper maintenance procedures.

The Maintenance Directorate recommended the M60 machine guns be disassembled, inspected, cleaned, and reassembled in accordance with the manuals and PMCS. In late December Fort McClellan informed the directorate that 52 weapons were taken to the range, with only 4 going down through an entire day of firing.

### M249 Squad Automatic Weapon

The M249 machine gun instructor and key personnel (I&KP) training course was taught in the Maintenance Directorate MOP shop on 5-9 May 1986 and provided students with information through the intermediate level of maintenance. Five students from Anniston Army Depot (ANAD) received the training and formed the cadre for M249 NET at CONUS and OCONUS sites.

#### M85 Machine Guns

The Maintenance Directorate was notified of problems relating to the serviceability condition of M85 machine guns at Fort Stewart. An unserviceable M85 deadlined an M60 tank. The problem was loose rivets on M85 receivers, which rendered the machine gun unserviceable.

A directorate representative evaluated the problem and reported that the deadlined M85s were in a serviceable condition. AMCCOM forwarded a message to Fort Stewart clarifying the inspection criteria for loose rivets on the M85 machine gun. This clarification of the criteria was provided to the field via worldwide letter and through the LAR network to preclude further occurrence of similar problems.20/

#### Bradley Fighting Vehicle System

Designated series of inland motors used on the M2/M3 turret drive were found to have potential failures under high temperature and usage. Failure of these motors could cause the turret to slew at full rate when the handstation palm switch was depressed. Five of these incidents had occurred.

The Maintenance Directorate issued a safety-of-use message to all M2/M3 users identifying the motors in question and requesting the location of the vehicles with these motors.

The PM for Light Combat Vehicles provided a modification to correct this problem. The Maintenance Directorate provided the PM with the necessary locations so that the modification could be performed.

#### Large Caliber Maintenance Engineering Division

The Large Caliber Maintenance Engineering Division accomplished life cycle maintenance engineering, maintenance support planning, and maintenance readiness support for all weapon systems above 40mm, except recoilless rifles, and turrets on tanks.

M1/M1A1 Tank

Significant savings were promised through the adoption of a suggestion to modify the indicator lamps on the image control unit (ICU). This prevented loss of the nitrogen purge in the unit whenever the lamps were replaced. Recurring savings realized after the second year would be \$45,580.

An M1A1 tank new-look manual scope-of-work meeting was held at General Dynamics on 7-11 April 1986. The contractor demonstrated the M1A1 new-look manuals. The content was tested using a target soldier, and results were satisfactory. A memorandum of agreement was negotiated and signed to convert the M1A1 technical manuals to the MIL-M-63038B format. The conversion was to be completed by the first quarter of FY 1987, with a 40 percent reduction to existing manuals.

The M1 tank component pilot overhaul was conducted on the three DMWRs during March and April 1986 at ANAD, then a pilot overhaul of a complete tank was conducted in May. Based upon the preshop analysis, there was little work required on the tank. Several line replaceable units (LRU) were replaced. The pilot overhaul vehicle was to be sent to Yuma Proving Ground for reconditioning testing, which consisted of 500 miles and 80 rounds fired.

All 29 M1 DMWRs were published and distributed during the year. ANAD was tasked to update 15 volumes of M1 DMWRs and to incorporate the M1A1. Start of work meetings were held in May and June 1986.

M1 tank gun turret drive depot maintenance plant equipment (DMPE) was installed at Mainz Army Depot (MZAD) on 13 June 1986. The only action left was the turret test stand for MZAD, scheduled for July to August 1987. This concluded efforts started in 1981.

DMPE installed at each depot were as follows: ANAD, 26 each; MZAD, 30 each); and SSAD, 7 each.

M60A3 Tank

A Maintenance Directorate representative traveled to APG on 15-18 October 1985 to witness phase three of development test II (DT II) of applique armor testing, and to write battle damage combat repair procedures.

During the test, new clips and bolts were introduced to the program. The clips were much larger than those previously used, 21.44 ounces as compared to the old design of 8.64 ounces. The new clip added approximately 272 pounds to the applique armor

design. This also caused the gun balance weights to be redesigned, since the additional clip added weight to the muzzle end of the gun. This required a redesign of interior weights to compensate for this added weight.

Battle damage was assessed, and a military crew was tasked to remove damaged hardware and replace it with serviceable tile cannibalized from other places on the tank. These replacement tiles were assembled on the damaged area by various means, such as wire and tape, as well as using damaged hardware. This effort was highly successful and added to the information collected to support applique armor when fielded.

Two Maintenance Directorate employees performed 10/20 standards inspections on 75 tanks to determine their suitability for redistribution to the National Guard and Army Reserve units. This was completed in June 1986.

#### M90 Radar Chronograph

The FY 1985 maintenance contract with Lear Siegler, Inc. (LSI) expired in March 1986. Repairs on units sent in under FY 1985 contract were to be completed and the units returned to the users. LSI averaged 11 units per month, despite a contractual requirement to do their best to deliver up to 20 per month. Eighty-six M90s were at Sharpe Army Depot awaiting repair pending award of FY 1987 contract.

Steps were taken to establish a partial capability at Letterkenny Army Depot (LEAD) to repair M90s. ARDEC was tasked to develop a test program set (TPS), and LEAD was tasked to write the DMWR. LEAD was to have full capability in February 1990, with DMPE installed.

#### XM979 GEMSS, 5 Ton, 4-Wheel Trailer

A representative from the Tank Section visited Barnes and Reinecke, Inc. (BRI), Elk Grove, Illinois, on 10-14 March 1986 to participate in draft technical manual validation and verification for the XM979 GEMSS trailer. Key accomplishments included verification of disassembly and assembly procedures of the trailer using the maintenance allocation chart (MAC). All levels of maintenance were performed. Validation of preliminary draft equipment publications for the XM979 GEMSS trailer was completed.

#### M119 Howitzer

The M119 howitzer was type classified standard A in December 1985. Provisioning was done in house in order to establish the PMR and subsequently purchase spare parts. A LSA/LSAR publication

contract was signed in September 1985 with Royal Ordnance, the prime contractor.

M102 Howitzer Mid Life MWO Program

A November 1985 team visit to Hawaii to discuss and assess an on-site depot application of the MWO was successful. The 25th Division and Hawaii National Guard agreed in principle with the proposed application, and only a few details needed to be revised.

The MWO fielding plan (MWOFP) was signed in March 1986. Application of the mid-life PIP was initiated on-site in Hawaii in June 1986.

Chemical Agent Resistant Coating and Camouflage Paint Pattern

The chemical agent resistant coating (CARC) was the approved coating for all equipment in combat, combat support, tactical wheeled vehicles, aircraft, and essential ground support equipment categories. The three color camouflage paint pattern (CPP) was only to be applied with CARC.

A VENUS meeting was held on 10 July 1986, with AMC, TROSCOM, MICOM, TACOM, DESCOM, LEAD, CECOM, and AMCCOM participating. They set a goal to complete the pattern development in six months.

At a subsequent meeting it was decided to expedite camouflage pattern production. According to the Belvoir Research and Development Engineering Center (BRDEC), the inspection sheets would be ready by the end of November 1986.

The painting instruction for field use was TM 43-1039. Technical bulletins for each MSC were required to include camouflage patterns and inspection sheets. Estimated completion date was June 1987. AMCCOM had 33 items that required CPP application.<sup>21/</sup>

Set, Kit, and Outfit On-Site Review

Maintenance Directorate personnel conducted an on-site review on SKO SC 4931-95-CS-A07 at Fort Ord, California, on 2-3 September 1986. Sixteen deletions and forty-two changes were agreed on by all participants. The military members of the review team were very cooperative and expressed their pleasure with AMCCOM's concern about the tools needed to do their job.

Environmental Stress Screening

Environmental stress screening (ESS) was the application of heat, cold, shock, and vibration to electronic components to accelerate any latent defects that would normally occur during operations. This was a common practice in "high tech" industry as part of the quality assurance process.

The Maintenance Directorate participated in an ESS meeting at Sacramento Army Depot (SAAD), California, on 6 May 1986 to determine the feasibility of implementing ESS at the depots. If implemented, the requirements would be added into the DMWR.

As a result of the meeting, several action items were established. Failure data that was gathered by SAAD would be used as the guidelines for determining ESS implementation. The lowest level of ESS would be at the circuit card level. SAAD would conduct preliminary environmental tests on several electronic components.

There was a possibility that SAAD would require additional funding to support this effort, so the Maintenance Directorate was to coordinate the funding effort with SAAD. Following the ESS tests, AMCCOM would evaluate the results and conduct a cost analysis to determine its feasibility.22/

Automated Test Equipment (ATE)/Post Deployment Software Support (PDSS)/Test, Measurement, and Diagnostic Equipment (TMDE) and Sets, Kits, and Outfits (SKO)  
Control Office

The ATE/PDSS/TMDE and SKO Control Office served as the directorate manager for coordination and control of AMCCOM requirements related to ATE, PDSS, TPS, TMDE, SKO, and calibration programs. This excluded management and control of TMDE, SKO and calibration programs related to the operation of arsenals, plants, or for contractors.

#### Weapon System Programmable Read-Only Memory (PROM)

PROM referred to the computer microchips found in "on-board" computers in such systems as the M1 tank, the M23 mortar ballistic computer, and the M109 howitzer (HIP configuration).

AMCCOM had a requirement to reprogram PROMs in the field with potential for large future requirements. Projections were that howitzer improvement program (HIP) LRU would require annual update because of the variety of types of ammunition and changes thereto.

#### Tracking Configuration Actions

During the first quarter of FY 1986 the investigation of engineering changes (requests for deviation or waiver and/or engineering change proposals) with potential impact on TPSS required continued use of the computerized data base.

Configuration control board (CCB) and configuration review board (CRB) meetings were attended for the M1, Bradley fighting vehicle system (BFVS), and M60A3 systems. Each action discussed at these meetings was reviewed for potential TPS impact including appropriate coordination with the AMCCOM ATE/TPS activity located within the Fire Support Armament Center at Dover. When impacts were determined, the appropriate input was reflected by the minutes of the meetings, which were forwarded to the PMS.

#### Test Program Set Authorization

The following TPSSs were installed during FY 1986: 12292741 and 12313171 for the BFVS, and 12312087 and 9338442 for the M1. Additionally, the following TPSSs transferred from AMCCOM responsibility to MICOM: 12293390 power amplifier, 12293390 mirror servo, and 12293827 super elevation.

The eight direct support electrical system test set (DSESTS) TPSSs located at Red River Army Depot were "deauthorized" and returned to the Maintenance Directorate for training purposes.

#### Test Program Set Exercise at Fort Hood

Feasibility testing for repair of printed circuit boards (PCB) for M1 tanks and M2/3 Bradleys started on 22 September 1986 at Fort Hood, Texas. The test evaluated AMCCOM depot level test program sets for the power control unit (PCU) in the AN/USM-105 VAN, using general support (GS) personnel. During the first week of the test, three test adapters and seven test programs were installed and tested, GS test equipment operators began training, and initial supply parts were ordered for the test site.

After 30 days of testing, 90 boards had been tested, with 42 boards being repaired, retested, and returned to service. The remainder of the boards tested were awaiting parts for repair. This exceptional effort from Fort Hood personnel greatly reduced the unserviceable supply rate for the PCU. The TPSSs were scheduled to be removed from Fort Hood on 3 December 1986.

#### Training Device and Maintenance Support Equipment Division

The Training Device and Maintenance Support Equipment Division managed life cycle maintenance engineering and contract logistic support (CLS) for maintenance support and test equipment, industrial plant equipment, common maintenance SKOs, and training

devices.

Multiple Integrated Laser Engagement System

The Maintenance Directorate was notified in July 1986 that the data item description (DID) previously used to obtain training device CLS cost reports was no longer authorized for use. A new DID was developed and approved for one-time use on 10 September 1986. The document was to be staffed with DOD to ultimately become a permanent instrument.

Approval of the DID would permit detailed cost collection on training device CLS type contracts, and allow for completion of the MILES competitive statement of work.

Remoted Target System (RETS)

Maintenance Directorate personnel completed in-house provisioning of RETS depot parts. There were 618 lines in this provisioning effort, which was completed in three weeks. It was determined that 95 percent of the provisioned items existed in the federal supply system.

This provisioning accomplishment would permit LEAD to accumulate repair parts in quantities by January 1987, and enhanced AMCCOM's ability to provide organic maintenance support for RETS.

Lathes

National Machinery and Supply Company (NMSC) provided seven lathes on contract. Discrepancies noted during the review of the commercial manuals for the lathes prompted physical examination, and additional discrepancies were noted.

Representatives from NMSC met with AMCCOM representatives to discuss these discrepancies in April 1986, and agreed to correct them.<sup>23/</sup>

Fuel Injection Test Stand (FITS)

A new state-of-the-art FITS, NSN 4910-01-190-7667, was procured from Bacharac Instruments of Pittsburgh, Pennsylvania. The test stand's prime features were a closed loop cooling system and a cathode ray tube display of the performance data of a diesel fuel pump undergoing test. It also displayed data of the test stand supportive system, such as calibrating fuel and lubricating oil, temperature and pressure, and revolutions per minute.

## Logistics Readiness

The FITS was to replace existing assets on a one-for-one basis, based upon TDA allocations. It was not deployed to any army TOE field units.

### Asbestos Handling Equipment for Brake and Clutch Repair

A suggestion was received which proposed the use of a vacuum cleaner to deal with asbestos dust during automatic brake and clutch assembly and disassembly operations. It was decided to add vacuum cleaners to 11 post, camp, and station shop sets.

Further contact with GSA produced a valid NSN for an acceptable vacuum cleaner, and action was taken in November 1985 to have AMCCOM recorded as a user. This allowed troop units to requisition rather than purchase locally.24/

### Steam Cleaners

Since the use of formaldehyde as an inhibitor in the descaling of steam cleaner coils was determined by the surgeon general to be hazardous to personnel, the Maintenance Directorate searched for a substitute inhibitor or descaling solution. Iodine tincture and sulfamic acid were determined acceptable replacements and were sanctioned by the surgeon general's office.

Iodine tincture, as an optional inhibitor, was established in the normal army supply system, and a descaling procedure using sulfamic acid was published to the field through the AMCCOM LARs, PS Magazine, and the Materiel Management Directorate's newsletter. Action to implement the optional inhibitor into the existing descaling procedure was being taken to provide this information to the field through the above mentioned media.25/

### Tool Improvement Program Suggestions (TIPS)

A TIPS initiative was submitted which proposed the addition of drill/tap extensions to machine maintenance shop sets. It was suggested that the use of these drill/tap extensions would enable the machinist to remove broken, hard to reach bolts from equipment.

This TIPS initiative was adopted which would add the drill/tap extensions to two machine maintenance shop sets (basic machine and heavy machine). An award recommendation of \$125.00 was provided MRSAs based on a determination of intangible benefits, moderate potential value with extended application. The initiative was to be implemented during the next scheduled review of the two machine maintenance shop sets.

Test Stand Automotive Generator, Alternator, 500 Amp

The US Army Tank Automotive Command introduced a 200 amp alternator for the M113 vehicle which could not be tested on existing test stands. An adapter plate for mounting onto the existing test stands was required to be developed.

Drawings were prepared locally by the maintenance engineer and converted to military standard format. Three adapter plates were fabricated by the MOP shop. A performance verification test of the adapter plate was completed at Aberdeen Proving Ground in December 1985 with satisfactory results.

Adapter bracket fabrication instructions were to be incorporated into generator manuals, and hook-up instructions were to be issued as a change to the existing test stand manuals after TACOM finalized test procedures.

New Configurations of Contact Maintenance

The command developed two new configurations of the contact maintenance shop sets. The fundamental difference between the two shop sets was the tool load, due to end article application. Type II configuration was used by engineering units for maintenance support on construction equipment. Type III configuration was used by maintenance support units in support of automatic, tanks, and weapons systems.

The directorate was preparing supply catalogs in support of these new shop sets by loading component listings in the commodity command standard system (CCSS), establishing supply catalog numbers, and establishing component NSNs.

Damaged MILES Cables

The TRADOC IG inspected the US Army Infantry Center and Fort Benning in February 1986, resulting in a finding related to processing reports of survey on damaged multiple integrated laser engagement system (MILES) cables. The finding indicated that soldiers held pecuniarily liable were being charged the full replacement cost of MILES cables damaged during training, when some cables might be repaired at less cost.

As manager of the CLS contract for MILES, the AMCCOM Maintenance Directorate investigated the issue and, in conjunction with the contractor, Loral Electro-Optical Systems, devised a legitimate method for providing an estimated cost of repair of damage (ECOD) that could be used in the report of survey process.

Shop Equipment, Electrical Repair

An additional requirement was received from the US Army Ordnance Center and School to replace two TMDE type components with less costly and more compact TMDE components in the subject shop set.

An urgent value engineering proposal (VEP) was approved and acted upon to incorporate into the ongoing production contracts. This VEP reflected a savings of \$673,920, starting in FY 1986.

Military Adapted Commercial Item, Welding Shop/Machine

The FUE for the army standard welding shop in USAREUR was 22 May 1966. Using the new AMC staging activity located at Gernsheim, Germany, 105 welding shops and 11 welding machines were handed off to USAREUR. No major maintenance problems surfaced with the new equipment.

Twenty-three welding machines were also issued to Korea. FUE for Korea was 4 September 1986.

Tire Changing Equipment, Bishman Tire Mounter/Demounter

In February 1986 the Maintenance Directorate reported that the required video training tape was inadequate. Bishman resubmitted the tape and manuals in March 1986. AMCCOM personnel reviewed the resubmittal and considered it excellent.26/

A copy of the video tape was to be included with each machine purchased under this contract. The video tape was used to supplement commercial manuals.

Air to Ground Engagement System (AGES)/Air Defense (AD) II

AMCCOM Maintenance Directorate representatives and personnel from PM-TRADE, MRSA, and TRADOC participated in a start of work meeting with the AGES/AD II development contractor, Fairchild Weston of Syosset, New York, on 21-24 April 1986.

AGES/AD II formed a part of the MILES training device family intended for use on the AH-64, OH-58D, CH-47D, and UH-60 helicopters and the Hellfire ground support system. The AGES/AD II devices were planned for transition to AMCCOM from PM-TRADE during the first quarter of FY 1990.

MILES PLEXUS Computer Upgrade

A representative from Loral Electro-Optical Systems visited AMCCOM during 21-23 April 1986 to upgrade software in the PLEXUS computer system.

PLEXUS was a computer system that resided at AMCCOM, Loral, and the 28 MILES sites worldwide. It enabled the contractor and the government to communicate directly with each other in the collective management of the MILES training devices. Maintenance information was obtained and the contractor's performance was monitored through its use. Messages could be sent to, and received from, the various sites and Loral.

Shop Equipment, Automotive Maintenance TB 9-4910-746-30

A DA Form 2028 was received on 11 September 1986, indicating a discrepancy in the subject TB created a potential for electrical shock. The Maintenance Directorate investigation revealed an error in the TDP.

An urgent ECP was written and a safety-of-use message transmitted. All actions, including approval by the configuration manager, changes to the TB, and articles for PS Magazine, the Materiel Management Directorate's newsletter, and EIR Digest were accomplished by 30 September 1986. The originator of the 2028 was recommended for an award.

Chemical Maintenance Division

The Chemical Maintenance Division managed life cycle maintenance engineering, maintenance support, and maintenance readiness for chemical equipment. It provided equipment publications, initial provisioning, new equipment training, and fielding plans support for chemical equipment and ammunition.

Chemical Equipment Maintenance Readiness Seminars

The Chemical Equipment Maintenance Operations Branch conducted two chemical equipment readiness seminars at the Pine Bluff Arsenal, Pine Bluff, Arkansas. Attendees were from all services, DOD agencies, and other federal agencies.

The purpose of the seminars was to enhance chemical equipment maintenance readiness throughout the army, its sister services, and other federal agencies by using an informal hands-on seminar which acted as a medium for exchange of logistical information relative to chemical equipment.27/

Improved Head Harness for the M17 Series Mask

## Logistics Readiness

A new head harness made of polyester rashel knit elastic and new-elastic nylon webbing was developed by CRDEC as a product improvement program (PIP) to improve the protection and comfort of the M17 series mask. The head harness would be installed on all M17A1 and M17A2 masks in the field and in depot storage through a routine modification work order.

### XM55 Large Area Screening System

The XM55 consisted of a power module and several attachable modules. It would be capable of generating both visual IR defeating and millimeter-wave defeating smoke, as well as achieving aqueous (liquid) and hot air decontamination, depending upon which module was attached. The XM55, which would be mountable on either the HMMWV or M113 APC, was to replace the M3A4 smoke generator and M157 generator set.

The Chemical Maintenance Division provided input into the statement of work (SOW) for a full scale development (FSD) contract package. The SOW called for extensive LSAR and technical manual-programs, as well as provisions for full contractor new equipment training.

### XM785 155mm Nuclear Projectile System

The Chemical Maintenance Division coordinated helicopter loading and tiedown tests for the XM785 155mm nuclear projectile system at Fort Bragg, North Carolina. The system included the projectile, a shipping and storage container, registration rounds, and propellant charges.

Helicopters tested were the UH-1, UH-60, and CH-47, with both internal and external carry evaluated. Procedures were developed by the Military Traffic Management Command. The FM-55 series manual for air transport by army rotary wing aircraft was to be developed from the tests.

### Nuclear Maintenance Division

The Nuclear Maintenance Division managed life cycle maintenance engineering, maintenance support, and maintenance readiness for nuclear and associated items. It provided equipment publications, initial provisioning, new equipment training, and fielding plans support for nuclear and ammunition. The division provided an interface for large caliber and small caliber weapons and fire control.

### XM785 155mm Nuclear Projectile Ram and Extraction Test

The XM785 155mm nuclear projectile ram and extraction test was held in May 1986 at Yuma Proving Grounds, Yuma, Arizona. Procedures were performed by a target audience of both army artillery and marine personnel. Nuclear Maintenance Engineering Division personnel attended the subject test in order to evaluate operating and maintenance procedures for the extraction of the XM785 nuclear projectile.

Tests were conducted under hot (110 degrees Fahrenheit) and cold (-30 degrees Fahrenheit) temperatures, while simulating both night and day conditions. Under ambient and hot conditions the equipment, as well as the personnel, performed satisfactorily.

During the cold conditions portion of the test, considerable difficulties were encountered. The hydraulic extractor pump was not consistent in producing sufficient pressure to extract the round. Further testing was necessary to determine whether or not the pump met the requirements of the system.

#### Recode Operation Support

A representative of the Dover Nuclear Maintenance Division permissive action link (PAL) team participated in a USAREUR recode operation of all mechanical PAL locking devices. During FY 1986 the team representative repaired or refurbished a total of 246 items.

#### Vulnerability Assessment of Pershing II Nuclear Warhead

DA and AMC directed a program be established to assess the non-combat vulnerability of several nuclear warhead sections. Pershing II was selected as the first nuclear warhead section to be assessed. An AMCCOM team was established to perform the subject assessment. It consisted of representatives from development, maintenance, and quality assurance.

The assessment was to consider vulnerability to sabotage, theft, and accident of warhead sections and warhead section major components during full scale development, manufacturing, storage, transport, training, deployment, demil/disposal, and as an oversight in design.

Trips were scheduled by the vulnerability assessment team to six army/contractor facilities involved in the aforementioned activities. The final report was disseminated during September 1986.

#### Weapon Access Delay System (WADS)

On 23 June 1986, it was reported that a WADS smoke generator had initiated at a storage site in Germany. Later it was classified as a minor nuclear weapon incident. The smoke generator was not activated by the normal electrical signal from the site security control console, but was inadvertently activated by lightning from an electrical storm. Further reports stated that only one of the four smoke generators installed on the ceiling of the storage structure was expended.

Immediate action was taken by site personnel, as well as the WADS maintenance contractor, to clean up the smoke residue using procedures in the technical manual provided by the Nuclear Maintenance Division. To aid in the smoke residue clean-up operations, personnel from the division, as well as PM-NUC and ARDEC, were in close contact with site personnel, the maintenance contractor, and the manufacturer of the smoke generator.

At the request of USAREUR, a team including a representative from the Nuclear Maintenance Division visited the site to provide technical support. Site personnel and the maintenance contractor were interviewed on details of the electrical storm and the events that followed. External and internal inspections of the storage structure for signs of lightning entry and damage were conducted. Tests were performed to evaluate the extent of the damage, and defective components were replaced by the maintenance contractor. The WADS smoke system was made fully operational and tested before the team left the site.

#### Introduction of New Weapon-Carrying Vehicles

A representative of the Nuclear Maintenance Division participated in a meeting on 1 May 1986 at Fort Sill, Oklahoma, to discuss the tests that should be performed when new army vehicles, intended for transporting nuclear weapons, were fielded to assure that the weapon was not damaged by experiencing environments that exceeded weapon stockpile-to-target (STS) specifications.<sup>28/</sup>

The attendees agreed that existing procedures involved in fielding new vehicles should be improved, and proposed that a nuclear weapons transport certification working group (NWT CWG) be established with members from PM-NUC, TACOM, AMCCOM, the US Army Nuclear Control Activity (USANCA), ARDEC, USADACS, TECOM, the navy, and the Department of Energy. These agencies were to be queried to ascertain their comments/approval concerning the establishment of the NWT CWG. If chartered, the working group would determine the standard tests to be performed, conduct the testing, compare results with STS specifications, certify those vehicles which pass, and authorize publications of tie-down procedures.<sup>29/</sup>

Since, with the exception of two amphibious vehicles, the navy used fielded army vehicles that transport nuclear weapons, it was decided there was no necessity for investigating navy and marine vehicles.

USAREUR would continue to certify NATO vehicles. They were also contemplating the establishment of a group similar to the proposed NWTCWG.

#### MATERIEL MANAGEMENT DIRECTORATE

##### Mission

The Materiel Management Directorate served as the NICP for AMCCOM's major and secondary armament items. It directed the performance of basic supply management responsibilities, including inventory control, commodity management, requirement computations, and interservice supply support. It supported the mutual security program and MIPR coordination, cataloging, and stock control, including requisition processing and stock records. It assured that this support continued through the operational phase to disposal and item phaseout, and also managed a worldwide DOD weapons registry.<sup>30/</sup>

##### Organization

The directorate was divided into an office of the director and eight divisions and offices. Four of the divisions were commodity divisions. They were the Heavy Weapons Division, the Light Weapons Division, the Chemical and Nuclear Division, and the Tools and Equipment Division. They determined requirements, issued equipment, redistributed assets, and provided overall supply support for the various commodities under their control.

The four other divisions and offices performed a variety of functions. The Logistic Data Management Division and the Distribution Division provided support to the commodity divisions. The Programs, Systems, and Evaluation Division provided staff coordination, planning, programming, and other staff functions for the directorate. The Resources Management Office provided administrative support to the directorate.

##### Personnel and Staffing

Colonel David A. Measels was director until July 1986 when he was reassigned to duty in Korea. Mr. Deane Warnecke served as deputy director until July, when he was appointed director. Mr. Daniel Wessel served as deputy director from July to September 1986.<sup>31/</sup>

## Logistics Readiness

Directorate personnel strength for the fiscal year was as follows: 23 military and 601 civilians were authorized, but actual strength was 19 military and 605 civilians. During the fiscal year 24 AMC interns were assigned to the directorate. Ten graduated from the program. Nine were placed within the directorate, and one was placed in another directorate.

### Director's Overview

The Materiel Management Directorate continued to serve as the NICP for AMCCOM's major and secondary armament items, directing the performance of basic supply management responsibilities. During 1986 the directorate was reorganized to accommodate the subject matter assessment for cataloging, and to establish level III weapon systems management for 53 weapon systems.

The directorate continued to meet the challenge of accomplishing its mission along with the assimilation of new functions and responsibilities in the face of continued reduction of authorized personnel strength. The civilian employment estimate for the directorate was reduced from 622 to 601 during the year. The directorate faced additional cuts in personnel strength for 1987 and 1988. Despite these constraints and adversities, the directorate continued to excel in all supply performance indicators.

### Major Activities

#### Programs, Systems, and Evaluation Division

The Programs, Systems, and Evaluation Division directed the overall planning, developing, and review of policy, procedural, regulatory, financial, and fiscal (except OMA) aspects of the Materiel Management Directorate. It directed the overall implementation of directorate readiness programs, including coordinating and monitoring command readiness objectives. It provided staff assistance in all areas of materiel management, including both mid- and long-range logistical planning, the resolution of procedural problems, and the development of operational procedures. The division directed, coordinated, and administered initial provisioning functions for fielding new or improved mission equipment.

### Supply Performance

The data source for determining supply performance was the military supply and transportation evaluation procedure (MILSTREP). Goals prescribed by AMC formed the basis for all performance reviews and reports provided both locally and to higher authority.

Stock availability closed the year at 85.6 percent and reached a fiscal year-high of 86.4 percent in August 1986. The division's ability to sustain stock availability performance above the 85 percent goal over a sustained period was significant.

Stock availability for not-mission capable supply (NMCS) equipment closed the year at 87.8 percent and reached a high of 89.6 percent in September. This was slightly below the 90 percent goal. However, it was the highest of all AMC major subordinate commands.

PA2 stock availability was a true success story. The command rose from a 78.8 percent PA2 stock availability figure for the first quarter to reflect an 87.1 percent figure for the fourth quarter. A record PA2 high was reached in September 1986 with 89.1 percent.

Back orders closed FY 1986 at 37,884 lines. While this number of back orders was up 2.5 percent from FY 1985, the percentage of demands was also up 3.7 percent from FY 1985. With all consideration, back orders remained below the management concern level of 20 percent of total quarterly demands (19.3 percent). Back orders over 90 days old closed the year at 20,154, reflecting less than the desired level. Back orders over 90 days reached a 56.9 percent level of total back orders during the third quarter, and thus the year-end close of 53.2 percent did represent progress, but was still above the goal of 50 percent.

On time requisitioning processing, in accordance with the uniform movement and issue priority system standards, closed the year at 93.1 percent, which was above the AMC standard of 92 percent.

#### Total Package/Unit Materiel Fielding

During its second year of operation, the Materiel Fielding and Studies Section successfully fielded 11 systems to 10 major commands, using 20 materiel fielding teams (MFT). Fielded systems included the M8A1 chemical agent alarm to the Eighth US Army (Korea) (EUSA), WESTCOM, US Army Japan (USARJ), and a continuation fielding to USAREUR; the M3A4 smoke generator to FORSCOM; the squad automatic weapon to FORSCOM; the GEMSS to USAREUR; the BUCS to TRADOC, FORSCOM, WESTCOM, EUSA, USAREUR, and the National Guard; the M23 MBC to FORSCOM; and the welding machine to USAREUR and EUSA. Requisition support was provided for a one time "push" fielding of the Apache attack helicopter to Fort Hood. Additionally, support data was provided to other fielding commands for the Bradley, the Patriot, the MLRS, and three unit activations of the special operations forces battalion.

## Logistics Readiness

Of the \$27 million OMA P2 funds requested for TP/UMF in FY 1986, \$3.4 million was received, \$3.1 million was obligated, and \$275 thousand was returned. Some causes for the disconnect were that while 18 systems were budgeted for TP/UMF in FY 1986, the FUE on 9 systems slipped out of FY 1986; density reductions occurred on some systems; direction was received that 3 systems would not be TP/UMF; and some systems experienced cost reductions on components.

TP/UMF travel funds totaled \$97,710. The bulk of the MFTs were supported by military personnel following a management decision to transfer all but two of the authorized military spaces within the directorate to this section. The section gained 12 military space authorizations in FY 1986 for a total of 18 (3 officers and 15 enlisted). Authorized civilian spaces increased from 4 in FY 1985 to 11 in FY 1986, while actual civilian resources totaled 12. Of the 30 spaces required to support the TP/UMF mission, only the above 7 additional spaces were authorized in FY 1986.

A problem surfaced regarding the disposition of TP/UMF assets remaining at the UMFP which were not called-forward for reasons of authorization changes since receipt of the mission support plan (MSP). A procedure was proposed for the "unfielding" of this material wherein it would be held at the UMFP under a TP/UMF ownership purpose code.

Discrepancies between DESCOM's requisition validation product and the gaining unit's MTOE and TDA authorizations continued to provide frustrations in the building of packages. Many of the fieldings of the SAW, which were scheduled for FY 1986, were delayed until FY 1987 due to design problems with the arms racks.

Further problems were experienced in accomplishing the shipment of end items to staging sites. Special DOD activity address codes (DODAAC) were requested for each AMCCOM staging site in order to maintain accountability and ensure proper TP/UMF unique marking. It was also established that each system's project code would have to be identified to each staging site DODAAC within the standard depot system. Systems problems relating to inaccurate cataloging data complicated the requisitioning of other managed items.32/

All fieldings were accomplished on schedule with the exception of the aforementioned SAWs rack problem. Timely receipt of MSPs continued to be a problem, and a need existed for the standardization of MSP formats. A total of 342 hours of overtime were expended in FY 1986 in an attempt to meet established fielding milestones.

Secondary Item Program

The FY 1986 army stock fund (ASF) program totaled \$488.7 million. The obligation target was 100 percent awarded at \$358.1 million with \$130.6 million carried over to FY 1987 in unobligated commitments. FY 1986 represented the second straight year that ASF targets were reached. An early buy program with accelerated obligation targets was in effect all year. This program had the effect of pulling forward orders earlier in the year for obligation. The methodology was originated at AMCCOM, and was expanded to all major subordinate commands.

Procurement appropriation, secondary (PA2) programs were 74.0 percent awarded. Long standing problems not unique to FY 1986 continued to hamper full obligation of the PA2 programs. Reimbursable customer program generated late in the fiscal year, war reserve programs with low priority, less reimbursable program than forecasted earlier in the year, obligation slippages, savings from contract awards at less than procurement value, weapon system program reductions, late year deobligations, and expiring year (FY 1984) funds received too late in FY 1986 were all reasons for lack of full PA2 obligation.

Army Stock Fund Activity

There was a significant cash drain from the ASF in FY 1986. Gramm-Rudman-Hollings Act cuts to consumer (operation and maintenance, army) funds led to lower customer requisition activity all year. Demands of \$298.2 million and sales of \$291.8 million were \$22.1 and \$36.8 million below forecast.

Further cash drains were caused by the FY 1986 realignment program which switched ASF items to PA2 in some cases. Approximately \$30.0 million was lost as on-order materiel was transferred as it was received with no subsequent sales. The cancellation of the SGT York gun in August 1985 caused cash drains in FY 1986 as on-order materiel was not cancelled, but was received in the depot system. On hand inventory stood at \$686.8 million at year-end.

Organizational Aspects

A realignment of the two sections comprising the Financial Programs Branch was initiated in FY 1986. Formerly, the two sections were divided between budget and program execution responsibilities. The new alignment moved ASF execution, ASF budget, TP/UMF, the special defense acquisition fund, tool sets, and major item programs into one section. PA2 budget, PA2 execution, pricing, and spare parts comprised the other section. This reorganization brought the secondary item programs area into

a structure similar to that employed at all other major subordinate commands.

#### Other Programs

AMCCOM's steadily improving performance in PA2 stock availability, within 1 percent of the AMC goal, was directly related to lambda factor increases. These factors were input based on the branch's recommended adjustments to the factors from automated products analyzed every quarter. The safety level increases caused by the increased lambda factors were largely funded through deobligations.

#### Office Automation

Office automation in FY 1986 began with several major initiatives foreseen to advance the scope and uses of workplace automation. The first four Intel 310 microcomputers were received along with equipment to upgrade our "PRIME" computer capability and the first personal computers for the directorate. The mainframe capability was increased with delivery of another shipment of terminals. The directorate had over 150 terminals/personal computers available to its employees which were used for a variety of functions.33/

The major emphasis of local programming was in the areas of budgeting, administration, and programs to increase productivity for functional users by increasing and refining use of the mainframe and minicomputer linkage. Programs were created/updated to make repetitive actions easier while allowing for front end editing of data. These programs substantially reduced "key punch" usage and at the same time reduced rejects. After these programs were introduced, over 2 million transactions were passed from the PRIME computer to CCSS virtually error free.

#### Mission Support Plans

Acquiring MSP for individual using units was extremely difficult. Plans were nearly always late and in many instances incomplete and inaccurate. Implementation of the TP/UMF concept dictated an improvement in this area if the command was to be successful in the fielding of newly developed systems. Also, additional information was required to make the new fielding concept work properly.34/

To correct this deficiency, AMCCOM requested that the MSP (DA form 5106-R) be revised to include the new data elements. In an effort to improve the user on-time submission rate, a program was developed on the minicomputers which tracked receipt of the MSPs by system and identified those units which were delinquent or had

provided inadequate data. Using this system, the provisioning officer could readily identify problem areas and initiate timely follow up actions to the appropriate major commands. Records for the year indicated the overall average for timely/correct MSP submissions improved from 38 to 68 percent.

#### Logistic Data Management Division

The Logistic Data Management (LDM) Division of the Materiel Management Directorate was responsible for directing command participation in the federal and army cataloging programs. This included monitoring the overall operation of ADP systems to include research, review, analysis, and coordination of program changes and development of systems change requests and ADPE life cycle management documentation. The division provided representation at functional coordinating group (FCG) meetings and division level, prototype, and interface test reviews, and served as the command focal point for LDM programs/projects with higher headquarters and other commands/services.

LDM functions included obtaining NSN assignments for items of supply on new and revised weapon systems prior to the established fielding date for managed and non-managed items; preparation of supply support transactions to establish requirements; implementation of logistic transfers for existing items of supply; coordination of standardization and interchangeability/-substitutability (I&S) received from other activities; initiation of requests for new approved item names (AIN); controlling and recording assignments of management control numbers (MCN) for future NSN assignment; and ensuring the compatibility of the army master data file (AMDF), the Defense Logistics Services Center (DLSC) total item record (TIR) file, the national stock number master data record (NSNMDR), and the army central logistics data bank for publication in the AMDF.

#### Cataloging Subject Matter Assessment

A cataloging subject matter assessment resulted in complete reorganization of the Cataloging Division and changed the title to the Logistic Data Management Division. The reorganization accomplished a restructure of the division to include four functional, commodity-oriented branches; a Quality Control, Logistic Data, and Distribution Branch; and a Systems Analysis and Procedures Branch.<sup>35/</sup>

#### Item Transfers

Approximately 250 items were transferred to the marines, GSA, and DLA on the light armored vehicle system. The provisioning master record (PMR) was deleted in September 1986 and final file

cleanup was in process.

120mm Mortars

Due to a decision by the project manager, contract award for the 120mm mortar was slipped from September 1986 to February 1987 with a corresponding slippage in the provisioning conferences.

Defense Nuclear Agency

Editing difficulties at the Defense Nuclear Agency (DNA) carried the completion of the manual conversion of characteristics data from uncoded to coded on army design items at Field Command, DNA, into FY 1986. AMCCOM and DNA correlated the editing difficulties closely, resulting eventually in satisfactory conversion of all army design items. Successful completion of segment V conversion allowed storage of descriptive data in the NSNMDR file for nuclear items.

DSESTS

The DSESTS-TIS initial provisioning conference was held on 24-26 June 1986, and 1,094 lines were loaded to the PMR on 22 August. The DSESTS-TOW initial provisioning conference scheduled for 23 September 1986 was cancelled due to lack of technical data and was expected to be rescheduled in early 1987.

PIVADS

Approximately 3,370 items were received on the product improved Vulcan air defense system (PIVADS); 2,650 were completed. Of the 720 still in process at the year's end, 688 had supply support requests to DLA and 32 were out to DLSC for NSN assignment.

Videodisc Gunnery Simulator

The Educational Computer Corporation provided CLS for the videodisc gunnery simulator (VIGS), with the exception of a few cosmetic spare parts which AMCCOM was to support until October 1988. The provisioning conference for the VIGS was held 8-10 October 1986 and the in-process review was scheduled for January 1987. NSNs were established for the model records of the five configurations included in the VIGS: the M60A1, the M60A3, the M1/M1A1, the M3, and the M728.

M119 Light Towed Howitzer

Approximately 2,000 lines were loaded into the PMR; 80 percent of these required NATO NSNs. These items were forwarded to Britain and only 70 were completed, with completion of the remaining items expected by early 1987. Initiation of supply support requests of NSN assignment was completed on the remaining 400 items not requiring NATO NSNs.

#### Automated Master Item and PICA Selector (AMIPS) System

The AMIPS system was established to identify I&S decisions for review and collaboration prior to loading families to the DOD I&S system. This project required extensive research and coordination with other services and agencies, as well as within the AMCCOM complex. After release 71.50 was implemented, the I&S change signals report reflected 992 records, 81 of these rejected in AMCCOM's system. As of the end of FY 1986 the DLSC responses had not been received.

#### Item Management Coding Review Project

The Systems Analysis and Procedures Branch of the LDM Division was assigned as the main point of contact for AMCCOM headquarters. It was responsible for coordinating the review of approximately 22,198 NSNs of which certain items would be identified as candidates for transfer to DLA. By the end of the fiscal year 16,845 NSNs had been received. In accordance with the DOD implementation plan for application of new/revised IMC criteria for consumable items, 11,373 of these items were retained for management. Logistic reassignment to DLA took place or was in process for 467 of the items.36/

#### AMC AMDF Product Enhancement (AMCAPE) Program

A confidence level sampling of 200 items was conducted for the AMCAPE program. The sampling resulted in redirection of the program.

The first increment would consist of a review of the data elements failed in the confidence level sampling for all items in file along with reporting of weight and cube data for war reserve items. AMCCOM failed six data elements (FSC, nomenclature, essentiality code, maintenance repair code, acquisition advice code, and special requirements code) and was to conduct a review of 750 items per month.37/

#### Item Identification Type II Upgrades

AMC directed the division to review type II NSNs for upgrade. Approximately 400 items per month were being reviewed.

Automation

The division acquired an INTEL 310 computer and nine WYSE-75 terminals which gave it the capability to establish its own ADP programs. It was in the process of converting manual files to this automated system as well as establishing new programs which would enable it to provide more efficient storage of records. Additionally, the system would have the capability to interface with PRIME.

LDM cross-training programs were administered to all employees over a six year period. This cross-training consisted of 120-day details. A product enhancement work group was established to help resolve cataloging problems.

The division was still experiencing difficulties in receiving adequate technical data in accordance with DOD-STD-100. Therefore, type II NSN assignments were increased. This resulted in an increase in logistic transfers, various file maintenance updates, and a corresponding increase in workload.

Distribution Division

The Distribution Division had the primary responsibility for accounting for weapons and chemical defensive materiel managed by the Materiel Management Directorate, and administratively processed all requisitions for managed materiel. Additionally, the Distribution Division managed the mobilization and war reserve programs for assigned commodities, administered the army sales and donation program, and was the office of primary action and record for the DOD weapons registry.

Major efforts were directed at maintaining inventory accuracy and maintaining on-time processing performance for requisitions. The year-end denial rate was .7 versus a 1 percent goal, and on-time processing was maintained within assigned goals.

Significant individual efforts were directed at supporting major field exercises, participating in the subject matter assessment on distribution and transportation divisions, fielding the 9mm pistol to general officers, and developing management control processes over assets in the hands of contractors.

Light Weapons Division

The Light Weapons Division was one of four commodity divisions within the Materiel Management Directorate. The division was composed of four branches managing distinctly different commodities (small arms, light artillery, the BFVS, and helicopter armament subsystems and fire control).

### New Weapons Fieldings

In addition to providing total field support of all fielded items, several new weapons systems were in various stages of initial fielding and introduction to active army units. During FY 1986 approximately 19,000 items were managed with new force modernization items still being identified through the initial provisioning support process.

The improved 81mm mortar, and the direction to replace the 4.2 inch mortar with a new 120mm version that improved range and lethality, continued to be a significant major effort with very complex issues. Since funding continued to be severely restricted, intense monitoring of mortar programs continued.

A major effort in the initial logistics support (ILS) provisioning area was started or continued on the following new systems: the BFVS, the advanced attack helicopter, the remoted target system (RETS), the squad automatic grenade launcher, the M16A2 5.56mm rifle, the 120mm heavy mortar system, the improved 81mm mortar, the M9 bayonet, and the M9 personal defense weapon (PDW).

Efforts to obtain funding for additional procurement of M60 machine guns and M203 grenade launchers continued to frustrate the command, since back orders were over 19,000 and 13,000, respectively. This situation became increasingly more critical as the priorities for fielding under TP/UMF dictated that all other TO&E authorized equipment for units being fielded be filled. These weapons were not funded at the proper levels to affect adequate support.

The fielding of the squad automatic weapon system (SAWS) continued to "stumble along" as further unforeseen problems occurred, the most notable being a requirement for a third redesign of the security racks to prevent break-in.

Additional fielding of the M23 mortar ballistics computer and the Bradley continued throughout the year. All fieldings were under the TP/UMF handoff concept whereby AMCCOM physically handed-off the weapons and supporting parts packages and processed all required paperwork to assure a smooth transition.

The AH-64 Apache helicopter provisioning effort became increasingly intense to provide sufficient supply support for transition from CLS to total organic support on 1 February 1987.

### Small Business Contractors

## Logistics Readiness

The division continued to experience significant problems with small business contractors experiencing difficulties meeting tolerances on key weapon parts. This problem was aggravated by the overly strict emphasis being directed on competition in procurement. As usual, "the implementation of Congressional directives overruled common sense" and forced more awards to "lowest bidder" contractors which could not handle the difficulties encountered with production on certain tight tolerance-type items. In spite of problems in the small business arena, the division continued to lead the directorate with an 89.2 percent stock availability, 4.2 percent above the AMC goal.

### 9mm Pistol

The 9mm PDW was on contract and gave every indication of becoming a massive "distribution nightmare" because of multiservice distribution and the army TP/UMF concept for handoff to the voluminous numbers of activities requiring a PDW. The program was further aggravated by continuous AAA/GAO audits and Congressional-interest protest actions.

### Receiver Exchange Program

The receiver exchange program initiated in FY 1984 with the M60 machine guns was expanded to other small arms weapons and proved to be a tremendous success. The first-year savings for M60, M2, M16A1, and M203 weapons were approximately \$14 million. Although this program required an extensive effort in maintaining control and visibility, the savings accrued made it well worthwhile.

## Heavy Weapons Division

The mission of the Heavy Weapons Division was the timely and economical support to heavy weapons users. The more than 35,000 secondary items managed ranged in complexity and cost from very expensive and latest state-of-the-art thermal imaging and laser systems to routine repair parts. The division also managed several major items, including both self-propelled and towed howitzers and air defense weapons.

FY 1986 was a year of many outstanding achievements, not the least of which were beating AMC goals for stock availability on total items, PA2 items and NMCS (combat essential) items, and reducing customer back orders.

### M174 Gun Mount

During FY 1986 the division initiated action to establish the M174 gun mount cradle for the M110A2 howitzer as an item of supply. This cradle was thought to have an infinite life. However, during gun mount overhaul, cracks were discovered in a significant number of cradles. If this cradle had not been established in the supply system, gun mounts with a unit cost of \$109,000 which had cracked cradles would not have been repairable, and would have been sent to property disposal. The cost of a new cradle was about one-third of the cost of a new gun mount. The division justified and obtained approval to procure \$14.1 million dollars worth of cradles during FY 1986.

M4 and M5 gun mounts were removed from obsolete M115 howitzers, and were also converted to the M174 gun mount. As a result of this conversion, AMCCOM was able to avoid the procurement of 37 M174 gun mounts. The difference between the new production unit cost and the conversion cost was \$19,822.10. The total savings that resulted from this action was \$733,417.70.

#### Ground Emplaced Mine Scattering System

The ground emplaced mine scattering system (GEMSS) began fielding in FY 1986. Twenty-two GEMSS were successfully fielded to USAREUR under the TP/UMF concept.

The PLL/ASL computation had factored out to 0, and USAREUR refused to accept the GEMSS without some type of support package. As a result, two general supply support packages (GSSP) were developed and fielded with the system, one to the Fifth Corps and one to the Seventh Corps.

The fielding of the remaining 41 GEMSS to USAREUR was scheduled to begin in the second quarter of FY 1987, with no additional GSSPs.

#### M102 Howitzer

The overhaul and product improvement of the M102 howitzer at Letterkenny Army Depot and Schofield Barracks involved the completion and shipment of 93 assets during FY 1986. This involved improvements to the carriage and recoil and fire control components. The improved weapons were sent to priority light infantry and airborne units worldwide.

#### Abrams Tank

During FYs 1985 and 1986 the division established and initiated procurements for nearly 1,000 unique new items to support the fielding of the 120mm gun version of the Abrams tank, the M1A1. Handoffs to the Third Armored Cavalry Regiment at Fort

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Bliss and to USAREUR customers began during FY 1986 and were to escalate during FY 1987.

A large number of M1 and M60A3 tanks, particularly in USAREUR, were to be displaced as the M1A1 fielding continued. These displaced vehicles needed to be brought to 10/20 TM standards for redistribution to other users in CONUS, including National Guard customers, and EUSA. The division procured boldly, and expected to fully support this extensive tank redistribution program. Stock availability rates on the Abrams and M60 items for FY 1986 were at all time high levels.

### SGT York

FY 1985 was a year of great turmoil for the SGT York, and the program was cancelled by the secretary of defense on 27 August 1985. FY 1986 involved many disposition actions, and finally the termination of the division's SGT York branch. The few remaining actions on this air defense system were being handled by a very small team, and, conversely, activities on the old Vulcan air defense system accelerated. Stock availability on the Vulcan reached an all time high for FY 1986.

### New Programs

The division planned to be very heavily involved in several new programs in FY 1987, such as the M119 105mm towed howitzer. Also ongoing, and requiring more and more intensive management, were the many complex product improvement/modification programs for Abrams and M60A3 tanks and self-propelled artillery.

## Chemical and Nuclear Division

The Chemical and Nuclear Division was one of the four commodity divisions in the Materiel Management Directorate. The division directed the execution of integrated materiel management functions for assigned commodities which included test and handling equipment; chemical protection, detection, and decontaminating equipment; and nuclear items. These items included major, secondary, and army stock fund items. The division also directed the distribution of all nuclear items to US Army customers and was responsible for worldwide inventory control and verification through the use of the war reserve stockpile computer system.

The division managed approximately 9,663 secondary items and 596 major items. The army stock fund budget for the division was \$71.8 million; provisioning stock fund, \$46.5 million; and project manager for nuclear munitions budget dollar (for Department of Energy designed materiel), \$1.2 million.

The major problem areas encountered by the division were in support of the gas mask program, as well as supporting the M8A1 alarm fielding. Back orders continued to be a problem in these two areas and required constant monitoring and expediting. Back order count for the Nuclear Branch was at the lowest average in history, less than 126 lines.

Development of a new tie down strap dropped initial stock availability from a high of 91.7 percent in October 1985 to an average of 82 percent for the year. This was caused by premature requisitioning of the strap. Initial quantities were received in August 1986. Full production was to commence in November 1986.

New systems requiring provisioning were the M753 8" projectile fielding, the M8A1 chemical agent alarm, the M13 decontaminating apparatus, the modular collective protection equipment, the M3A4 smoke generator, and the individual decontamination kit. A safety modification was completed on the Nike Hercules during the year, and over \$50 million of material on the Honest John system was sent for disposal.<sup>38/</sup>

#### Tools and Equipment Division

The Tools and Equipment Division was one of four commodity divisions in the Materiel Management Directorate. It was responsible for the execution of the integrated materiel management functions for assigned commodities which included special tools, test equipment, repair parts, and tool sets in support of AMCCOM managed weapons; ammunition gages; precision weapon gages; common tools, sets, kits, and outfits; explosive ordnance disposal (EOD) tools and sets; industrial plant equipment; automotive support equipment; and other miscellaneous equipment.

Supply performance by the Tools and Equipment Division continued to reflect a positive trend. For the fifth consecutive year, stock availability increased, thus reflecting improved support to field units. The adjusted monthly stock availability was at 75.4 percent in October 1985, and at 82.8 percent in September 1986. This improved availability played a significant role in the successful fielding of the squad automatic weapon, the M240 machine gun, the M1 tank, the Bradley fighting vehicle, the M60 tank, and the Cobra helicopter. Procurement was also initiated for the Apache helicopter in anticipation of fieldings in early FY 1987.

The basic issue items (BII) "team" assembled in excess of \$6.9 million worth of sets in support of AMCCOM managed weapons. The tool set assembly program completed the assembly of 8,300 sets at a value in excess of \$11 million. This represented an increase

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of approximately 600 sets over the FY 1986 forecast.

Positive actions continued in the support of commercial equipment in the field. The number of repair parts identified and stocked increased by approximately 16 percent during the fiscal year. This action increased repair part availability and reduces the "down time" of end items. The supportability of commercial equipment was projected to continue to increase in the future as additional efforts were made to further increase the level of supportability.

A division milestone occurred with the initial fielding of the newly developed standard welder and welder shop, being initially fielded in USAREUR, EUSA, and selected CONUS activities. This represented a "first" for deploying equipment of this nature with full organic support as a result of total provisioning.

### TRANSPORTATION AND TRAFFIC MANAGEMENT DIRECTORATE

#### Mission

The mission of the Transportation and Traffic Management Directorate was to develop, manage, and direct the execution of command transportation and traffic management policies, plans, and programs, including conventional ammunition items assigned to the SMCA. This encompassed policies, plans, and programs pertaining to traffic management aspects and related systems covering life cycle movement of all AMCCOM-managed armament during procurement and in the wholesale inventory. The directorate served as program manager for the command first and second destination transportation budget and funding programs and related resources, and approved and prioritized the use of AMCCOM air assets for cargo movement requirements of ARDEC, CRDEC, plants, and arsenals with the AMCCOM Aviation Office. The directorate provided technical policy guidance and approved transportation and traffic management programs for all subordinate AMCCOM activities. It developed policies for use of facilities and equipment relative to movement of freight by container. Transportation budgeting and funding management for other military services was excluded from the directorate's mission. However, it received quarterly funding targets from the US Marine Corps, which were sub-allocated as required to AMCCOM's shipping installations for the USMC's first and second destination transportation shipments.<sup>39/</sup>

#### Organization

The Transportation and Traffic Management Directorate went through FY 1986 without a reorganization, retaining the structure as constituted in FY 1982. The directorate was divided into an office and two divisions: the Resources Management and

Transportation and Traffic Management Directorate

Administrative Office, the Defense Munitions Distribution Traffic Division, and the Defense Procurement and Production Traffic Division.

The Resources Management and Administrative Office was responsible for the command's transportation budget and funds management, the internal operating budget, personnel and manpower management, and overall directorate administrative functions. The Defense Munitions Distribution Traffic Division managed the conventional ammunition transportation function, including export shipments and nuclear and chemical materiel shipments. The Defense Procurement and Production Traffic Division performed a variety of functions that included procurement traffic supporting the command's procurement and production missions; weapons, tools, and other armament shipments; passenger travel; and transportation officer functions for ammunition plants not staffed with a transportation officer. It also exercised staff control for personal property.

Staffing and Personnel

Mr. Robert J. Surkein, remained the director of the Transportation and Traffic Management Directorate during the first quarter of FY 1986, retiring on 31 December 1985. On 1 January 1986, Mr. Wilfred E. Schweitzer replaced Mr. Surkein. Mr. Evan M. Jones served as the deputy director throughout FY 1986.

The directorate's civilian authorization remained at 57 until 30 September 1986, when it was reduced to 55. The directorate's military authorization remained unchanged with one enlisted and two officer personnel. The directorate was augmented with one USAF officer and one USMC enlisted positions for performing traffic management functions under the SMCA concept, which represented no change from FY 1985. These two positions were not counted toward the directorate's manpower authorization, and are excluded from the display listed below:

Personnel Strength

	Authorized		Actual	
	FY 85	FY 86	FY 85	FY 86
Military	3	3	3	3
Civilian	57	57	53	55

The authorized strength of 57 included positions for three AMC interns engaged in on-the-job-training (OJT), and who graduated in August 1986. These three interns represented the increase in actual strength for FY 1986.

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### Director's Overview

The highlight contribution the directorate made in FY 1986, again, was the timely planning and directing of shipments of ammunition and weapons to worldwide customers, including ammunition shipments to all military services under the SMCA concept.

The transportation cost efficiencies and economies employed were instrumental in realizing significant transportation handling cost avoidances during FY 1986. The total cost avoidance during FY 1986 amounted to \$41,814 million for all military services shipments.

The directorate's short and long range goals were predicated to a large extent on the command's and other military services' goals and objectives, to which the Transportation and Traffic Management Directorate historically reacted and supported on a timely basis.

### Major Activities

#### CONUS Shipments

Transportation and Traffic Management Directorate staff personnel processed 62,606 requisitions for movement of ammunition within CONUS. Action officers monitored requisitions so as to permit arrival at the CONUS training sites to meet training schedules.

#### Special Assignment Airlift Mission for Special Weapons

During FY 1986, 30 SAAM airlifts to, from, and within overseas theaters and CONUS for the movement of 989 special weapon major items and major components were arranged, controlled, and monitored by the directorate.

Coordination was effected by the directorate with the air force NICP for special weapons at Kelly Air Force Base, Texas, for the consolidation of army cargo on air force SAAM's. This resulted in a cost savings of \$318,464. Additionally, approximately 86,587 pounds of inert and/or compatible material, including special training material, was airlifted as filler cargo on existing SAAM aircraft at a cost savings of \$98,254.

#### SAAM for Ammunition and Weapons

## Transportation and Traffic Management Directorate

During FY 1986, directorate personnel coordinated with other elements of the headquarters and with the Military Airlift Command (MAC) in arranging for 17 SAAM aircraft missions, utilizing 14 C-141, 2 C-130, and 1 C-5A aircraft. Total tonnage transported was 405 short tons (ST)--380 ST of ammunition and 25 ST of weapons, components, and spare parts. These items were shipped to five foreign countries, and from one foreign country to the US.

### Export Air Shipments and Challenges -- Ammunition

The Transportation and Traffic Management Directorate received 2,882 ammunition requisitions for MAC channel of 10,725 ST during FY 1986. Challenge and validation resulted in 664 ST validated for airlift, with 10,061 ST diverted to surface transportation. This challenge procedure resulted in cost avoidances of \$11,339,991 for the air force; \$174,606 for the navy; \$39,595 for the marines; and \$13,944 for the army. The total savings amounted to \$11,568,136 during FY 1986. The following breakdown gives the overseas destinations with the amount of tonnage to each area:

Air Station	Army	Air Force	Navy	Marines	Total
Europe/United Kingdom	259	795	45	1	1,100
Pacific Area	36	202	60	5	303
Central/South America	332	50	0	0	382
Caribbean/Panama Canal	37	101	1	0	139
Mediterranean/Middle East	66	10	0	0	76

### Maritime Prepositioned Ships Program

Ship planning and cargo movement for MPS-1, 2, and 3 was completed. The loadout of 4 remaining ships, which started in April 1986, was completed during the month of September 1986, with a total of 11,214 short tons and 13,755 measurement tons of ammunition for MPS-3. This concluded the loadout of all 13 prepositioned ships. The total tons for the MPS project were 35,881 short tons and 43,225 measurement tons.

### Toxic Chemical Munitions Contingency Plan

The initial toxic chemical munitions (TCM) mobilization and contingency support plan development effort began with source selection by the Defense Ammunition and the Transportation and Traffic Management Directorates. The sourcing effort was followed by the publication of an AMCCOM draft plan which specified the requisitioning and movement procedures that would be used for deployment of TCM. In March 1986, the first draft plan was submitted to the services and other agencies for comment or concurrence.

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In April 1986, JCS directed DA to establish a joint working group (JWG) to develop joint TCM deployment procedures based on the AMCCOM draft plan. Three JWG meetings hosted by JCHEM were held in which subsequent drafts were refined. A final draft was published at the end of September 1986 and submitted to the field for concurrence. The final product would be published as a supplement to DOD 5160.65.M.

Export Shipment of Ammunition

During FY 1986, Transportation and Traffic Management Directorate personnel facilitated the movement of 141,530 ST of ammunition worldwide to overseas customers in contrast to 194,449 ST during FY 1985. The decrease in tonnage during FY 1986 was primarily due to a reduction in ammunition shipments of all services to the Pacific. The most significant decrease was in army tonnage with the war reserve stock allies (WRSA) program for Korea being 5,383 ST from CONUS compared to 25,651 ST in FY 1985 when both the FY 1984 and FY 1985 WRSA programs were executed. In addition, there was no Pacific Command reserve program in FY 1986, and this program accounted for the movement of 28,246 ST in FY 1985. Of the total 141,530 ST shipped during FY 1986, 139,287 ST moved by surface transportation, while 2,243 ST moved by air. The percentage airlifted in FY 1986 was approximately one and a half percent, while the percentage airlifted in FY 1985 was approximately one percent. The following breakdown gives the overseas destinations with the amount of tonnage to each area:

Surface (ST)

Overseas	Army	Air Force	Navy	Marines	Total
Europe/United Kingdom	69,543	12,686	0	103	82,332
Pacific Area	33,902	2,118	3,839	1,418	41,277
Central/South America	2,484	529	0	0	3,013
Caribbean/Panama Canal	785	427	67	116	1,395
Mediterranean/Middle East	367	9,600	0	50	10,017
Alaska	446	807	0	0	1,253
TOTAL	<u>107,527</u>	<u>26,167</u>	<u>3,906</u>	<u>1,687</u>	<u>139,287</u>

Air (ST)

Europe/United Kingdom	259	795	45	1	1,100
Pacific Area	36	202	60	5	303
Central/South	332	50	0	0	382

Transportation and Traffic Management Directorate

America					
Caribbean/Panama	37	101	1	0	139
Canal					
Mediterranean/	66	10	0	0	76
Middle East					
Alaska	46	190	5	2	243
TOTAL	<u>776</u>	<u>1,348</u>	<u>111</u>	<u>8</u>	<u>2,243</u>

The 82,332 ST shipped to Europe and the United Kingdom, including 856 ST of foreign military sales (FMS) cargo, moved on 11 ships. Of the total tonnage shipped, 58,814 ST moved in 4,429 military vans (MILVAN) and the balance of 23,518 ST was shipped in breakbulk configuration.

The Pacific area tonnage of 41,277 ST was moved on 7 ships and included 22 ST for FMS and 20,378 ST for resupply of prepositioned ships.

A total of 3,013 ST of FMS was moved to Central America on 4 ships broken down to 2,192 ST to El Salvador, 128 ST to Panama, 1 ST to Costa Rica, and 692 ST to Honduras.

US troop support shipments of 1,174 ST to the Panama Canal Zone, 105 ST to Puerto Rico, and 116 ST to Guantanamo, Cuba, were accomplished by utilizing space on 2 ships.

Four voyages moved 10,017 ST to the Mediterranean and Middle East, which included 175 ST in grant aid, 882 ST US Army troop support, 130 ST prepositioned war reserves (PPWR), 125 ST training for SETAF, and 8,768 ST for the air force in Oman.

Army Ammunition Build-up Program for Europe and Korea

Approximately 59 percent of the tonnage directed for surface movement by the Transportation and Traffic Management Directorate during FY 1986 was in support of the Europe and Korea army ammunition build-up programs consisting of training, PPWR, and WRSA.

The initial program objective for Europe was 45,000 ST PPWR and 30,000 ST training for a total program objective of 75,000 ST. The program objective was subsequently changed to 65,000 ST, which was exceeded by 3,395 ST at years-end due to additional call forward received in July 1986. A total of 23,483 ST was programmed for retrograde, including 8,990 ST for FY 1986 WRSA, Korea. The WRSA, Korea, tonnage was subsequently revised upward to 15,100 ST and additional tonnage of 522 ST PPWR and 209 ST training for Korea was added to the Europe retrograde program. Actual tonnage shipped to Europe during FY 1986 was 56,551 ST PPWR and 11,844 ST training for a total of 68,395 ST. Retrograde

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returned to CONUS in FY 1986 totaled 14,231 ST and to Korea 15,875 ST. In addition, 1,855 ST of MICOM missiles and missile components were retrograded to CONUS.

The program objective for Korea was 5,000 ST training and 5,000 ST PPWR. The FY 1986 WRSA conventional ammunition program of \$113,500,000 equated to 5,383 ST from CONUS; 15,445 ST from Europe; and 502 ST transferred in place in Korea. Total tonnage shipped for the army ammunition build-up in Korea during FY 1986 was 1,067 ST training; 6,962 ST PPWR; and 20,828 ST WRSA for a total of 28,857 ST. The directorate coordinated the movement from CONUS of a total of 9,880 ST of ammunition on two ships delivered to Korea in March 1986 in support of Exercise Team Spirit.

### Intransit Safety and Security

In August and September 1985, the directorate coordinated the AMCCOM position through AMC and DA that the existing constant surveillance service (CSS), with one driver, for movement of arms, ammunition, and explosives (AA&E) was not adequate. Not only were two drivers required for security, but also for safety. Based on joint service review of increased security incidents and the overall terrorist threat, OSD directed transportation protective services be upgraded to the following: category I, an armed guard dual driver protective service with escort; category II, an armed guard dual driver protective service; categories III, IV, and all other uncategorized A and B explosives, a dual driver protective service; and removal of sensitive class C explosives from freight on all kinds of tenders.

Seven new contract clauses were developed to ensure transportation protective services were applied to AA&E being commercially produced for AMCCOM and AMCCOM GOCO activities. The implementation of FOB origin-only delivery terms for new contracts provided for movement under a government bill of lading. Application of upgraded transportation protective services to AA&E produced at GOCOs for third party contracts brought all movement of AMCCOM AA&E under control.

### Traffic Management Data File Build

FY 1986 saw continued efforts to surmount the freight classification backlog. Classification of items being procured and prompt responses to depot challenges continued to receive priority. After these, newly cataloged items, and then backlogged items, were classified. Classification of 5,601 items was accomplished; however, due to the introduction of new items, the overall backlog was reduced from 7,558 to 6,476.

## Transportation and Traffic Management Directorate

### Directorate Automation

During FY 1986, the directorate made significant advances in office automation. Word processing capability was expanded from two memory typewriters in one division to Visual 500 (PRIME) word processing in all divisions. Computer lines were expanded from 3 to 11. Equipment increased by four IBM personal computers, eight Visual 500 terminals, and four printers.

### Transportation DSACS

DSACS transportation requirements were divided into seven modules: shipping planning process, manifest reconciliation, transportation file integrity, shipment planning file, transportation query processing, production data process, and transportation procurement support.

During FY 1986 one of the seven DSACS transportation subsystems/modules (shipment planning file) was completely implemented and nearly 80 percent of the work on the other DSACS transportation subsystems/modules was also completed. The four requested IBM computers were received. One subsystem (transportation procurement support) was being developed by contract. The functional description was completed by Systems and Applied Sciences Corporation. Design and programming was to be performed by SAGE Federal Systems, Inc., in FY 1987 and FY 1988.

### Traffic Management Support of Procurement Activities

The accelerated FY 1986 procurement emphasis required ammunition support specialists to furnish transportation provisions for 594 solicitations and 185 freight on board (FOB) origin delivery cost evaluations. Weapons support specialists furnished transportation provisions for 1,647 solicitations resulting in 93 transportation delivery cost evaluations.

All resulting contracts and contract modifications were reviewed to ensure that transportation recommendations, especially first destination transportation (FDT) funding entries, hazardous material safety data, sensitive item security requirements, guaranteed maximum shipping data, and prescribed loading drawings were implemented, and that all FOB origin movements comprising either 500,000 pounds or 25 truckloads between one origin and one destination in one year were identified to the Military Traffic Management Command (MTMC). These 124 "volume movement reports" were used by MTMC to negotiate more economical delivery rates and charges, offered the government by the commercial carrier industry through reduced Section 10721 quotations resulting in 112 negotiated potential cost avoidances of \$2,251,882.

Transportation Officer Support to Ammunition Plants

Traffic management functions for 11 of the less active AAPs and 2 DOD contractors, Martin Marietta Energy Systems and Honeywell, at Joliet AAP, continued to be performed by the Transportation and Traffic Management Directorate during FY 1986. This required the issuance of 1,717 government bills of lading (GBLs) for movement of commodities by all modes of transportation. This compared to 1,681 GBLs issued for FY 1985, a 2.2 percent increase.

Passenger Travel

A total of 14,014 travel orders were processed during FY 1986 for civilian and military travelers from AMCCOM headquarters to various CONUS and OCONUS TDY destinations. This was a nine percent decrease over FY 1985. The directorate arranged for AMCCOM executive travel and all OCONUS arrangements which resulted in obtaining and accounting for 367 airline tickets. This was 810 less than in FY 1985, due to command emphasis to reduce travel and the change in AMCCOM regulation 55-2, which gave the directors and deputies the option to make their CONUS travel arrangements directly with SATO, or OCONUS arrangements with RIA transportation. These tickets were paid for under the local payment of airlines (LOPA) system with 48 government travel requests (GTR). The total of 247 OCONUS travel orders indicated a 43 percent decrease over FY 1985. The AAPs not having an assigned transportation officer requested and received 110 GTRs from the directorate for official travel.

A frequent flyer program was initiated with enrollment of 312 travelers with 7 participating airlines. The Scheduled Airlines Traffic Office (SATO) at RIA supported the program with a SATO clerk and a computer. The RIA transportation officer managed the program for AMCCOM headquarters and tenants.40/

In June 1986 a customer service survey form was initiated to obtain feedback from travelers on airline and rental car service. Surveys were reviewed and action taken to resolve critical issues.

A PRIME computer program was developed to determine travel target balances by army management structure (AMS) code for each directorate. A printout of the target estimated balances could be provided by AMS code weekly, but could be viewed anytime.41/

AMCCOM regulation 55-2 was revised on 2 July 1986, superseding the 25 July 1985 edition. Major revisions included limiting the number of personnel at briefings, introduction of SMCRI Form 2048 (Tips for Travelers), appendix G - Trip Report Form, timeframe for submitting CONUS travel requests, allowing

## Transportation and Traffic Management Directorate

directors and deputies the option of making their own CONUS and OCONUS arrangements direct with SATO and RIA, stressing the use of installed restraint systems, and controlling OCONUS travel and timely submission of all OCONUS travel requests.

### Third Party Contract Shipments

The directorate launched an effort to better control intransit security for third party shipments. Transportation security of sensitive AA&E was not being required for third party shipments. Shipments were prepared and released under Department of Transportation regulations, which did not provide equal DOD security requirements.

The directorate coordinated the AMCCOM position that the transportation protective services which apply to army shipments should also apply to third party contract shipments. This recommendation was made through AMC to DA, along with a recommendation to use military or DOD approved ports for export.

DA approved these recommendations and action was taken to include appropriate language in non-DOD third party contracts to ensure appropriate transportation protective services were applied. Blanket third party production authorization letters and AMCCOM plant utilization policy were also revised.

### Transportability

During FY 1986 the director, Transportation and Traffic Management Directorate, was designated project engineering for transportability (ET) focal point for AMCCOM. The directorate served as the ET focal point for CRDEC, as the commander did not have a transportation officer on his staff. The transportation branch chief continued to serve as the ET focal point for ARDEC. The directorate arranged ET seminars conducted by MTMCTEA at ARDEC and AMCCOM headquarters for ILS managers, engineers, and transportation and project manager personnel.

A major initiative was begun in coordination with AMC, TACOM, USADACS, and PM-AMMOLOG on recommended changes to AR 70-47 and AR 700-127 to require all tactical and non-tactical vehicles be evaluated for ammunition tiedown procedures to preclude vehicle fielding without adequate tiedown points. Transportability problem items were also identified through representation on acquisition boards, ILS, and WSMM teams and transportability reports continued to be submitted as necessary to obtain MTMC approval.

Cargo Preference, US Flag Vessels

In the summer of 1985, the US Maritime Administration (MARAD) advised AMCCOM, along with other DOD activities, of noncompliance with the Cargo Preference Act of 1904. This law required that DOD use only US flag vessels for surface transport of its supplies. Upon review with a representative of MARAD, it was determined that AMCCOM was not citing FAR Clause 52.247-64 (ALT 1) preference for privately owned US Flag commercial vessels in all solicitations and contracts involving foreign prime contractors or subcontractors. In addition, it was not following up on the requirement that contractors submit ocean bills of lading for each shipment to document use of US flag vessels.

AMCCOM's first action to remedy this oversight was to ensure that the required FAR clause would be automatically printed in all solicitations. This action was taken in September 1985.

During FY 1986 additional actions were taken in coordination with MARAD to bring the command into full compliance with the law. All existing contracts for \$500,000 or more were modified to include the required clause. This threshold was selected as an initial manageable workload and to ensure large shipments were identified. The directorate also assisted the Procurement Directorate in the development of a special lead-in note which would appear in all solicitations highlighting the clause and its attendant requirements.

In July 1986, the Procurement Directorate sent letters to all contractors with contracts of \$500,000 or more requesting they identify all use of foreign flag vessels for themselves or at any tier of subcontracting. The Transportation and Traffic Management Directorate assisted the procurement community in obtaining pertinent documentation from affected contractors for calendar year 1985. This information was required by MARAD for its annual report to Congress on compliance by federal agencies. AMCCOM's methodology was recommended as a model for other AMC commands to use in support of this law.

On 12 September 1986 AMCCOM received a message from DA restricting policy statements or interpretations regarding the cargo preference laws pending DA review. Clarification was requested by the AMCCOM Procurement Policy Directorate. Further action to collect documentation for calendar year 1985 contracts was temporarily suspended pending DA response.

Transportation Funding

Transportation and Traffic Management Directorate

The Transportation and Traffic Management Directorate managed and controlled a total of \$32,053,500 in FY 1986 for shipment of AMCCOM managed material. The directorate was responsible for budgeting OMA first (FDT) and second (SDT) destination transportation funds and conventional ammunition working capital fund (CAWCF) as budgeted by the comptroller. Table 1 shows OMA-FDT and CAWCF funds committed in the amount of \$27,822,300 for shipments which included ammunition end items (FDT), ammunition components (CAWCF) and other OMA-FDT for weapons, tracked combat vehicles, other support material, missile and aircraft associated material. Table 2 shows SDT funds committed in the amount of \$4,231,200 for shipments which included army ammunition end items in support of Europe and Korea build-up.

Review of GBL during FY 1986 resulted in the recoument of \$864,190, as compared to \$523,635 for FY 1985, from other military services and agencies, which was caused by the shippers erroneously citing AMCCOM's OMA transportation funds. Additionally, reviews detected inordinate differences (the differences between the carrier charges and the rates that should have been charged) in the amount of \$580,628 in FDT and \$154,658 in SDT. This \$735,286 in inordinate differences was forwarded to the US Army Finance and Accounting Center for further review and action.

In addition to FDT and SDT budgeting and funding control responsibility, the directorate reviewed and monitored usage of funds for the following programs for shipment of AMCCOM-managed material:

Account	AMSMC	Dollars	Short Tons
US Army Reserve	527991.30000	\$18,000	114
Grant-Aid (MAP)	L1A00.10000	9,787	118
National Guard	P3726	465,573	1,614
Marine Corps FDT	MG08	4,481,574	50,081
Marine Corps SDT	MG09	1,212,257	7,125

FY 1986 force modernization program directed by higher headquarters required research of GBLs received against procurement contracts to assure the correct force modernization system was being charged. Usage of AMCCOM's FDT and SDT funds were as follows:

AMSMC	Dollars	Short Tons
P728009.00 (FDT)	\$1,281,080	9,482
P728010.11 (SDT)	\$ 250,534	3,939

TABLE 1  
**FY 86 OMA FIRST DESTINATION TRANSPORTATION FUNDING AND  
 CONVENTIONAL AMMUNITION WORKING CAPITAL FUND (CAWCF)**

<u>AMSC</u>	<u>COMMODITY CATEGORY SHIPPED AND FUNDED</u>	<u>FUNDS</u>	<u>SHORT TONS SHIPPED</u>
	TOTAL ALL COMMODITIES	(\$27,822,300)	(425,561)
	DIRECT FUNDING (D)	27,236,300	419,231
	REIMBURSABLE (R)	586,000	6,330
728009.10000	AIRCRAFT ASSOCIATED EQUIPMENT (D)	(\$3,600)	(14)
		3,600	14
.20000	MISSILES COMPONENTS (D)	(\$90,000)	(523)
		90,000	523
.31000	TRACKED COMBAT VEHICLES (D)	(\$686,200)	(4,570)
		591,500	3,940
		94,700	630
.32000	WEAPONS (D)	(\$153,600)	(580)
		38,600	128
		115,000	452
.33000	NON-TRACKED COMBAT VEHICLES (D)	(\$280,000)	(3,403)
		261,900	3,183
		18,100	220
.40000	AMMUNITION END ITEMS (D)	(\$13,988,700)	(196,405)
		13,630,500	191,377
		358,200	5,028
.53000	OTHER SUPPORT EQUIPMENT (D)	(\$320,200)	(3,483)
		320,200	3,483
CAWCF	AMMUNITION COMPONENTS (D)	(\$12,300,000)	(216,583)
		12,300,000	216,583

**TABLE 2**  
**OMA SECOND DESTINATION TRANSPORTATION FUNDING (FY 86)**

<u>AMSC</u>	<u>COMMODITY CATEGORY SHIPPED AND FUNDED</u>	<u>FUNDS</u>	<u>SHORT TONS SHIPPED</u>
728010.11000	TOTAL AMMUNITION, WEAPONS, RELATED ARMAMENTS, AND OTHER COMMAND-MANAGED EQUIPMENT	(\$4,231,200)	(35,476)
	DIRECT FUNDING (D)	4,226,100	35,433
	REIMBURSABLE FUNDING (R)	5,100	43
	BREAK-OUT FOR AMMUNITION AND NON-AMMUNITION		
	AMMUNITION	3,552,400	28,833
	WEAPONS AND OTHER ARMAMENTS	678,800	6,643

SMCA Transportation and Handling Cost Avoidances

Ammunition shipments for all military services were moved by most economical means, without jeopardizing the required delivery dates. This resulted in a cost avoidance of \$22.558 million for FY 1986 in transportation and handling costs as indicated below:

Service	Dollar Amount
US Army	\$ 3,517,291
Retrograde Europe	\$ 6,284,428
US Navy	\$ 306,429
US Marine Corps	\$ 505,721
US Air Force	\$11,944,334

The above avoidances were achieved through airlift challenges, pay-backs, MILVAN stuffing, negotiated freight rates, and the relocation of retail assets and retrograde direct from Europe to Korea. The above avoidances compared to \$34.365 million in FY 1985.

SMCA Production Shipments and Handling Cost Avoidances

The FY 1986 cost avoidance of \$19.256 million was a result of shipping ammunition direct from production to all military services customers rather than from production to depot to outloading ports as follows:

Service	Dollar Amount
US Army	\$16,570,000
US Navy	\$ 316,000
US Marine Corps	\$ 479,000
US Air Force	\$ 1,891,000

The above avoidances compared to \$14.465 million for FY 1985. During FY 1986, a total of 141,474 short tons were shipped, of which 83,996 short tons (59 percent) moved direct from production. The remaining 57,478 short tons (41 percent) were shipped from the depots.

Transportation and Traffic Management Directorate

NOTES

1/This section is derived from the annual historical submission of the deputy for logistics readiness, Colonel L. W. Stock, Assistant Deputy, 19 Nov 86.

2/Lawrence L. Leveque, et al., Annual Historical Review: US Army Armament, Munitions, and Chemical Command, Fiscal Year 1985 (Rock Island, Illinois: Historical Office, AMCCOM, 1986), p. VI-1; Sheila C. Kamerick, et al., Annual Historical Review: US Army Armament, Munitions, and Chemical Command, Fiscal Year 1984 (Rock Island, Illinois: Historical Office, AMCCOM, 1985), p. VI-3.

3/This section is based on the annual historical submission of the Defense Ammunition Directorate, LTC David W. Strand (USAF), Director, 16 Dec 86.

4/HQ, AMCCOM, Record of Weekly Staff Meetings, 19 Nov 85, p. 21. For further information on the "Hardin Study," see the Management Directorate section of Chapter VII.

5 Staff Meeting, 20 May 86, p. 28.

6 Ibid., 14 Jan 86, p. 26.

7 Ibid., 7 Sep 86, p. 28.

8 This section is derived from the annual historical submission of the International Logistics Directorate, Mr. Richard L. Harris, Director, 17 Nov 86.

9 This section is derived from the annual historical submission of the Integrated Logistic Support Office, Mr. Robert W. Hurley, Acting Chief, electronically transferred 25 Nov 86 as confirmed by DF dated 21 Nov 86.

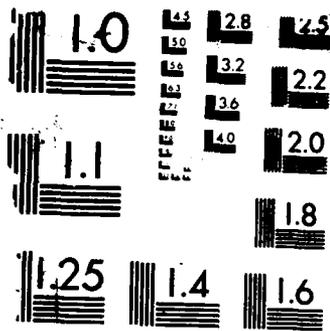
10 This section is based on the annual historical submission of the Maintenance Directorate, Mr. R. D. Husson, Deputy Director, 14 Nov 86.

11 Staff Meeting, 30 Dec 85, p. 14.

12 Ibid., 4 Jul 86, p. 17.

13 Ibid., 8 Jul 86, p. 16.





MICROCOPY RESOLUTION TEST CHART

Logistics Readiness

14/Ibid., 8 Oct 85, p. 18.

15/Ibid., 23 Sep 86, p. 7.

16/Ibid., 11 Mar 86, p. 14.

17/Ibid., 4 Mar 86, pp. 15-16.

18/Ibid., 7 Jan 86, p. 12.

19/Ibid., 16 Sep 86, p. 7.

20/Ibid., 5 Aug 86, p. 16.

21/Ibid., 22 Jul 86, p. 18.

22/Ibid., 20 May 86, pp. 12-13.

23/Ibid., 29 Apr 86, p. 14.

24/Ibid., 10 Dec 85, p. 13.

25/Ibid., 26 Nov 85, p. 13.

26/Ibid., 25 Feb 86, p. 15; 15 Apr 86, p. 15.

27/Staff Meeting, 8 Oct 85, p. 17.

28/Ibid., 7 May 86, p. 15.

29/Ibid., 13 May 86, pp. 14-15.

30/This section is based on the annual historical submission of the Materiel Management Directorate, Mr. D. L. Warnecke, Director, 19 Nov 86.

31/Staff Meeting, 20 May 86, pp. 15-16.

32/Ibid., 25 Feb 86, p. 20.

33/Ibid., 22 Jul 86, p. 21.

34/Ibid., 10 Jun 86, pp. 18-19.

35/Ibid., 17 Jun 86, p. 17.

36/Ibid., 11 Feb 86, p. 22.

37/Ibid., 22 Jan 86, p. 15.

38/Ibid., 8 Jul 86, p. 19.

39/This section is derived from the annual historical submission of the Transportation and Traffic Management Directorate, LTC G. J. McCarthy, Acting Director, 26 Nov 86.

40/Staff Meeting, 12 Aug 86, p. 20.

41/Ibid., 9 Sep 86, p. 11.

## CHAPTER VI

### INDUSTRIAL PREPAREDNESS AND INSTALLATIONS

#### Mission

The deputy for industrial preparedness and installations consolidated all industrial base functions for the command. He exercised managerial authority over industrial base planning and operations, production base support, and installation support programs. The deputy directed and integrated AMCCOM organizations in the assigned mission areas.<sup>1/</sup>

#### Organization

The deputy for industrial preparedness and installations' organizational structure remained unchanged during FY 1986. The Industrial Readiness Directorate, the Production Base Modernization Activity (PBMA), the Installations Support Directorate, and the Industrial Preparedness and Installations Program Management Office all reported to the deputy.

#### Staffing and Personnel

In February 1986 Mr. Dale F. Kinney was placed on extended sick leave pending disability retirement in April 1987. Colonel Donald R. Reinhard reassumed the duties of the deputy. On 6 October 1986 Dr. Marion Z. Thompson became the deputy, and Colonel Reinhard once again assumed the duties of the assistant deputy.

The authorized personnel strength for the deputy's office was increased from three civilians and one military to four civilians and one military in March 1986. The authorized personnel strength for the entire community was 409 civilians and 22 military. The actual strength at the end of the fiscal year was 399 civilians and 18 military.

### INDUSTRIAL PREPAREDNESS AND INSTALLATIONS PROGRAM MANAGEMENT OFFICE

#### Mission

The mission of the Program Management Office was to develop, coordinate, and submit for approval programs required to support the deputy's mission. It developed and operated the deputy's prioritization system. Upon program approval, the office issued funds, provided financial management, developed forecasts, revised programs, and reported on their status. These programs included the production base support (PBS) program; the family housing

## Industrial Preparedness and Installations

program; the ammunition and weapons manufacturing methods and technology (MMT) program; the military construction, army (MCA) program; the agriculture, fish, and wildlife program; the forestry program; the other procurement, army (OPA) program; the baseline commercial equipment program; the operation and maintenance, army (OMA) base operations program; the OMA industrial preparedness operations program; the audiovisual support program; and the environmental restoration program.<sup>2/</sup>

### Organization

The Industrial Preparedness and Installations Program Management Office consisted of three divisions: the Program Operations Division, the Programs Formulation and Analysis Division, and the Production Base Program Division. The Program Operations Division was located at Rock Island, with the other two divisions located at Dover.<sup>3/</sup>

The Program Operations Division developed, coordinated, and submitted for approval programs required to support the deputy's mission. It was the responsibility of the division to develop and operate the deputy's prioritization system and to manage those programs listed above.

The Production Base Program Division directed, coordinated, and controlled ammunition modernization, expansion, and initial production facilities proveout and MMT programs and financial management operations for those projects assigned to the PBMA. It acted as the financial policy advisor concerning delegation of authority, sources and uses of funds, reprogramming activities, and limitations and other programming and financial management for those programs within the PBMA area.

The Program Formulation and Analysis Division managed near-term budget, pre-budget, and other five-year defense plan programs, their supporting information, documents, and activities for the ammunition modernization, expansion, and initial production facilities production base support program. The division was also responsible for all aspects of MMT planning which involved the integration and formulation of all future program years, including budget year submissions for ammunition, chemical defense, and weapons projects.

### Staffing and Personnel

Lieutenant Colonel Henry M. Rosenbaum, Jr., served as the chief of the Program Management Office throughout the fiscal year. Mr. William Donnelly served as the deputy chief. The chief was located at Rock Island, with the deputy chief located at Dover.

The authorized personnel strength at the beginning of FY 1986 was 26 civilians and 1 military at Rock Island and 29 civilians and 4 military at Dover, totaling 55 civilians and 5 military. By the end of the fiscal year, this total had been reduced to 52 civilians and 2 military, with 25 civilians and 1 military at Rock Island and 27 civilians and 1 military at Dover. This represented a 12 percent loss of manpower authorization over the fiscal year.

Director's Overview

The FY 1986 released production base support program (PBS) for procurement appropriation, army (PAA) was \$281.2 million. The deferred PBS PAA program was \$150.9 million. The PBS program covered efforts for modernization and expansion, mobilization deficiencies, production support replacement, layaway, productivity enhancing capital investment, quick return investment, environmental restoration, proveout, and renovation of armament manufacturing (REARM).

In addition, \$27.5 million of the RDTE program was received for the manufacturing methods and technology effort.

FY 1985 industrial preparedness operations funds were provided in the amount of \$115.2 million to retain and maintain the layaway base and to conduct industrial preparedness planning.

Major Activities

Industrial Preparedness Operation Program

The following chart reflects the programming and execution of the industrial preparedness operation program (OMA 728011) for FY 1986. This program insured capability to support emergency procurement programs, and to retain, maintain, and protect facilities and equipment. It supported pay of personnel who developed, reviewed, and submitted industrial preparedness requirements that assured a responsive industrial base.

Code	Title	Total Financed	Total Obligated
728011.1	Reserve Industrial Plant and Emergency Repair	75.2	75.2
728011.2	Reserve Industrial Equipment	10.2	10.2
728011.3	Industrial Preparedness Planning	4.3	4.3

## Industrial Preparedness and Installations

728011.4	Production Base Support Program, Administration and Project Management	14.1	14.1
728011.5	Industrial Base Management	11.4	11.4
	TOTAL	115.2	115.2

### OMA Program Status

OMA program status as of 30 September 1986 is shown on the chart on the following page.

### INDUSTRIAL READINESS DIRECTORATE

#### Mission

The mission of the Industrial Readiness Directorate was to manage the industrial preparedness planning program and the planning phase of the production base support program for AMCCOM. It also provided property administration, except for real property and equipment management services for AMCCOM.4/

#### Organization

The Industrial Readiness Directorate underwent a reorganization in August 1984. No changes within the organization occurred in FY 1985 or FY 1986. Time and effort were spent making a transition to the new mode and becoming an effective operating organization. The existing organization consisted of five divisions: the Equipment Management Division, the Preparedness Concepts and Analysis Division, and three commodity divisions. The commodity divisions included the Armament, Small Caliber, and Chemical Defense Division; the Munitions Division; and the Energetic Materials Division.

#### Staffing and Personnel

Colonel Thomas F. Hall was assigned as product manager at Mississippi AAP on 2 August 1985, and continued this assignment throughout FY 1986. Mr. Richard W. Janik assumed responsibility as acting director and Mr. August J. Zahatko was selected as acting deputy director. Mr. Janik and Mr. Zahatko continued in these positions throughout FY 1986.

On 17 March 1986 the civilian employment estimate (CEE) for FY 1986 was determined by the deputy for industrial preparedness and installations to be 145. The authorized military remained at 9 until 16 May 1986, when the air force withdrew its position from the directorate. On 8 July 1986 one military space was

**OMA PROGRAM STATUS (FY 86) AS OF 30 SEP 86**  
**(\$ IN THOUSANDS)**

<u>CODE</u>	<u>TITLE</u>	<u>FINANCED</u>	<u>COMMITTED</u>	<u>OBLIGATED</u>	<u>PCT</u>
722896	BASE OPERATIONS (EXCLUDING .P)	27,237.4	27,237.4	27,237.4	100
722894	REAL PROPERTY MAINTENANCE ACTIVITIES (RPMA)	25,222.8	25,222.8	25,222.8	100
1910 & 1920	MILITARY FAMILY HOUSING OPERATIONS (1910) MAINTENANCE/PROJECTS (1920)	( 5,710.6) 2,038.8 3,671.8	( 5,710.6) 2,038.8 3,671.8	( 5,710.6) 2,038.8 3,671.8	(100) 100 100
788008	ENVIRONMENTAL RESTORATION	548.0	548.0	548.0	100
202892.61	LOGISTICS SPT ACTIVITIES/ UNITS (NATIONAL RIFLE MATCHES)	60.0	60.0	60.0	100
	<b>TOTAL</b>	<b>58,778.8</b>	<b>58,778.8</b>	<b>58,778.8</b>	
	<u>REIMBURSABLE</u>				
0870000000	WILDLIFE	50.9	50.9	50.9	100
722894.K33	AGRICULTURE	1,021.0	1,021.0	1,021.0	100
728012.23	FORESTRY	528.9	528.9	528.9	100
	<b>TOTAL</b>	<b>1,600.8</b>	<b>1,600.8</b>	<b>1,600.8</b>	

## Industrial Preparedness and Installations

transferred to the Central Ammunition Management Office, Pacific, table of distribution and allowance (TDA), reducing the authorized military total to seven. The on-board strength on 30 September 1986 was 137 civilians (of which 2 were on-call) and 5 military.

### Director's Overview

The Industrial Readiness Directorate achieved great progress in FY 1986 toward numerous goals, in spite of a major obstacle and special assignments which required significant workload.

The major obstacle was the moratorium on Defense Department (DD) 1519 forms. The DD 1519 was the document used to formally plan the mobilization of commercial producers. The moratorium was issued in February 1985, based upon guidance from the undersecretary of the army. Since the moratorium prohibited the issuance of future DD 1519 agreements, and since the forms were issued for a limited period of time, all mobilization planning with industry expired. A major impact of the moratorium was the determination that the mobilization base data used by the command was two years old, and of questionable validity. Additionally, the disestablishment of the mobilization base created severe impacts in the procurement community in the processing of justifications and approvals. AMC attempted to lift the DD 1519 moratorium by meeting certain requirements set by the undersecretary. Its approach would establish a "no cost contract" to replace the DD 1519. AMC had not briefed the undersecretary by the close of the fiscal year.

With the DD 1519 moratorium in effect, a method of obtaining industry data was developed. This method, entitled "market surveys," asked for information on a voluntary basis with no cost to the government.

Special efforts requested of the directorate included presenting a briefing to the AMC CG on why AMCCOM retained inactive ammunition plants, and participating in a mechanized/armor functional area assessment (FAA) directed by the vice chief of staff of the army (VCSA). The directorate also provided a back-up witness to two Senate hearings on preparedness of the production base, and participated in development of the VCSA-directed plan entitled "production base/plant workloading master plan FY 88 - FY 97." It also developed a Scranton AAP analysis for the undersecretary of the army which resulted in the selection of Scranton as the initial production facility for XM864 metal parts. The directorate implemented a comprehensive installation development plan (CIDP) for AMCCOM installations. This was initiated as a result of the AMC CG's guidance to show how various types of planning at each installation were integrated.

Mission related achievements included conducting 386 demand day to production day (D-P) analyses, and publishing the second part of the small caliber optimization utilization report for 25-40mm ammunition. The directorate submitted over \$25 million of surge projects for the secretary of defense's surge wedge fund. However, it appeared that the surge wedge initiative would not receive funding. Finally, the Industrial Readiness Directorate completed the MUSALL pilot demonstration module, developed a minimum sustaining rate study for depleted uranium penetrators, and conducted 67 command review of industrial base (CRIB) surveys.

#### Major Activities

##### Armament, Small Caliber, and Chemical Defense Division

#### FAA on Industrial/Mobilization Production

In February 1986 a tasking was received from the CG to perform a mini-FAA addressing the industrial base's capability to provide equipment in support of 11 types of battalions. Also, the directorate was responsible for the total preparation and presentation of the 155mm towed howitzer, 155mm self-propelled howitzer, and the light infantry division battalions. The effort consumed many manhours of resources from within the division, and culminated in a formal presentation to the vice chief of staff of the army on 28 April 1986.

The presentation was well received by the VCSA; he singled out the directorate's effort as being the kind of approach that the other commands should achieve in their battalion assessments. The presentation ran about 6-1/2 hours and involved all of the major subordinate commands and Training and Doctrine Command (TRADOC) schools, as well as the deputy chief of staff for personnel. AMCCOM received no taskers from the VCSA. However, he did request a thorough evaluation of fielding M1 and mechanized infantry battalions, which the division supported. His conclusions were that substantial communications had been opened between the user, TRADOC, and the supplier, AMC, and that this dialogue should continue.<sup>5/</sup>

#### Production Market Survey

The division was tasked by the acting director to brainstorm an alternative which could be used in lieu of the DD form 1519. This action was necessary because in 1986 the army's moratorium on issuance of DD form 1519 was becoming two years old. Shifts in the production base's capability to respond to army needs had to be probed so that a production base plan, investment strategies, industrial preparedness measures (IPM), and an overall alignment of the base could be carefully thought out.

## Industrial Preparedness and Installations

Asking industry to respond to a simple letter, without charge or promise of procurement, was novel. The setting for conducting market researches was established within federal acquisition regulations. The division developed a sample letter and a one-page form to be filled out by each contractor for each assigned item. The Industrial Readiness Directorate sent 388 letters to contractors seeking information relative to any changes in industrial capability for the items covered by FY 1985 planning agreements.<sup>6/</sup>

Overall, the production market research approach was a success. Of the 388 letters sent, 192 were returned, covering 370 items. This information was the only feel for the base taken in two years, and was used to update the industrial readiness customer information computer system which was to be the data base used to publish the FY 1987 production base plan.

### Raw Glass Storage at Seneca Army Depot

In November 1985 the division initiated the disposal of 256 tons of glass stored at Seneca Army Depot. Seneca proceeded to send the non-radioactive glass to the property disposal office for proper disposal in September 1986. The division provided Seneca with instructions for requesting radioactive material disposition.

### Twin Cities AAP Readiness Review

The division performed a readiness review of Twin Cities AAP in May 1986. Of the 46 industrial preparedness measures initiated, 37 were determined necessary and were validated. Nine were not validated because of conflicting information in the industrial preparedness plan, or because the contractor could not furnish the team justification of need. Also, it was determined that 2 pieces of equipment were required for the 5.56mm cartridge production line, and 27 pieces were required for the 7.62mm cartridge line.

One of the 37 validated IPM requirements was in the funded 1988-92 modernization and expansion baseline, and the equipment voids were identified in the 1988-92 mobilization deficiency plan unfunded level.

### M16A1 Rifle Bolts

A shortage in spare bolts for the M16A1 rifle provided a test of the plant equipment package system.

The division worked in coordination with Rock Island Arsenal and the Transportation and Traffic Management Directorate to ship to RIA 29 pieces of industrial equipment that had been stored in

Pontiac, Michigan, since 1971. This equipment was installed, connected, and tested in January 1986, with the division gathering data on the extent of repairs required to restore the equipment to production capability. The equipment passed its first article test in April, and RIA had delivered 2,000 bolts by the end of May.7/

This quick response to the M16A1 bolt shortage validated "the policies of using laid away equipment and a cadre of skilled personnel to respond to emergency requirements."8/

#### Preparedness Concepts and Analysis Division

##### Value Engineering

The efforts for the Industrial Readiness Directorate's in-house value engineering program included co-hosting two value engineering workshops. Fifteen directorate personnel attended the workshops. Two personnel completed a 40-hour course in the principles and application of value engineering. The division guided the directorate to accomplish validated value engineering savings of \$6.6 million, against a goal of \$6 million.

##### Render Safe Policy

A CG tasking to develop an "explosive ordnance disposal policy" was received. This project was completed and policy number 75-1 was signed by the CG in June 1986.

##### AMCCOM Supplement 1 to Army Regulation 700-90

A new supplement to the regulation governing the army industrial preparedness program was published in May 1986. This supplement replaced two former AMCCOM supplements and an AMCCOM regulation. A new form 319R was developed as part of this supplement, which replaced five other forms for a three-year savings of \$70,000.9/

##### Mobilization Master Planning

Corps of Engineers mobilization master plans (MMP) at 10 AMCCOM army ammunition plants (AAPs) were updated. The MMPs identified construction projects required to meet mobilization production assignments and would enable the corps to provide construction design prior to mobilization if funding was available. The MMPs also identified sites for expansion at the AAPs to reduce mobilization production shortfalls.

Comprehensive Installation Development Plan

The FY 1986 CIDP effort for AMCCOM installations was consolidated. The CIDP was an "umbrella" plan that consolidated the installation's planning documents. The CIDP served to direct the installation's commander toward integrated planning, to avoid "stovepipe" planning. "Stovepipe" planning was planning not coordinated laterally with other activities. The division consolidated comments on the CIDP from AMCCOM elements and sent the CIDP to AMC for review.

Internal Control Checklists for Plant Equipment Packages

An internal control checklist for establishing, recertifying, and excessing plant equipment packages (PEP) for the directorate was developed. This project was finalized and internal operating procedures were prepared which implemented these checklists.

MUSALL High Melt Explosive Program

During the FY 1983 appropriations hearings, the Congress approved the initiation of an innovative high melt explosive (HMX) process development program whose principle was based upon the manufacture of dinitrogen pentoxide vial electrolytic cells. The programmatic approach was based upon a three-phased scale-up starting with a bench scale model and proceeding through a pilot plant phase to a full-scale production facility.

The bench scale or process demonstration model (PDM) was initiated in October 1984 as a joint venture between Morton Thiokol, Inc. (MTI), the operating contractor of Longhorn AAP, and Lawrence Livermore National Laboratory (LLNL). The \$4 million PDM was constructed at Longhorn and consisted of four separate production modules. HMX was successfully produced on the PDM in December 1985, and the project was closed-out, within budget as of 1 April 1986.

With successful operation of the PDM, the MUSALL pilot plant was initiated. A cost-plus design contract was awarded to MTI in November 1985. Electrolytic cell support was again provided by LLNL. The \$4 million pilot plant design effort was scheduled for completion by 1 April 1987.

Principal activity with the MUSALL project in FY 1986 centered around the acquisition strategy for award of the \$20 million construction (execution) contract. The FY 1986 House committee on appropriations report contained language indicating the pilot plant should be accomplished via a fixed-price approach. This caused the contract award date to be changed from June to December 1986 due to the necessity of preparing a fixed-price

request for proposal (RFP). The RFP was dispatched on 25 September 1986.

Ammunition and Weapons Information System

An attempt to obtain a computerized ammunition and weapons information system (AWIS) continued. The AWIS was selected to receive FY 1987 funding. Approximately \$305,000 was budgeted under DOD productivity improvement fund number OPA 203 in March. This system would be used to tie all elements of the deputy for industrial preparedness and installations closer together and provide its users with a multiplicity of tools to use and manipulate industrial base files. This system should yield improved information through its flexibility and increased capability.

Selection of Mobilization Base Items Committee Members

The AMCCOM memorandum prescribing the selection of mobilization base items committee's (SMBIC) membership list was revised to allow multiple voting members from each participating directorate. This action was deemed necessary by the committee to accommodate individual expertise on the various family commodities under the SMBIC responsibility.

Every effort was taken by the SMBIC representative not to combine commodities at a single meeting. The SMBIC is a command committee, and was revalidated on 9 July 1986.

Armament Industrial Readiness Management Information System

The FY 1986 publication of the directorate's production base plan (PBP) was cancelled because the AMC moratorium restricted the processing of industrial preparedness planning documents (DD form 1519) with private industry, which prevented allocation of the mobilization production base. The ammunition PBP had been published annually using the armament industrial readiness management system (AIRMS) data base (or its equivalent) since 1975, and the weapons/fire control/chemical defense PBP was first published using the AIRMS data base in 1985.

Due to the continued moratorium on DD form 1519 processing and planning, allocation of production capacity was accomplished for FY 1987 based on market surveys, CRIB surveys, verbal communications, and other available information.

The FY 1987 publication of the PBP for both ammunition and weapons/fire control/chemical defense was anticipated in December 1986 or January 1987. The "high speed" printer in building 350 would be used to print the master copy of the PBPs. The master

## Industrial Preparedness and Installations

copies would then be provided to central reproduction to produce the required number of copies. Using the high speed printer would reduce both the cost and time (normally averaged 4 to 5 weeks) required in the past for central reproduction to process the total operation.

Customer information control system (CICS) programs were implemented in FY 1986. The CICS programs provided planners the capability to input and update mobilization production base data directly into the AIRMS data base. The CICS programs eliminated the need to provide source documents to the Requirements Branch of the Industrial Readiness Directorate for input to the AIRMS data base.

The FY 1987 PBP would identify five-year defense programs for the first time. This information would provide mobilization planners with a ready indication of current and out-year peacetime acquisition for their assessment of warm bases, component requirements, and project determinations.

Other areas being investigated to further improve future PBPs were the inclusion of asset and consumption data. Implementation of this data would be accomplished upon completion of programming and the availability of a classified data base.

### AMPMOD Room

A secure computer facility for the directorate was installed in early 1986. This room served as a classified terminal area and a deputy exercise war room, and supported the army materiel plan modernization (AMPMOD) effort.

### Reactivation Networks

Six new ammunition plants were added to the reactivation networks program. A system was perfected to enable submitting this information via floppy disk, thereby saving the branch hundreds of hours in computer input time.

### Active Downloading from PRIME to Microcomputers

Activity in this area increased significantly over the year due to procurement of several CROSSTALK XVI communications packages. Personnel could upload and download information freely from the PRIME system to the mainframe computers and back. This significantly reduced input time required to establish large files for use with commercial software packages.

P-15 Summary Sheets

The division developed a DBASE III program to generate P-15 summary sheets. These documents gave a thumbnail sketch of a project's major points of interest, such as cost, location, added production capacity, project manager, and project engineer.

Software Training

The division began managing a program administered by the Office of Personnel Management to instruct employees in the use of commercially available software packages such as DBASE III, LOTUS 1-2-3, WORDSTAR, and CROSSTALK. Over 80 personnel from the directorate received training in 1986.

New Industrial Preparedness Measures Subsystem

A system to process industrial preparedness measures was developed. Information was based on the revised form 319R and would reflect all industrial base projects managed by the deputy.

Surge Database

A database to track surge actions was developed and implemented. Unfortunately, due to the 1519 moratorium imposed by DA, surge data from current contractors was impossible to obtain.

Planned Item

The quantity of items planned in FY 1987 were as follows: 1,274 ammunition; 116 weapons; 87 fire control; and 29 chemical defense. There were 666 planned producers to support the above.

Standard Study Numbers

Standard study numbers (SSN), as used by AMCCOM, were applicable to army items only (budget studies). A unique SSN system was established by AMCCOM/DESCOM to identify other service items. This action was needed for uniformity in the mobilization scheme and support of ASAPP (army system for automation of preparedness planning) programming.

A block of numbers from 500 to 999 with a prefix of "F" (i.e., F500000MAF) were used to allow a distinct difference from the army conventional ammunition "E" SSN. The "F500" indicated other service, the "M" identified AMCCOM, the "AF" identified the service arm. After a one-year trial, the system was accepted and appeared on all DOD acquisition code/SSN cross reference releases. As new "F" SSNs were needed, a change request was prepared and forwarded to DESCOM for implementation into the master file.

## Industrial Preparedness and Installations

### Sustainability Studies

The Requirements Branch provided considerable mobilization planning production capability data in support of two major sustainability studies conducted by the Office of the Secretary of Defense (OSD) and the Defense Resources Board (DRB). The objective of both studies was to determine the amount of dollars to be allocated to mobilization production capability to support the fielded forces.

### Munitions Division

#### Technical Data Packages for Mobilization

The Munitions Division coordinated publication of the Industrial Readiness Directorate's operating procedure (DOP) IR-42, for technical data. The purpose of this DOP was to provide a standardized method of ordering technical data packages for mobilization planning purposes.

#### Locating New Producers

The division received 3 copies of 43 state industrial directories. These directories would be used to identify potential producers for mobilization planning purposes, and to compliment the on-going process of researching industry for mobilization shortfalls.

#### Sustainability Study

During FY 1986 OSD directed a sustainability study be conducted on 64 items. In response, analyses were performed and industrial preparedness measure (IPM) cost/capacity data provided for the items. This was done to enable the OSD and DRB to prioritize/allocate the base funding for/between hardware inventories, or facilities, or combinations thereof, in order to optimize readiness.

#### Industrial Preparedness Plan and Readiness Reviews

During FY 1986, a total of eight industrial preparedness plan reviews and two readiness reviews were conducted at the GOCO installations. As a result, all 319-R submittals were subjected to the verification/validation process, and the IPM data base was updated to reflect deficiencies.

#### Submittals to Mobilization Deficiency Program

An initiative was continued to develop projects to meet mobilization requirements. In response, 172 projects were identified to meet 50 percent of the mobilization requirements for the items assigned to the Munitions Division. These consisted of 103 projects to increase/maintain production capability, 28 safety projects, 3 security projects, 17 general support projects, and 21 plant infrastructure projects.

#### Safety Initiatives

The importance of safety was re-emphasized during FY 1986. A total of 10 safety projects were identified and programmed in the baseline for FY 1988/89 funding, thereby allocating the total safety funding set-aside for these fiscal years. Additional communication channels were opened with the AMCCOM Safety Office to ensure all deficiencies were identified and represented as IPMs or projects.

#### Security Initiatives

The importance of security was also re-emphasized during the fiscal year. A total of 10 security projects were identified and programmed in the baseline for FY 1988 funding. Additional communication channels were opened with the AMCCOM Security Office to ensure all deficiencies were identified and represented as IPMs or projects.

#### Standby Maintenance

FY 1987 storage and maintenance proposals from 21 companies were reviewed and technical evaluations, including a recommended cost summary, were prepared for each. Due to the efforts of the Industrial Readiness and the Procurement Directorates, these contracts, originally proposed at \$5,906,621, were negotiated at \$4,942,408, a savings of \$964,213.

#### Standard Operating Procedures (SOPs) for IPMs

AMCCOM form 319-R was the initial document by which all IPMs were introduced for review and funding consideration. An SOP for all elements involved in form 319-R processing was compiled, integrated, drafted, staffed, and published. In addition, an SOP was published for industrial readiness personnel involved in form 319-R processing, including verification, validation, and prioritization of IPMs and maintenance of the IPM data base. These SOPs expanded the scope of the 319-R from the narrowly defined deferred deficiencies, to all deficiencies.

XM864 Facilitization and Site Selection

During FY 1986 XM864 facilitization for the 155mm XM864 continued. The division, acting as the lead for AMCCOM, briefed the secretary of the army regarding the acquisition plan for the XM864 and the workload at Scranton AAP. The secretary decided to facilitize Scranton AAP and Louisiana AAP for 10,000 XM864 metal parts each.

Based on a review of the acquisition plan, the division initiated action to accelerate the Louisiana facilitization from FY 1988 to FY 1987 in order to stay within funded delivery lead times and to preclude jeopardizing hardware procurement. Further, the division proposed facilitizing Louisiana for the body metal parts only. It was possible that a large portion, or possibly all, of facilitization for the ogive, base, and base closure metal parts could be accomplished in the commercial sector, without government funding. This would allow cancellation of Louisiana AAP project 5882656, and potential cost avoidances of \$10 million.

XM915/916 105mm Cartridge

During the latter months of FY 1985, the division tasked a number of GOCO facilities to submit plans to create a load, assemble, and pack (LAP) facility for the XM915/916. This round was a reduced version of the 155mm M483 and 8 inch M509 projectiles, with a smaller but functionally identical version of the M42 grenade used in the larger rounds.

Eight plants submitted studies: Cornhusker, Joliet, Iowa, Louisiana, Mississippi, Milan, Lone Star, and Kansas AAPs. The first four locations submitted plans for a new facility only. The last four plants submitted two studies: one to create a new facility, and another detailing plans to convert their existing 155mm M483 LAP facilities to dual-purpose M483/XM915 LAP facilities.

The site selection studies were received in April 1986, analyzed by various elements of the command, and the division recommended a site. At the end of the fiscal year, the site selection package was being finalized for staffing.

XM762/767 Fuze Market Survey

A market survey questionnaire was sent to three potential producers of the XM762/767 fuze who had previously received technical information from ARDEC. Responses were received from two of the three producers, and on-site visits were made to their facilities. It was determined both companies had the necessary expertise and capability to produce the XM762/767 fuze and were

willing to partially facilitate for this item. It was estimated the facility cost could be reduced from the programmed \$24 million to \$12 million.

L119 Round Market Survey

At the January 1986 army materiel plan review, requirements for the new 105mm XM913 and XM915/916 versions of rounds for the L119 105mm howitzer were introduced. In September 1986 a market survey was conducted by the division to determine the need for government investment, partial or full, in production facilities to produce L119 metal parts. Over half of the 28 manufacturers visited were judged capable and willing to self-invest when a return on investment was possible. It was recommended that the competitive acquisition plan include a fixed order quantity through multi-year buys, required self-investment, and government indemnification if the program changed. At the end of the fiscal year, development of revised acquisition plans for these items was on-going.

Energetic Materials Division

JCAP Propellant, Explosives, and Pyrotechnics Group

A meeting was held at the Naval Weapons Station, Yorktown, Virginia, in December 1985. Major issues for coordinating a smooth transfer of energetic materials from development into the single manager for conventional weapon ammunition (SMCA) production base were addressed. The combination of this group with the working party for explosives planned in FY 1985 did not occur. The new division chief was appointed chairman of a new joint conventional ammunition program (JCAP) explosives and propellant sub-group in September 1986.

Mobilization Deficiency Program

Extensive effort was put out to support a 10-year mobilization deficiency plan. Shortfalls were identified by the preparedness branch whereupon the technical branch developed industrial preparedness measures and P-15 summary sheets identifying projects to eliminate shortfalls. This effort was still on-going at the end of the fiscal year.

Stick Propellant

The technical branch worked very closely with the Production Base Modernization Activity, the project manager for cannon artillery weapons system, Radford and Indiana AAPs, private industry, and the Production Directorate to establish production capability to support procurement of the 155mm M203A1 propelling

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charge. The extensive effort resulted in successful acceptance of first article and LAP of the 155mm M203A1 propelling charge.

### Combustible Component Facility Planning

During the year, numerous acquisition strategies were adopted and changed for artillery and mortar combustible component facilities. Progress toward a generic facility at Indiana AAP proceeded. Private industry also indicated a desire to enter this field. Continued efforts in the strategy were on-going at the end of the fiscal year.

### Planning

FY 1987 planning requirements were provided in June 1986. The planning form DD 1519 moratorium was in effect throughout this fiscal year. Market surveys were sent to previous planners to obtain the contractors existing capability. Letters were sent out regarding the standby base to 18 potential contractors. One contractor was signed to a standby base.

D-P charts were prepared early in the fiscal year supporting FY 1985 requirements. The preparedness branch had planning responsibility for 623 items with FY 1987 requirements. Planning with government-owned and operated (GOGO) and government-owned, contractor-operated (GOCO) plants for FY 1987 requirements was progressing at the end of the fiscal year.

### Continuous Automated Single Base Line

A demonstration test production operation of the continuous automated single base line at Radford AAP was completed on 11 September 1986. Over 200,000 pounds of single base propellant were produced in the test, which ran for 168 hours. The groundbreaking of the \$97.6 million project was in 1973.<sup>10/</sup>

The results of analytical testing of the run were not completed prior to the end of the fiscal year, but preliminary results indicated problems with the blending of the single base propellant, due to the lack of finishing uniformity.<sup>11/</sup>

## Equipment Management Division

### Property Accountability

During FY 1986 there were two system surveys performed at AAPs, two follow-up reviews of unsatisfactory property systems, nine industrial property management reviews, nine command equipment and supply management reviews (CESMR), and five assistance visits for other directorates to provide guidance in

property administration, plant clearance, and management of supply items. Four supply reviews revealed two plants with deficiencies which were corrected. Also, two cost plus award fee evaluations were accomplished, resulting in a lower award fee.

The AMCCOM acquisition regulation, supplement 3, was revised updating the contracting officer's representative staff's guidance in property management. The division also informed GOCO installations of the Defense Property Disposal Office freeze and subsequent increment lifting of the freeze and other directives. It participated as a member of source selection boards evaluating proposals of all offerers for selection of a contractor at Lake City and Newport AAPs.

#### Command Review of Industrial Base Surveys

The CRIB program had as its primary mission the verification of the readiness of mobilization planned producers who were assigned PEPs, and the readiness and condition of the PEPs. During FY 1986, 67 CRIB surveys were conducted.

The surveys identified 27 "planning changes required," associated with 12 of the surveyed producers, to align their planning rates consistent with their true production capability. They identified 192 equipment voids, associated with 24 of the surveyed producers. The voids represented missing pieces of equipment in a production line or department.

The surveys also identified 250 pieces of equipment, associated with 20 of the surveyed producers, that should be added to their PEP. This equipment was in the possession of the contractors, being used under existing production contracts, and could also be used to support mobilization production.

The surveys identified 874 pieces of equipment, associated with 32 of the surveyed producers, that were excess to the respective planned producer's needs. This equipment became available to fill equipment voids, replace worn out or poor condition equipment, and was subsequently returned to the army's general reserve for use, or, in some cases, retained on-site to support production, but not required in the PEP.

The surveys identified 245 pieces of equipment, associated with 17 of the surveyed producers, which were in a condition other than that reported on the Defense Industrial Plant Equipment Center's (DIPEC) equipment list. They also identified 773 pieces of equipment, associated with 24 of the surveyed producers, which were in a status other than that reported on the DIPEC equipment list. Finally, the surveys identified 61 pieces of equipment, associated with 12 surveyed producers, which were in a location

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different than that reported on the DIPEC equipment list. All of these changes were submitted to DIPEC for record correction.

Also during this period, the CRIB office initiated a program at the GOCO plants to identify other plant equipment, special tooling, and special test equipment that should be included in the PEPs. This program was expected to extend through FY 1987.

### Production Equipment

At the end of FY 1986, the mobilization production base consisted of 108 ammunition PEPs and 16 weapons PEPs. These PEPs contained 19,540 items of industrial plant equipment with an estimated value of \$769.2 million.

During FY 1986 an intensive effort continued to fill equipment deficiencies (PEP voids) in the PEPs. PEP voids were identified as a result of CRIB surveys and other reports generated by the division. These voids were screened against the DIPEC general reserve, and also against excess equipment within the ammunition and weapons production base. This screening resulted in the identification of suitable equipment for assignment to ammunition and weapon PEPs that would otherwise need to be procured in order to attain the required PEP capability to meet assigned mobilization production schedules.

For FY 1986 there were 55 voids filled from the DOD equipment reserve or through internal redistribution of equipment. These items had an estimated value of \$5.9 million. In addition, 44 items of poor-condition PEP equipment were replaced through internal redistribution, for an estimated replacement cost savings of \$5.3 million. At the close of the fiscal year, there remained a total of 1,979 PEP voids, with an estimated dollar value of \$238.7 million. Of the 123 PEPs, 39 were totally filled.

A total of 960 equipment requisitions (DD Form 1419) were completed during FY 1986. These requisitions were for a variety of purposes, such as DIPEC's certifying non-availability prior to procurement of new equipment, filling PEP voids, and replacing obsolete or worn-out equipment. A total of 979 load/reactivation actions (DD Form 770) were completed during the year. A total of 1,771 DOD property records were also completed. Forty-five DD Forms 1348-1 shipping documents were processed.

A total of 975 excessing actions were completed during FY 1986 at an estimated value of \$115.9 million. Excessing actions were results of changes in mobilization requirements, CRIB surveys, and requests from contractors. The Production Equipment Branch initiated actions and executed quarterly follow-up until DIPEC records indicated the items were dropped from AMCCOM

accountability.

#### Installation Equipment

During the fiscal year four CESMRs were performed at AMCCOM subordinate installations. The CESMRs assured sufficient command emphasis on property accountability management, equipment management, and supply management to eliminate unsatisfactory conditions, achieve optimum control of all installation equipment, and maintain operations in a highly professional manner.

In addition to the CESMR visits, personnel conducted five pre-CESMRs, one post-CESMR, and five technical assistance visits to subordinate installations. These visits provided the installation commander with an assessment of equipment management strengths, weaknesses, and plans of action to eliminate unsatisfactory conditions. The early identification and correction of problem areas were vital steps toward assuring proper management and success in achieving a satisfactory rating in future CESMRs.

The division represented AMCCOM as a member of the functional coordinating group (FCG) for the installation equipment management systems (IEMS). The purpose of the FCG was to review and recommend approval for all systems change requests (SCR) submitted by subordinates, to cast a command-wide vote on SCRs submitted by all AMC major subordinate commands, and to direct reporting installations or activities. Also, it provided staff guidance on IEMS, and conducted staff visits to assist in IEMS-related problems.

Four trips were made to Lexington, Kentucky, on the functional process assessment property accountability for the AMC CG. This was to provide issues and suggested actions to resolve major problems in daily work that had an adverse impact on property accountability for non-expendable equipment. General Thompson was briefed on 24 January 1986 and accepted all recommended actions as stated.

In FY 1986, action was taken to redistribute equipment valued at approximately \$4.21 million.

#### INSTALLATION SUPPORT DIRECTORATE

##### Mission

The mission of the Installation Support Directorate was to direct, staff supervise, develop authorization and funding programs for, and coordinate the operation, maintenance, management, and utilization of the physical plants of AMCCOM and

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all support services incident to the operation and proper administration of installations and activities. It developed, defended, and executed the facilities construction program for AMCCOM, except for provision of facilities under the P4200 program at GOCO ammunition plants. The directorate also provided overview and coordination management of the environmental pollution abatement program for AMCCOM. It reviewed, evaluated, and provided technical supervision over maintenance, repair, and alteration projects, plans, and specifications developed by AMCCOM installations. Finally, it directed, staff supervised, and coordinated all programs relating to family housing, energy conservation, resource recovery, and recycling programs.12/

### Organization

The Installation Support Directorate consisted of the Environmental Quality Division, the Family Housing Office, and the Facilities Engineering Division.13/

### Staffing and Personnel

On 1 December 1985, Mr. Bernard Connelly, the acting director of the Installations Support Directorate, was selected as its permanent director. Also, the job series for the position was changed from supervisory general engineer to that of program manager. Directorate strength at the end of the fiscal year was 46 civilians authorized, and 46 assigned.14/

### Director's Overview

During the fiscal year, the directorate successfully defended a claim by the AMC Installations and Services Activity that many of its programs were duplicated by the Installation Support Directorate.

The space management function for the headquarters was assigned with an accompanying space. Attempts were underway to staff this office with an engineering technician with computer graphics experience and a typist.

Partially because of a headquarters-conducted efficiency review and the "Frost Study," both of which recommended substantial personnel reductions, the directorate continued to contend with persistent personnel shortages, particularly in the environmental quality division. The directorate maintained its "glide path" for FY 1986-88 CEE targets.

In an attempt to make it more meaningful, the "employee of the month" award was changed to the "employee of the quarter." An employee recognized through this program was awarded an inscribed

desk pen set, their picture was posted for a three-month period, and they were granted use of a reserved parking space for three months.

A quality circle comprised of the clerical staff was formed during FY 1986. Two of its stated objectives were accomplished: a directorate SOP for preparing correspondence was completed and distributed, and six of nine Olivetti memory typewriters were updated to disk drives. Both accomplishments significantly increased productivity.

### Major Activities

#### Environmental Quality Division

The Environmental Quality Division directed and staff supervised the environmental program for the prevention, control, and abatement of pollution related to the operations of AMCCOM installations and activities. The division strove to insure that all AMCCOM elements executed their responsibilities in an environmentally acceptable manner, staff supervised the solid waste and toxic/hazardous waste programs, and assured that environmental management and leadership was exercised by AMCCOM in accordance with public laws, executive orders, and regulations.

#### Leaking Underground Storage Tank Registration

Public Law 98-616 required registration, with the appropriate state agency, of all underground storage tanks, as defined by the Resource Conservation and Recovery Act (RCRA), by 8 May 1986. Underground tanks included any tank with at least 10 percent of its volume buried below ground, including any pipes attached to the tanks. This was the first time the RCRA had been applied to hazardous substances, in addition to hazardous wastes.<sup>15/</sup>

The final rule on notification requirements for owners of underground storage tanks was published in the Federal Register on 2 November 1985. All AMCCOM installations completed this registration or had approved extensions from their respective state agencies.

#### Installation Compatible Use Zone Program Implementation

Army regulation 200-1 established the requirement for the army to measure noise pollution levels at installations and respond to local noise complaints. A 4 September 1985 memorandum from the assistant secretary of the army, required all applicable installations to have the installation compatible use zone (ICUZ) program in place by the end of FY 1987.

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Installation commanders were responsible for public notification of noise/ICUZ programs, to include public relations programs and notification of local congressmen.

### Polychlorinated Biphenyls in Electrical Transformers

A polychlorinated biphenyl (PCB) transformer was defined as one containing more than 500 parts per million (ppm) PCB.

All AMCCOM installations met the final rule requirements on electrical transformers by successfully registering all PCB transformers with their appropriate fire department, labeling the exterior of all PCB enclosures, and removing combustible materials stored within 5 meters of PCB transformers.

### Hazardous Waste Minimization Policy

During 1984 AMC generated 119,000 tons of hazardous waste (HW).

In July 1985 the US Environmental Protection Agency (EPA) promulgated regulations which limited HW land disposal, imposed stringent/costly design requirements on HW treatment facilities, and required commanders to certify that a hazardous waste minimization (HAZMIN) program was in effect at the installation to reduce volume and toxicity.

As a result, General Thompson announced the establishment of a HAZMIN program for all AMC installations to follow. The plan required that the program be in place at all applicable installations by 1 March 1987.

### Used Solvent Elimination Program

AMCCOM installations were required to complete implementation of their used solvent elimination (USE) programs by 1 October 1986. The purpose of the USE program was to avoid disposal of used organic solvents. A USE plan was required for any AMCCOM activity generating at least 400 gallons per year of organic solvents. An installation USE plan implemented and coordinated actions to eliminate disposal of used (spent) organic solvents by using process change, material substitution, in-house recycling, outside recycling, as a fuel supplement for heating, or sale.

Installation USE plans were required to account for all organic solvents used, as well as address disposition of all such solvents. Plans had to require investigation of disposal alternatives before a used solvent management decision was made. Within AMC, the installation USE plan was a subset of the installation HAZMIN plan, which implemented a "pro-active"

hazardous waste reduction effort.

Solvents Listed as Hazardous Waste

Effective 30 January 1986 the category of spent solvents listed as hazardous waste was expanded to include spent solvent mixtures containing 10 percent or more, by volume, of total listed solvents. This 10 percent threshold applied to solvent mixtures before use, and eliminated a regulatory loophole which allowed toxic solvent mixtures to remain unregulated. This information was provided to all AMCCOM subordinate installations and activities.

Environmental Funds

During FY 1986 \$561,000 in environmental restoration funds were received at AMCCOM. Total obligations were \$548,427.90 (98 percent). Eight environmental projects at seven installations were funded.

Also, \$986,000 in environmental procurement appropriation, army (PAA) funds were received, of which \$936,543.85 (99.8 percent) were obligated/committed. This amount was reduced to \$938,000 due to an early FY 1986 budget cut of \$48,000. A total of 23 environmental projects at 15 installations were funded.

In all, a total of \$1,499,000 environmental funds were received, of which 99.1 percent (\$1,484,971.73) were obligated/committed.

Army Environmental Quality Award (CY 1985)

Entries for the army environmental quality award were reviewed at AMCCOM headquarters, with nominees forwarded to AMC for the award competition. AMC selected three entries from all AMC nominees and forwarded them to DA for final selection.

Nine AMCCOM installations submitted entries, of which five were forwarded to AMC for further review. Holston AAP, Iowa AAP, Lone Star AAP, Louisiana AAP, and Watervliet Arsenal were forwarded to DA as candidates for the secretary of the army environmental quality award.

The winner of the award was Fort Lewis, with Fort Dix and Seneca Army Depot as runners up.

Volatile Organic Compounds Emission Standards

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All AMCCOM installations were in compliance with volatile organic compound emission standards. In general, any future non-compliance would be the result of increasing production beyond peacetime requirements. The one exception was Rock Island Arsenal which was required to comply with revised State of Illinois standards by 31 December 1987.

### Notices of Violation and Deficiency

During FY 1986, 25 notices of violation (NOV) and notices of deficiency (NOD) were received at various AMCCOM installations.

On October 1985 McAlester AAP received a NOV from the state for high pH on its inert bomb loading line.

On 14 November 1985 Iowa AAP received a NOV from the EPA for poor PCB inspection records and improper transformer disposal. Iowa received another NOV from the EPA on 4 September for not including solvent wastes and painting wastes in its waste analysis plan.

On 20 December 1985 Sunflower AAP received a notice of noncompliance from the EPA for a PCB spill, poor drum marking, and lack of annual documents for 1978-1984. Sunflower received a letter of violation from the EPA for national pollution discharge elimination system (NPDES) violations (unauthorized by-passes) on 17 and 19 April 1986 at tank 784 and the ammonia stripper. On 5 September Sunflower received another NOV from the EPA for an outdated contingency plan, unlabeled storage containers, and storage of containers in poor condition.

On 23 December 1985 Longhorn AAP received a NOV from the EPA for failure to prepare annual documents for PCBs.

On 9 January 1986 Indiana AAP received a RCRA notice of inadequacy from the state for using an inadequate ground-water monitoring plan. Indiana also received a NOV on 20 May for failure to implement a groundwater monitoring system, failure to have hazardous waste warning signs, and failure to make emergency arrangements with local authorities.

On 16 January 1986 Rocky Mountain Arsenal received a NOV from the state for inspection violations at basin F and its salt storage warehouse. On 3 February 1986 Rocky Mountain received another NOV from the state for RCRA violations including the storage and disposal of chlorine on non-chlorinated hydrocarbons, motor pool disposal of hazardous waste, and motor pool inspections.

On 14 February 1986 Holston AAP received a NOV from the state for lack of hazardous waste training, a poor contingency plan for identification of hazardous waste to hospitals, and poor storage practices at its paint shop building. Holston received another NOV on 9 July for excessive emissions on the furnace in building 7.

On 6 March 1986 ARDEC received a NOV from the state for part B permit application inadequacies, piles of hazardous waste, and closure of hazardous waste management units. It received another on 16 September for a monthly microbiological violation of the national interim primary drinking water standards.

On 26 March 1986 Kansas AAP received a NOV from the EPA for failing a RCRA storage inspection.

On 22 April 1986 Pine Bluff Arsenal received a NOD from the EPA for NPDES permit sampling technique failures. All were corrected by 9 May 1986.

On 8 May 1986 Joliet AAP received a NOV from the state for not performing RCRA inspections, poor record keeping, and lack of RCRA training. On 22 May 1986 Joliet received a NOV from the EPA for failure to obtain waste analysis, failure to post "danger" signs, improper impoundment inspections, and lack of contingency and closure plans. Joliet received a NOD from the state on 3 September for deficiencies on its part B permit application.

On 2 June 1986 Rock Island Arsenal received a notice of noncompliance from the EPA for PCB items in service, and disposal practices.

On 23 June 1986 Badger AAP received a NOV from the EPA for violations of the RCRA in relation to signs and aisle space in storage areas.

On 11 July 1986 Riverbank AAP received a NOV from the state for labeling violations at its hazardous waste storage facility.

On 22 August 1986 Twin Cities AAP received a NOV from the state for violations on site F closure.

Finally, on 5 September 1986 Crane AAA received a NOV from the EPA for problems at the open burning, open detonation grounds and other administrative problems.

#### Spills

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Reportable spills were reported to the appropriate environmental regulators. However, all spills (reportable and non-reportable) were reported to the division. During FY 1986 nine reportable spills occurred at various AMCCOM installations. A total of 49 non-reportable spills occurred. The following is a summary of reportable spills.

On 10 December 1985 tank 502 at the industrial wastewater treatment facility (IWTF) at Mississippi AAP overflowed during waste treatment operations. This involved 20-25 gallons of CR VI rinse. The spill was reportable because of NPDES permit violations. The storm drain was immediately sandbagged and contained. Liquid was removed with the use of a vacuum sump and disposed of properly. The spill was reported to AMC.

On 20 February 1986 oily material, approximately 150 gallons of petroleum products, suddenly appeared on Green Pond Brook at ARDEC. Contractor personnel were brought in to stop the flow, clean the brook, and determine the cause of the spill. Booms were placed across the brook to retain the oil. The spill was reported to the regional EPA, state regulators, and AMC.

On 11 April 1986 the naval and marine corps reserve center at Rock Island Arsenal used less than two gallons of petroleum naphtha to clean oil residue from their driveway. The petroleum naphtha entered the Mississippi River through a storm drain. The spill was reported because a sheen formed on the water, but reportable quantity limits were not exceeded. The coast guard was contacted, who recommended no contact be made with the State of Illinois because of the minor nature of the spill. A "boom" was placed around the dock to contain the oil, which was collected within a few hours. At the direction of the coast guard, the boom was removed from the water and saved for future use. AMC was also notified.

On 26 June 1986 approximately 250 gallons of oil-contaminated wastewater from the Mississippi AAP water/oil separator overflowed into a storm drain and entered an unnamed drainage canal. The spill was reportable only because a sheen formed on the water. The spill contingency plan was implemented, the spill contained, and the contaminated water pumped into tote tanks and transported to IWTF for proper treatment. Both the state and AMC were notified.

On 8 July 1986 approximately one pint of lubricating oil from the floor of building 7, area A, Holston AAP, went directly to the Holston River instead of the treatment facility. The incident was considered reportable only because a sheen formed on the water, but no negative impacts were observed. Both the state regulators and AMC were notified.

On 19 July 1986 at ARDEC, while a crew was cleaning machinery, 3 to 5 gallons of number 6 fuel oil spilled on the ground and flowed directly into Picatinny Lake. The spill was reportable only because a sheen formed on the water. The spill was contained and cleaned up, and the regional EPA, state regulators, and AMC were notified.

On 1 August 1986 heavy rains caused oil and grease from mechanical parts in a pit at building 9A at Holston AAP to overflow directly into the south fork of the Holston River. The spill was reportable only because a sheen formed on the water. Planned remedial action included tying the pit into the industrial sewer. The regional EPA and state regulators were notified.

On 15 August 1986 at Watervliet Arsenal, two to three gallons of toxic wastewater containing 7.29 ppm chrome, 2.56 ppm cyanide, and 1.8 ppm cadmium, leaked from a stainless steel tanker used for temporary storage. The spill was reportable only because of the chrome content. The state limit on reportable quantity was 5 ppm; the actual amount spilled was less than .021lb. The spill was cleaned up and the tanker taken out of service and drained. The state and AMC were notified.

On 26 August 1986 at Holston, 50 gallons of oil-water mixture from the cooling water sump for building 7 was accidentally pumped out by the contractor and entered Mad Branch of the Holston River. The spill was reportable only because a light sheen formed on Mad Branch. The state and AMC were notified.

#### Badger Army Ammunition Plant

The region 5 EPA staff conducted an unannounced environmental inspection at Badger AAP during 13-15 January 1986, stating they were routinely conducting unannounced inspections throughout the region. The inspectors did not report any major non-compliances at the exit briefing.16/

The Department of Natural Resources, from the Wisconsin EPA, requested drinking water samples be taken by the army to determine if contamination was migrating off-post. Headquarters DA was given permission to sample water from private residences off-post. Sampling was to be conducted by the US Army Environmental Hygiene Agency (USAEHA) in conjunction with the local Department of Health. Analysis would be done in the USAEHA laboratories.

#### Sunflower AAP

Due to the numerous amount of spills occurring at Sunflower, a NPDES federal facilities compliance agreement was worked out between the plant, the State of Kansas, the EPA, the US Army Toxic

and Hazardous Materials Agency (USATHAMA), and AMCCOM in order to solve the problems and avoid possible litigation. The finalized agreement was signed at a 19 June 1986 meeting between Sunflower and the EPA.

#### Pine Bluff Arsenal

The region 6 EPA and the State of Arkansas issued Pine Bluff a RCRA permit to construct, operate, and maintain a hazardous waste landfill which would receive production wastes as well as Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) wastes. The effective date of the permit was 2 August 1986 through 1 August 1996.

#### Watervliet Arsenal

On 10 December 1985 a capacitor leaked 2.5 gallons of PCB dielectric fluid onto an induction furnace, which vaporized the fluid. The installation contingency spill plan was successfully implemented, with the furnace area cordoned off. A major PCB cleanup contract firm performed the entire cleanup, decontamination, and resampling as required.<sup>17/</sup>

#### Riverbank AAP

A meeting was held on 14 November 1985 between the division, USATHAMA, and State of California regulators to discuss and resolve the Riverbank plan of action for determining the extent of soil and groundwater contamination of chromium and cyanide. This was a requirement of the RCRA part B permit.

A technical plan for corrective actions was prepared by USATHAMA. The plan included drilling additional on-post monitoring wells for defining the horizontal and vertical extent of contamination in groundwater. The State of California also wanted off-post monitoring wells installed and extensive soil sampling and analyses at suspected contamination sources. The remedial action schedule was attached to the RCRA part B permit.

USATHAMA conducted a second round of off-post sampling from private drinking water wells on 22-28 January 1986. The sampling results showed an increase from 7 to 15 home wells contaminated with chromium. Meetings to discuss the results were scheduled for 11 March 1986 with the California regulators, and on 12 March with the public. At the 11 March meeting, the California regulators said they would issue a monitoring "compliance order" to Riverbank. At the 12 March meeting, USATHAMA announced that a permanent drinking water supply would soon be provided to the two homes not receiving bottled water. DA approved funds providing a deeper uncontaminated off-post well water supply.

On 5 June USATHAMA presented quarterly groundwater sampling results to the public and regulators. There was little change from the previous quarter, and no further contamination migration was detected. Also, only one off-post supply well exceeded drinking water criteria.

At a 17 September meeting between the army and the state, the army proposed that the state's environmental regulators continue to have input into USATHAMA's remedial investigation/feasibility study rather than issue Riverbank a formal compliance order. The state said they would consider the proposal after reviewing USATHAMA's written technical plan and milestone dates. "Hot Spot" treatment was to be part of the proposed order. The plume of contaminated groundwater would be extracted, treated, and reinjected. This was similar to the groundwater treatment at Rock Mountain Arsenal. USATHAMA was to develop a plan to meet the requirements of the proposed compliance order by the end of September. The USATHAMA contractor could begin executing the plan by the end of December 1986, provided the state approved the plan.

The fourth and final round of groundwater analysis showed little change from previous results. The contaminated plume was estimated to be slowly moving at 25-100 feet per year.

#### Twin Cities AAP

Assistant Secretary of the Army Shannon visited Twin Cities AAP briefly on 12 October 1985. A 20-minute briefing on environmental remedial activities was presented by the remedial project manager, Mr. Clarence Oster. Mr. Shannon was pleased with the progress of the on-going remedial action program.

A remedial activities status meeting was held on 3 December 1985 between the EPA, the Minnesota Pollution Control Agency (MPCA) technical staff, and army representatives. The regulators felt on-going efforts were proceeding on schedule but wanted increased army monetary participation off-post.

On 14 January 1986, the EPA region 5 regional administrator addressed an EPA/MPCA/DOD compliance agreement proposal to Mr. Carl Schafer, the director of environmental policy for the Office of the Assistant Secretary of Defense. The EPA/MPCA-proposed agreement asked the DOD to reimburse the EPA and Minnesota state agencies for their groundwater contamination/investigatory costs, and proposed DOD implement further studies and remedial actions.

Strategy sessions were held on 13-14 March 1986 at the Pentagon and AMC. Attendees included army legal and environmental engineering staffs from DA, AMC, AMCCOM, Twin Cities, the

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Department of Justice, Federal Cartridge Corporation, and Honeywell, Inc. Key accomplishments were the formation of negotiating and working group teams, and an army counter proposal to the EPA/MPCA proposal. Major objections conveyed in the army counter proposal were that the army was not the sole contributor of contamination, that the EPA should remain the lead agency off-post, that the army and EPA should jointly determine response and financing where the army was a contributor, and that the MPCA had authority only as an agent of the EPA.

An army position meeting was held at the Pentagon on 23 April 1986 regarding the DOD/EPA/MPCA compliance agreement. The army stood firm on legal issues of federal jurisdiction and sovereign immunity. The army also stated that, in accordance with a DOD/EPA memorandum of understanding, the EPA/MPCA should fund their remedial studies/efforts off-post.

On 26 August 1986 the MPCA board requested the army, Federal Cartridge, and Honeywell investigate and remedy groundwater pollution on and off Twin Cities. The MPCA request asked officially for off-post remediation for the first time. The MPCA indicated it would undertake studies and cleanup and would seek reimbursement or a court order if the army did not comply with the MPCA request for off-post work. The army and EPA, however, had an agreement that made the EPA responsible for off-post cleanup.

A US Geologic Survey review raised grave questions about the MPCA off-post studies. The review, delivered to MPCA on 26 August 1986, stated that the MPCA studies unfairly favored the conclusion that Twin Cities was the major source of regional groundwater contamination.

### Mississippi Army Ammunition Plant

A written complaint from the Mississippi Department of Natural Resources was presented to General Thompson on 10 July 1986. The complaint was for failure to have the "smog hogs" meet the requirements of the previously presented compliance order by 30 June 1986. General Thompson was also threatened with a fine for noncompliance with Mississippi air standards. A settlement was negotiated in August 1986 which included payment of a penalty, and a commitment to develop a new operating permit.

### Facilities Engineering Division

The Facilities Engineering Division managed real property maintenance activities, installation master planning, construction programming and execution, real estate, facilities engineering, and conservation of energy and natural resources for AMCCOM. The headquarters space management mission was assigned to the deputy

for industrial preparedness and installations with subsequent delegation to the Installation Support Directorate and Facilities Engineering Division effective 1 October 1985.

Rock Island Arsenal REARM

Phase I of renovation of armament manufacturing (REARM) at Rock Island Arsenal involved construction of building 210 and 212E with a connecting corridor. The contract was awarded in January 1983 and was completed. The final contract cost was estimated at \$14,843,000.

Phase II involved the construction of a new building 212W with accompanying utility modifications in adjacent buildings. The contract was awarded in June 1985 and was 40 percent complete. Completion was scheduled for February 1988, with a current working estimate (CWE) of \$32,141,000.

Phase III of REARM was to expand the existing building 222 and renovate seven existing manufacturing buildings to complete the consolidation of all arsenal operations and personnel in the southwest quadrant of the installation. When bids were opened, the lowest bid was \$141 million versus a CWE of \$31,625,000. Consequently, the project was "rescoped" with a CWE of \$24.7 million. Bids were opened 31 October 1986.

Phase IV of the project would incorporate all items deleted from Phase III, and was estimated at \$19 million.

Radford AAP

The construction contract for Radford's treatment of thick liquor (SUNOCO) was awarded to Mechanical Constructors, Inc., of Springfield, Virginia, for \$21.5 million. Construction was in progress, with completion scheduled for August 1988.

Lake City AAP

Lake City's industrial (heavy metal, explosive, sanitary, pyrotechnic) wastewater treatment facility project was delayed because Congress mandated completion of a third-party study for an alternate method of constructing the project.

Other Actions

The Construction Branch reviewed 22 final designs, 22 concept designs, 44 project development brochures, 152 PAA projects, 34 engineering change proposals and value engineering proposals, 100 DD Forms 1391, 43 facility master plans, 9 industrial preparedness plans, and 3 studies/reports. Additionally, the branch processed

## Industrial Preparedness and Installations

9 unspecified location minor MCA projects and technically reviewed  
1 family housing project.

### MCA Programming

The FY 1988 and 1989 MCA programs were submitted as a consolidated, biennial budget. There would not be a budget cycle for FY 1989-93.

Projects submitted to AMC for the FY 1988-92 program were as follows:

FY 1988	4 Projects	\$ 34,000,000
FY 1989	32 Projects	\$130,000,000
FY 1990	54 Projects	\$201,000,000
FY 1991	29 Projects	\$377,000,000
FY 1992	20 Projects	\$405,000,000

### Base Operations and Installation Support Program

During FY 1986 a total of 300 headquarters support work requests were submitted to and processed by the Operations and Maintenance Branch. This included requests for facilities and equipment services, phone requests, moves, and minor construction efforts. In addition to the above, installations submitted work requests and projects, which were funded as follows:

Project Requests	No. of Projects	Value (\$000)
Pine Bluff Arsenal	14	\$ 988,300
Watervliet Arsenal	2	67,900
Rock Island Arsenal	13	1,710,400
McAlester AAP	3	33,800
Milan AAP	1	31,800
Iowa AAP	1	147,200
Joliet AAP	1	584,800
Ravenna AAP	1	2,100
St. Louis AAP	4	269,700
Newport AAP	4	111,900
Sunflower AAP	1	279,500
Radford AAP	1	56,900
Hawthorne AAP	5	135,200
CAMO-PAC	5	194,700
Atchison Vaults	2	41,000
Subtotal		
Installation Projects	58	\$4,655,200
Security Projects (Fenced Funds)		1,445,800

AMCCOM HQ Support	
(Funded to RIA)	394,200
Communications Support	<u>21,400</u>
Total Funded	\$6,516,600

Energy Program

The AMCCOM Energy Office served as the command's agency to conserve energy at six GOGO plants, 26 GOCO plants, one activity, and a firing range. The program was administered through an energy working committee and an energy executive committee coordinated through the AMCCOM Energy Office.

Command emphasis was an important part of FY 1986. Major energy conservation projects were submitted through the energy conservation improvement, the energy conservation and management, and the productivity capital improvement programs, but funding was scarce because of other priorities. Low-cost/no cost projects were emphasized to meet the AMC short term goal for FY 1986. Results for FY 1986 versus FY 1985, through 31 August 1986 (11 months), was minus 0.8 percent. The long term DA goal was to reduce facility energy consumption by 8 percent and process energy by 10 percent, both through FY 1995 (10 year goal).

Fire Prevention

During the year, AMCCOM experienced a total of 66 fires. These fires were classified as 57 army and 9 non-army with losses of \$364,652 and \$35,695, respectively. There were no fire related deaths or disabling injuries.

Three fires caused the highest dollar losses. On 1 November 1985 a power amplifier in building 3109 at ARDEC experienced an electrical malfunction, causing a fire that did \$40,000 damage. On 8 January 1986 a cutting torch in the weld shop at Rock Island Arsenal caused a fire that did \$211,313 damage. On 4 May 1986, at Louisiana AAP, a door burner on the heat treat furnace in building 2600 ignited quench oil residue on a crossover conveyor causing \$36,000 damage.

Fire prevention and protection programs continued to receive a high level of command emphasis. AMC conducted 10 fire prevention operational readiness inspections within the command. Three installations were rated excellent, six were satisfactory, and one was rated marginal.

The following AMCCOM installations were recognized in the FY 1985 AMC fire prevention and protection awards program: Pine Bluff Arsenal was the winner in the small GOGO division; Badger

## Industrial Preparedness and Installations

AAP won the large GOCO division, with Hawthorne AAP as runner-up. Lone Star AAP won the small GOCO division, with Milan AAP as runner-up.

### Backlog of Maintenance and Repair

The total backlog of maintenance and repair at the end of FY 1986 was \$123,965,100; broken down by funding elements as follows:

	FY 1986	FY 1985
OMA PE 721111	\$ 17,861,400	\$ 18,426,300
OMA PE 722894	7,503,600	3,258,900
OMA PE 728011	62,988,900	46,972,700
PA	20,600,200	8,210,200
AIF	11,046,300	24,905,300
RDTE	3,964,700	0
	<u>\$123,965,100</u>	<u>\$101,773,400</u>

FY 1986 versus FY 1985 indicated an increase of \$22,191,700. The goal was a reduction of 10 percent. However, as only limited funding was available there could be no effective reduction. Also, delayed correction allowed accelerated deterioration, resulting in compounding costs. The following is a summary of the prior year report:

End of FY 1985 BMAR	101.8
Projects financed	(-) 11.1
Changes	(-) 15.6
Projects added	(+) 48.8
End of FY 1986	<u>123.9</u>

### Natural Resources (General)

In FY 1986 the Real Property Management Branch organized the first AMCCOM land management conference. This conference was hosted by Iowa AAP on 16-17 September 1986. Thirty-six representatives from AMCCOM headquarters, 16 AMCCOM installations, the Louisville and Omaha Corps of Engineers districts, the Soil Conservation Service, the Iowa Department of Conservation, and AMC attended the conference. The conference, by all indications, was a success. Planning was under way to make the conference an annual event.

### Agricultural/Grazing Lease Program

FY 1986 was the third year that funds were provided for administrative expenses for leasing land and financing natural resource projects. Funds for administrative costs in the amount

of \$401,965 and \$638,583 for projects were dispensed. Lease revenue was \$2,545,147.

FY 1986 Fish and Wildlife Management

Hawthorne AAP began collecting fees for fishing in order to help support fish and wildlife conservation projects. There were 10 AMCCOM installations collecting fees for hunting and/or fishing privileges. A total of \$60,098 in fees were collected during the year. Funding authority of \$50,885 was issued in FY 1986.

FY 1986 Forestry Program

The forestry program in FY 1986 returned a profit of 51 percent, with costs of \$400,896 and income of \$694,023. This was a 93 percent decrease from FY 1985, but those profits were exceptional.

Disposal of Excess Installations

A total of 439.56 acres at Hawthorne AAP, in seven parcels, was reported for disposal. Included were 335 buildings and structures, plus supporting utility systems, comprising the entire area known as the Babbit Housing Area. The district engineer, Sacramento, California, was selling the vacant houses on the property for off-site removal. Most of the vacant houses had been sold. Sale of the land was delayed pending removal of all the housing units on the property.

The entire Gateway AAP, St. Louis, Missouri, was sold by the General Services Administration (GSA), Fort Worth, Texas. A 2.9 acre parcel was sold to the highest bidder following a public auction on 11 September 1985. The quit claim deed for that parcel was signed on 3 December 1985. A public auction for the balance of the property, 11.96 acres fee and .31 acres easement, was held on 22 May 1986. The high bid was \$750,000. Closing of the sale was scheduled for late November 1986. GSA paid the costs for protection and maintenance of the property.

A report of excess (ROE) for 103.94 acres and six buildings was submitted by the commander of Milan AAP, Milan, Tennessee, on 11 February 1986. The purpose of this action was to effect transfer of the property to the Tennessee Army National Guard. That ROE was sent to DA for approval.

On 30 May 1986, 22.61 acres of land at Twin Cities AAP, New Brighton, Minnesota, was transferred to the Fourth US Army, Fort Sheridan, Illinois. This property was to be used by the US Army Reserves in conjunction with the construction of a reserve center. This 22.61 acres was in addition to 6.43 acres transferred on 13

## Industrial Preparedness and Installations

August 1981 for use by the reserves.

The GSA, Atlanta, Georgia, sold several excess parcels of land at Volunteer AAP, Chattanooga, Tennessee, during April 1986. One parcel of 71.52 acres was sold for \$530,000, while the second parcel of 559 acres sold for \$275,000. In all, 630.52 acres were sold for \$805,000. Approximately 680 acres, known as parcel F, remained excess and available for disposal at Volunteer.

No disposal of excess land occurred during FY 1986 at any of the following listed installations at which land had previously been reported excess: Alabama, Indiana, Iowa, and Joliet AAPs and Picatinny Arsenal.

### Disposal of Excess Buildings and Structures (Facilities)

During FY 1986 over one million dollars were provided for the decontamination, demolition, and site restoration of 94 excess facilities at five installations. A summary of these follows:

<u>Installation</u>	<u>Amount Funded</u>	<u>Facilities</u>	
		<u>Number</u>	<u>Square Feet</u>
Hawthorne AAP	\$ 19,455	6	3,264
Iowa AAP	147,242	21	8,925
Joliet AAP	584,838	3	105,933
Radford AAP	56,853	5	703
Sunflower AAP	279,451	59	56,098
	<u>\$1,087,839</u>	<u>94</u>	<u>174,923</u>

### Historical/Archeological Preservation Program

The DOD historic preservation program was implemented following the passage of the National Historic Preservation Act of 1966, as amended by executive order 11593. To comply with the program's requirements, AMC entered into a contract with the National Park Service in June 1982 to do historical and archeological surveys of all AMC installations. 18/

The historical segment of the AMC contract with the National Park Service to conduct historical and archeological surveys at all AMCCOM installations was completed. The archeological effort was nearing completion. Installations were reviewing the draft reports.

### Real Estate Acquisition

By letter dated 4 April 1985, Pine Bluff Arsenal initiated a request to acquire 10.4 acres of land adjacent to the installation's main entrance. On 11 June 1986 the Little Rock

District Corps of Engineers accepted the donation of 5.0 acres of land from the Whitehall School District. This land had previously been installation property which was transferred to the school district. The remaining 5.4 acres, controlled by GSA, was also in the process of being transferred to the Little Rock District Corps of Engineers.

By letter dated 17 December 1985, Watervliet Arsenal submitted a request for acquisition of approximately 30 acres of land adjacent to its southwest boundary. Both AMC and AMCCOM supported the acquisition, as it was for contemporary and future mission expansion capability.

#### Family Housing Office

The Family Housing Office staff supervised and directed the management of family and bachelor (except troop barracks) housing, guest houses, and associated functions including housing referral services at subordinate installations.

AMCCOM funded 22 housing projects totaling \$1,404,900; and \$5,283,948 in routine operations and maintenance funds. The FY 1986 obligation rate was 99.97 percent.

The disposal of the Babbitt Housing Area at Hawthorne AAP proceeded with the removal of 17 units from the real property records during FY 1986. Work progressed on the removal of all 443 units in the Babbitt area.

Congress allocated \$1.5 million to upgrade 52 family housing units at the Rotterdam Housing Area. Work was scheduled to begin in November 1986.

A DA-funded study to determine what should be done with all historical quarters began in December 1985. Watervliet and Rock Island Arsenals were studied by the historical review committee. They recommended retention of the Watervliet units, but no decision had been made on the Rock Island units. The report was due to be completed on 31 December 1986.<sup>19/</sup>

#### PRODUCTION BASE MODERNIZATION ACTIVITY

##### Mission

The mission of the Production Base Modernization Activity was to intensively manage the Department of Defense armaments, munitions, and chemical production base modernization program in accordance with appropriate directives, regulations, and SMCA and AMCCOM policies and procedures. It managed initial production facilities, modernization and expansion of production facilities,

## Industrial Preparedness and Installations

manufacturing methods and technology engineering, production support and equipment replacement, layaway, and other support engineering required for the program at DOD plants and arsenals, and for the government-owned production equipment located at contractor-owned facilities.20/

### Organization

The Production Base Modernization Activity consisted of the office of the commander and six divisions: the Load, Assemble, and Pack Division; the Resources and Management Division; the Metal Parts Division; the Engineering Programs Division; the Propellants and Explosives Division; and the Production Support and Equipment Replacement, Armament, and Layaway Division. The activity was located at Dover, New Jersey.21/

### Staffing and Personnel

Colonel Francis L. Mulcahey served as the commander of the Production Base Modernization Activity throughout FY 1986. Mr. Joseph Taglairino served as deputy director until his retirement on 3 January 1986. Mr. Albert Siklosi assumed the duties of deputy director until his retirement in March, when Mr. Kalman Kolis was made acting deputy director.22/

The activity's TDA called for 170 civilians and 9 military. However, its civilian employment estimate was established at 162. At the end of the fiscal year, the activity had 161 civilians and 6 military actually assigned.23/

### Major Activities

The FY 1986 annual historical submission of the Production Base Modernization Activity can be found as an appendix to this volume.

## NOTES

1/This section is derived from the annual historical submission of the deputy for industrial preparedness and installations, Dr. Marion Z. Thompson, Deputy, 22 Dec 86.

2/AMCCOM Regulation 10-1, Mission and Major Functions of the HQ, AMCCOM, 1 Apr 86, p. 40-2.

3/This section is derived from the annual historical submission of the Program Management Office, LTC Henry R. Rosenbaum, Jr., Chief, 9 Dec 86.

4/This section is based on the annual historical submission of the Industrial Readiness Directorate, Mr. Richard W. Janik, Director, 28 Nov 86.

5/HQ, AMCCOM, Record of Weekly Staff Meeting, 7 May 86, p. 38; Ibid., 27 May 86, p. 43.

6/Ibid., 19 Feb 86, p. 44.

7/Staff Meetings, 5 Nov 85, p. 47; 19 Nov 85, p. 36; 14 Jan 86, p. 38; 25 Feb 86, p. 44; 22 Apr 86, p. 40; 20 May 86, p. 42.

8/Ibid., 20 May 86, p. 42.

9/Ibid., 13 May 86, p. 43.

10/Ibid., 16 Sep 86, p. 32.

11/Ibid., 30 Sep 86, p. 37; FONECON, author with Mr. Alfred A. Khwaja, Industrial Readiness Directorate, 23 Mar 87.

12/AMCCOM regulation 10-1, p. 38-2.

13/Ibid., p. 38-1.

14/This section is based on the annual historical submission of the Installation Support Directorate, Mr. Gene R. Marten, Acting Director, 19 Nov 86; Staff Meeting, 30 Sep 86, n. p.

15/Staff meeting, 4 Feb 86, p. 54.

16/Ibid., 22 Jun 86, p. 51.

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17/Ibid., 30 Dec 85, p. 53.

18/Ibid., 11 Feb 86, p. 64.

19/Ibid., 14 Jan 86, p. 47.

20/AMCCOM regulation 10-1, p. 39-2.

21/Ibid., p. 39-1.

22/Vincent Stenziano, Annual Historical Review: Fiscal Year 1986, (US Army Production Base Modernization Activity, Dover, New Jersey), pp. iv and 23.

23/Ibid., pp. 29 and 34.

## CHAPTER VII

### RESOURCES MANAGEMENT

#### Mission

The mission of the deputy for resources and management (DRM) was to act for the commanding general in exercising directional authority over the management and control of command resources. The deputy also directed AMCCOM elements in the assigned mission areas associated with financial, manpower, management information and automatic data processing, personnel, cost analysis, systems analysis, the defense standard ammunition computer system (DSACS), and the AMC automated manpower management information system (AAMMIS).<sup>1/</sup>

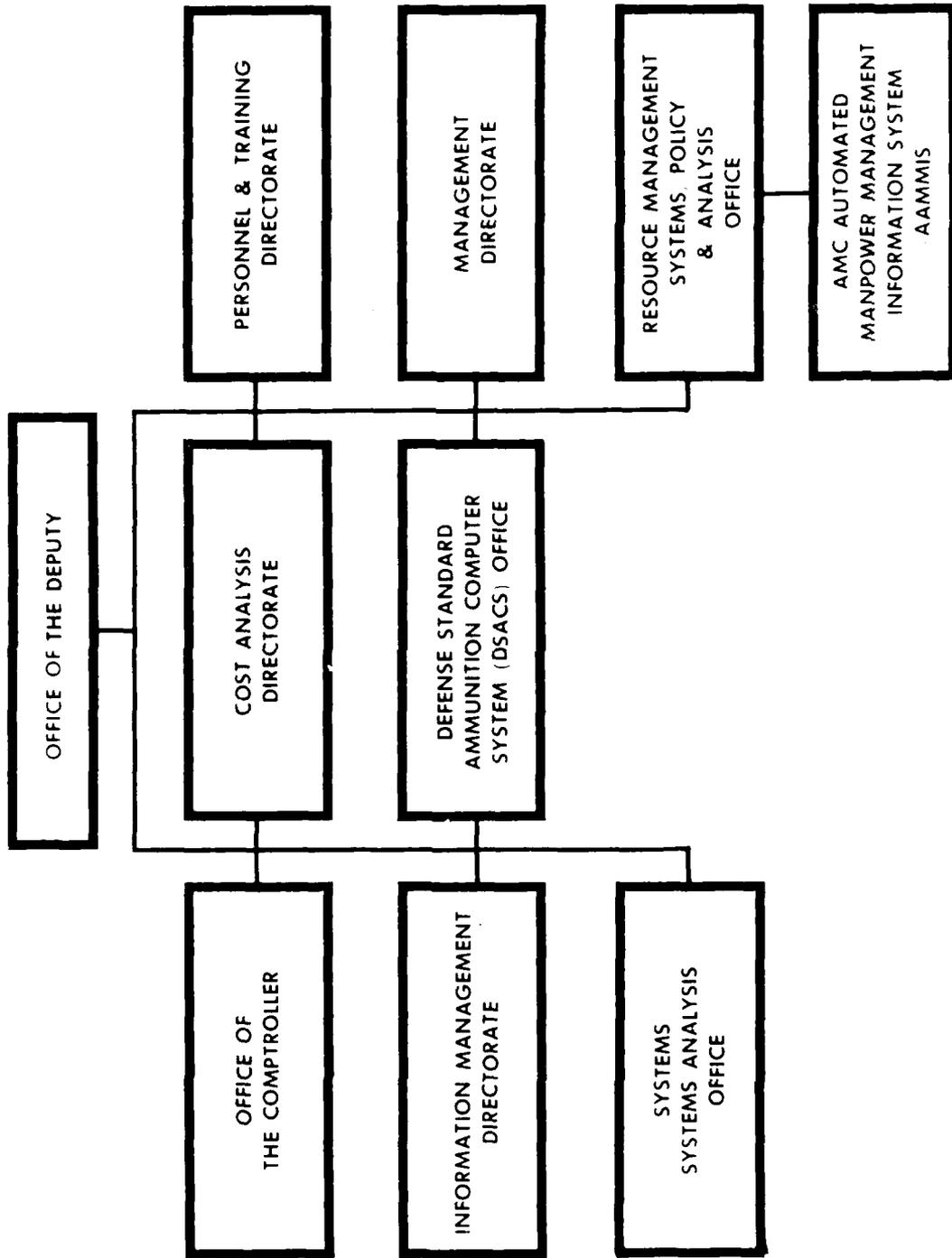
In addition to directing the activities of the directorates/offices making up the DRM community, the deputy was charged with providing executive level assistance and advice to the commanding general and the three deputy commanding generals regarding command resources and management.

#### Organization

FY 1986 was a year of organizational improvement within the DRM community. The AMCCOM Management Information Systems Directorate was combined with the Management Information Systems Directorate, in conjunction with the implementation of the Information Systems Command. The combined directorate was retitled the Information Management Directorate, and had expanded responsibility for communications, audio-visual, technical data, and adjutant general functions.

The deputy also assumed responsibility for the newly created Systems Analysis Office, the creation of the PM-AAMMIS, and CG approval of the "Major Frost" study. This latter effort, to be fully implemented in FY 1987, would result in the reduction of 10 high grade civilian positions; the transfer of the director positions for cost analysis and management from Dover to Rock Island; the elevation of the civilian chief of the Civilian Personnel Division to director of personnel and training; and the reassignment of the previous military director position to assistant deputy for resources and management. All of these improvements were accommodated without changing the deputy's span of control from that of FY 1985. An organizational chart is on the following page.

FIGURE 1  
DEPUTY FOR RESOURCES AND MANAGEMENT



Staffing and Personnel

Mr. Donald R. Lathrop continued to serve AMCCOM as the deputy for resources and management, and Colonel Louis Beasley continued to serve as the assistant deputy at Dover. The assistant deputy position at Rock Island was vacant at the end of FY 1986 with the retirement of Colonel Malcolm Shaffer in June.

Personnel staffing levels for the entire DRM community were 15 officers, 14 enlisted, and 1,136 civilians authorized; and 7 officers, 22 enlisted, and 1,111 civilians actually assigned.

Deputy's Overview

Efforts in FY 1986 were directed toward finding better ways of doing business, to do more with less. During FY 1986 command resources continued to shrink while the overall mission increased. Suffice it to say, the DRM family was equal to the challenge and the level of quality of support provided to the command increased. Collectively, it was on the leading edge of innovation and productivity within the AMC and DA resource management arena.

The DRM community exceeded expectations for obligation performance and reached the highest levels ever for several areas. It met AMC-assigned "glide path" targets for civilian employment estimates, workyears, and annual financial target; acquired an Amdahl 5880 central processing unit for the DSACS; and realigned the information mission area in concert with the Information Systems Command. The community realized \$285 million in savings from the cost control initiatives program; activated VENUS, a video teleconferencing network, during April 1986 at Rock Island, realizing a 6-month's savings of \$133,000 in travel cost-avoidances; and assumed lead responsibility to develop AMCCOM information/communication architecture. It activated the job scheduling model for ammunition; initiated the arsenal, plant automated computer system effort; and improved management of high grades, with the end-FY-1986 basepoint reduced by 75 from FY 1985. It conducted the first ever AMCCOM resource management workshop, established the resource management fellowship program, and implemented command-wide mandatory urinalysis drug testing for 1,200 positions. Finally, the DRM community increased emphasis on design to cost and selected acquisition information management systems, and published the AMCCOM resource management handbook.

OFFICE OF THE COMPTROLLER

Mission

The mission of the comptroller was to serve as the financial manager of the command -- to develop, obtain, operate, and manage the programming, budgeting, funding, financial accounting, and review and analysis systems and activities required to accomplish the command's mission. He developed and maintained effective financial controls, systems, and procedures for safeguarding and achieving optimum use of resources, and administered the comptroller career program within the command.

Organization

The office was made up of three divisions and two offices: the Program and Budget Division, the Finance and Accounting Division at Rock Island, the Finance and Accounting Division at Dover, the Review and Analysis Office, and the Administrative Office. There were no organizational changes within the comptroller office during FY 1986. Program and budget activities continued to be administered by the lead site at Rock Island. Finance and accounting activities continued to be organized into two separate divisions located at Rock Island and Dover.

However, within the Finance and Accounting Division at Rock Island, there were major organizational changes planned, to take effect in FY 1987, which would reduce the number of branches from seven to five. In the Review and Analysis Office, planned changes for FY 1987 would move the review and analysis group at Dover from the comptroller to the Management Directorate.

Staffing and Personnel

Colonel David L. Click continued to serve as the comptroller throughout much of FY 1986 until his retirement in August. Ms. Suzanne Wells finished out FY 1986 as the acting comptroller. Additionally, Ms. Wells served as the deputy comptroller at the Rock Island site and as chief of the Program and Budget Division. Mr. William Edwards continued to serve as deputy comptroller at the Dover site throughout the fiscal year. There were no changes in personnel serving as division or office chiefs during the fiscal year.

Personnel strength in the Office of the Comptroller at the beginning and the end of FY 1986 was as follows:

	1 October 1985		30 September 1986	
	Auth	Actual	Auth	Actual
Military	6	3	6	2
Civilian	568	552	523	502

Director's Overview

Major initiatives to improve the operations and performance of the comptroller office were undertaken and accomplished in FY 1986.

The comptroller office completed the unliquidated obligations (ULO) review on schedule. A 100 percent review of ULOs was completed on 29 September 1986, with 1,600 hours less overtime than in FY 1985. A prioritized first cycle baseline for FY 1987 was developed about a month earlier than in the preceding fiscal year, and was to be completed by 6 October 1986.

Another significant achievement was implementation of the standard army procurement appropriation reporting system application 821. The application allowed for automatic recording of earnings based on disbursements and automatically generated special forms 1080 to bill customers.

In the Finance and Accounting Office at Rock Island the use of microcomputers increased considerably, resulting in reduced manpower requirements, improved recordkeeping, and improved response time. Overtime was reduced by 58 percent from FY 1985, and full time staffing was reduced to 31 from 33 in FY 1985. Conventional ammunition working capital fund (CAWCF) reports (the CSCOA-78, CSCOA-6, and CSCFA-212) based on the commodity command standard system (CCSS) month-end trial balance and CAWCF report adjustments, were microcomputer generated.

FY 1986 saw a substantial reduction in payroll deductions for travel advances. Payroll deductions were reduced from six percent to one percent, the obvious result of implementation of a \$15 service charge for collecting the indebtedness by payroll.

Travelers at ARDEC were provided vastly improved, "one-stop" travel service with the move of the ARDEC Transportation Office into the same building occupied by the Finance and Accounting Division. Travelers could obtain travel orders, tickets, and travel advances in "one-stop."

Improvement in research, development, test, and evaluation (RDTE) appropriation reporting occurred in FY 1986 with the establishment of a consolidated RDTE database for satisfying multiple reporting requirements and the initiation of "big ticket reviews" for AMCCOM's deputy commanding general for armament and munitions on large dollar RDTE items.

Other significant initiatives accomplished during FY 1986 were the coordination of joint ordnance commanders group financial management reviews; establishment of procedures to track

## Resources Management

obligations for all foreign military sales (FMS) and non-FMS customer orders; and the development, with the deputy for procurement and production, of a re-orientation concept to integrate acquisition tracking center (ATC) appropriation tracking with appropriation overviews.

FY 1986 was an exceptional year in the program execution arena. Obligation performance exceeded expectations, and in several areas reached the highest levels ever achieved by AMCCOM. This is shown in greater detail on the table on the following page.

The office accomplished some significant actions affecting FY 1987. FY 1987 accounting and reporting changes were reviewed and approved; parallel products were received and reconciled, and a new 218 report format tested with outputs approved. A management decision package (MDEP) reporting plan for FY 1987 was developed in which all FY 1987 procurement work directives (PWD) carried an MDEP code that would be entered into the operations and maintenance, army (OMA) accounting system. Internal operating budget funded costs (non-PWD) would carry an MDEP code that would be identified to MDEP within the OMA cost accounting system.

### Major Activities

#### Program and Budget Division

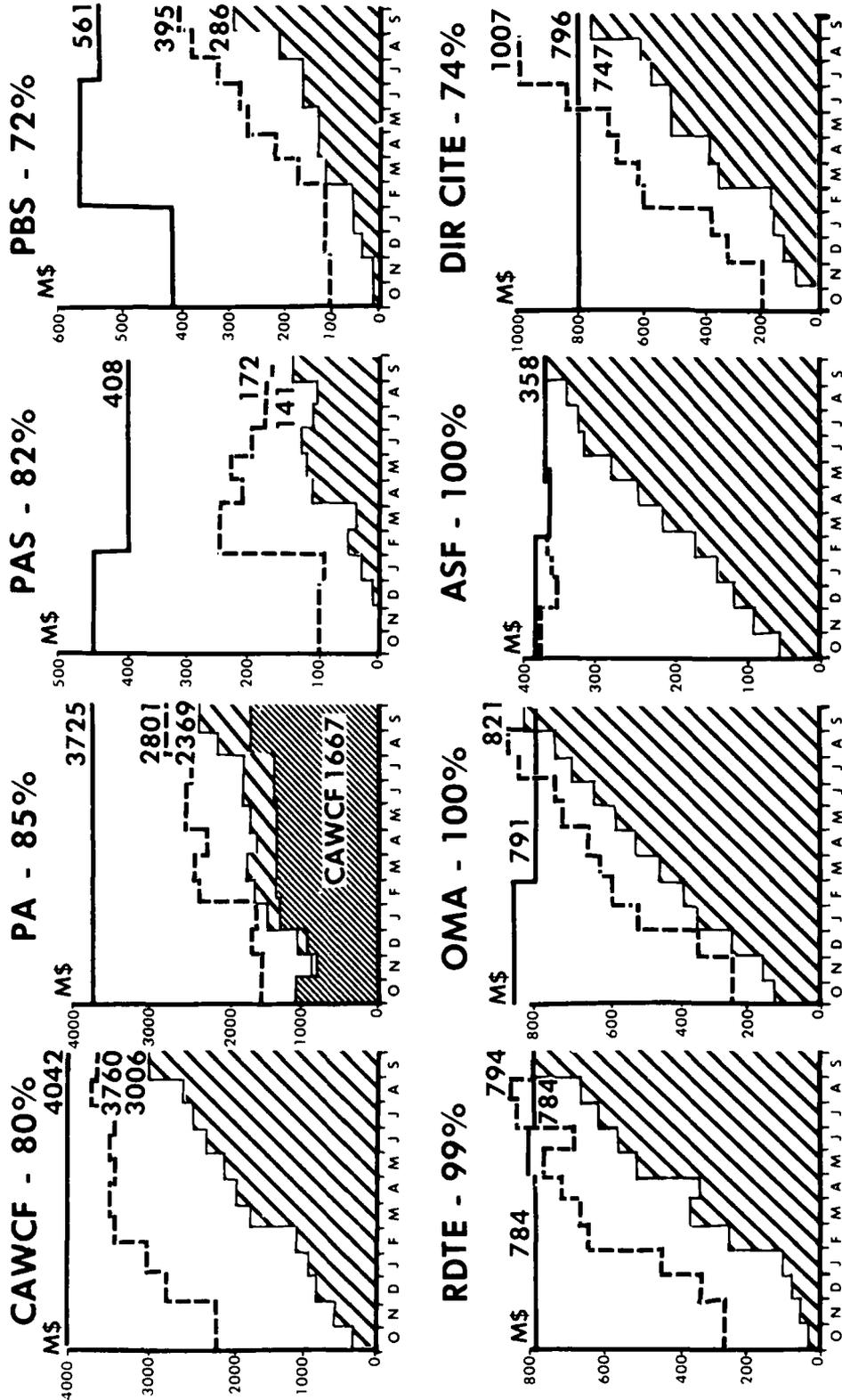
##### Command Programs

The FY 1986 AMCCOM total authorized program for goal years FY 1984-86 was \$8.254 billion. (See Table 3 for breakout by appropriation.) The total direct program was \$4.468 billion, and the total reimbursable program was \$3.786 billion. The procurement appropriation program was \$3.143 billion, and the CAWCF program was \$2.121 billion.

The authorized annual operation and maintenance, army (OMA) program and obligations as of 30 September 1986 by program are shown on Table 4. The OMA program funds available for obligation in FY 1986 were \$821,171,200. Obligations were \$821,144,300, or 99.9 percent of the available program. Table 5 further breaks out the OMA program by program element.

FY 1986 obligations of the total operating funds program broken out by the military assistance program, the family housing maintenance account (FHMA), and the operation and maintenance, army reserve program are provided in Table 6.

**TABLE 2**  
**AMCCOM**  
**FY 86 PROGRAM EXECUTION**  
**OBLIGATED AS A % OF RECEIVED (CUM)**  
**AS OF 30 SEP 86**



NOTE: MISC PLAN = 7. RECD = 7. OBLG = 7 (100%)

**TABLE 3**  
**STATUS OF FY 1986 AMCCOM PROGRAM**  
**(\$ IN MILLIONS)**

<u><b>TOTAL</b></u>	<u><b>\$8,254</b></u>
Direct	4,468
Reimbursable	3,786
<u><b>PROCUREMENT APPROPRIATION</b></u>	<u><b>3,143</b></u>
Direct	2,861
Reimbursable	282
<u><b>RDTE</b></u>	<u><b>797</b></u>
Direct - Current	542
Direct - Prior Year	53
Reimbursable	202
<u><b>CITED ORDERS</b></u>	<u><b>1,007</b></u>
<u><b>OMA</b></u>	<u><b>821</b></u>
Direct	647
Reimbursable	174
<u><b>AST - Direct</b></u>	<u><b>358</b></u>
<u><b>OTHER - Direct</b></u>	<u><b>7</b></u>
<u><b>CAWCF</b></u>	<u><b>2,121</b></u>
Non-PA	1,590
Carry Over	531

NOTE: Figures may not total due to rounding.

TABLE 4  
 AMCCOM  
 FY 1986 OPERATION AND MAINTENANCE, ARMY  
 AUTHORIZED VERSUS OBLIGATED BY PROGRAM/SUB-PROGRAM  
 30 SEPTEMBER 1986  
 (\$ in Thousands)

<u>PROGRAM/SUB-PROGRAM*</u>	<u>AUTHORIZED ANNUAL PROGRAM</u>	<u>OBLIGATIONS</u>
P20 (General Purposes Forces)	\$ 27,858.6	\$ 27,858.0
P72 (Central Support)	657,312.1	657,294.2
P73 (Maintenance)	124,726.8	124,719.6
P78 (Environmental Restoration)	1,145.5	1,145.0
P81 (Training)	9,242.7	9,242.5
P87 (Other)	358.7	358.4
P95 (Administration)	291.8	291.6
P10 (FMS Support)	235.0	235.0
TOTAL	\$821,171.2	\$821,144.3

\*P10 and P20 are programs and P72-P95 are subprograms.

TABLE 5  
AMCCOM  
FY 1986 OMA OBLIGATIONS BY PROGRAM/PE  
(\$ in Thousands)

<u>PROGRAM PE</u>	<u>DESCRIPTION</u>	<u>DIRECT</u>	<u>REIMBURSABLE</u>	<u>OBLIGATION</u>
202892	Special Activities/ Log Spt	\$ 27,756.1	\$ 19.5	\$ 27,775.6
208011	JCS Direct & Coord Ex	82.4	0.0	82.4
	Total P20	(27,838.5)	(19.5)	(27,858.0)
721111	Supply Depot Operations	78,632.9	4,622.9	83,255.8
721112	Supply Management Oper	28,894.5	5,394.1	34,288.6
721113	Central Procurement	87,624.5	6,686.5	94,311.0
722829	Logistics Admin Support	12,643.4	369.6	13,013.0
722890	Audiovisual Support	1,355.8		1,355.8
722894	Real Property Maint	25,222.8		27,805.1
722896	BASOPS	33,048.3	2,582.3	43,515.4
722898.1	Headquarters	551.6	10,467.1	640.8
722898.2	Mid-Management Commands	25,523.7	89.2	26,350.7
728009	First Destination Trans	14,936.4	827.0	15,522.3
728010	Second Destination Trans	4,226.1	585.9	4,231.2
728011	Industrial Preparedness	115,281.7	5.1	115,927.1
728012.11	Central Supply	22,048.2	645.4	31,571.8
728012.12	Production Base Support	7,539.8	9,523.6	8,851.9
728012.13	Standardization Programs	3,637.7	1,312.1	4,115.7
728012.16	Prod Eng for Proc Items		478.0	102,108.7
728012.18	Mission Support	2,038.9	102,108.7	2,099.6
728012.2	Demilitarization	17,444.7	60.7	20,779.1
728611	Information Program Mgmt	54.1	3,334.4	54.1
728612	Data Processing Facilities	9,781.8		9,781.8
728615	ADP Program Management	8,871.9		8,871.9
729993	Reimb GOCO Services	-6.6	7,989.3	7,982.7
729999	Reimb Sale of Supplies		860.1	860.1
	Total P72	(499,352.2)	(157,942.0)	(657,294.2)
733207	Depot Maintenance Act	28,979.4	4,652.9	33,632.3
738017	Maintenance Support	78,583.6	10,793.9	89,377.5
738611	Information Program Mgmt	55.7		55.7
738612	Data Processing Facilities	1,654.1		1,654.1
	Total P73	(109,272.8)	(15,446.8)	(124,719.6)
788008	Environmental Restoration	548.0	597.0	1,145.0
	Total P78	(548.0)	(597.0)	(1,145.0)

TABLE 5 (CONT)

## FY 1986 OMA OBLIGATIONS BY PROGRAM/PE

<u>PROGRAM PE</u>	<u>DESCRIPTION</u>	<u>DIRECT</u>	<u>REIMBURSABLE</u>	<u>OBLIGATION</u>
814731	General Skill Training	3,565.5	90.3	3,655.8
814771	Training Support	213.8		213.8
814772	Training Development	374.6		374.6
819731	Training Support to Units	4,998.3		4,998.3
	Total P81	(9,152.2)	(90.3)	(9,242.5)
878751	Civ Trng, Educ & Dev	351.2	7.2	358.4
	Total P87		(7.2)	(358.4)
951214	Public Affairs	138.0		138.0
951215	Prod Cap Invest Prog	36.8		36.8
951298	Management Headquarters	108.7		108.7
958612	Data Processing Facilities	8.1		8.1
	Total P95	(291.6)		(291.6)
002002	FMS Support		235.0	235.0
	Total P10		(235.0)	(235.0)
	Total OMA	(646,806.5)	(174,337.8)	(821,144.3)

**TABLE 6**  
**AMCCOM**  
**FY 1986 OPERATING FUNDS PROGRAM**

<u>APPROPRIATION</u>	
Operation and Maintenance Army (OMA)	\$821,171
Military Assistance Program (MAP)	33
Family Housing Maintenance Account (FHMA)	6,687
Operation and Maintenance, Army Reserve (OMAR)	68
Total	<u>\$827,959</u>

Customer Order Control Point

Significant emphasis was placed on closing FMS cases. Case closure goals established by AMC for calendar year (CY) 1985 totaled 527. For CY 1986 the AMC goal was initially established at 784, but was later reduced to a more realistic 553. All out efforts were directed to achieving the goal. The actual number of case closeouts achieved in CY 1986 was 600 versus 532 in CY 1985. Attention was applied to streamlining closure procedures that would allow for goals assigned by the US Army Security Assistance Accounting Center (USASAC) to be achieved.

Recoupment reviews were also stepped up and resulted in over \$24.3 million being returned to customer countries as excess to execution requirements.

A continuing effort in processing non-FMS customer funding documents was instrumental in obligating approximately 60 percent of the FY 1986 procurement program by 31 March 1986. Significant effort was required to monitor the FY 1986 special defense acquisition fund program.

Army Industrial Fund

Army industrial fund (AIF) earned revenue and incurred operating costs are shown in Table 7. The data represented a consolidation of the 5 AMCCOM AIF installations located at Crane, McAlester, Pine Bluff, Rock Island, and Watervliet. The operating loss of \$12,805,000 was largely attributable to a directed decrease in rates to customers for FY 1986. The gross operating results included revenue for the asset capitalization program based on depreciation of \$16,681,000 and a surcharge of \$20,400,000. Effective with FY 1985, AIF gains and losses were recouped through refunds or passthroughs in lieu of customer rate adjustments.

Rocky Mountain Arsenal discontinued operation as an AMCCOM AIF installation as of 30 September 1985. The transition to an OMA funded installation was accomplished in FY 1986, with help, supplied by the comptroller, in closing out residual AIF account balances.<sup>2/</sup>

Finance and Accounting Division (Rock Island)

The Finance and Accounting Division at Rock Island planned, directed, and controlled all finance and accounting activities for the command elements at that location. The division provided finance and accounting support to AMCCOM's subordinate installations and activities, including proper accounting and reporting of the command's financial resources, ensuring

TABLE 7

**COMBINED ARMY INDUSTRIAL FUND  
EARNED REVENUE AND OPERATING COSTS**

FY 1985 and FY 1986  
(Dollars in Thousands)

<u>COSTS INCURRED</u>	<u>FY 1986 ACTUAL</u>	<u>FY 1985 ACTUAL</u>
Direct Labor	\$144,810	\$139,260
Direct Material	94,668	96,273
Contractual Services	16,625	18,926
Other Direct Costs	41,501	44,490
Overhead (Gross)	<u>214,438</u>	<u>218,498</u>
Total Costs Incurred	\$512,042	\$517,447
Work-In-Process (Change)	<u>7,715</u>	<u>3,830</u>
Costs of Goods and Services Sold	<u>\$519,757</u>	<u>\$521,277</u>
Earned Revenue	517,796	522,572
Gross Operating Results (GOR)	-1,961	1,295
Passthroughs/(Refunds)	-800	6,300
Reserves	<u>-8,255</u>	<u>-20,400</u>
Net Operating Results (NOR)	\$-11,016	\$-12,805

LABOR INVOLVED IN ARMY INDUSTRIAL FUNDS

Civilian End Strength	8,988	8,455
Civilian Workyears	8,788	9,256

regulatory compliance and propriety of funds.

Reorganization Plan

During FY 1986, the finance and accounting officer directed his staff to conduct a study to further streamline the division's organizational structure. The plan intended to consolidate sections with similar functions into one branch. For example, the foreign military sales function involved four branches to record, monitor, and control customer orders, billings, and collections. The plan would centralize functional responsibility into one branch, making it possible to obtain information, resolve problems, and accomplish required action quicker and easier. Coordination time would be reduced. The reorganization was scheduled for implementation at the start of FY 1987.

AMC's Standard OMA Accounting and Reporting System

During FY 1986 the Finance and Accounting Division continued to support AMC's standard OMA system development as a part of the functional coordinating group responsible for the development of the system. The target date for implementation at AMCCOM was revised from December 1987 to April 1988.

FY 1987 Accounting and Reporting Changes

During FY 1986 DA directed major changes in the accounting and reporting of appropriated funds, except the procurement appropriation, to be effective 1 October 1986. AMCCOM's unique accounting system was locally modified to accommodate these changes. The required changes to the commodity command standard system, to accommodate army stock fund and conventional ammunition working capital fund reporting requirements, were accomplished by the Automated Logistics Management System Activity (ALMSA).

Uniform Cost Accounting and Reporting System

During FY 1986 uniform cost accounting and reporting system (UCARS) personnel were deeply involved in the analysis of cost and financial data at the Mississippi Army Ammunition Plant. The high priority placed on the review of the contractor at Mississippi required visits to assist in the development of briefing materials. UCARS personnel also assisted in numerous other studies involving the plant's accounting data.

Management of Unobligated Procurement Appropriation Funds

The FY 1984 procurement appropriation funds, at fund expiration on 30 September 1986, were reduced to \$7.5 million, or two-tenths of one percent of the total fiscal year 1984 program

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(cumulative from inception program of \$3,146,300,000). This reduction more than cut in half the FY 1983 procurement appropriation unobligated funds at fund expiration on 30 September 1985.

### Procurement Appropriation Obligation Rates

Obligation rates and other pertinent data for FY 1986 are reflected on Tables 8, 9, and 10. Pertinent reimbursement data are reflected on Table 11.

During the fiscal year, \$422.1 million in FMS modified direct cite funds, representing 598 country case lines, were accounted for and reported under operating agency 65. This accounted for \$21.4 million unobligated 1 October 1985 carryover plus \$400.7 million in allotments and orders received in FY 1986. Of this, \$270.3 million was obligated during the fiscal year.

### Conventional Ammunition Working Capital Fund

During FY 1986, the fifth year of the CAWCF, the available current-year program was obligated at a rate of 80 percent, in comparison to 85 percent in FY 1985, 87 percent in FY 1984, 76 percent in FY 1983, and 78 percent in FY 1982. To facilitate recording and tracking customer orders, a new CAWCF customer order file was developed.

### OMA Support of Force Modernization Program

The reporting of OMA obligations in support of the force modernization program was expanded in FY 1986. The quarterly CSCOA 83 report of obligations related to "intensively managed" systems was continued. Part IV of the CSCFA 218 report, which reflected "fielding" obligations only, was also continued. In addition, a new report was added as a requirement of the output oriented resource management system to provide a feedback of execution data by management decision package (MDEP) code as contained in the budget system.

The initial MDEP reporting in FY 1986 consisted of trimester reports of direct obligations for OMA and FHMA. All of the above reports were derived from the PR1ME data base developed in FY 1985. The final S11173 FY 1986 force modernization target was \$45.3 million. Actual obligations were \$51.9 million.

### Accounting and Reporting for the Information Systems Command

During FY 1986, DA directed that the FY 1987 accounting support for the Information Systems Command (ISC) would be transferred (decentralized) from Fort Ritchie to the local finance

TABLE 8  
**TOTAL PROCUREMENT APPROPRIATION EXECUTION**  
**AS OF 30 SEP 86**  
**(\$ IN THOUSANDS)**

YEAR	FT 86 PROGRAM AVAILABLE	FY 86 OBLIGATIONS	UNOBLIGATED	PERCENT OBLIGATED	UNLIQUIDATED	PERCENT LIQUIDATED
86	2,600,205	2,305,151	295,054	89	1,474,752	36
85	241,730	144,647	97,083	60	1,641,371	46
84	(73,171)	(80,701)	7,530	99	807,170	74
<b>SUB-TOTAL GOAL YEARS</b>	<b>2,768,764</b>	<b>2,369,097</b>	<b>399,667</b>	<b>86</b>	<b>3,923,292</b>	<b>53</b>
83	16,131	(21,450)	37,581	98	295,592	87
82	22,289	(11,084)	33,373	98	148,411	94
M-ACCT	(15,196)	(15,196)	-0-	--	42,446	--
<b>GRAND TOTAL</b>	<b>2,791,988</b>	<b>2,321,367</b>	<b>470,621</b>	<b>--</b>	<b>4,409,741</b>	<b>--</b>

TABLE 9  
 PROCUREMENT APPROPRIATION  
 DIRECT ARMY - EXECUTION  
 AS OF 30 SEP 86  
 (\$ IN THOUSANDS)

YEAR	FY 86 PROGRAM AVAILABLE	FY 86 OBLIGATIONS	UNOBLIGATED	PERCENT OBLIGATED	UNLIQUIDATED	PERCENT LIQUIDATED
86	2,370,182	2,082,235	287,947	88	1,263,048	39
85	243,977	147,312	96,665	60	1,563,300	45
84	(68,456)	(75,995)	7,539	99	689,871	74
SUB-TOTAL GOAL YEARS	2,545,703	2,153,552	392,151	85	3,516,219	54
83	19,253	(18,012)	37,265	98	272,984	87
82	22,750	(9,324)	32,074	98	143,423	94
M-ACCT	(8,369)	(8,369)	-0-	--	33,030	--
GRAND TOTAL	2,579,337	2,117,847	461,490	--	3,965,656	--

TABLE 10  
 PROCUREMENT APPROPRIATIONS  
 CUSTOMER - EXECUTION  
 AS OF 30 SEP 86  
 (\$ IN THOUSANDS)

YEAR	FY 86 PROGRAM AVAILABLE	FY 86 OBLIGATIONS	UNOBLIGATED	PERCENT OBLIGATED	UNLIQUIDATED	PERCENT LIQUIDATED
86	230,023	222,916	7,107	96	211,703	5
85	(2,247)	(2,665)	418	99	78,070	49
84	(4,707)	(4,707)	0	100	117,299	69
SUB-TOTAL GOAL YEARS	223,069	215,544	7,525	97	407,072	46
83	(3,123)	(3,438)	315	99	22,608	90
82	(461)	(1,760)	1,299	98	4,988	94
M-ACCT	(6,827)	(6,827)	-0-	--	9,416	--
GRAND TOTAL	2212,658	203,519	9,139	--	444,084	--

TABLE 11

PROCUREMENT APPROPRIATION  
 CUSTOMER - REIMBURSEMENTS  
 AS OF 30 SEP 86  
 (\$ IN THOUSANDS)

YEAR	PRIOR YEAR UNFILLED ORDERS PLUS NEW ORDERS RECEIVED	FY 86 EARNINGS/SALES	30 SEP 86 UNFILLED ORDERS
86	243,617	71,440	172,177
85	93,840	58,643	35,197
84	103,360	84,895	18,465
SUB-TOTAL GOAL YEARS	440,817	214,978	225,839
83	31,724	28,873	2,851
82	36,062	22,767	13,295
M-ACCT	21,531	3,319	18,212
GRAND TOTAL	530,134	269,937	260,197

and accounting office (FAO). Since the AMCCOM installation-level FAOs had only AIF accounting responsibilities and not OMA, it was decided that all ISC accounting support would be provided by the AMCCOM FAO at Rock Island. Funding, accounting, and reporting procedures were developed to provide the required accounting support, effective 1 October 1986.

#### Finance and Accounting Division (Dover)

The Finance and Accounting Division (Dover) planned, directed, and controlled all finance and accounting activities for AMCCOM at ARDEC, CRDEC, and the project managers at both locations.

#### Chemical and Armament Resource Management System

The chemical and armament resource management system appropriated fund accounting system was implemented as a successor to the RADMIS AIF system that was decapitalized 30 September 1985.

#### Open Order Review

Open order reviews were conducted in the three phases newly required by Section XVIII, Chapter 4, Army Regulation 37-108. The first phase included orders merged into the "M" year account and all orders that would merge at the end of the fiscal year. The second phase included orders that had expired for obligation purposes that were not reviewed in phase one. In the third phase, orders that were available for obligation purposes were reviewed. Additionally, in the first and second phases, unliquidated obligation balances over \$5,000 for appropriations that were available for obligation were also reviewed.

However, all 25,177 open orders were reviewed in FY 1986. These reviews contributed to the unqualified year-end certification of all appropriation reports.

#### Decentralized Fund Certification

Fund certification was decentralized to AMCCOM segments served by the division, which expedited the fund certification process. Training of fund certifiers was conducted on an ongoing basis. A series of fund propriety bulletins were also published.

#### Review and Analysis Office

The AMCCOM Review and Analysis (R&A) Office continued its operations in FY 1986 with the lead office in Rock Island and an element at Dover. Organizational interfaces, lines of authority and communication, and responsibilities among the R&A elements at

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the Rock Island, Dover, and Aberdeen sites were effectively maintained. The acquisition tracking center (ATC), also an element of the office, continued in its role as the command's principal management tool to review, evaluate, and monitor obligation performance.

### Review and Analysis Activities

A new innovation in the conduct of the R&A program was introduced in the office of the deputy for resources and management. A R&A presentation was accomplished via the VENUS system, thereby eliminating the need for travel among the Rock Island, Dover, and Aberdeen sites. Organizations continued to automate chart-making and updating, utilizing computer graphic and word processing systems. A long range initiative of the division was to ultimately automate the command R&A process.

The FY 1986 AMCCOM program plan was developed and distributed in November 1986 to AMCCOM elements, as well as to AMC and its other MSCs, as a means for cross-fertilization. The FY 1986 program plan was developed in accordance with new AMC policy on program plans. The program plan contained "total army" goals, AMCCOM goals in support of the army goals, and AMCCOM review and analysis items.

In addition to the FY 1986 AMCCOM program plan, AMCCOM direction thrusts were developed and distributed in November 1986 to all AMCCOM organizational elements. The AMCCOM direction thrusts were 39 major thrusts requiring command emphasis during FY 1986. The AMCCOM FY 1986 direction thrust plan provided the AMCCOM thrusts, objectives, and the implementing tasks for accomplishment. The AMCCOM tracking system remained to monitor and assure the reporting of all thrusts.

The AMCCOM CG key indicator book was distributed to members of the command group, including the respective DCGs for armament and munitions and chemical materiel. The book included key indicators from the Rock Island, Dover, and Aberdeen R&As, and other subjects selected by the CG. The book was updated and published monthly.

Other significant activities of the division in FY 1986 included coordination of the comptroller visitors' orientation briefings and the new employee orientation briefings. The comptroller's new employee orientation briefing was redesigned and made into a multi-media presentation. The redesigned briefing was presented to approximately 400 AMCCOM employees at Rock Island and Dover. The briefing was so successful it won national recognition from the American Society of Military Comptrollers.<sup>3/</sup>

Acquisition Tracking Center

FY 1986 was a year of change for the ATC. Center procedures evolved from detailed line-by-line reviews to summarized presentations. ATC analysts developed formats which allowed rapid assessment of progress to meet obligation goals. Work continued to replace manual data manipulation by machine-generated summaries.

In accordance with command group direction, the ATC incorporated program execution data in its briefings. Beginning in February there were monthly variance reports on obligation performance versus command obligation goals. Development of updated obligation plans was more closely coordinated with forecast award dates in the center.

In the fourth quarter, work began to realign responsibilities for information presentation. Joint efforts of the deputies resulted in a memorandum of agreement (MOA). Under this MOA each appropriation review would have three segments: program status, by appropriation managers; summary analysis of tracked contracts, by ATC analysts; and status of selected contracts, by procurement office representatives. This increased participation in center operations would more fully integrate the center into the command acquisition process.

COST ANALYSIS DIRECTORATE

Mission

The Cost Analysis Directorate supervised and directed the cost/economic analysis mission of AMCCOM. As well as developing policies, it provided direction and guidance for cost/economic analysis throughout the command. The mission included cost/economic estimating, inflation, data base, cost review/validation, and special studies. In the area of research and methodology, cost/economic models and techniques were developed. The additional functions of selected acquisition information management systems (SAIMS), and design-to-cost (DTC), were carried out in accordance with DOD directives and governing regulations. The Directorate also supervised the AMCCOM cost/economic analysis training program, and served as the AMCCOM cost analysis career development program coordinator.4/

Organization

The Cost Analysis Directorate was organized into three divisions, with one at each AMCCOM headquarters site. The director was located at Dover, New Jersey.

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Each division performed a similar mission at its location. Cooperation between the sites resulted in standardized operations within the AMCCOM cost analysis community. The integration of the life cycle cost throughout the acquisition cycle was accomplished with the ARDEC and CRDEC sites emphasizing research and development, and the Rock Island site concentrating on operating and support cost.

With regard to the additional functions, the SAIMS branch was located at the Rock Island site, and DTC personnel operated out of the Dover site.

### Staffing and Personnel

Mr. Robert E. Lee remained the director of the Cost Analysis Directorate during FY 1986. Mr. William Seaver retired, and was replaced by Mr. Frank Larson as the division chief of the Rock Island site, while Mr. Charles Glebas served as division chief at Edgewood throughout the fiscal year.

A study which recommended an increase in overall authorized strength by 18 additional analysts to perform the SAIMS and DTC work at the three sites was approved, but its implementation was still pending at the end of the fiscal year. The overall mission of the directorate was changing because of the increased army emphasis on control of cost growth and the decrease in Congressional funding. Authorized and actual strengths were as follows:

	Authorized		Actual	
	FY 85	FY 86	FY 85	FY 86
Military	1	0	0	0
Civilian	59	58	63	59

The decrease in authorized strength was due to the implementation of the "glide path" for the decrement.

### Director's Overview

Work begun on the new missions, DTC and SAIMS, which were added to the Cost Analysis Directorate in FY 1985, continued throughout FY 1986. A plan was developed for establishing a system to insure adequate cost-schedule control and SAIMS application and coverage on AMCCOM contracts meeting established thresholds and guidelines. Formal implementation of this plan was not completed. Also, the SAIMS scheduling system was being computerized to facilitate real-time goals.

A draft AMCCOM DTC guide was published six months after the draft AMC DTC guide was published. A DTC engineer was hired and trained at a DTC workshop sponsored by DOD. Also, quarterly DTC reports listing selected DTC items were sent to AMC.

Validations represented approximately 30 percent of the directorate's available man hours. Support for command elements, PMs, and other major subordinate commands continued under matrix management. The directorate continued to support commercial activities in the form of two full time employees, plus support to several source selection evaluation boards (SSEB), specifically, the 120mm mortar, the sense and destroy armor (SADARM) round, and Lone Star AAP.

The role of cost analysis was becoming broader in the performance of studies, plant evaluation, and numerous command quick response studies to other MSC weapons.

#### Major Activities

Major activities for the directorate included SSEBs, DTC, SAIMS, the cost data base, validations, independent cost estimates, independent government cost estimates, and study requirements.

SSEB requirements were for the SADARM program, performed in FY 1986, and both the 120mm mortar and Lone Star AAP SSEBs, started in FY 1986 and continued into FY 1987. Papers were published on DTC and the procurement process, and cost-estimating relationship equations for conventional ammunition. A draft report on independent government estimates was published, and a draft report on "Methodology for Low Resolution Costing for Systems" was being completed.

The cost data base work was a research program designed to provide an automated data base for AMCCOM. The system was being tested.

Major validations performed by the directorate included the 120mm mortar, SADARM, the Abrams tank, the DSACS level II, the M42A3 Duster, the XM722 60mm smoke cartridge, and the XM135 binary warhead.

Major studies were on the Abrams tank base-line cost estimate, the M109A2/A3 howitzer improvement program independent government estimate, the XM915/916 cartridge site selection, a comparison and contrast of the cost/schedule controls system and the uniform cost accounting reporting system, the forward air defense system cost and operational effectiveness analysis, the XM40 protective mask, and the job scheduling model. The ad

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scheduling model had as its purpose maintaining efficient production rates with a stable, fully utilized personnel level at the GOCOs. Cost analysis provided cost/quantity factors to estimate unit prices.<sup>5/</sup>

### PERSONNEL AND TRAINING DIRECTORATE

#### Mission

The mission of the Personnel and Training Directorate was to plan, manage, and administer the command civilian personnel, military personnel, career development, and training programs. It served as the program director of the AMCCOM alcohol and drug abuse prevention and control program and the employee assistance program. It directed the operation of all command programs relating to morale, welfare, and recreation; military and civilian nonappropriated funds; food service; military and civilian marksmanship; community services; and child support services.

#### Organization

On 27 July 1986 a number of organizational changes took place. The Adjutant General Division became a part of the Information Systems Command. The Office of the Chief, Civilian Personnel Division, was eliminated with the division reorganized into two divisions. These were the Civilian Employment and Compensation Management Division and the Performance Management, Training, and Labor Relations Division. The position of director was redesignated a civilian position rather than military.

The configuration of the Personnel and Training Directorate, after the changes, was an office of the director and six divisions/offices: the Civilian Employment and Compensation Management Division; the Performance Management, Training, and Labor Relations Division; the Military Personnel Division; the Alcohol and Drug Control Office; the Community Activities Office; and the Word Processing Center.

#### Staffing and Personnel

Colonel Malcolm B. Shaffer continued as director until 24 June 1986, when he retired from active service and Mr. Milton B. Bessie became director. His office was augmented with an administrative officer and a secretary.

The active and total personnel strengths of the Personnel and Training Directorate were 10 military and 40 civilian personnel with a total strength of 50 personnel and 4 positions.

Major Activities

Alcohol and Drug Control Office

The Alcohol and Drug Control Office directed the command alcohol and drug abuse prevention and control program (ADAPCP), the adjunct employee assistance program (EAP), and the command fitness/wellness programs. It provided guidance and assistance to commanders of subordinate installations/activities on all matters relating to the command ADAPCP/EAP and to fitness/wellness initiatives. It also assured that the total intent of the basic public laws buttressing the ADAPCP/EAP would be accomplished.

FY 1986 saw AMCCOM moving toward implementation of the proposed health opportunities program for executives (HOPE). This one-year pilot program would offer a comprehensive fitness/wellness program to 250 AMCCOM executives. At the close of FY 1986, HOPE requirements had been submitted to procurement so a contract could be let for a health opportunities package.

The AMCCOM ADAPCP consistently exceeded enrollment goals, with an overall FY 1986 success rate of 84 percent. Supervisory and nonsupervisory training goals were exceeded. Cumulative dollar savings for FY 1986 reached \$828,673. The program, however, only reached 13 percent of the problem-prone people in AMCCOM, so the potential savings could have amounted to \$7,360,867.

Also, the office prepared to initiate mandatory drug testing of AMCCOM employees in critical positions, in response to Executive Order 12564, dated 16 September 1986.

The AMCCOM ADAPCP continued to offer help and hope to the troubled employee, at the same time offering great benefit and savings to management. Measurable results and savings were in direct proportion to resources allocated to the program.

Civilian Employment and  
Compensation Management Division

The Civilian Employment and Compensation Management Division established civilian personnel management program standards, plans, goals, and objectives, and monitored and analyzed the effectiveness of AMCCOM performance against these criteria. The division also developed, implemented, and coordinated policies, plans, regulations, and programs in the areas of position management and classification, recruitment, and placement; career management; pay factors, grades, and environmental pay differentials; Equal Opportunity Standards Act; and priority placement.

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programs; special employment programs; performance management recognition system; travel; commercial activities; and reduction in force, transfers of function, and reorganizations. In addition, the division provided staff assistance and technical advice to command installations and activities in these areas.

### Logistic and Acquisition Management Program

The AMCCOM logistic and acquisition management program (LOGAMP) review board was established and chartered in April 1986. The review board members were representatives of the six civilian career programs included in LOGAMP: contracting and acquisition, engineers and scientists, material maintenance management, quality and reliability assurance, transportation, and supply.

A total of eight nominees were forwarded to AMC, of which seven were approved for inclusion into the LOGAMP program. The nominees and their LOGAMP advisors were scheduled to attend an individual development plan seminar in November 1986.

At the close of the fiscal year, 26 AMCCOM employees were participating in LOGAMP. Of these, one participant requested graduation, which was approved by the DA LOGAMP committee.

### Civilian Personnel Surveys/Staff Assistance Visits

Fourteen surveys/staff assistance visits were scheduled during FY 1986 and nine were made. Scheduled visits to CRDEC, the Defense Ammunition Center and School, Watervliet Arsenal, McAlester Army Ammunition Plant, and Rocky Mountain Arsenal were cancelled due to lack of travel funds.

Four AMCCOM installations were scheduled for full scale surveys by the deputy chief of staff for personnel (DCSPER) in FY 1986. Consequently, an additional purpose in the above surveys was to assess the civilian personnel programs at these four installations in preparation for the DCSPER surveys. While the DCSPER surveys were ultimately cancelled for FY 1986, the planned full-scale approach was retained.

### Surplus Employees

Throughout much of FY 1986 considerable effort was directed toward attaining a reduction of approximately 2,600 employees in AMCCOM headquarters by the end of FY 1988 without resorting to separations by reductions in force.

On 10 July 1986 the command developed an implementation plan for attaining this objective. AMCCOM installations developed and submitted plans to attain their authorized strength levels by the

end of FY 1988, and identified surplus employees for priority placement in those situations where there were problems. Through these intensive efforts, the command reached FY 1986 employment levels without any adverse impact on employees.

#### AMCCOM Exchange Program

The AMCCOM exchange program was established and announced in April 1986 for the expansion and enrichment of functional and managerial skills of AMCCOM senior civilians. AMCCOM regulation 690-4, AMCCOM Exchange Program, was developed and published.

Nominations were solicited twice during FY 1986, resulting in the receipt of one female participant nomination and two assignment nominations. The nominations were reviewed by the senior level approval board. The board matched and approved a 90-day assignment for the participant nomination to a position shadowing the associate technical director for systems concepts and technology at ARDEC.

#### Classification Appeals Processed

AMCCOM had DA-level appellate decision authority for civilian positions under its jurisdiction. During FY 1986 five appeal decisions were rendered. One of the decisions was a group appeal by eleven individuals. In each case, the AMCCOM decision supported the position classification assigned by the servicing civilian personnel office.

#### Senior Executive Service and Scientific/Technical Positions

A reorganization of the armament center at Dover and the chemical center at Edgewood required new and revised senior executive service (SES) job descriptions, and some minor updates for positions which could be traced from the old to the new structure. A request was submitted for a proposed SES position at Edgewood for an associate technical director for technology.

A proposed scientific/technical (ST) non-SES position for CRDEC was submitted to AMC. It was entitled, "scientific advisor for biotechnology." Criteria for ST positions were very different from the criteria for SES positions, since ST positions were nonmanagerial, scientific positions created by the scientific capability of the incumbent. AMCCOM had one approved scientific/technical position at ARDEC, the specialist for propellants, which was identified for abolition.

#### High Grade Management

## Resources Management

In addition to the "Major Frost" study, discussed later in this chapter, a significant reduction in high grades resulted from the planned phase down of the project manager (PM), SGT York, following the decision by the secretary of defense to terminate the program. The phase down was planned to be consistent with the AMCCOM CG's guidance that PM personnel be retained as long as necessary to accomplish an orderly phase down, and that no PM employee be penalized as a result of the reorganization. At the end of FY 1986 the high grade base point for PM SGT York was 15, a reduction of 25 from the end of FY 1985.

The command composite high grade base point at the end of FY 1986 was 2,162, which was 75 less than the FY 1985 total base point. The number of GS/GM-13 and above positions filled at the end of FY 1986, including temporaries, was 33 less than the number of filled positions at the end of FY 1985. The number of filled permanent high grade positions was 138 less at the end of FY 1986 than at the end of FY 1985.

### Civilian Performance Management, Training and Labor Relations Division

The Civilian Performance Management, Training, and Labor Relations Division provided the commanding general, top managers, and subordinate installations advice and guidance on aspects of personnel management relating to training, labor relations, employee benefits, discipline, incentive awards, suggestion program, leave administration, and performance appraisal systems. The division also coordinated, managed, and administered the Combined Federal Campaign (CFC), on behalf of the commanding general, for all federal agencies in the Quad Cities and surrounding area.

#### Training/Funding

The personnel and training director was the operation and maintenance, army (OMA) program manager for budget 8 funding. FY 1986 was the first full year of contractor logistics support (CLS) contractual effort accomplished in accordance with guidance that such contractual effort would be funded as if being accomplished in house.

Program 8 funding supported the portion of CLS contracts for training devices which were at US Army Training and Doctrine Command locations. The CLS contracts were for three families of training devices: the training set fire observation, the multiple integrated laser engagement system, and the conduct of fire trainers for the M1 tank, M60A3 tank, and M2/M3 Bradley fighting vehicle. Before FY 1986, the P8 program was used only for the operation of the Defense Ammunition School, the short term

training of AMCCOM military personnel, the conduct of the national match pistol and rifle maintenance course at Rock Island Arsenal, and the centralized funding of executive and management development of AMCCOM civilians.

The FY 1985 program 8 effort totaled \$6,223,000. The FY 1986 program, including CLS, was \$9,503,700. The FY 1987 program was forecast to be \$16 million, with \$11,548,000 identified for CLS.

#### Combined Federal Campaign

The AMCCOM Personnel and Training Directorate had administrative responsibility for the annual CFC. The CFC was the only authorized fund raising method for all areas of the United States in which 200 or more federal employees were located.

The Rock Island/Scott County CFC encompassed all federal offices located in Rock Island County, Illinois, and Scott County, Iowa. For management purposes, the campaign was broken into six divisions: AMCCOM headquarters, Rock Island Arsenal, tenant activities located on Rock Island Arsenal, post offices, Rock Island County federal offices, and Scott County federal offices.

The 1985-86 campaign was the most successful ever, achieving 110 percent of the established \$370,000 goal.

#### Federal Employees Retirement System

The president signed a new civilian retirement system into law on 6 June 1986 to become effective on 1 January 1987. All employees hired after 31 December 1983 were automatically covered by the federal employees retirement system (FERS). Other federal employees not covered by the plan could transfer to FERS during FY 1987.

The FERS was a three-tiered system consisting of Social Security benefits, a basic benefit plan, and a savings plan.

#### Sick Leave

Special emphasis was placed on conservation of sick leave. As a result of that emphasis, AMCCOM, for the previous three years, had maintained a sick leave usage rate that was one of the lowest among the AMC MSCs. However, during FY 1986 AMCCOM experienced an increase of 1.9 hours per employee. Subordinate installations and activities increased their efforts to effect viable plans to control sick leave usage.

The Federal Employee's Compensation Act

The safety and personnel offices, along with representatives of the medical staff, worked to reduce job-related injuries and illnesses, and the resultant costs. The program was moderately successful, with a reduction in the number of claims. However, costs increased during FY 1986.

New DA Performance Management Regulation

AMCCOM implemented a new DA performance management regulation during FY 1986. GM employees were covered for the rating period ending 30 June 1986. GS/WG employees were to be covered at the beginning of each employee's next rating period.

When fully implemented, all employees except senior executive service would have their performance appraised under the same regulation, with the same forms, rating definitions, and rules. All AMCCOM employees would be under the new appraisal regulation by April 1987 and would have completed a rating period cycle under the new system by April 1988.

FY 1986 Suggestions Program

The FY 1986 suggestion program was successful. First year savings exceeded \$12.3 million, over 300 percent of the DA established goal. Submissions of suggestions exceeded the DA goal by 14 percent. AMCCOM also achieved 99 percent of its adoption goal, which was to adopt at least one out of four suggestion submissions.

Labor Management Relations

The Department of the Army identified two health related matters for greater control initiatives by management. A revised regulation mandated drug abuse testing for civilian employees working in critical positions involving aviation, security, personnel reliability, and alcohol and drug abuse. Urinalysis testing was prescribed for current and prospective employees in these critical occupations. The requirement was challenged by one union in the courts.

A second matter was the army policy to control smoking. Uniform guidelines to control smoking were developed, as well as an educational program requirement to encourage smoking prevention and cessation. Smoking within buildings became prohibited except in approved areas.

Resources Management Community

A new development program was instituted for highly competent and talented GS-11 and above employees in the resources management community. The resources management fellowship program was announced, and 63 applications were received. A pilot group of 12 was selected by a screening panel. Selectees could spend up to 12 months assigned to developmental projects in functional areas other than the one to which they were permanently assigned.

Community Activities Office

The mission of the Community Activities Office was to provide executive control and staff supervision for all programs relating to morale, welfare, and recreation (MWR); nonappropriated funds; food and food services; Army Community Services; child development services; family advocacy; and marksmanship activities.

Child Development Services

Planning continued on a major construction project for a child development center (CDC) at RIA, which slipped from FY 1987 to FY 1988. The interim CDC at RIA was active and filled to capacity. RIA also continued to operate a family child care (FCC) program. The program, as of 30 September 1986, had 13 sets of quarters certified for child care. Both the CDC and FCC had waiting lists.

AMCCOM received \$90,000 in program development increment package (PDIP) funds for the FCC programs. This money was allotted to RIA, Pine Bluff Arsenal (PBA), and ARDEC, and was used to fund the FCC director position, to procure equipment and supplies, to provide training, to publicize the program, and to provide TDY money to attend the seventh annual CDS workshop.

Army Community Services

Two PDIPs were funded: one for financial planning and assistance, and one for army family services. The latter included information referral and follow-up, relocation, exceptional family members, and foster care.

In the first PDIP AMCCOM received \$30,000 which was provided to ARDEC, PBA, and RIA. The second PDIP was in the amount of \$35,000 and was provided to PBA and RIA. These PDIPs were utilized to reimburse salaries, obtain equipment and supplies, contract services, provide training, publicize programs, and provide TDY funds to attend the annual ACS workshop.

Morale, Welfare, and Recreation

The MWR nonappropriated fund (NAF) accounts were consolidated into an installation morale, welfare, and recreation fund (IMWRF). This fund included all installation NAF accounts, except the post restaurant and the civilian welfare fund, and became effective on 1 October 1986.

AMC conducted two workshops to assist in the establishment of the IMWRF. The first of these workshops was for MSCs only, while the second workshop was for MSCs and installations. AMCCOM had representatives at both workshops.

Military Personnel Division

The Military Personnel Division was responsible for the overall military personnel programs and administration within AMCCOM. The Military Personnel Office (MILPO) provided military personnel support for records and other allied actions to all AMCCOM arsenals, ammunition plants, headquarters, and other tenant units co-located with the arsenals.

The division was organized into three branches. The Command Management Branch was responsible for personnel procurement, special management programs, and personnel accountability. The MILPO provided personnel records and allied support, awards processing for the command, defense eligibility enrollment reporting personnel, and special actions. The Training and Testing Branch controlled service school quotas, civilian institution training, and administration of the various military personnel tests.

The Military Personnel Center announced that all advanced education requirements board (AERB) and training with industry (TWI) positions would be invalidated and each program would restart. The command submitted 82 AERB positions, of which 72 were temporarily approved, and 43 TWI positions, all of which were temporarily approved.

DA also announced the revised officer personnel management system coding of all commissioned officer positions within the army. The Military Personnel Division took the lead for the command to identify the revised coding for AMCCOM. These changes became effective on 1 October 1986.

Word Processing Center

The Word Processing Center (WPC) provided word processing support to the Personnel and Training Directorate, the Management Directorate, the Safety Office, the Integrated Logistics Support

Office, the Information Management Directorate, and the organizational effectiveness staff consultant.

During FY 1986, telephone dictation equipment was installed and made fully operational. Additionally, specifications for new equipment were submitted to the Procurement Directorate and a contract was awarded. The award, however, went to a company that was not acceptable to the WPC, so the award was terminated. A new bid was being offered to several vendors. Finally, a study of the WPC recommended an upgrade of equipment with four full-time personnel.

#### INFORMATION MANAGEMENT DIRECTORATE

##### Mission/Organization

Realignment of the information mission area (IMA) continued throughout FY 1986.

On 1 October 1985 the Information Systems Command (ISC) issued orders appointing David L. O'Melia as the director of the ISC element at Rock Island. He also assumed operational control of all information mission areas as the AMCCOM information manager and as the director of information management at the Rock Island site. Directors of information management (DOIM) at ARDEC; Watervliet, Pine Bluff, and Rocky Mountain Arsenals; and McAlester and Hawthorne AAPs were appointed as directors of their respective ISC elements.

Responsibility for centralized computer operations and common user visual information functions transferred from AMCCOM to ISC on 1 October 1985. Transfer at army industrial fund installations was deferred until 1 October 1986 to allow time for development of financial procedures.

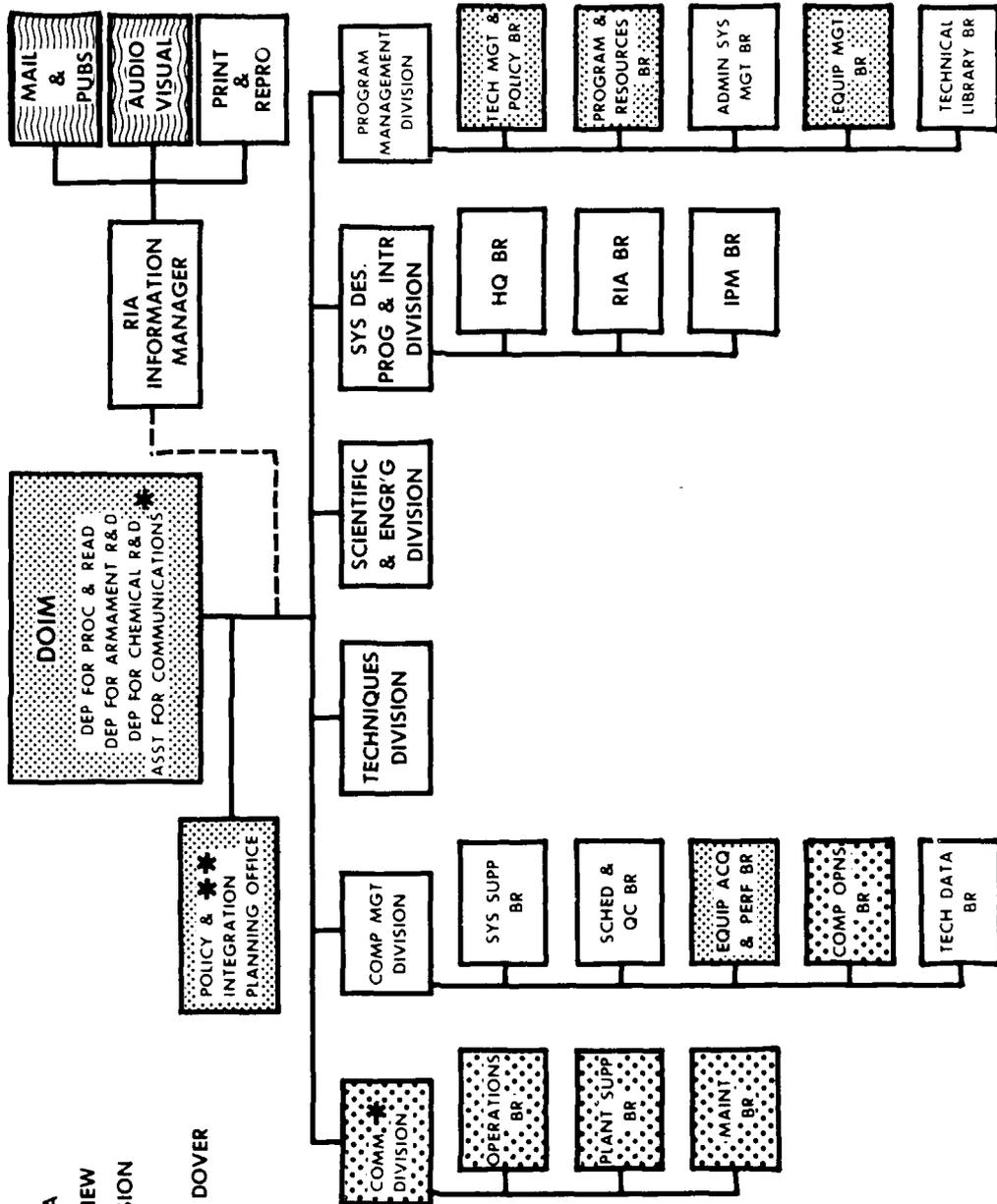
On 27 July 1986 the Information Management Directorate was officially established integrating resources of the IMA (see organizational chart on following page). Functions included in the new organization were automation, communications, records management, audiovisual services, the technical library, and technical data operations. Records management, audiovisual, and printing and reproduction functions of Rock Island Arsenal remained under the direct control of the RIA information manager, with staff supervision provided by the AMCCOM information manager, until completion of RIA's commercial activities review.

The new directorate included both AMCCOM and ISC personnel with a total authorization of 483 spaces. A total of 338 spaces remained AMCCOM assets, with 145 assigned to ISC. The ISC element was made up of 78 former Communications Command employees plus 67

# AMCCOM INFORMATION MANAGEMENT DIRECTORATE ROCK ISLAND SITE PHASE 1

**NOTE:**

- ISC TDA
- AMC & ISC TDA
- UNDER CA REVIEW
- STAFF SUPERVISION
- DUAL HAT
- DUTY STATION COVER



Information Management Directorate

automation personnel transferred to ISC concurrent with the establishment of the Information Management Directorate. These 67 included the AMCCOM information manager, the deputy, 63 centralized computer operations personnel, and two standard systems programmers.

The first phase of the personnel realignment was taken with minimal organizational change to assure that there would be no adverse personnel impact and no disruption of service to users.

In August 1986 an AMC mini-functional areas assessment (FAA) of the IMA was presented to the vice chief of staff of the army (VCSA). The FAA identified all IMA manpower resources throughout AMC. The Rock Island site authorized positions were displayed as follows:

Automation	332
Communications	78
Visual Information	24
Records Management	29
Printing/Publications	47
Technical Library	4
Administrative/Clerical	<u>64</u>
TOTAL	578

Total AMCCOM IMA resources were as follows:

Automation	615
Communications	173
Visual Information	71
Records Management	100
Printing/Publications	92
Technical Libraries	43
Administrative/Clerical	<u>110</u>
TOTAL	1,204

Decisions resulting from the mini-FAA included that system programming, integration, and design personnel and their pro rata share of support personnel would remain AMC assets. Central systems design agencies, like the Automated Logistics Management Systems Activity (ALMSA) and the Logistics Systems Support Activity, would remain AMC assets. Personnel performing all other IMA functions, unless specifically exempted, would transfer to ISC on 1 April 1987. Technical libraries would remain AMC assets, under the operational control of the DCIM, pending SA decision.

## Resources Management

The standard installation organization (SIO) addressed in army regulation (AR) 5-3 and subsequent alternatives provided core models for typical and small organizations. This structure could not feasibly accommodate a large organization and became particularly complex under the single installation DOIM concept. The VCSA directed that only one DOIM organization be established at each geographic location. AR 5-3 called for all information management operational functions to co-exist in one division. At AMC/ISC, this division would have consisted of over 300 personnel with multi-functional responsibilities.

Concerns over the implementation of this SIO were presented and discussed between DA, ISC, the Seventh Signal Command, and AMC/ISC. Following that, the AMC/ISC directors met and formulated a structure that would best provide the needs of the mission and assure integration of all IMA disciplines. Mission and function statements were then developed by an MSC working group for presentation to the Seventh Signal Command. The newly approved structure provided a core model for a large organization of 400 or more (See the chart on the following page). Operational disciplines were separated by level of responsibility and a phased approach was developed to provide for full integration of all functions into a single information service support center.

### Staffing and Personnel

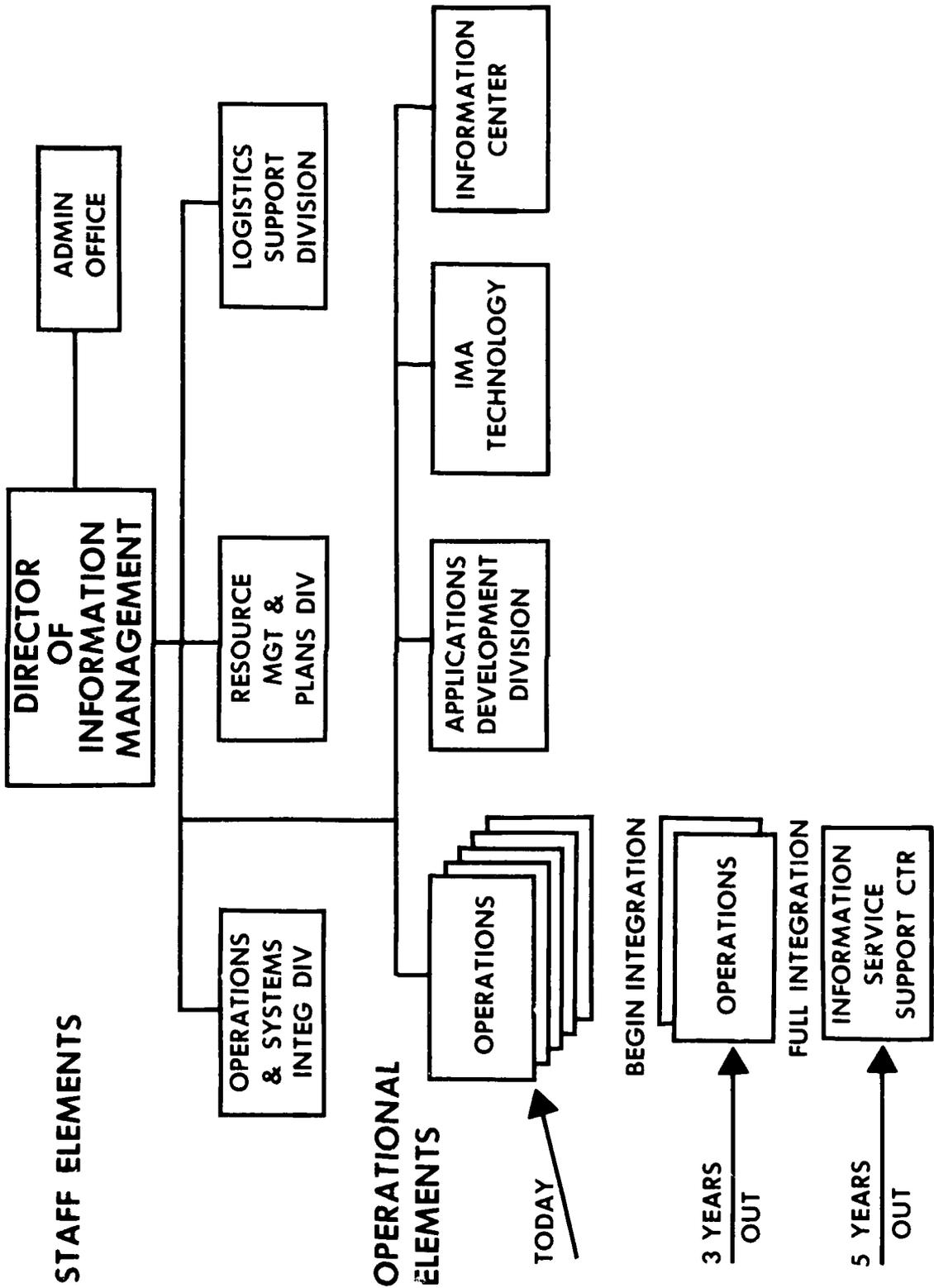
Throughout FY 1986, David L. O'Melia remained the director and Clifford L. Harrell remained the deputy director.

At the beginning of FY 1986 the authorized civilian employment projection of the Management Information Systems Directorate and its actual strength were 353 and 368, respectively. Its authorization was reduced 2 spaces due to an efficiency review reduction, and 12 spaces due to the implementation of the most efficient organization (MEO) resulting from a commercial activities review. There was a hiring freeze imposed by the chief of staff on 6 February 1986. This was lifted on 3 April 1986 when the FY 1986 civilian hiring plan was implemented and the civilian employment estimate (CEE) was established for the FY 1986 end authorization. The CEE and the actual strength for the Information Management Directorate at the end of FY 1986 were 492 and 464, respectively.

### Organizational Overview

During FY 1986 the Information Management Directorate emerged, integrating all information functions within one organization. The directorate included functions which remained in the AMC/ISC table of distribution and allowance (TDA), as well as those which belonged to the Information Systems Command.

# SIO FOR LARGE IM ORGANIZATIONS



## Resources Management

Functions transferred remained intact. However, additional workload was experienced in the administrative support areas.

The financial area experienced radical changes during FY 1986. The directorate, for the first time, had responsibility for managing its own resources, not only for automation, but for all of the IMA disciplines at all AMCCOM-ISA locations. This was evidenced by a growth in resources from \$10 million in FY 1985 to over \$45 million in FY 1986, and a projection of over \$80 million in FY 1987.

Increased emphasis was also placed on security functions. Due to the expansion of numerous directorate projects, additional workload was expected in both the data processing and communications security areas. These projects included the defense standard ammunition computer system, the army materiel plan modernization, and the local area network (LAN).

Automation demands continued to steadily increase. The growth rate for automation was 20 percent per year. AMCCOM could not meet its direct manpower reductions without continued growth in automation equipment. The implementation of the DSACS was expected to provide the ADP equipment foundation for the future. The DSACS maxi/mainframe computer and the projected addition of two maxi/mainframes would provide computer processing capabilities to meet the projected demand.

The directorate acquired multiuser microcomputers as fast as funds became available. However, it needed the local area network (LAN) to tie together its multiuser microcomputers and provide the capability for full exchange of information. This was an unfunded requirement valued at \$1.7 million.

The AMCCOM DOIM organization was actively involved in the development of automation architecture plans to provide computer/communication interoperability and standardization within AMCCOM. Among the interoperability bridges which were built, or were in the development process, were multi-site terminal access, full file transfer, PRIME computer network to MILNET (electronic mail), teleconferencing, AMCCOM automated information management steering (AIMS) group, establishment of the interoperability working group, information management plan, blueprint for AMCCOM computer security, workplace automation policy, command microcomputer policy, and information systems planning phase I. The AIMS group was chartered as a command-wide vehicle for managing information system priorities, and was comprised of all command deputies, research and development center technical directors, and site directors of information management.

The massive communications-electronics support required for AMCCOM headquarters, the manufacturing and depot needs, and both GOCO and RCO installations continued in FY 1986. As these needs evolved, they responded by providing new communications. The communications center (TCC) processed a total of 553,607 messages in FY 1986. This was made up of 401,171 narrative; 152,436 magnetic tapes; and 99,999 card messages. The installation of the automated AUTODIN interface, which diverted messages directly to the computer systems, caused these figures to decrease during FY 1986. The speed of TCC service was improved with the installation in May 1986 of a new modem connecting the optical character reader directly to the transmission line. The Information Management Directorate also operated TCCs at nine separate COMUS installations and an unclassified network to exchange messages with the 18 inactive AAPs. This processed 10,434 messages, included in the narrative total listed above.

Approximately 40 networked personal computer systems consisting of 660 terminals, printers, and other peripheral devices were installed during the year. Additionally, 880 PRIME terminals and peripheral equipment were supported through installation, moves, and troubleshooting during the fiscal year. Approximately 3,550 phones were installed, relocated, or removed due to personnel relocations. Approximately 2,000 phones were replaced with single line touch tone phones. A total of 26 electronic key telephone systems supporting 416 users were installed to replace obsolete or incompatible phone systems. The Maintenance Branch of the TCC received 926 work orders during the fiscal year, and completed 789.

The goal to reduce commercial telephone toll costs at 10 percent of the prior year level was exceeded. During FY 1985, \$449,275 was expended for telephone toll and wide area telephone service by reporting activities. GOCO army ammunition plants and AMCCOM activities that were tenants on other than AMCCOM installations were exempt from reporting. During FY 1986 \$368,250 was expended, a reduction of 18 percent of FY 1985 costs.

#### Major Activities

##### Defense Standard Ammunition Computer System

A contract was awarded on 20 June 1986 which provided for the ADP equipment and software required to run the defense standard ammunition computer system (DSACS). The DSACS ADP hardware contract formed the base for totally modernizing the data processing capabilities at the AMCCOM central computer facility, with provisions for additional computer support during the subsequent 5-years at the Rock Island site.

## Resources Management

Installation of the DSACS computer equipment was started during July 1986. An AMDAHL 5880 central processing unit (CPU), three boxes of disk controllers, eight boxes of disk storage, and an additional stand-alone air conditioning unit and motor generator were completed. Other major installations would be additional disk storage, a battery back-up power system, a local area network, and 58 personal computers located in the various DSACS user directorates.

During September the directorate developed a course of instruction to be taught to users of the DSACS IBM PC microcomputers.

### Installation of a PRIME Model 9955

A PRIME model 9955 superminicomputer was installed in building 390. This system was to be used primarily to run the plant job scheduling model that was developed by the Readiness Directorate and used by other major directorates. Initially, it was also to be used for other systems analysis/operations research studies. The new system was approximately 3-4 times faster than the existing PRIME model 750 being used for this purpose.

### Perkin-Elmer Computer System

The system supporting the procurement automated document and data system (PADDS) was upgraded on 26 January 1986 with two megabytes of memory and two additional 370 megabyte disk drives. The disk upgrade was required for the necessary expansion of the PADDS data base. The memory, as well as the additional disk capacity, was required to facilitate ALMSA release 72.20, implemented in FY 1986. As a result of this upgrade, an increase in processing speeds and terminal response time would be achieved.

### Maintenance Contract

A contract was awarded for the maintenance of all National Advanced Systems CPUs and disk equipment. Several maintenance contracts were combined and recompeted under one contract. This effort resulted in a savings of approximately \$168,000 per year. The directorate was in the process of recompeting maintenance for two other groups of ADP equipment. Like savings were expected to result from these actions.

### Mini-FAA on Industrial Mobilization

The purpose of the subject briefing, held on 28 April 1986 at Fort Belvoir, Virginia, was to advise the vice chief of staff on the capability of the industrial base to equip 11 representative battalions covering field artillery, anti-armor, attack

helicopter, tank, and mechanized infantry.6/

This was the first time that on-line, interactive capability and color graphics, provided by an IBM PC, were used to display this information. General Thurman gave unqualified praise for the project, and told everyone in attendance to adopt it, use it, and expand it.

#### Video Teleconferencing

The VENUS teleconferencing network became operational 1 April 1986. This system represented a break-through in video conferencing in that it provided a switching capability to permit multi-point access. The ten-room network gave all major subordinate commands of AMC the ability for quick response to headquarters and all other MSCs. The "Tempest" construction gave users the capability to have classified conferences up to SECRET between each point.

In the six months the VENUS teleconferencing room was in operation, 262 conferences were held, with 1,541 personnel attending. A total of 424 trips were avoided. The cumulative savings associated with avoided travel costs for the six month period was \$133,800. This represented 36 percent of all savings AMC-wide.

#### Construction of Staging/Storage Area

Approximately 4,000 square feet of floor space on the third floor of building 104 was enclosed to provide a staging/storage area for the directorate's ADP equipment and supplies. This area would provide adequate protection from theft and vandalism and the staging area necessary for equipment bar-coding, testing, and distribution.

#### New Computer Room

Design funds in the amount of \$20,000 were provided RIA's facilities engineers from the Installation Support Directorate to facilitate the design effort of the computer room on the second floor, building 350. This project included renovation of office areas on the west side of the second floor, center bay, of building 350 to accommodate the new ISC director, and construction of solid walls necessary for preparation of the new secured commuter center on the second floor.

#### Special Security Office Equipment Upgrade

## Resources Management

A complete upgrade of the special security office (SSO) communication center was completed in March 1986, converting it from mode V to mode I. This communications center separately processed 16,257 messages in FY 1986. Facsimile transmissions over both systems (SSO and TCC) were 110,305 pages, an increase over the previous year. In contrast to the new SSO equipment, the main TCC continued to have problems with its DCT 9000 equipment, much of which was over 15 years old.

### Lake City Telephone System Replacement

A new Northern TELECOM SL-1 telephone system was installed and accepted for operations at the Lake City Army Ammunition Plant in February 1986. This was a state-of-the-art digital system which replaced a step-by-step electro-mechanical analog switch installed in 1973. The new system had a capacity for 1,000 telephone lines, 820 of which were connected. The cost of this system was \$540,000.

### Installation of FAST Terminal at Indiana AAP

A new CPT 8100T FAST (fast, accurate, simple, tempest) terminal for AUTODIN access was army prototype tested and accepted for use at the Indiana Army Ammunition Plant in January 1986. The system was secured for transmission of information through SECRET in June. The system provided an electronic message distribution system for unclassified narrative and data pattern messages to any personal computer on the installation. Messages to the world-wide AUTODIN were transmitted and received via a secure circuit to an automated multimedia exchange at Fort Benjamin Harrison. This satisfactory operation of FAST at Indiana resulted in programmed replacements of all AAP AUTODIN terminals with the new FAST system.

### Enlarged Generator Installation

The emergency auxiliary generator for the TCC in building 350 was replaced to include all of the TCC and telephone areas. The old generator was antiquated and did not support AUTODIN terminals.

## MANAGEMENT DIRECTORATE

### Mission

The mission of the Management Directorate was to provide direction for, and overall management of, the AMCCOM manpower, mission, and organization and force management programs; the productivity and management studies programs; the commercial activities program; and closure, consolidation, reduction, and

realignment (NRR) actions. It also formulated and recommended policies, established program objectives, and developed plans and procedures for the implementation of these programs.

The Management Directorate was organized into three divisions: the Manpower and Force Management Division, the Productivity and Management Studies Division, and the Commercial Activities Division. The Manpower and Force Management Division established and implemented AMCCOM force development program objectives. It also integrated human resources management with AMCCOM strategic planning in order to optimize the acquisition, deployment, and use of personnel. Along with this, the division developed organization structures and functional alignments that optimized mission accomplishment. Finally, it managed the AMCCOM NRR functions and served as the deputy command career program manager for the manpower and force management career program.

The Productivity and Management Studies Division planned, directed, administered, and evaluated programs such as the AMCCOM management analysis and the army performance oriented review and standards, providing staff supervision of the work measurement programs of subordinate AMCCOM organizations. In addition, it provided staff supervision, direction, and control over AMC management engineering program organizations located at AMCCOM.

The Commercial Activities Program Division provided AMCCOM centralized and continuing command direction, control, and coordination for the commercial activities program, including cost-based reviews.

#### Staffing and Personnel

Mr. Gerald T. Cannon continued as the director of the Management Directorate throughout FY 1986, and Mr. Roger T. Logan continued to serve as the deputy director. The directorate's personnel strength for FY 1986 at all headquarters sites was 102 civilian employees authorized and 93 actually assigned.<sup>7/</sup>

#### Director's Overview

The Management Directorate again made progress against a broad range of challenges during FY 1986.

Analysts in all divisions provided assistance to a number of studies and reorganizations, chief among them being the organizational review of the headquarters conducted by Major Monta Frost. Other major efforts were the implementation of the program manager matrix concept, and the transfer of certain command ADP

## Resources Management

spaces to the Information Systems Command. Eleven management studies were completed during the year in a variety of areas.

Control of the command "glide path" was again a primary concern. All AMCCOM elements were assigned targets for civilian employee estimate (CEE), workyears (WY), and annual financial target (AFT). To aid in their tracking, a microcomputer was obtained and a system developed for easy display and update. The use of this system was briefed to the AMCCOM CG and DCGs, all directors and office chiefs, the AIF installation commanders, resource managers at other major subordinate commands, as well as AMC's DCG for materiel readiness, the comptroller of the army, and the AMC CG. These latter three briefings assisted the command in obtaining an additional \$5 million in AFT, which allowed the command to continue a higher rate of overtime. All "glide path" targets were met due to continual monitoring.

Large strides were also made in the productivity area. Significant accomplishments included the expansion of the internal control program to all AMCCOM elements, expansion of the quality circle program and the "sharing better ways of doing business" system, and the establishment of a productivity exchange hotline. The command reported cost control initiative program savings of \$285 million, which accounted for 20 percent of total savings reported in AMC and 50 percent of hard dollar savings in AMC.

The efficiency review program achieved some very significant results during the year. For FY 1986, a total of 8 reviews were completed, encompassing 632 spaces, and achieving a saving of 43 spaces and \$3.5 million in budgeted dollars.

Major milestones were reached in the commercial activities area, with in-house decisions reached for the data entry and Watervliet base operations studies, and a contractor decision announced for Rock Island Arsenal base operations.

### Major Activities

#### Management Studies Program

During FY 1986 11 management studies were completed on ammunition gages, supply and equipment, value engineering change proposals, the skill mix, terminations for default, planning and control of capital equipment, foreign military sales case closures, the fund flow, teleconferencing, food service inspection, and discount air fares.

In addition to these studies, several special projects were completed. The first management analysis award was established, and winners were selected and announced in the local government

and community newspapers. A data bank usage survey was conducted and results were issued to staff elements. Defense Ammunition School training was provided to portions of the Management and Production Directorates for a hands-on, visible review of AMCCOM's end items. A workshop was held with several of AMCCOM's prime contractors under the theme of improving productivity and quality of government end items.

To promote esprit de corps of the management analysts at the various major subordinate commands, a network of idea and verbal interchange on studies was established by the Studies Branch at AMCCOM. The first action taken was the interchange of fiscal year studies plans and selected studies that could prove useful AMC-wide. The same process was encouraged between the studies personnel at AMCCOM subordinate installations.

#### AMCCOM "Glide Path"

AMC's total civilian strength as of 30 September 1986 was 113,572. This was 529 personnel, or one half of one percent (.005), below the AMC FY 1986 CEE of 114,101. Performance of the individual AMC MSCs is shown below:

Element	Strength	Target	Diff.	Variance
AMCCOM	21,469	21,538	- 69	-.003
AVSCOM	5,370	5,256	+114	+.022
CECOM	8,659	8,695	- 36	-.004
DESCOM	38,781	38,857	- 76	-.002
LABCOM	4,243	4,250	- 7	-.002
MICOM	7,495	7,492	+ 3	+.0004
TACOM	6,133	6,117	+ 16	+.0002
TECOM	8,818	8,853	- 35	-.004
TROSCOM	4,125	4,148	- 23	-.006
USASAC	762	755	+ 7	+.009
MSC Total	<u>105,855</u>	<u>105,961</u>	<u>-106</u>	<u>-.001</u>
AMC Grand Total	<u>113,572</u>	<u>114,101</u>	<u>-529</u>	<u>-.005</u>

Four MSCs exceeded their FY 1986 CEE while the other six were slightly below it. AMCCOM's actual strength was closer to its CEE than indicated above (21,509 rather than 21,469). Errors in the civilian personnel automated system made the command strength appear 40 personnel lower than it actually was. Even with the errors, however, AMCCOM's year-end strength was within three-tenths of one percent (.003) of its CEE. This was closer than the overall AMC figure (.005), and closer than all but two of the MSCs that stayed within CEE ceiling constraints.

## Resources Management

AMCCOM's performance on workyears and annual financial target was also within the assigned guidance levels, but was not as close as the CEE and strength figures. This was because workyear and AFT expenditures were not as quickly or as easily adjustable as end strength. Therefore, command elements had to be cautious and allow a "cushion" for possible error in their management of these factors to ensure that over-expenditures did not occur. This is reflected in the following figures:

	CEE	Workyear Ceiling	AFT Ceiling
Ceiling Targets	21,538	22,175	\$720,884,000
Actual Usage	21,469	22,048	\$718,252,000
Difference	- 69	- 127	-\$ 2,632,000
Percent Under Target	- 0.3	- 0.5	- 0.4

### AMCCOM Productivity Program

During FY 1986, AMCCOM prepared a broad-based productivity improvement plan which was forwarded to the AMC CG on 6 January 1986.

One of the key efforts within this plan was the modification of the cost control initiatives program (CCIP) to meet the requirements of AMC's productivity savings impact report. AMCCOM's FY 1986-93 budget program resource review (BPRR) submission showed \$37.1 million in FY 1986 hard dollar savings and \$223.7 million in FY 1986-93 cost avoidances. This submission accounted for 50 percent of the hard dollar savings and 20 percent of the total savings reported in AMC. By the end of the year, FY 1986 savings totaling more than \$600 million had been identified for tracking in the CCIP.

Another major effort during FY 1986 was establishment of a productivity infrastructure within AMCCOM to promote productivity improvement command-wide. A network of productivity advisors, a productivity exchange electronic newsletter, and a productivity hotline were established to involve all levels of the command in productivity improvement efforts.

A major new AMC-wide idea interchange program entitled "sharing better ways of doing business" (SBWDB) was established during the year. This program consisted of ideas transmitted among the MSC commanders to insure that everyone had access to good productivity ideas. AMCCOM established an automated tracking system and streamlined review procedures using the productivity advisors to ensure that all SBWDB ideas were fully considered for use in AMCCOM.

AMCCOM maintained an active quality circle (QC) program with 56 QCs at AMCCOM headquarters, Rock Island Arsenal, Pine Bluff Arsenal, Crane Army Ammunition Activity, and McAlester Army Ammunition Plant. During the year, a Pine Bluff QC was awarded the secretary of defense productivity excellence award for a project that saved more than \$1 million by reducing the gas mask rebuild reject rate. At the close of the year, efforts were well underway towards implementation of QCs at the AMCCOM Dover site under the heading "People Enhancing Picatinny (PEP)."

During FY 1986 AMCCOM received funding approval for 64 productivity capital investment projects valued at \$17.1 million. These projects were expected to return a total savings of \$22.9 million per year.

The defense regional interservice support (DRIS) program remained very active during FY 1986. At the close of the year, AMCCOM had 318 DRIS agreements providing services valued at \$99.4 million, which resulted in a total documented cost avoidance of \$20.1 million.

#### Internal Control Systems Program

The FY 1986 goal to implement the program in the remaining headquarters organizations was accomplished. Program training was provided to over 200 managers, points of contact, and program administrators.

#### Commercial Activities Cost Studies

Pine Bluff Arsenal released its solicitation package for installation support on 31 January 1986. No bids were received. AMCCOM recommended termination of the study and the accomplishment of work requirements with in-house forces. At the end of FY 1986 DA was still considering the recommendation.

During FY 1986 ARDEC progressed with its installation support CA study to the point of releasing its solicitation. On 11 August 1986 DA issued notice to delay completion of all CA cost studies until new retirement factors could be issued by the Office of Personnel Management. The ARDEC study remained in abeyance through the end of FY 1986.

The Watervliet Arsenal installation support CA study was concluded during FY 1986 with a final decision to remain an in-house operation. No protests or appeals were filed by interested parties. Watervliet's most efficient organization (MEO) was implemented and became operational on 29 September 1986.

## Resources Management

The AMCCOM data transcription/data entry services CA cost study was concluded, with a decision to remain an in-house operation. The most efficient organization was implemented on 8 and 9 December 1985. Rock Island Arsenal progressed with its CA study of installation support during the fiscal year. The solicitation was released on 8 November 1985. The cost comparison process resulted in a decision that the RIA functions would be performed by contract. On 7 June 1986, a protest was received at the General Accounting Office (GAO) from BECON Construction Company. GAO ruled against the protest. The contractor operational date was scheduled for 25 or 26 January 1987.

Public announcement was made on 27 February 1986 to conduct total installation cost studies at Crane Army Ammunition Activity and McAlester Army Ammunition Plant. Milestone schedules, team make-up, and cost study planning were developed, and CA teams were activated. On 7 July 1986 the secretary of defense requested the secretary of the army to halt both studies until after the GAO conducted an updated analysis of the conversion at Hawthorne AAP and a review of the army's commercial activities procedures.

Cost studies being conducted by other commands on AMCCOM installations were studies of health clinics by the US Army Health Services Command on five installations, and studies of property disposal yards on five installations by the Defense Marketing Reutilization Office.

### Commercial Activities Policy

An Office of Management and Budget transmittal memorandum, which changed the basic regulatory guidance for CA, was implemented in FY 1986. Major changes included civilian and military pay inflation indices; procurement inflation indices for fuel, major commodities, and other; Social Security and Medicare rates; and source of supply rate changes for the Defense Logistics Agency.

Department of Defense Instruction 4100.33 was updated on 9 September 1985. One of the major changes to the commercial activities program was the requirement for preparation of a cost benefit analysis in situations where it was elected not to furnish government owned facilities, equipment, and/or real property to the contractor.

The FY 1983 DOD Authorization Act placed a one year moratorium on the study of firefighting and security functions. This was followed by the FY 1984 DOD Authorization Act which provided an additional two year moratorium on contracting for the performance of these functions. This ruling continued to impact units at Rock Island Arsenal, Rocky Mountain Arsenal, Watervliet

Arsenal, Pine Bluff Arsenal, and ARDEC through FY 1986. The FY 1987 DOD Authorization Act prohibited contracting out of the firefighters function permanently, and a year extended the prohibition for guards for an additional 12 months.

#### Systems Analysis Office

At the direction of General Thompson, AMCCOM established a separate Systems Analysis Office. The purpose of this independent action was to improve systems analysis capabilities, accuracy, credibility, and impact.

The Analysis Division of the Real-ess Directorate developed a new Systems Analysis Office. This office reported directly to the deputy for resources management. The Systems Analysis Office was under operational control on 24 January 1987.

#### Commanding General's Policy Book

The Management Directorate was the proponent for the commanding general's policy book. Thirty-six commanding general's policy statements were signed in FY 1986. The purpose of the policy book was to provide a medium for dissemination of major AMCCOM policy decisions. It provided the basis for assuring consistent and uniform action throughout the command.

#### Printing Equipment Reconfiguration Plan

The printing equipment reconfiguration plan was a survey originated by AMC to eliminate labor-intensive reproduction equipment and reduce operational costs. The Management and Information Management Directorates reviewed the original plan and made recommendations for implementing it to AMC. As a result of the survey, AMCCOM would realize a manpower savings of 22 people.

#### AMCCOM Regulation 10-1

Due to the inordinate amount of reorganizations that took place since the publication of AMCCOM regulation 10-1 on 12 August 1984, the entire regulation was updated, published on 1 April 1986, and distributed.

#### Manpower and Organizational Review (Frost Study)

The "Frost Study" team was tasked by the commanding general AMCCOM to review the organizational structure and position management of AMCCOM headquarters, ARDEC, and CRDEC. Special emphasis was placed on locating unnecessary layering, civilian high grade, and senior military positions. Additionally, the study team examined all organizations for overlapping, duplicative

Program and Budget Office

The study team's findings were presented to the AMCCOM CG, who approved their recommendation for the establishment of an organization that would eliminate 10 high grade civilian and 5 senior military positions targeted for elimination. This translated into savings of \$1.5 million by the end FY 1988, and over \$31 million over the next 5 years.

Program Manager Matrix Concept

AMCCOM CG directed the AMC MSCs to explore ways for maximizing resources from intensively managed programs and fully implementing a matrix management concept as a starting point.

The PM matrix concept at AMCCOM was implemented on 26 July 1986. Functional responsibility for the PMs for munitions, smoke obscuration systems, smoke obscuration; mortars; rockets, rockets, and demolitions; and ammunition logistics was transferred to appropriate functional areas. The remaining structure for the PMs would be able to intensively manage the program and apply their functional expertise to perform the "doer" role.

The AMCCOM's guideline on PM matrixing was that no new positions would be considered or allocated as a result of the concept. The PM core staff was to be tailored to individual programs. The PM organization was to be "lean and mean," one employee per system with full justification for more. Finally, the intent was to assure that the grade structure was maintained.

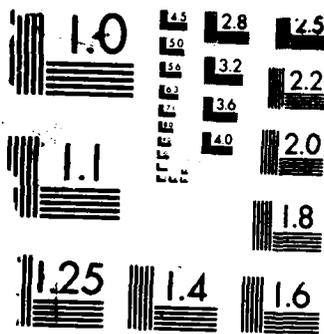
The implementation was completed on 24 July 1986 with the organizational transfers of the PM matrix employees to the host organizations at AMCCOM.

Ammunition Program and Budget Office

An Ammunition Program and Budget Office was received from the command group responsible for Ammunition Program and Budget Office to provide a focal point for AMCCOM on the ammunition budget. Expertise and functional responsibility were transferred from the Office of the Comptroller, the Production Directorate, the Defense Ammunition Directorate, and the Industrial Readiness Directorate. The organization with a staff of eight civilians, reported to the deputy for logistics readiness.

Reorganization of the Management Directorate





MICROCOPY RESOLUTION TEST CHART

As a result of the aforementioned "Frost Study," the AMCCOM CG directed changes in the Management Directorate's organization. The director's position was to transfer to Rock Island, and the deputy director position was eliminated. The Productivity and Management Studies Division's chief was downgraded from GM-15 to GM-14, and "dual-hatted" with the Productivity Branch chief.

The Manpower and Force Management Branch and the Organization and Manpower Branch were consolidated and renamed the Organization and Force Management Division. The organization and manpower element at Edgewood was elevated to a division level, and the Dover element was restructured into a Management and Analysis Division with two branches: the Organization and Force Management Branch and the Management Analysis Branch. The management review and analysis function at Dover was also transferred from the comptroller into the new division. This retitled division was to be headed by a GM-15.

The results of the "Frost Study" for the Management Directorate were the loss of a GM-15 and a GM-14 at Rock Island, and a GM-13 at Dover. Plans called for implementation to occur early in FY 1987.

#### "Hardin Study"

Numerous explosive accidents and incidents involving ammunition in storage during depot-type demilitarization operations prompted General Thompson to establish the AMC independent review of munitions, demilitarization, and stockpile management, under the chairmanship of Lieutenant General (Retired) Henry H. Hardin.

Since the thrust of the tasking was ammunition demilitarization operations and the management of the ammunition stockpile in the AMC complex, functional areas deemed critical to ammunition life cycle management were identified. AMCCOM was designated as lead to develop implementation plans applicable to all of the MSCs involved. This institutionalized fixes through a systematic approach, thereby ensuring that the fixes remained fixed and were standardized throughout the MSCs to the extent possible.

In the area of organization, staffing, and training, the Management Directorate was designated as lead in the development of implementation plans for training and certification of employees working in ammunition operations, organizational structure, staffing, and the development of a regulation for environmental/hazard pay at the AMC headquarters level. All of the Management Directorate's milestone dates associated with the implementation plans were completed. The anticipated date for AMC

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publication of standardized procedures for environmental/hazard pay was 31 December 1986.

### Commander's Guidance Statements

AMC commander's guidance statements were provided to establish policy and guidance for operations within AMC. As such, they were to be complied with in all cases by AMCCOM and its subordinates.

The Organization and Force Management Division distributed the CGSs to all AMCCOM elements. During FY 1986 46 new CGSs and 58 revisions to existing CGSs were distributed. At the end of the fiscal year 152 CGSs existed.

### TAADS Document Submissions

A total of 44 TAADS (the army authorization documents system) documents were submitted on each semiannual cycle. Joint submission of the update FY 1986 and FY 1987 TDAs was accomplished from November 1985 to January 1986. The update FY 1987 and initial FY 1988 TDA submission cycle for all documents was completed in May-July 1986.

At the direction of AMC, all 44 mobilization documents were submitted in September.

### Implementation of the Standard Installation Organization

Final guidance to implement the army's standard installation organization (SIO) at AMCCOM was received in June 1986. The regulation required army installations to establish a standard organization and functional structure for garrison activities. The requirements of the regulation applied to Pine Bluff, Rock Island, and Watervliet Arsenals. Approval of arsenal plans for implementing the SIO was pending, with full implementation anticipated prior to the end of FY 1987.

### AMCCOM Manpower Authorization Level

The AMCCOM manpower authorization level at the end of FY 1986 was 418 officers, 8 warrant officers, 466 enlisted, and 21,538 civilians. Actual strength on 30 September 1986 was 343 officers, 8 warrant officers, 433 enlisted, and 21,509 civilians.

### Civilian Hiring Plan

The development and monitoring of a civilian hiring plan was again a high priority during FY 1986. FY 1986 actions were part of a 4-year phase down of AMC strength directed by DA. The plan

directed that by FY 1988 actual strength at year end would match authorized CEE levels. The goal was to attain a workyear/CEE match by FY 1989. To this end, AMC instituted hiring restrictions which were implemented in FY 1985. Unlike FY 1984, the AIF installations were included in the reduction planning.

#### Overtime Program

The AMCCOM headquarters overtime program continued to be thoroughly reviewed during FY 1986. Overtime requests for each directorate/staff office were on a random sample basis. Selected overtime requests were reviewed for compliance against requirements set forth in AMC regulation 616-4, Overtime for Civilian Employees, and its AMCCOM supplement. Each director and office chief was advised in writing of these reviews.

#### Manpower Reductions

Other significant concerns in FY 1986 were the cancellation of the PM SGT York program, which resulted in the withdrawal of 183 civilians and 19 military spaces; AIF productivity reductions of 180 civilian spaces; and efficiency review reductions of 99 civilian spaces.

Two officer and twenty-nine civilian spaces were withdrawn from AMCCOM for the establishment of PM, Rocky Mountain Arsenal. This PM was intended to oversee and ensure the completion of decontamination and cleanup of the Rocky Mountain Arsenal site. Likewise, 2 officer and 13 civilian spaces were withdrawn from AMCCOM for the establishment of the deputy chief of staff office for conventional ammunition.

#### Budget Program and Resource Review (BPRR)

The command operating budget (COB) and program analysis resource review (PARR) were combined into one submission document entitled the budget program and resources review (BPRR). Formerly, the COB was submitted in the spring of each year and the PARR was submitted in the fall. The BPRR encompassed both in a single document which detailed command manpower and funding needs for the succeeding 7 years. The result was a more complete document with better continuity than the COB/PARR provided.

#### Information Systems Command

A total of 68 spaces were transferred from AMCCOM to the Information Systems Command in phase one of its establishment. Phases two and three were to follow in FY 1987 with 147 and 408 additional spaces to be transferred, respectively. The establishment of the Information Systems Command was intended to

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standardize automation and computer operations throughout the army.

### Rocky Mountain Arsenal Phasedown

The realignment stage of the Rocky Mountain Arsenal phasedown was accomplished during FY 1986. The civilian personnel strength was reduced from 213 to 168 on 1 December 1985. Although there were no separations, 45 employees were identified as surplus and retained as overhires. This excess labor pool was reduced to 5 by 30 September 1986 through placements in permanent positions and normal attrition.

### Program Manager for Chemical Munitions

A team of senior Management Directorate officials assisted senior staff members from the Army Toxic and Hazardous Materials Agency in developing a concept plan and draft charter package for the establishment of the program manager for chemical munitions. This management organization was mandated by the 1986 Defense Appropriation Act and contained two project management offices, one for binary munitions and one for chemical demilitarization.

### Manpower Management Branch (Edgewood)

During FY 1986 the Manpower Management Branch at Edgewood completed a survey of the Edgewood Procurement Directorate, which was approved by the deputy for procurement and readiness on 12 May 1986. It completed a manpower study of the CRDEC secretary of the general staff. This was approved by the CRDEC commander on 2 January 1986. The branch also completed a manpower study of CRDEC civilian manpower allocations, which was approved by the CRDEC commander on 2 January, also.

The branch completed a manpower study of the host/tenant agreement with the Test and Evaluation Command which was approved by the DCG for chemical materiel on 27 January. It also participated in a manpower and organizational review of CRDEC, and implemented findings as approved by the AMCCOM CG on 22 May. It prioritized the functions of the Edgewood organization and manpower element from peacetime through mobilization phases for the FY 1986 mobilization study plan, and participated in a mobilization exercise, providing daily strength and other special information reports.

The branch submitted a total of 13 TDAs for CRDEC, PM Smoke, and the Technical Escort Unit. This included two mobilization TDAs. It also adjusted the CRDEC TDA to reflect an increase in authorization of 63 civilian spaces to cover previously recognized overhire authorization, and implemented the PM Smoke matrix,

effective on 1 August 1986.

The Manpower and Management Branch monitored FY 1986 CEE weekly and WY/AFT utilization monthly for CRDEC; participated in FY 1987-92 BPRR; established the Environmental Quality Office, effective 12 August 1986 and realigned the remaining Environmental Technology Directorate elements into the Research, Development and Engineering Support Directorate; established the Special Project Office-Binary (provisional), which was approved by the deputy commanding general for chemical materiel on 6 June 1986.

#### The People Enhancing Picatinny Program

The Management Directorate launched an employee involvement program at ARDEC, called "People Enhancing Picatinny" (PEP), with the concept and philosophies of a quality circle program. The focus of the program was to establish a working climate throughout Dover that enhanced self-esteem; encouraged people to participate in decisions that affected them in their jobs; promoted open, honest exchanges in information; and established trust among all.

A PEP working group was established to develop general policy and guidance, and to provide support and direction to the program. Members of the working group were the deputy commanding general for armament and munitions, the chief of staff, the deputy for resources management, the technical director, the productivity advocate, the civilian personnel officer, the public affairs officer, the chairman of the ARDEC technical excellence committee, and the PEP program manager.

The pilot program involved targeting areas for ten teams. Eight organizations -- the Information Management Directorate, civilian personnel, the comptroller, the Product Assurance Directorate, the Management Directorate, the Close Combat Armaments Center, the Fire Support Armaments Center, and the ARDEC Technical Excellence Committee -- would spearhead PEP, with others being added as the program evolved.

#### Establishment of PM, Mortars

Senior management analysts worked closely with the product manager for mortars during and following its formal establishment. The PM was the first within the AMCCOM PM community to be established post-PM matrix management. Innovation and efficiency needed to be evident in the PMS' management of commodity programs. Management Directorate personnel were intimately involved with these efforts.

Establishment of PM, Fuzes

Action was initiated to establish a product manager for fuzes. This would improve overall fuze management within AMC, and interaction with both the Missile and Laboratory Commands. It was provisionally established on 24 July 1986. Senior Management Directorate analysts worked side-by-side with the provisional PM.

Automation of the Workplace

The DRM recognized the great productivity gains and benefits in efficiency possible from the use of automation and committed significant resources to the effort. Through the use of an automation coordinator based in the directorate's Productivity and Management Studies Division at Dover, the DRM managed a coordinated program, resulting in a work force well trained in automation and able to accomplish tasks quicker and better.

The initial phase of the DRM automation effort consisted of the selection of software and hardware to be purchased for use by both the Dover and Edgewood DRM elements. The level of automation planned was one of the highest in the command at the time, and included in many instances a workstation for each employee. At the same time, a commitment was made to the use of electronic mail for inter and intra office communication. Through an agreement with the Information Management Directorate, a major upgrade of an existing computer was purchased by the DRM to allow each employee to have an electronic mail account and be trained in its use. The cost of this initial phase was approximately \$1.2 million in FY 1985 funds.

The second phase of the DRM automation program consisted of the selection and purchase of \$87,000 in software, computers, and peripherals. Seventy-five percent of these items were earmarked for the management and comptroller offices at Rock Island, with the remainder to be used to supplement the existing equipment at the Dover site. Delivery of the equipment was expected in mid December 1986.

The last major phase of the DRM automation was planned for the FY 1987-88 and would be managed by office automation specialists in the Management Directorate. This phase would consist mainly of the implementation of the "PC NET" networking system which would allow all DRM users to access files on each others computers.

Movement of the Project Manager, Tank Main Armament System

AMC conducted a comprehensive review of the transfer of PM-TMAS from the Tank Automotive Command to AMCCOM. Approval was granted to proceed with the transfer by 31 December 1986.

Management Directorate personnel took the lead in developing the concept plan, the draft transition package, the memorandum of understanding, and the revised PM charter. However, at the end of the fiscal year, it appeared that the transfer would not occur until FY 1988.

#### Enhanced Test and Evaluation Function

In April 1986 a study was initiated to consider the merit of combining the ARDEC and AMCCOM test and evaluation (T&E) activities to create a centralized T&E function for the command. The AMCCOM T&E function, located in the Product Assurance Directorate, was the command focal point for policy, guidance, and compliance, while the ARDEC T&E office (Armament Engineering Directorate) played a strong "hands on" role by working directly with the engineering elements to optimize test planning, scheduling, and system specific test management.

By combining the two functions under the Office of the Associate Director for Test and Evaluation in the Product Assurance Directorate, mission accomplishment was enhanced, functional overlap and duplicate staffing were eliminated, and a savings of 24 manpower spaces (8 high grades) was realized.

#### Survey of Procurement and Production Directorate, Dover

This manpower survey was performed between 15 November 1985 and 17 March 1986. It was actually an assessment of manpower requirements and an operational audit. Problems encountered included less than optimal organization structures, splintering of functions, ineffective use of some personnel, high turnover of employees in certain functional areas, and time consuming reporting requirements.

Recommendations of the team included the establishment of a Resource Management Division to perform functions which were fragmented among other elements in the directorate; a restructured Support Contracting Division; a proposal to deal with automation needs and implementation methods; and the consolidation of ADP procurement in the Support Contracting Division. This effort realized a saving of four manpower spaces.

#### "Glide Path" Activities Within ARDEC

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The Management Directorate prepared a glidepath for each organization within ARDEC to get them to their 30 September 1986 CEE. Actual strength was monitored and controlled through hiring to insure that the organizations stayed within their guidelines.

The directorate formed a review board chaired by the ARDEC chief of staff and comprised of senior ARDEC managers to allocate hiring at Dover. Conservative hiring policies were in place during most of the fiscal year with an 80 percent replacement policy to virtually guarantee under-achievement of the CEE.

Signals dramatically changed when General Thompson said he didn't want to end the year under his CEE. The directorate changed strategies and "scrambled" to hire. It was successful, even though many new hires were engineers in a difficult recruitment market.

### Management Engineering Office

In FY 1986 the Management Engineering Office (MEO) completed six efficiency reviews on the ARDEC Safety Office, the Benet Weapons Lab, the Personnel and Training Directorate (less military and civilian personnel functions), technical data/configuration management, procurement in GOGOs, and the Historical Office. These efficiency reviews covered 567 spaces, with a space reduction of 42 spaces or 7.4 percent.

The MEO also completed two special studies on AMCCOM foreign military sales functions and product assurance, and formal methods and standards reviews at Watervliet and Pine Bluff Arsenals, Crane AAA, and McAlester AAP. These methods and standards reviews identified \$5,336,026 savings.

The MEO identified \$3,552,981 of budgeted dollar savings in connection with efficiency reviews.

### Research and Development Integration Office

In December 1985, Major General Hissong directed the Management Directorate staff to present a series of alternatives designed to enhance his managerial control of the research, development, test, and evaluation program at AMCCOM. During January and February four alternatives were presented, and in February he selected the Research and Development Integration Office as his choice.

The purpose of the new office was to provide the AMCCOM CG with on-site "eyes and ears" on activities and communications with ARDEC and CRDEC. The office reported directly to the AMCCOM CG, and began operating during the summer of 1986.

RESOURCE MANAGEMENT SYSTEMS,  
POLICY, AND ANALYSIS OFFICE

Mission

The mission of the Resource Management Systems, Policy, and Analysis Office was to assist the deputy for resources and management in the execution of assigned responsibilities. It served as the focal point for the definition of requirements for new AMC standard and local-unique automated resource management systems, and guided the development and implementation of those automated systems. It coordinated the development of objectives, and provided staff assistance to all areas of the DRM community, including both mid- and long-range resource planning, resolution of procedural problems, and development of operating procedures for the community. It planned, directed, and coordinated all requirements for automated data processing in support of the resource management community's programs, and developed and presented recommendations and related actions for implementation for both existing and proposed systems.

Organization

The office was a straight-line organization with a small nucleus of multi-disciplined personnel representing the major resource management disciplines. In June 1986 the office chief was assigned operational control over the newly established program manager for the AMC automated manpower management information system (AAMMIS).

Staffing and Personnel

The chief of the Resource Management Systems, Policy, and Analysis Office was Mr. Allen L. Shimp. The authorized and actual strengths were six civilian employees.

Director's Overview

Chronologically, FY 1986 was the second full fiscal year of operation for the office. The major thrust of its efforts was directed toward the AMC resource management standard systems architecture, conceived in October 1985 by the AMC resource management systems review committee, and subsequently approved by DA in March 1986.

AMCCOM found itself deeply involved in supporting AMC efforts to develop six new systems for AMC-wide use in the 1989-90 timeframe: the standard operations, maintenance, and research and development system (SOMARDS); the standard industrial fund system

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(SIFS); the standard customer order system (SCOS); the budget resource information system (BRIMS); the AMC automated manpower management information system (AAMMIS); and the AMC financial entitlements system (AFES).

The major benefits to AMCCOM would be the replacement of two appropriation accounting systems with SOMARDS, the replacement of four unique army industrial fund accounting systems with SIFS, and the filling of automation voids by implementing AFES, AAMMIS, and BRIMS. The move towards standard systems would provide major improvements in data availability, transportability, uniformity, and maintainability.

### Major Activities

#### Management Advisory Studies

Two studies were completed during FY 1986. The AMCCOM plant/arsenal computer system (APACS) effort resulted in its assignment to the Defense Standard Ammunition Computer System Office.

Completion of a comparative analysis of Crane Army Ammunition Activity, McAlester Army Ammunition Plant, and Pine Bluff, Rock Island, and Watervliet Arsenals' army industrial fund accounting systems established the need for one AMCCOM standard AIF system, and served as a major topic of discussion for the AMCCOM resource management workshop. Effort continued toward the establishment of a multi-site internal operating budget for headquarters organizations with elements located at Rock Island, Dover, and Edgewood, with plans to implement in FY 1987. Efforts were also initiated to expand the use of the acquisition tracking center by other "tracking systems" and, thus, share the presentation technology available.

#### AMCCOM Resource Management Handbook

The AMCCOM resource management handbook (AMCCOM pamphlet 5-3) was developed to capture, in one volume, a guide to provide managers, newly assigned personnel, and other members of the AMCCOM staff with a better understanding of resource management, the resource management community, and the types of services and assistance available.

#### AMCCOM Resource Management Workshop

The first command-wide workshop was held 10-11 December 1985 at the Blackhawk Hotel in Davenport, Iowa, with representatives from the resource management community, ARDEC, CRDEC, Crane, McAlester, Pine Bluff, RIA, and Watervliet. A very intense agenda

covered many issues with the over-riding theme being the need for standard systems. Guest speakers included Major General Robert Adams, the AMC deputy chief of staff for resource management; Mr. A. Allison, the chief of the AMC Resource Management Systems Office; and Mr. D. Newberry, the director of resource management at the Tank Automotive Command.

#### Program Budget Committee

An analysis of the program budget committee (PBC) resulted in the adoption of a three-tier structure, expansion of membership, and more clearly defined responsibilities.

Specifically, the structure followed the chain of command, with the senior PBC chaired by the CG, the junior PBC chaired by the comptroller and the director of the Management Directorate, and the working PBC co-chaired by the same. Additionally, the "working level" was supported by action officers representing each member, with responsibility for developing recommendations concerning issue resolution, strategy, allocation of resources, prioritization, and preparation of the various program and budget submissions.

#### Standard Industrial Fund System

In conjunction with the AMC resource management systems review committee's (RMSRC) decision to develop a standard industrial fund system, the office was appointed by the DRM to represent AMCCOM on the functional coordinating group (FCG). Although representatives from the Depot Systems Command were appointed FCG chair, the AMCCOM office developed the charter approved by AMC and a statement of work for General Services Administration (GSA) contractor support to be awarded in early FY 1987.

#### Functional Coordinating Group Interface Group

With the push for AMC standard resource management systems, AMCCOM suddenly found itself with representatives on functional coordinating groups for AFES, BRIMS, CCSS, SIFS, AAMMIS, SOMARDS, and SCOS. To facilitate the interfaces among these systems, an interface group of AMCCOM representatives to each FCG was established, with biweekly meetings to exchange information.

#### AAMMIS

AMC assigned lead responsibility to the AMCCOM DRM for the development and fielding of the AMC automated manpower management information system. To assist the DRM in this effort, operational control of the AAMMIS program manager was assigned to the chief of

## Resources Management

the Resources Management Systems, Policy, and Analysis Office in May 1986.

### DEFENSE STANDARD AMMUNITION COMPUTER SYSTEM (DSACS) OFFICE

#### Mission

The Defense Standard Ammunition Computer System (DSACS) Office provided management for the design, development, and centralized maintenance of the DSACS project in accordance with regulatory guidance. The DSACS was a DOD-wide network of data systems linking the single manager for conventional ammunition with each of the armed services. It incorporated each of the armed services' existing ammunition systems, and standardized them. The office managed and coordinated those life-cycle management events necessary for project deployment of DSACS. In August 1986 the office was directed to initiate a new project, the AMCCOM plant and arsenal computer system (APACS).<sup>9/</sup>

#### Organization

The DSACS Office structure was established in May 1984, as a result of a product manager charter approved by DA in May 1983. The office was originally assigned as a branch of the Joint Activities Office. However, in August 1984 it was placed under the deputy for resources management for reporting and control purposes. This posture continued throughout FY 1986.

#### Staffing and Personnel

The product manager/office chief position was occupied by Mr. Greg Legare during FY 1986. There were no military positions authorized or on-board during the fiscal year. The authorized manpower was seven civilian employees, with eight actually assigned.

#### Director's Overview

FY 1986 was very successful for the DSACS project. Contracts were awarded for the purchase of hardware and software, and for application development. Monthly reviews were held for the senior level steering committee. Quarterly inter-service in-process reviews were held with participation from the other services. Appropriate contractual efforts were utilized to assure the project stayed on track for milestone actions.

The desired posture for the office was to have a portion of DSACS operational in FY 1986. This was attained by the end of the fiscal year, to the appreciation of all participants. Life cycle management documents were staffed for the APACS project and site

surveys were initiated.

### Major Activities

The first in a series of major activities accomplished by the office was contracting out additional life cycle documentation with the Chicago regional office of the GSA in January 1986. A hardware/software contract was awarded on 20 June 1986 to YIPKON, Inc., Newark, New Jersey. The mainframe selected was an Amdahl model 5880, the disk controllers and disk drives selected were also Amdahl, and the remaining equipment selected was from a variety of vendors. An application development contract was awarded through the Oak Ridge National Laboratory to SAGE Federal Systems, Inc., Rockville, Maryland, on 23 June 1986.

In September 1986, 205 subsystems became operational. This included 132 CCSS applications covering cataloging, stock, and production. It also included 73 local, unique subsystems which were migrated to the new system, covering the areas of supply, comptroller, maintenance, production, technical data, industrial preparedness, and quality assurance.

Additionally, one subsystem, a new development, was in prototype in September 1986. This subsystem, the customer acquisition plan entry, involved the other services during design, and had a direct service interface.

The APACS mission element needs statement was staffed, and site visits began in September 1986.

## SYSTEMS ANALYSIS OFFICE

### Mission

The mission of the Systems Analysis Office was to manage and execute the command operations research, systems analysis, and risk analysis (OR/SA/RA) programs in the areas of research, emerging technologies, methodology development, and computer application. It assured that the OR/SA/RA program effectively integrated with assessments and determination of corrective actions in command operations for assigned systems, their acquisition, and logistics. The office developed and assured implementation of OR/SA/RA policy and provided leadership within the command for OR/SA/RA programs. It provided staff guidance to the OR/SA/RA activities of ARDEC and CRDEC and managed the OR/SA/RA activities for the Rock Island site of the command. Finally, the office served as the principal technical advisor to the command group in all areas of OR/SA/RA.10/

Organization

During the latter part of 1984 AMC conducted a survey of all systems analysis functions throughout the command and studied this environment in light of AMC regulation 11-1, Systems Analysis, and related documents and reports. In January 1985 AMC published a report containing conclusions and recommendations which resulted from the study. The AMC CG requested all MSC commanders implement the recommendations and underscored the use of systems analysis in the making of command decisions. Significant among the recommendations contained in the report were those concerning the organization of systems analysis throughout the command and in subordinate elements. Each MSC was to have a systems analysis office which reported directly to the commander or the command staff.

On 24 January 1986, after careful study and review to most effectively implement the report's recommendations, operational control for systems analysis functions was assigned to a newly formed systems analysis office which had previously been the Analysis Division of the Readiness Directorate. The AMCCOM Systems Analysis Office was to report directly to the deputy for resources and management, who was a member of the command staff.

As reorganized, the Systems Analysis Office contained four divisions: the Acquisition Division, the Logistics Division, the Operations Division, and the Systems Division. These divisions replicated branch-level elements of the former Analysis Division of the Readiness Directorate. The systems analysis functions of the former Strategic Analysis and Plans Branch were distributed among the four new divisions, whereas the long range planning and related functions formerly assigned to that branch were retained by the Readiness Directorate.

Staffing and Personnel

Mr. Bernard C. Witherspoon was chief of the Systems Analysis Office. During a portion of FY 1986 he was put on special assignment as head of a task force for the development of the AMCCOM information systems plan. During his absence, he assigned each of the division chiefs to the position of acting office chief, with each occupying the position for approximately one month.

The authorized strength of the Systems Analysis Office was 41 civilians and 3 military. The on-board strength was 41 civilians and 1 military.

Director's Overview

The Systems Analysis Office during FY 1986 continued its successful record of providing systems analysis expertise and analytical effort to the command. Some of the projects, such as the job scheduling model, impacted the entire production and budgeting processes of the army as a whole, whereas other analyses met critical needs of the command. The reorganization was effective in re-establishing the important role of systems analysis in effective decision-making, cost saving, and production and distribution of command munitions.

An encouraging increase in coordination between the systems analysis offices within AMC took place during FY 1986. The Systems Analysis office played an active part in each of the semi-annual systems analysis conferences sponsored by AMC. It also contributed many articles and other commentary to the "Systems Analysis Newsletter." The office improved its communications and inter-disciplinary coordination through the use of electronic mail and the newly formed AMC-wide OR/SA net.

In order to improve coordination among its professional specialists, the office actively participated in the preparation, distribution, and use of the AMC "Gist" report initiative. "Gist" reports were short summary reports of completed analyses which were prepared in an easily read format for distribution throughout the entire OR/SA community in AMC. They were to acquaint the reader with the latest developments in this specialty and served to prevent the redundant development of similar models and analyses by individuals in other offices.

A model developed by the Systems Analysis Office was instrumental in its obtaining a stand-alone PR1ME 9955 computer, six micro-computers, and a Tektronix graphic workstation 4125.

Major Activities

Acquisitions Division

The Acquisitions Division served as the central AMCCOM capability for the development, application, and operation of models and automated systems for accomplishing the acquisition mission of AMCCOM.

Integrated Production/Distribution

The objective of this project was the development and application of a model system to match ammunition production base capacity and mobilization requirements to minimize the shortfall

of ammunition. The model programs were used in the army logistics assessment (ALA) conducted in early FY 1986.

The model was run to assist the Industrial Readiness Directorate in the preallocation of the ammunition production base. Using Production Directorate data representing current warm end item load, assemble, and pack plants, the model calculated the warm component production required to support the ALA ammunition shortfalls. Additional programs were run to determine the amount of ammunition production base capacity available to satisfy the shortfalls not supplied by the wholesale inventory base.

The newly-developed facility locator file was used to provide automated estimates of continental United States (CONUS) transportation movement times for resupply of ammunition items from production facilities.

#### Ammunition Strategy Model System

The ammunition strategy model system helped with peacetime and mobilization ammunition planning. It was designed to help allocate available resources within given ammunition stockpile and production base technological and fiscal constraints.

During the program objective memorandum (POM) briefings to the VCSA, AMCCOM was requested to expand upon the workforce balancing methodology used by the job scheduling model for the site selection of new items and the relocation of existing items. The factors to be used in the site selection determination included cost, item priority, production base expansion policy, training and war reserve need, production skill level availability, and existing facility capabilities.

A feasibility study was conducted to determine if modifications could be made to the strategies model that would aid the Industrial Readiness Directorate in the development of a 10-year ammunition plan which would stabilize the workforce at the plants through the best determination of site selection for new items and the relocation of existing items. However, it was decided to model a somewhat restricted version of the site selection problem to gain insight to what might be involved in the full base planning effort.

#### RDX/HMX Analysis

A series of analyses were conducted to determine the RDX/HMX production base expansion and inventory stockpile levels necessary to support future peacetime and mobilization requirements. Results of these analyses were briefed at various levels of AMCCOM and AMC, and were also periodically documented. Graphics software

in displaying model results was used extensively and complicated the drafting of a final report.

Industrial Preparedness Measures Prioritization System

The assistant secretary of the army directed that the five year defense program include initiatives to reduce ammunition production base mobilization deficiencies. AMCCOM was to identify specific production projects necessary to eliminate known shortfalls. To augment this effort, the Industrial Readiness Directorate tasked the Acquisition Division to develop an automated system to pace mobilization production of ammunition items.

The sequential pacer version of the production base allocation model met this objective. It identified pacers and provided output reports with sufficient information to permit the identification of necessary corrective actions. Additionally, the capability of addressing variable ammunition demands over the mobilization period was provided.

Sequential pacer model runs for the FY 1988-92 program plan were completed and provided to the Industrial Readiness Directorate for evaluation. Several data base deficiencies were identified by the runs, including missing component capacities and items included in the bill of materials without any facilities identified to produce them. The Industrial Readiness Directorate continued to resolve these data problems.

Sustainability Study

This study was conducted to determine how DOD should proceed to meet sustaining (long war) requirements for ammunition. AMCCOM was tasked to participate in the activity by providing assessments of the ammunition production base capacity and responsiveness to various mobilization demand levels. The Acquisition Division supported the Industrial Readiness Directorate in these analyses.

Several iterations of the production base allocation model system were made to identify primary and secondary pacers and to quantify end item shortfalls as a function of time over the mobilization period.

Ammunition Executive Management System

This computer system was being developed for the deputy chief of staff for research, development, and acquisition (DCSRDA) by CACI Federal, to improve information available for the planning, programming, and budgeting of ammunition. Four micro-computers were procured and installed to support the system at AMCCOM. The

## Resources Management

POM subsystem which generated ammunition program alternatives was installed and implemented in October 1985 and upgraded in April 1986.

Enhancements made to the POM subsystem and data were implemented and demonstrated in April 1986. The CACI contract was also amended to obtain needed equipment and software to link the job scheduling model and ammunition executive management system data.

The development by CACI of the life cycle subsystem which addressed the supply, distribution, and inventory control aspects of ammunition, continued. AMCCOM production and distribution data from previous ALA studies was provided to CACI to test the preliminary program logic. A review of the concept and the required data was conducted during the fourth quarter. The results of the review were provided to DCSRDA and CACI for inclusion in the September 1986 in-process review.

### 10-Year Ammunition Production Base/Plant Workloading Plan

On 2 April 1986, the VCSA directed AMCCOM to prepare a 10-year ammunition production base/plant workloading plan for FY 1988-97. A special task force was formed on 13 May 1986 at the direction of the deputy commanding general for procurement and readiness to include representatives from the Office of the Comptroller, the Defense Ammunition Directorate, the Industrial Readiness Directorate, the Production Directorate, the Readiness Directorate, and the Systems Analysis Office. Decisions concerning ammunition production, workloading, and site selection were to be a part of this 10-year plan.

The Systems Analysis Office was responsible for operating the job scheduling model (JSM) to support the development of the plan. Initial runs of JSM were made during May 1986 using estimated 10-year buys furnished by the Defense Ammunition Directorate. Subsequently, several JSM runs were made to balance workloading and stay within the confines of the projected table of allowance funding.

The JSM was used to develop an acquisition profile for the out years of the plan. After review and analysis of this program, modifications and follow-on iterations of the JSM were made to meet the readiness and plant personnel stabilization objectives of the plan. The plan was presented to AMC in August 1986.

### Munitions Replacement Values

A method to comparatively rank different ammunition items was being sought to better address the item tradeoffs required during the POM and budget planning process.

An initial investigation surfaced many factors pertinent to such an evaluation including the mission of the round, weapon system distribution, inventory and storage locations, and the scenario. Previous AMCCOM efforts were investigated, but they only considered specific sub-families of rounds.

Additional research identified that the Concepts Analysis Agency (CAA) had developed a POM planning model that operated on a limited number of ammunition items. The model used substitution factors for specific groups of ammunition items based on lethality. The CAA was contacted to obtain further documentation on the scope and details of the substitution factor methodology.

#### Computer Procurement

During the 26 July 1985 briefing on the JSM, the VCSA directed that a new computer with supporting software and peripherals be obtained which would exclusively support the model and associated data bases. A PRIME 9955 minicomputer was purchased, installed, and became operational in January 1986. The FY 1988-92 POM model runs were completed using the new computer. The system was upgraded during the fourth quarter by a new central processing unit and the addition of eight megabytes of memory.

#### Logistics Division

The Logistics Division served as the central AMCCOM capability for the development, application, and operation of models and automated systems for accomplishing the inventory management mission of AMCCOM.

#### Distribution Simulation Model

The distribution simulation model (DSIM) produced a plan to distribute ammunition from CONUS depots and production facilities to theater ammunition supply points, while considering many "real world" constraints such as the number of rail cars, trucks, containers, ships and aircraft available and the lift capabilities at the depots, production facilities, ports, and ammunition supply points.

During the first half of FY 1986 extensive testing of the DSIM model was completed. A new report generator was then completed, and several graphical output products were generated. The documentation of the model capability was expected to be completed during FY 1987.

Transportation Management Support System

The Transportation and Traffic Management Directorate and the Office of the Comptroller requested an improved automated system to provide the means to process documents relative to the transportation of AMCCOM materiel and personnel travel, to disburse transportation and travel funds, and to generate status and management reports. The system was written in FORTRAN 77 and consisted of four major subsystems that generated financial documentation and management reports for government bills of lading (GBL), excess returns, overseas ammunition shipments, and personnel travel.

The transportation management support system (TMSS) was expanded to include additional procurement request order numbers (PRONs) so that excess return shipments could be broken out by specific system, weapons, ammunition, or miscellaneous equipment. Later, the system was modified to reject actual payment records that were already in the data base as a discrepancy record. The TMSS was also modified to streamline editing and reporting procedures. Several new reports were made available at the user's request.

Furthermore, the TMSS was modified so that the government bills of lading master report generator would run in 19 to 24 percent less central processing unit time. Detailed reports of all GBLs for fiscal years 1985 and 1986 were provided as requested. Also, a request to enhance the GBL system to maintain credit balances by PRON was started.

Transportation Rates

The Transportation and Traffic Management Directorate requested a system for maintaining conventional ammunition freight rates, computing transportation costs, and improving the manual process which was used for daily business transactions. The system, written in FORTRAN 77, was capable of determining minimum transportation costs for various classes of ammunition, multiple source-destinations, various types of tariffs, and item specific or general cargo data.

Later in the year, the system was enhanced with new security charges for rail mode, including armed guard service and twist-lock charge. In addition, minor modifications were required to the system to reflect the requirements of a new computer.

Projected Asset Update System

The Defense Ammunition Directorate requested an automated system to predict the worldwide joint service conventional ammunition inventory posture. After obtaining the beginning asset posture from the worldwide ammunition reporting system and the commodity command standard system (CCSS), the projected asset update system (PAUS) projected future asset postures while considering expected training requirements, retrograde shipments, maintenance/renovation, and planned production. The system was unique to AMCCOM due to conventional ammunition data base requirements.

The system was subsequently modified to accommodate projections for more than a year in advance. The PAUS data bases were updated and an asset projection to 1 October 1986 was provided to the Logistics Evaluation Agency. Additionally, the system was modified to project assets to FY 1988 for the job scheduling model using peacetime training, testing, and production to adjust the initial assets postures.

Finally, the system was revised to support a two year asset projection for the total logistics readiness/sustainability (TLR/S) study. The system was also revised to include reduction of peacetime production assets for non-army training and testing requirements during the projected periods.

#### Mobilization Production/Distribution Interface

Major distribution studies required assessment of the distribution of ammunition from production facilities, as well as from inventory, under a mobilization situation. An automated process was developed to determine item shortfalls from inventory and identify production requirements for the required item or a reasonable substitute.

A system flow diagram was developed for data exchanges between the industrial readiness data base, the AMSAMOB data base, the allocation model, and the ammunition distribution system. Two new programming efforts were required to complete this effort. The first program consisted of a data extract from the MIDAS data files and the requirements data to produce a master DODAC-substitute file. The second program consisted of a computation process including algorithms that determined monthly shortfall requirements for mobilization planned items, either prime or substitute, as well as other data outputs summarizing shortfall requirements.

Two other programming efforts were required to complete the effort. The first program consisted of a data extract from the MIDAS data files and the requirements data to produce a master DODAC PRIME-substitute file. The second program consisted of a

computation process, including algorithms that determined monthly production requirements for mobilization planned items, either prime or substitute, as well as other data outputs summarizing production requirements.

#### AMCCOM Leadership Study

The Systems Analysis Office was requested by the AMCCOM leadership committee to conduct a study on what qualities average employees believe leaders should have to enhance work, and whether these needs were being met.

A survey instrument was developed to collect the perception of a random sample of the AMCCOM headquarters staff, and an automated means for the analysis of this data was designed and tested. An analysis of the response to the survey was completed, and a briefing was given to the leadership committee and the command group.

#### Variable Cost to Procure

The Materiel Management Directorate requested updated variable cost to procure (VCP) parameters to be used in the procurement of secondary items (both army stock fund and procurement army, secondary). The VCP was a procurement setup cost incurred each time AMCCOM initiated a request to replenish its stock of an individual secondary item. Included in the VCP parameters were direct and indirect labor, ADP, and support costs for processing the purchase request.

The new parameters were developed and documented. Once validated by cost analysis they were entered in the materiel management decision file in CCSS where they would be extracted as required for use in various runs. Later, a questionnaire was mailed to various directorates to request the amount of manpower and time spent in their areas to process secondary item procurement work directives (PWD). From the data contained in the questionnaires, the VCP parameters were computed.

#### Average Monthly Demand for Secondary Items

The Materiel Management Directorate requested alternative methods be explored to predict the average monthly demand for secondary items in relation to the existing method on CCSS. An improved prediction method could result in a reduction of backorders, improved supply status, and a reduction in over-buying. Six years of demand, return, and disposal data, and two years of program change factor data from the CCSS were used to evaluate all methods.

Initially, a literature search was performed, and analysis was initiated to develop different prediction methods for various year/weight and training level combinations. Data was extracted from the huge amount of historical data and reworked into a format suitable for analysis. This process included adjustment for items whose stock numbers had changed over the years.

Alternative prediction methods were analyzed and draft documentation prepared. Prediction from two years of past data, as CCSS did, gave the best results. Additionally, a continuous percent errors function was developed which would reduce fluctuations in item safety levels. A final report was prepared and published.

#### Variable Cost to Hold

Materiel Management also requested updating the variable cost to hold (VCH). One of the important factors in the computations of economic order quantities (EOQ) and variable safety levels (VSL) in CCSS was the holding cost factor. The functional elements included in the VCH were the investment cost, the obsolescence risk rate, the storage loss rate, and the general storage cost.

The percentage of these functional elements attributing to storage cost or the cost to hold was determined. The analysis concluded that the VCH was 14.4 percent. This result was provided, completing the project.

#### A Smooth Percent Error Function for Secondary Items

The Materiel Management Directorate requested a study to develop a smooth percent error function for secondary items in place of the step function in CCSS. This study was of strategic interest to AMC in its mission to summarize the support of weapons within the affordability limits imposed during peacetime.

A type of smooth percent error function was devised which could replace the step function of percent errors used in the CCSS. Use of this or a similar smooth function would help prevent jumps in the item safety level. These results were provided to the Army Materiel Systems Analysis Agency's Inventory Research Office (IRO). IRO planned to investigate the impact of using the smooth percent errors function, and anticipated that the function would be incorporated in CCSS during FY 1988.

#### Support to the Ammunition Distribution System

The ammunition distribution system (ADS) was a series of over 60 programs written in FORTRAN IV and FORTRAN 77, used by supply and transportation personnel for ammunition distribution planning and analyses during mobilization exercises and for contingencies.

During early FY 1986 the system was modified to provide several user requested enhancements. The Joint Deployment Agency directed that only a percentage of the available inventory assets be considered for specific operational plans. ADS was modified to accommodate this. Also developed was a special report for the air force logistics planners summarizing all shipment transactions.

Later, it was discovered that in-place theater assets were not being properly applied to the theater requirements before the net requirements were passed to ADS for processing and analysis. Coordination was undertaken with the Management Information Systems and the Defense Ammunition Directorates so that a change was made to the methodology for applying in-place theater assets for both the required item and its appropriate substitutes. A new report was also developed which summarizes the assets for primary and secondary items, and a standard report was modified detailing the requirements, inventory, deliveries and shortfalls.

Another change was made in the manner in which the item sequence number was utilized. This change affected two standard report generators. These report generators were updated and validated for accuracy. An additional report was devised to provide to the air force specifications of what shipments will be made to meet their ammunition requirements.

A special request by the Defense Ammunition Directorate to assist them in generating a summary report of inventory assets for a VCSA study was accommodated. Also, a depot outloading tonnage summary report to assist in determining the mobilization depot outloading requirements was provided.

#### Methodology and Evaluation Working Group Support

The methodology and evaluation working group for a joint munition effectiveness manual requested a simplified effectiveness model for tank munitions that could be programmed on a programmable calculator.

A simplified technique was developed for the probability of hit, and the probability of kill given a hit, and was compared against actual data. The results were documented in briefing form and were presented to the working group during April 1986. Also a review of the proposed changes to the simplified artillery projectile effectiveness model was completed and was presented to the working group in July.

Army Logistics Assessment Support

The ALA was a yearly analysis of which a portion assessed AMCCOM's wholesale ability to support assigned Class V, VII, and IX combat requirements. The Logistics Division provided analytical support in assessing AMCCOM's ability to respond to ammunition requirements generated by a multi-theater scenario.

The Logistics Evaluation Agency (LEA) requested the division provide several additional management reports for FY 1986's ALA. These included item family summary reports for projected asset postures and requirements. Also, LEA required ALA results, provided by magnetic tape, to support the force evaluation model and the transportation model developed by the Concepts Analysis Agency.

Total Logistics Readiness/Sustainability Support

Total logistics readiness/sustainability (TLR/S) was a yearly analysis of which a portion assessed AMCCOM's wholesale ability to support assigned Class V, VII, and IX combat requirements. The TLR/S analysis was being changed to a two year cycle to align data results with the OMNIBUS study in an effort to better provide real world constraints and the impact of logistics elements on the war fight. The ultimate goal was to influence procurement and distribution decisions.

Advance data was required to be furnished to LEA in FY 1987. This included Class V worldwide inventory assets (both current and projected to 1 October 1988), mobilization production aligned to produce only shortfall items, and the study items in current production.

Economic Order Quantity/Variable Safety Level Simulator

The Materiel Management Directorate requested the development of an economic order quantity/variable safety level (EOQ/VSL) simulator for use on the PRIME mini-computer. Once developed, a set of tables would be generated which displayed values of EOQ/VSL versus values of procurement lead times, average monthly demands, and unit prices. These tables were to be used by the item managers during supply control studies. If an item manager reviewed a supply control study and noticed some problems, he could refer to the tables and make manual adjustments instead of waiting until the next cycle of the requirement determination and execution system.

The model was tested, documented, and given to the materiel management for its use. Since the model was so user-friendly and processed so quickly, it was decided not to generate a set of

tables which display values of EOQ/VSL versus values of procurement lead times, average monthly demands and unit prices.

Revalidation of Ammunition Prepositioning Objective (Europe)

The LEA requested an analysis to estimate average shipping times of ammunition from CONUS storage facilities and production plants to the outside CONUS theaters of operation during mobilization. This information was to be used to validate the order-ship times for mobilization. Results of the AJA were to be used as input data for the analysis.

The Supply Performance Analyzer

The Materiel Management Directorate requested assistance in obtaining and modifying the Inventory Research Office's updated weapon system supply performance analyzer (WSSPA) program. The function of the WSSPA program was to display the relationship between safety level investment, commitment authority, stock availability, and average waiting time for different funding levels. This information was used by inventory managers to estimate budgets for each weapon system to obtain specific wholesale fill rates. AMCCOM had been using an earlier version of the WSSPA which was obtained and modified during April 1983. Since that time, IRO had made several significant changes to the WSSPA program, making it necessary for AMCCOM to obtain the latest version.

The model was converted from the CDC operating system to the PRIME operating system, expanded to handle 120 weapon system codes simultaneously, restructured to reduce execution time, and modified to produce the desired output products.

Effects of Depot Unserviceable Return Rate

This study was of strategic interest to AMCCOM in its mission to maximize the support of weapons within the affordability limits imposed during peacetime.

Historical data on the depot unserviceable return rates (URR) was obtained from the CCSS and was analyzed statistically for a sample of depot repairable items from fielded weapon systems. This analysis indicated a depot URR with a relatively low mean value of approximately 50 percent and extremely high variability. The historical data base was expanded by obtaining data from the demand, return, disposal files in CCSS. This data was screened, and each item's URR was computed.

When provisioning for new weapon systems, a URR value of 85 percent was assumed for each item. This assumption played an integral role in forecasting the supply and depot maintenance costs. From the analysis of historical data, the average URR was determined to be approximately 50 to 60 percent. These values were applied to a sample weapon system to determine the impact on yearly maintenance and supply costs, the safety level investment, and the pipeline cost. It was found that as the value of URR decreased the cost of recurring supply dramatically increased, the annual cost of depot maintenance decreased, the nonrecurring safety level investment dramatically increased, and the nonrecurring pipeline cost decreased. The results were documented in memoranda RDA-MR-8502, RDA-MR-8503, and RDA-MR-8504.

#### Item Sequence Number Master Repository

In order for the Industrial Readiness Directorate to communicate with the Defense Supply Directorate on specific ammunition items, a cross reference directory had to be maintained. During FY 1986 it was recommended that the item sequence number be maintained on the AMSAMOB data base as a master repository for cross referencing the items. This effort was coordinated, and a mechanized means to generate update transactions for loading the cross reference data into the AMSAMOB data base was provided.

#### Operations Division

The Operations Division served as the central AMCCOM capability for the development, application, and operation of models and automated systems for solving AMCCOM resource allocation and program/planning issues.

#### Job Scheduling Model

The army's deputy chief of staff for research, development, and acquisition tasked AMCCOM to provide a management tool for estimating the yearly production quantities and mix of ammunition within the army ammunition plant complex. This management tool would be necessary to maintain efficient production rates, retain stable and fully utilized personnel levels, and maintain a balanced, continued inventory growth for required war reserve munitions.

The job scheduling model (JSM) was a management tool for economic scheduling of army ammunition plant manufacturing operations to produce mandatory training and other service requirements and to achieve increases in the days-of-supply for priority ammunition consistent with unfluctuating manpower levels at the ammunition plants. The model's basic premise was that the

ammunition program was driven by peacetime training and other losses, foreign military sales, other service buys, and combat requirements for any given item. Combat requirements were produced only for those items whose inventory was below an established readiness "trigger level." Production was also prioritized so that items having the lowest days-of-supply or highest numeric priority were produced first. This meant that no production was assigned to items with inventory levels above the trigger level or those without peacetime, foreign military sales, or other service requirements.

A method to evaluate the manually prepared ammunition program was developed. This method involved loading the entire ammunition program as a training requirement, assuming no war reserve needs and no available assets. The simulation then produced to this requirement. The post-processors were used to evaluate the program against the actual training and war reserve requirements. The method was successfully used to assess the manually prepared program objective memorandum (POM) and budget submissions.

A JSM generated 5-year ammunition program, with an objective to meet the total obligation authority, was successfully completed. A comparison was made between the program generated solely by the JSM, using army requirements supplied by DA and the Defense Ammunition Directorate buy program, and by using army buy quantities stipulated in the integrated conventional ammunition procurement plan program. The analysis and comparison concluded that the JSM baseline could be used as a starting point for management to produce an acceptable ammunition program.

There was a need to establish a routine for documenting changes, data sources, and objectives of each run, and to develop a user's manual for the JSM. Internal procedures were established to develop audit trails on each JSM run. This procedure included a computer generated listing of all files used and a manual record of all the data changes required for a specific alternative. File name conventions were standardized to include date of creation, thus enhancing the capability to audit and document specific runs. Existing documentation regarding JSM and JSM post-processors was coordinated and modified to serve as a user's guide. Further work was required to finalize the document.

#### Production Base Project Proposals

During the 26 July 1985 JSM briefing to the VCSA, General Thurman directed no further funds be obligated towards production base support projects until each proposed project was analyzed using the JSM. This directive resulted in a high priority effort at AMCCOM to evaluate proposed ammunition production base projects.

The evaluation included all proposed FY 1985 and FY 1986 projects which would go into effect in FYs 1987 and 1988. Each project was analyzed with respect to its impact on the production capacity, staffing requirements, and production costs. Results of the analyses were used by Industrial Readiness Directorate personnel to modify the proposed production base program. Conclusions of the analyses conducted were considered satisfactory and resulted in release of production base proposal funds for FY 1985 and FY 1986 projects.

#### FY 1988-92 POM Guidance Parameters

At the request of DCSRDA, sensitivity analyses of the independent and collective impact of ammunition item priorities, trigger levels, and training levels were conducted. Work addressed six policy issues: priorities, new materiel fielding, training levels, sequence of funding, trigger levels, and year-to-year production continuity.

The recommended guidance for the FY 1988-92 alternatives presented through briefings given to the deputy chiefs of staff for operations and research, development, and acquisition were to present only one program for the army materiel plan review in January 1986, to use priorities only as discriminators in production, to use priorities within the program development incremental package structure for funding, to use yearly authorized ammunition objectives as requirements, to establish trigger level at 30 days-of-supply, and not increase it until a majority or more items reached it; and to maintain a constant difference between the build-up and draw-down triggers.

All but the last two recommendations were fully approved. The last two were modified by DCSOPS and DCSRDA and were included in a December 1985 guidance letter.

#### FY 1988-93 POM Preparation

In January 1986 the Systems Analysis Office received a draft guidance letter from DA relative to the FY 1988-93 ammunition procurement program. The JSM was to be used in a parallel effort to generate the FY 1988-93 POM.

The Systems Analysis Office interactively received the most recent data relative to asset levels, prices, and production rates from the functional directorates as the POM review proceeded. This resulted in daily changes to the JSM's input files to reflect POM updates and revisions. As a result, the JSM did not provide a real-time program that could be reviewed simultaneously with the manually (item manager) prepared program. The manually prepared program was forwarded as the AMC POM submission, with the JSM

program as an alternative POM.

The AMC/DA POM submission was rejected by the VCSA. As a result, additional work and data on the JSM alternative was requested.

Due to the extreme budget restrictions, the JSM alternative was not a viable option. Therefore, DA directed a complete reworking of the FY 1988-93 POM. The JSM was not used in this effort, since functional managers were not yet confident in their ability to interpret its results. However, higher headquarters directed that a model alternative be available. The division was engaged in an all out effort to comply with this request.

#### Systems Division

The Systems Division served as the central AMCCOM capability to conduct OR/SA/RA studies and analyses for evaluating policy and strategy alternatives pertaining to AMCCOM materiel systems in relation to their manufacture, distribution, and logistics.

#### Integration of Design and Logistics

Work on the analysis of operational availability for major systems questioned the interrelationship of design and development of the hardware and logistic systems. A technique was developed that related availability, capability, and reliability through an effectiveness parameter. Theoretically, this technique could be applied at any phase in the life cycle or at any level of detail. The division agreed to provide a computer model reflecting this concept which could be used interactively by logistics analysts in the Integrated Logistics Support Office.

#### M42/M46 Incident Investigation

Explosions encountered in loading M42/M46 grenades at Lone Star, Kansas, and Milan AAPs were a persistent problem. An incident investigation board (IIB) was formed in response to the CG's concern, and the Systems Division undertook an extensive statistical analysis of the problem. The results of this analysis provided the bulk of information used by the IIB in its findings and recommendations to the CG, and served as the basis for directives for corrective actions and follow-on efforts. This analysis was reported in memorandum report RDA-MR-8601, Simulation of the State of the M42/M46 Grenade During Press Loading.

#### Workforce Allocation Methodology Process

The goal of this project, directed by the Deputy for Resources and Management, was to develop an objective method of assignment of the AMCCOM workforce under manpower restrictions in a manner to best fulfill management objectives. A concept was developed which used aggregated indices to identify workload forecasts and productivity, and which introduced the idea of providing incentives to accomplish command objectives.

Direction was given to proceed with a concept validation using the Maintenance Directorate, the three procurement directorates, the Cost Analysis Directorate, the Product Assurance Directorate, the Systems Analysis Office, and one RDTE organization from ARDEC.

#### M1A1 Boresight Life Cycle Cost Analysis

The army had five candidate producers for the boresight for the M1A1 tank. The weapon system manager requested assistance in performing life cycle cost analyses for the five alternatives. A totally organic concept, with depot line replaceable unit replacement and repair, was recommended instead of contractor logistic support.

#### Reactivation Network - VERT Support

At the request of the Industrial Readiness Directorate, the Systems Analysis Office supported the reactivation network program in implementing a version of the Venture analysis and review technique (VERT). This version was known as VERT-reactivation (VERT-R).

VERT-R incorporated an interactive, menu driven, network initial input, editing capability, and network update capability. It also accommodated processing families of networks in a faster, more efficient manner. A user handbook was prepared and used in training courses and was released for command-wide distribution. The training was centered on use of the specific network application VERT-R. Two sessions were held: the first for AMCCOM industrial readiness personnel, and the second for AAP personnel and contractors retained for implementation of VERT-R at the various AAPs.

VERT-R was successfully installed at Louisiana AAP. Installation of VERT-R at Iowa AAP, originally scheduled for FY 1986, was slipped to the first quarter of FY 1987. It was expected that the Systems Analysis Office would be supporting this project for at least two years.

Included in this project was a task to modify VERT-R for use on IBM-compatible personal computers (PC), which some AAPs required. Although there were "bugs" in the FORTRAN compiler, programs were developed to overcome the problems, and a successful test run was obtained.

#### Failure Factor Computation Model

The Maintenance Directorate requested the Systems Analysis Office develop an interactive computer program to aid in the development of failure factors.

A prototype program was developed and demonstrated to representatives of the Maintenance Directorate. Comments and suggestions were elicited. Modifications were then made to improve input editing, to include memory displays of past inputs, and to provide more extensive internal processing to replace off-line computations.

It was then programmed in PR1ME BASIC and IBM PC-compatible BASIC and was tested on the AMCCOM PR1ME system and a Victor 9000 PC. This version, along with program and user documentation, was turned over to the Maintenance Directorate in May 1986 for its use and evaluation.

#### M90 Radar Chronograph

The Integrated Logistics Support Office requested assistance in the analysis of five alternative maintenance concepts for the M90 radar chronograph. The analysis was completed in July 1986. The most cost effective maintenance concept was total organic support of the M90.

### PROGRAM MANAGER, AMC AUTOMATED MANPOWER MANAGEMENT INFORMATION SYSTEM

#### Mission

The Program Manager, AMC Automated Manpower Management Information System (PM, AAMMIS), was charged with overseeing the concept development, design, and development of the AAMMIS system.

#### Staffing and Personnel

Mr. William Jones was detailed as the program manager on 14 April 1986, and was appointed effective 27 July 1986. The organization was established as of 2 April.

By the end of the fiscal year the PM was authorized a full time staff of five civilian employees, with three actually assigned. The staff was augmented with five additional personnel from the Depot Systems Command, the Test and Evaluation Command, Rock Island Arsenal, and AMC headquarters. Of these, three were on-board at the end of the fiscal year.

#### Director's Overview

In November 1985 AMC's resources management systems review committee (RMSRC), perceiving difficulties in the existing method of operation, directed AMCCOM to take the lead in developing the AAMMIS system.<sup>11/</sup>

The program manager was established in April 1986, with the approval of a charter by the RMSRC, with no personnel resources and no significant plan of operation. During the remainder of FY 1986, an organizational structure and positions were established, personnel were identified, and resources were acquired. A strategy of operation was then established. Efforts were expended to bring the system to concept development (milestone 1) early in FY 1987.

#### Major Activities

Efforts were expended to develop a management plan with its logistics, acquisition, training, configuration management, and resource subsets.

With the assistance of a GSA contractor, a technical planning document was started to evaluate alternate hardware and software strategies. This would lead to an economic analysis, and a decision by the RMSRC.

The functional description and data element dictionary were being reviewed and amended to accommodate late breaking developments and to accommodate easier management and understanding of the system prior to establishment of a baseline document at milestone 1.

NOTES

1/Unless otherwise noted, this chapter is derived from the annual historical submission of the deputy for resources and management, Mr. Donald R. Lathrop, Deputy, 6 Jan 87.

2/HQ, AMCCOM, Record of Weekly Staff Meeting, 10 Dec 85, p. 44.

3/Ibid., 21 Apr 86, p. 40.

4/This section is derived from the annual historical submission of the Cost Analysis Directorate, Mr. David D. Halvey, Acting Chief, 20 Nov 86.

5/FONECON, author with Mr. Rodney A. Bales, Cost Analysis Directorate, 9 Mar 87.

6/Staff Meeting, 6 May 86, p. 50.

7/FONECON, author with Mr. Gary Strebel, Management Directorate, 12 Mar 86.

8/Staff meeting, 8 Jul 86, p. 56.

9/"New computer links DoD ammo system," RIA Target, 21 Sep 84, p. 3.

10/This section is derived from the annual historical submission of the Systems Analysis Office, Mr. Bernard C. Witherspoon, Chief, electronically transferred 26 Nov 86.

11/FONECON, author with Mr. William Jones. PM, AAMIS, 25 Feb 87.

## CHAPTER VIII

### INDEPENDENT DIRECTORATES AND OFFICES

In addition to those directorates reporting to one of the deputies, AMCCOM had several directorates and offices that reported directly to the deputy commanding general for procurement and readiness (DCGPR). The Weapons Systems Management and Product Assurance Directorates were discussed in previous chapters. The remaining "independent" directorates and offices were the Readiness and the Plant Operations Directorates, and the Joint Activities and the Competition Management Offices.

#### READINESS DIRECTORATE

##### Mission

During FY 1986 the Readiness Directorate's mission was to manage, direct, and expedite command-wide efforts to enhance mission readiness and sustainability through planning, assessment, systems analysis, and integrated corrective action. It managed and executed the command field logistics assistance program, provided associated technical training, and conducted necessary field visits. It managed the command programs for operations research, systems analysis, and risk analysis (OR/SA/RA) and assured that command force modernization and systems integration plans, policies, and programs contributed to improved field readiness. The directorate developed, conducted, coordinated, and integrated studies, studies programs, plans, strategic analyses, and corrective actions to support army readiness and sustainability, mission strategy formulation, and problem analysis related to AMCCOM's mission and operations. It responded to command-wide operational emergencies and high priority situations, or directed actions through the selective application of operations center teams or internal project teams. It formed multi-directorate task groups as necessary, managed the command emergency and strategic planning systems, and managed the chemical and nuclear surety program.<sup>1/</sup>

##### Organization

The Readiness Directorate was comprised of the Readiness Analysis Division; the Force Modernization Integration Division; the Policy, Plans, and Programs Division; and the Field Services Activity.

## Independent Directorates and Offices

During FY 1985 General Richard A. Thompson, the AMC CG, forwarded a letter to the AMCCOM CG stating that systems analysis capabilities should be an independent organization with direct access to the command group. Systems analysis within AMC HQ was a proponent of the deputy for management and analysis, while AMCCOM responsibility for systems analysis was assigned to the Readiness Analysis Division of the Readiness Directorate. A study was performed by the Management Directorate, in addition to an internal study within the Readiness Directorate, to determine the specific organizational disposition of the systems analysis mission and functions. In January 1986 the DCGPR decided that the systems analysis functions would be removed from the Readiness Directorate and become a separate office under the deputy for resources and management as the Systems Analysis Office.

A further study was conducted to determine proper placement of the strategic long range planning (SLRP) and mission area analysis (MAA) functions. Final disposition of these issues was achieved on 9 July 1986. The SLRP/MAA functions were retained by the Readiness Directorate, and the Readiness Analysis Division was reorganized on 21 August 1986.

The Readiness Directorate was forced to reorganize during the fourth quarter of FY 1986 as a result of the establishment of the Systems Analysis Office and the "Frost study." When the Systems Analysis Office was formed, only five individuals were retained by the Readiness Directorate to constitute the Readiness Analysis Division, forcing augmentation of the division by personnel from the Policy, Plans, and Programs Division, and a realignment of the logistics operations control center (LOCC). The "Frost study" mandated the reassignment of the Policy, Plans, and Program Division's chief to the Readiness Analysis Division, and also decremented a lieutenant colonel position in the Initiatives Branch, causing the Emergency Plans and the Initiatives Branches to combine. The branch chief of the Emergency Plans and Initiatives Branch was then "dual-hatted" as the chief of the Policy, Plans, and Programs Division.<sup>2/</sup>

### Staffing and Personnel

Colonel James H. McAllister served as the director of readiness with Dr. M. Z. Thompson as deputy director during the period 1 October through 25 November 1985. After Colonel McAllister was reassigned, Dr. Thompson became the acting director until July 1986, at which time he was tasked to a grenade bodies study, and then promoted to the position of deputy for industrial preparedness and installations. Mr. Jerry D. Brakhage was detailed to the director's position for the remainder of the fiscal year.

As of 30 September 1986, the authorized strength of the Readiness Directorate was 49 civilians and 19 military. The on board strength was 49 civilians and 15 military. The authorized strength of the Field Services Activity was 149 civilians and 14 military, with 154 civilians and 12 military on board.

#### Director's Overview

The Readiness Directorate underwent many challenges throughout FY 1986 as a result of the "Frost study" and the creation of new divisions. However, the directorate continued to operate with success in accomplishing its assigned mission. A proposed change to the Readiness Directorate portion of AMCCOM regulation 10-1, prepared and forwarded to the Management Directorate, identified the mission and functions of the directorate.

The following Readiness Directorate standard operating procedures were published during FY 1986: emergency notification actions, accounting for blanket travel order expenditures, fire prevention and protection, administrative procedures--staff meetings, safeguarding defense information, training procedures, staffing, and requests for personnel actions.

Some of the most noteworthy accomplishments of the Readiness Directorate during FY 1986 were the preparation of an AMCLOG-21 mission area analysis document, consisting of deficiencies with associated corrective actions, and the development of the readiness expert support system. The directorate established a readiness operations control center and nuclear, biological, and chemical (NBC) team training for reserve components at Pine Bluff Arsenal. It automated functional area assessment (FAA) chart preparation and data call processes, developed an AMCCOM automated total package/unit materiel fielding (TP/UMF) depot workloading report, and established an AMCCOM presence in the US Army, Europe (USAREUR) to oversee materiel fieldings under TP/UMF in that theater. The directorate published and distributed the AMCCOM mobilization operations planning and execution system (MOPES) plan, developed the draft AMCCOM toxic chemical munitions (TCM) contingency support and movement plan, and followed up on general officer initiatives and corrective actions. It completed seven command post exercises, and directed AMCCOM surety personnel in recovery operations resulting from a chemical incident at Neosho, Missouri. It also developed a comprehensive logistic assistance representative (LAR) inspection procedure, and established an AMCCOM LARs technical training center.

In summary, Readiness Directorate programs were effective and made significant contributions to major functions of the command.

Major Activities

Readiness Analysis Division

The mission of the Readiness Analysis Division was to manage and execute the command programs for operations research, systems analysis, and risk analysis; readiness and sustainability assessments and evaluations; analytical support services; the army studies program; and strategic analysis and planning. It assured that the OR/SA/RA program effectively integrated with command mission assessments and corrective action determinations, provided staff guidance to the OR/SA/RA activities of ARDEC and CRDEC, and served as the principal technical advisor to the command group in all areas of OR/SA/RA and strategic analysis and planning.

AMCLOG-21 Mission Area Analysis

This AMC initiative constituted a new way to determine the needs for support of the AMC logistics sustaining base, and to provide clear justification for those needs by associating them with specific deficiencies in support of the army in the field. AMCLOG-21 considered deficiencies to the year 2015.

The AMCCOM effort resulted in two products. The first document, which was submitted to AMC, consisted of deficiencies with associated corrective actions. The second document was an AMCCOM mission area development plan (MADP) which was to be used as an action document within AMCCOM to correct these deficiencies and establish the primary and supporting directorate responsibilities for each. An AMC MADP was compiled from the lists of deficiencies submitted by all of its major subordinate commands (MSC) and separate reporting activities. It was used by AMC to influence the FY 1989-93 impact memorandum for budget submission.

Using field manual 100-5, Operations, as the base document, a synopsis was developed concentrating on the logistics aspects of operations, which was to be used as a guide during future updates of the AMCCOM strategic long range plan and the AMCLOG-21 MAA and MADP.

The AMCLOG-21 approach was to be a continuing process. Therefore, AMCCOM established a permanent management system consisting of a DCG-level steering committee, an operating group, and a variable number of task groups. The eight existing task groups covered the mission areas of supply, maintenance, transportation, ammunition, armament technology, chemical technology, resources, and information management.

### Strategic Long Range Plan

The AMCCOM SLRP, published in November 1984, was designed as a living document with annual updates scheduled to ensure near-term actions consistent with long range command goals. During FY 1986 all AMCCOM SLRP actions were integrated with the AMCLOG-21 effort, and many of the policies, goals, and objectives identified in this long range plan were reflected in the deficiencies examined under AMCLOG-21.

AMC published its SLRP during FY 1986. Likewise, all other MSCs published similar documents. All of these plans were reviewed to provide useable data for subsequent updates of AMCCOM's plan. In addition, two position papers were prepared on the update process to incorporate the influence of the AMC plan.

### Readiness Analysis Planning

Following the reorganization of the Readiness Analysis Division, planning for accomplishment of its mission and functions began in earnest. A briefing was prepared for presentation to the DCGPR to implement policy feedback, and to develop a milestone plan of action. Newly assigned personnel were dispatched to several of the MSCs with well-established readiness analysis programs to obtain "how to" information to be used in the structuring of an AMCCOM program.

Additional readiness activities included participation in monthly readiness teleconferences as well as task groups established by the Materiel Readiness Support Agency (MRSA) for the modification of army regulation 700-138, Army Logistics Readiness and Sustainability, and critical national training center readiness interfaces. A secure terminal was installed to permit access to the readiness integrated data base. Other data bases were researched and identified to aid in the preparation of readiness status charts and trend analyses for the 22 AMCCOM reportable items. A command point of contact was identified within the Readiness Analysis Division for the emerging predictive analysis flagging system.

### Readiness Operations Control Center

The mission of the readiness operations control center (ROCC) was to gather readiness data reported from many sources, analyze it, and display it by weapons system unit. The center kept the readiness director informed of problem areas. After February 1986 the ROCC tracked mission capability (MC), non-mission capability due to supplies, and non-mission capability due to maintenance of 22 systems for which AMCCOM was responsible.

## Independent Directorates and Offices

In March 1986 AMCCOM, in conjunction with AMC and its MSCs, began the development of the readiness integrated data base system. In September a classified terminal hookup from AMCCOM to the MRSA central computer was accomplished. The main data base was stored on the MRSA computer.

The ROCC continued to track and display 22 AMCCOM systems with the objective of improving the readiness of the field army. Four of these systems were submitted to AMC as being below the 90 percent MC required by the army and became part of the AMC readiness offensive program. These items were specially tracked because of their low mission capabilities.

### Reserve Components Affairs

In January 1986 a reserve component officer was assigned to the Readiness Directorate to serve as the AMCCOM focal point and coordinator for reserve component affairs and to monitor and evaluate the status and unit training levels of selected AMC-aligned reserve component units.

In FY 1986 a new concept in NBC team training for reserve components was established at Pine Bluff Arsenal. This course was constructed, and largely carried out, by AMCCOM and reserve components with the support of Pine Bluff Arsenal. It was received with great interest and commitment by the reserve component community.

The use of plastic ammunition to improve the training capabilities of reserve components was effectively demonstrated at Pine Bluff Arsenal's celebration of Armed Forces Day. Between 60 and 70 representatives of reserve and national guard units witnessed the demonstration, which received coverage in articles appearing throughout AMC, AMCCOM, and AMCCOM subordinate installation newspapers. Also, procedures were initiated to allow for the expanded training of reserve components at AMCCOM contractor-operated subordinate organizations.<sup>3/</sup>

Initial steps were taken to use reserve components for the training of active duty AMCCOM officers, captain and below, by obtaining hands-on unit experience. Expansions of this concept would allow for the use of active army AMCCOM officers to assist and update reserve components on current army concepts and doctrine.

### Force Modernization Integration Division

The Force Modernization Integration Division was responsible for developing and maintaining policy and procedures for materiel fielding under the TP/UMF concept. It determined the impact of

AMCCOM equipment on unit readiness, managed AMCCOM's role in FAAs and program management system assessments (PMSA), and recommended or tasked corrective actions necessary to accomplish AMCCOM's assigned mission.

The division participated in numerous FAA briefings to the army's vice chief of staff. Subjects covered included rationalization, standardization, and interoperability; armor; infantry; aviation; quartermaster; chemical; and industrial base mobilization.

The division was also heavily committed to PMSA and force modernization council briefings which covered the following systems: the AH-64 Apache helicopter, the M9 9mm pistol, the Bradley fighting vehicle system, the M1/M1A1 tank, the M157 and XM55 smoke systems, the mine clearing line charge, the fire support team vehicle, the M60A3 tank thermal sight, and the field artillery ammunition support vehicle.

The division continued its mission as command overseer for TP/UMF execution. During the fiscal year AMC established a formal TP/UMF technical working group (TWG) for the purpose of monitoring the development of policy and procedures to support the new fielding concept. The AMCCOM representative to the TP/UMF TWG was the division's command point of contact for TP/UMF. This resulted in a simplification and streamlining of AMCCOM's coordination and interpretation of guidance.

#### Functional Area Assessment Branch

In addition to the above, the FAA Branch was designated the AMC center of excellence for the FAA process. Automation of FAA chart and data call format preparation was accomplished utilizing IBM-compatible personal computers and LOTUS 1-2-3 software. The branch trained other MSC FAA offices in its use. Training was completed by Communications and Electronics Command and Aviation Support Command personnel and was scheduled to be provided to the Troop Support Command (TROSCOM) when its equipment became operational.

#### Fielding and Integration Branch

The Fielding and Integration Branch was responsible for representing the command in the TP/UMF functional coordinating group. This select group of systems analysts persisted in their efforts to resolve TP/UMF implementation problems in the commodity command standard system. The branch served as the lead AMC point of contact to develop automated TP/UMF depot workloading procedures and reports.

## Independent Directorates and Offices

Branch personnel devoted time and resourcefulness to developing the reports on a personal computer. Lacking an IBM-compatible system, the automated report was created on an Apple MacIntosh computer. Efforts were made, in conjunction with TROSCOM representatives, to transfer this report to an IBM-compatible system in FY 1987. An IBM-compatible program would enable all other AMC elements to "interface" with the Depot Systems Command through computer modems.4/

During the fiscal year AMC initiated action to study implementation of TP/UMF throughout the army. This evaluation took the form of a subject matter assessment (SMA) conducted by the AMC Management Engineering Activity (MEA) at Huntsville, Alabama. Branch involvement was significant during the course of the six-month effort which continued into FY 1987. The SMA addressed organizational and procedural issues, which, if approved by the AMC CG, could result in changes to the branch mission and functions. The basic thrust of MEA's findings and recommendations was that the Readiness Directorate should concentrate on "assessor" functions for TP/UMF and cease performing "doer" functions.

Representatives from the branch participated as active members of AMCCOM materiel fielding teams during equipment handoff to USAREUR units. Readiness Directorate support during these fieldings assisted other AMCCOM directorates to accomplish the overall fielding mission and also provided an opportunity for branch staffers to gain valuable insight and experience in the fielding process.

The branch was actively involved in the effort to establish an AMCCOM presence in USAREUR to oversee materiel fieldings under TP/UMF in that theater. Although several resource problems remained at the end of FY 1986, the command had an officer on station at the Geinsheim Staging Activity in Germany with responsibilities to coordinate and facilitate planned materiel fieldings.

The AMC deputy chief of staff for readiness directed MSC readiness directors to assume responsibility as central points of contact for all support to Army Development and Employment Agency initiatives. Oversight, which had been fragmented previously throughout the command, was now centralized in the branch. This new mission expanded toward the end of the fiscal year as AMC attempted to consolidate responsibility for support to several other army initiatives. These initiatives included special operating forces, the Army Development and Employment Agency, light infantry divisions, low intensity conflicts, and army test beds.

## Policy, Plans, and Programs Division

The mission of the Policy, Plans, and Programs Division was to manage command programs for emergencies and contingency planning, exercises, command and control of the AMCCOM operations centers, and intercommand relationships. It provided the command group a centralized capability for evaluation, coordination, integration, and resolution of command group initiatives, and weapon systems program policy. It also provided administrative supervision over, and support to, the chemical and nuclear surety programs.

Mobilization and Operations Planning and Execution System

The MOPES combined the mobilization and the war emergency plans and became the primary document for policy in support of mobilization and war emergency operations. This plan was used extensively during emergencies and exercises.

During the second and third quarters the AMCCOM MOPES was prepared and coordinated with all AMCCOM elements, then published on 12 May 1986. In addition, all subordinate installations and activities were tasked to prepare supporting MOPES plans. These supporting plans were reviewed as they were received. Finalization of supporting plans was scheduled for the second quarter of FY 1987.

Toxic Chemical Munition Contingency Support and Movement Plan

In January 1986 the Department of the Army (DA) directed AMCCOM to prepare a TCM plan. With the assistance of the Defense Ammunition and Transportation and Traffic Management Directorates, and surety personnel, the Emergency Plans Branch developed a draft plan by March.

The plan provided guidance for, and identified the responsibilities of, all concerned for the movement of toxic chemical munitions in the event of applicable operations or logistics plan execution. The draft plan was distributed and staffed with the appropriate AMCCOM headquarters elements, the Technical Escort Unit, and other commands.

During the third and fourth quarters, many meetings and workshops were held to review the draft plan and discuss problem areas. In July 1986, DA tasked the Joint Chemical Warfare Joint Test Force (JCHEM) to use the AMCCOM draft TCM plan as a base and develop a joint services TCM document. The JCHEM completed the draft document on 30 September 1986. The document was in the process of being incorporated into a DOD manual.

Transportation of Chemical Materiel in Support of RDTE

In FY 1985 AMC directed the preparation of an operations plan (OPLAN) for the transportation of chemical materiel in support of research, development, test, and evaluation (RDTE). The plan was to be used as a general guidance document for the movement of chemical materiel in support of RDTE movements. A draft plan was prepared and distributed.

Throughout FY 1986, meetings were held to discuss the movement of toxic chemical agents and the final publication of OPLAN RDTE. This plan was being staffed for concurrence prior to being signed by the chief of staff. Publication was to be in FY 1987.

Functions During Heightened Tension, Surge, and Mobilization

In June 1986 AMC directed a study be implemented to justify mobilization manpower requirements. The Emergency Plans Branch tasked all headquarters elements to do an analysis study of their peacetime missions and functions and how these missions and functions would change under heightened tension, surge, or mobilization. Finalization of this study was to be in FY 1987.

Readiness Directorate's Organization, Mission, and Functions

From August 1984 to February 1986 AMC directed the establishment of readiness directorates at the MSCs, prescribed their mission and functions, and outlined their organizational structure. The Emergency Plans Branch conducted a study in March 1986 to ensure that the directorate was in compliance with all of those requirements.

General Officer Trip Reports

Due to the heavy volume of trip reports being received in the Readiness Directorate, a CG policy was prepared in October 1985 outlining procedures to be followed when processing these reports.

Due to a conversation between Generals Hissong and Thompson, the policy was revised. The revised policy allowed two days for the action officer to identify taskers and offices of primary responsibility (OPR), four days for the OPR to provide a response, and two days for the action officer to prepare a consolidated reply to General Thompson. The revised policy was signed in July 1986.

GOGO and Readiness Directorate Relationships

In January 1986 the Readiness Directorate received from the DCGPR monthly activity reports from government-owned, government-operated (GOGO) installations/arsenals. Instructions indicated these reports should be acknowledged and any items within the report needing corrective action be tasked to appropriate AMCCOM elements for comments. Monthly receipt of these reports required the preparation of a CG policy statement indicating that the Readiness Directorate was the command focal point for questions emanating from the GOGO commanders or other actions requiring a command point of contact. The CG policy was submitted to the command group for signature in August 1986.

#### Project Management

During FY 1986 five project/product manager (PM) charter updates were coordinated and submitted to AMC. A charter for the new PM for mortars, was coordinated and submitted to AMC in March 1986.

A study of AMCCOM subordinate PM-managed items was conducted to see which items past initial operations capability should have transitioned, and to establish tentative transition dates for all such items. As a result of the study, 29 items managed by the PM for smoke/obscurants were recommended for transition to MSC management. This recommendation was approved by AMC.

#### Weapon System Matrix Management

Brigadier General Hidalgo was briefed on weapon system matrix management on 11 July 1986. At the request of the CG, a comprehensive review of each level II system was conducted to see if level III management was more appropriate.

The annual review of the roster of 200 level III managed items was conducted and the roster updated. Nomination packages for level II management or management level changes were prepared on six systems. Three level II management charters were approved by the CG. Twenty-two level II management charters were revised. The directories of level II and III managed items on the computer's "command menu" were kept up-to-date.

#### Memorandums of Agreement/Understanding

In FY 1986, 151 agreements were reviewed and 12 new or revised agreements were signed. Five agreements were terminated because they were no longer useful.

#### Expeditious Reports to AMC

## Independent Directorates and Offices

The weekly significant AMC action report was replaced by the daily information summary (DISUM) on 21 August 1986. By the end of the fiscal year, 93 DISUM inputs had been received by the Readiness Directorate, 40 of which were approved for forwarding to AMC. Forty significant actions were reported from July to August 1986.

### Implementation of Red Teams

On 24 September 1985 the AMC CG directed AMCCOM to form "red teams" for each program and to use these teams to provide AMC an independent assessment of the program's health and status prior to each milestone decision point. The Readiness Directorate and the Systems Analysis Office developed a response to the direction and an initial implementation plan. As recommended by the directorate, the Systems Analysis Office was designated the lead organization for red teams in AMCCOM.<sup>5/</sup>

### Command Operations Center

The operations center (OC) was located on the second floor of building 350. The OC provided space and support to the AMC independent review of munitions demilitarization and stockpile management, generally referred to as phase III - demil task group, for approximately two and one-half months. This group was led by Lieutenant General (retired) Henry H. Hardin. In addition, the OC staff also supported the AMCCOM information systems plan for a three month period. This period coincided with preparation for a major command post exercise. Therefore, unnecessary difficulties once again arose from working with classified information in the presence of an "unclassified" study group. Also supported throughout the entire year was the small arms serialization group.

The OC, for the first time, conducted a training conference for all the subordinate installations and activities. This training conference covered such topics as emergency planning, emergency action messages and notifications, and participation in command post exercises. This was such a success that another conference was held prior to the start of the fall exercise.

The OC was activated for seven exercises during the fiscal year. These exercises were Port Call 86, Present Arms 86, Ulchi-Focus Lens, Tooele Fast Pack II, Gallant Eagle, Umatilla Fast Pack I, and Celtic Cross IV. Two of these exercises, Port Call and Present Arms, required augmentation of the normal staff to enable activation on a 24-hour basis.

### Exercise Port Call

Exercise Port Call was a joint chiefs of staff (JCS) sponsored command post exercise, conducted during the period 12-22 November 1985. All active army ammunition plants, arsenals, and subordinate installations and activities participated as required, mainly in response to individual taskers. AMCCOM headquarters elements participated on a 24-hour basis for the duration of the exercise. Six exercise objectives were established to support JCS and army planning requirements. The main objectives were to exercise the concept of a 100,000-man call-up, a surge of the industrial base, the implementation of full mobilization, and initial deployment.

An attempt was made during the pre-exercise phase of Port Call to execute the surge provisions of an ongoing AMCCOM contract. After much difficulty, two items and a contractor were selected. The items were the MJU-7/B and M206 infra-red flares produced by Tracor MBA of East Camden, Arkansas. Four messages were sent to the contractor instructing immediate surge production and providing guidance and additional information.

It was learned later that the contractor did not receive these messages expediently; as a result, critical time was lost. The communications center sent the messages via AUTODIN; however, the contractor subscribed to the Western Union TELEX system. Unfortunately, Western Union was on strike and the messages were given to the US Postal Service for delivery. This was where the delay was encountered. As a result of this lesson learned, a contract/solicitation provision for section "K" of the contract was initiated. The provision would require all future contractors to provide AMCCOM with a current mailing and electrical message address when applicable.

As far as surging the items, Tracor MBA had been conducting the surge of the MJU-7/B flare for two days on a 1-10-5 shift basis. The surge was going along smoothly with the increased rate as described in the contractor's production surge plan. On the third day, however, an explosion occurred in the area of pyrotechnic blending during the tumbling operation. There were two fatalities and one person was critically injured. Plant operations were immediately halted and had not resumed by the end of the fiscal year.

Message traffic received during Port Call was considered moderate. A total of 2,774 teletype messages were received, of which 394 required action. Worldwide military command and control system (WWMCCS) messages totaled 1,961. Total hours required to conduct this exercise was 8,262, with total expenditures of \$110,826.

Exercise Present Arms

Exercise Present Arms was also a JCS-sponsored command post exercise, conducted during the period 10-22 June 1986. Seventeen AMCCOM subordinate installations and activities participated during duty hours, responding to exercise taskings. All AMCCOM headquarters elements participated in the exercise on a 24-hour basis for the duration of the exercise. Present Arms was the first JCS exercise to test disaster control since April 1984.6/

Present Arms afforded AMCCOM an excellent opportunity to test requesting assistance from AMC tenants and other agencies. AMCCOM provided space in the OC for representatives from the AMC Installations and Services Activity and the Industrial Base Engineering Activity, both tenants located on Rock Island Arsenal. The Chicago district Corps of Engineers was also provided space. They were introduced to the command group, attended daily briefings, and presented, during the daily "round table," their mission and how AMCCOM interfaced with their agency.

Message traffic received during Present Arms was considered moderate. A total of 2,989 messages, including 868 WWMCCS messages, were received, of which 495 required action. Total hours expended was 9,705, for a total cost of \$135,445.

Ulchi-Focus Lens 86 and Tooele Fast Pack II

Both exercises were conducted simultaneously during the period 1-18 July 1986. AMCCOM acted as the AMC data collector and prepared and distributed the AMC after action report. The secret report provided a synopsis of the exercise, identified exercise participants, addressed specific problems encountered, and provided recommendations for their solution.

Exercise Gallant Eagle and Umatilla Fast Pack I

The AMCCOM operations center was the focal point for exercise Gallant Eagle. However, there was very little play involving the command. AMCCOM's resources were required for the auxiliary exercise Umatilla Fast Pack I, which was conducted at the same time as Gallant Eagle, 18-24 July 1986.

Operation Celtic Cross IV

Operation Celtic Cross IV was conducted during the period 13-26 August 1986. AMCCOM's mission was to support the LARs at Fort Ord, where the Seventh Infantry Division was conducting an exercise. This task was completed in a timely manner and a message of appreciation was sent to the OC from General Thompson.

Top Secret Account

The Operations and Surety Branch maintained AMCCOM's top secret (TS) account since 1972. During January 1986, in an effort to reduce classified holdings, all applicable AMCCOM elements were requested to review their TS documents for retention or destruction. This resulted in the elimination of 20 TS documents. On 22 September 1986, an inspection of TS documents was conducted by the AMC Security Support Activity, Fort Gillem, Georgia, with no security violations being reported.

Alternate Headquarters Files

AMCCOM elements, including ARDEC and CRDEC, continued their efforts to update and transfer appropriate documents and records to the alternate headquarters (AH) and the master duplicate emergency files depository (MDEFD). AMCCOM emergency planning officers (EPO) visited the operations center, conducted on-site inventories, and reviewed file contents to ensure that alternate records were adequate. All inadequacies uncovered were reported to the appropriate storing command. A program was in effect to obtain essential records for the files so the alternate headquarters mission could be effectively accomplished. Essential general war function statements were updated and provided to the AH and MDEFD.

Master Duplicate Emergency Files Depository

The MDEFD was administered by the Operations and Surety Branch with four individuals located at the facility in Atchison, Kansas. Greater emphasis was placed on transferring appropriate documents and records to the MDEFD. Briefings were provided to various commands on the mission and function of the MDEFD and the importance of having the proper reconstitution records stored at the facility.

A new support agreement was formulated between the MDEFD, the contractor, and the Defense Industrial Plant Equipment Center, Memphis, Tennessee. Visits to the MDEFD by AMCCOM EPOs and representatives from other storing commands increased, primarily due to renewed interest in having the proper records on file in case of a natural disaster or emergency situation.

Due to the high volume of records stored at the MDEFD, action was initiated to computerize some functions, including indexing records, analyzing like organizations from various commands to determine adequacy of records, and annual inventories. It was anticipated that computer hardware would become available early in FY 1987.

Surety

The Surety Section of the Operations and Surety Branch was relocated three times during the year. When the demil group moved into the OC in October 1985, the Surety Section moved to the third floor of building 350. During June 1986 the surety function was moved to a larger office on the same floor, and in September the surety element moved back into the operations center.

Fielding of M8A1 chemical agent alarms to Johnston Island was accomplished on 14 November 1985. The old M8 system exhibited an approximate false alarm rate of one per 300 hours of operation. The M8A1 improved that rate to one in 1,300 hours.

The Surety Section assisted in the movement of suspect chemical surety materiel at Fort Polk, Louisiana (4.2 mortar rounds); New Hampshire (bottles of unknown substance); the Department of Public Health, Topeka, Kansas (100 ml of diisoprophlorophosphate); Fort McCoy, Wisconsin (4.2 round); Little Cambridge, Massachusetts (recovery of all chemical materiel); and Washington, DC (military chemicals).

On 1 January 1986 Mason-Hanger became the new operating contractor at Newport AAP, replacing Uniroyal, Inc., who declined to renew their contract. The surety clause had been greatly expanded in the request for proposal, specifically requiring the contractor to perform many actions that had been implied in the Uniroyal contract but had not been accomplished. Mason-Hanger performed exceptionally, receiving only three deficiencies in their April 1986 AMC surety and operational inspection (SOI). The new toxic chemical laboratory and security upgrade were also completed and declared operational during the fourth quarter of FY 1986.

An AMC-level SOI was conducted at AMCCOM headquarters from 6 to 10 January 1986. Results were considered very good, despite the major problem of daily surety management of national inventory control point/national maintenance point nuclear activities.

The mandatory civilian urinalysis program for all civilians in the personnel reliability program (PRP) was instituted at AMCCOM during the third quarter of fiscal year 1986. Testing for drugs was unannounced and conducted by RIA employee assistance program personnel. Also, all civilian positions required to be in the PRP were coded on the job sheets as requiring successful screening in the PRP and completion of the urinalysis testing before the position could be filled permanently. The recruitment form would also require a notation that the action was for a surety PRP position.

During FY 1986, AMC requested selected chemical surety sites to upgrade their downwind hazard prediction capabilities. This was to be accomplished by installing meteorology towers capable of providing real time weather data to a computer in the operations center. The computer would calculate the various distances of 1 percent lethality, no deaths, and no effects and display them on a map. Both CRDEC and Pine Bluff Arsenal completed their "short response" installation with acquisition of specialized Doppler radars.

During June 1986 an incident occurred at Neosho, Missouri. Moark Industries, owner of land formerly part of a World War II training range at Camp Crowder, uncovered some toxic chemical vials and explosives during excavation to build a new facility. The bulldozer operator was slightly injured from a chemical agent that vaporized into the air. Army explosive ordnance disposal personnel from Fort Leonard Wood were asked to provide assistance. Upon determining that a chemical hazard was still present, they requested help from the Technical Escort Unit. Due to heavy media involvement and potential legal ramifications that could possibly obligate the army to the cleanup of much larger areas of Camp Crowder, a representative from the Surety Section proceeded to the site to direct recovery operations. Following removal of a substantial number of toxic-filled vials and explosive mines, the area was decontaminated and returned for the owner's use.

The Surety Section continued to provide technical support for a contract with Southern Research, Inc. (SRI), of Birmingham, Alabama, for chemical laboratory construction, equipment, and preparation of laboratory procedures for the operation of a chemical decontamination training facility at Fort McClellan, Alabama. Technical support was also provided to the USAREUR chemical surety site by preparing a scope of work for the SRI laboratory support contract, as well as numerous classified projects.

SRFX-86, an AMC-level annual nuclear weapons accident exercise to provide training for on-scene commanders and their response teams, was conducted at Savanna Depot Activity during August 1986. Due to limited funding, many of the prior-year field training exercises had to be reduced in scale. However, increased emphasis was placed on the command post exercise phase, resulting in much more interaction between army response elements and state and local officials. "The exercise was also designed to provide a full response to the expected heavy public affairs problems that would be encountered in a nuclear weapons accident."7/

Field Services Activity

## Independent Directorates and Offices

The mission of the Field Services Activity (FSA) was to establish, determine resources for, supervise, and control a worldwide logistic assistance program. The Field Services Activity consisted of three branches: the Far East Logistics Assistance Branch, the Europe Logistics Assistance Branch, and the Continental United States (CONUS) Logistic Assistance Branch. The Europe Logistics Assistance Branch consisted of the 21st Support Command Logistic Assistance Section at Kaiserslautern, West Germany; the V Corps Logistic Assistance Section at Frankfurt, West Germany; and the VII Corps Logistic Assistance Section at Furth, West Germany. The CONUS Logistic Assistance Branch consisted of the North Logistic Assistance Section at Fort Monroe, Virginia; the South Logistic Assistance Section at Fort Gillem, Georgia; the South-Central Logistic Assistance Section at Fort Hood, Texas; the West Logistic Assistance Section at Fort Lewis, Washington; and the Logistic Assistance Operations and LAR Technical Training Sections, both located at Rock Island Arsenal.

8/

### Automation

During FY 1986 the FSA continued a management initiative begun in FY 1985 to expedite transmittal of inquiries and responses by obtaining more electronic communications and computer capability. The FSA obtained "Silent 700" terminals and provided them to field supervisors. In addition, it planned to develop a logistic intelligence data base which would load the problem-solution/inquiry-response for access by all field LARs, as well as various headquarters elements. This data base would further aid in reducing response time and would help in observing trends to allow for quicker fixes of systemic or recurrent problems.

Also developed were LAR rotation and training data bases, which automatically matched a LAR's skills to assignments, or in the event of a mismatch, scheduled the LAR for training prior to reassignment. This action assured that all equipment which must be supported could be supported with trained LARs.

In addition to the logistic information, rotation, and training data bases, the FSA automated its tracking of passports, mobility agreements, and travel funds.

### LAR Technical Training Section

Technical training during FY 1986 was provided to AMCCOM LARs, AMCCOM maintenance personnel, personnel from the Forces Command, the national guard, the National Training Center, depots, and civilian contractors. There were 47 students trained on the M1/M1A1 Abrams tank, 46 on the M2/3 Bradley fighting vehicle, 16

on self-propelled artillery, 9 on towed artillery, 17 on the M60A3 tank, 19 on the Vulcan air defense system, 25 on aircraft armament, 7 on tools and equipment, 6 on directional fire control, and 12 on small arms.

#### JOINT ACTIVITIES OFFICE

##### Mission

The Joint Activities Office provided principal staff advice to the commanding general and deputy commanding general for procurement and readiness on command management policies and procedures relating to the single manager for conventional ammunition (SMCA). It interpreted and implemented command-wide SMCA policies and procedures, provided the focal point for coordination and control between the SMCA and external agencies on matters of command and control and the SMCA mission as a whole, and provided direction, coordination, and control of joint ordnance commanders' group (JOCG) activities. The office provided the focal point for the executive director for conventional ammunition (EDCA); provided for AMCCOM participation in joint logistics commanders (JLC) groups, panels, and studies; and directed, coordinated, and controlled worldwide ammunition reporting system (WARS) activities, including management of the WARS data bank.<sup>9/</sup>

##### Staffing and Personnel

John W. Masengarb served as chief of the Joint Activities Office during FY 1986. At the end of the fiscal year, the authorized and actual strength was seven civilian employees.

##### Director's Overview

In its second year of operation, JOCG activities continued to have high visibility. The flag and general officers comprising the group held three meetings, and the chairman, Major General Hissong, reported progress to the joint logistics commanders at their October 1985, March 1986, and September 1986 meetings. The insensitive munitions program was a high interest item throughout the year. The JOCG established an insensitive munitions coordination sub-group to enhance inter-service cooperation on this important program.

The publication and distribution of DOD 5160.65-M, Single Manager for Conventional Ammunition Implementing Joint Conventional Ammunition Policies and Procedures, was a significant milestone for both JOCG and the SMCA. Cost avoidances related to the SMCA mission showed a significant increase over the previous year.

## Independent Directorates and Offices

The chief of the Joint Activities Office served as the AMCCOM manager of SMCA and non-SMCA management decision packages. In that role, the chief defended AMCCOM SMCA requirements to the AMC staff, and AMC SMCA requirements to the DA sustaining panel. The result of the DA sustaining panel was additional funding for the SMCA mission in FY 1988 through FY 1992.

### Major Activities

#### Joint Ordnance Commanders' Group

Joint ordnance commanders' group activities continued at a high level of intensity. The chief of the Joint Activities Office served as the executive director and as the principal AMCCOM member of the executive committee. The JOCG held meetings during February, June, and September 1986. The AMCCOM CG, as chairman, reported progress to the JLC at its October 1985, March 1986, and September 1986 meetings.

The JOCG established an insensitive munitions sub-group to coordinate development programs, and to assure that military services goals and technical approaches in the insensitive munitions programs were complimentary. The sub-group also reviewed and harmonized the services' technical requirements with the goal of standardizing methods of test and pass/fail criteria, and facilitated the transfer of technology between the services. The armament maintenance sub-group was disbanded, since armament maintenance functions were being accomplished by the joint depot maintenance advisory group and the depot maintenance interservicing group.

The JOCG development sub-groups conducted "jointness" reviews of 26 programs to determine potential for joint service application. Fifteen of the programs reviewed were found to offer significant opportunities for joint service cooperation, joint development, or a significant degree of interoperability. The JOCG had 24 active sub-groups at the close of the fiscal year.

The office continued to serve as the focal point for activities involving the EDCA, and for the identification and submission of SMCA cost avoidances reported in the AMCCOM cost control initiatives program. SMCA cost avoidances for FY 1986 totaled \$340.1 million.

#### Department of Defense (DOD) Directive 5160.65-M

DOD directive 5160.65-M, Single Manager for Conventional Ammunition Implementing Joint Conventional Ammunition Policies and Procedures, was published and distributed in March 1986. The manual, which implemented DOD directive 5160.65, was prepared by

the JOCG and the former joint conventional ammunition program coordinating group. It was submitted to the office of the EDCA for approval, and forwarded for publication by the office of the secretary of defense.

#### Worldwide Ammunition Reporting System

A revision of the WARS requirement and assets report part IA/IB, and various derivative reports, was needed because of reorganization of the army and the addition of new requirements. Some 20 system change requests were implemented from March through June 1986 to complete the action. Changes directed by the army's deputy chief of staff for logistics included identification of theater reserve for each theater as computed by the Depot Systems Command; reporting of the authorized initial issue quantity; format revision to provide display for all Western Command assets and requirements in Hawaii, Japan, and Okinawa; and identification of the war reserve for selected allies for the Republic of Korea Army and applicable assets.

In late September 1986 a representative from the WARS manager's office attended the initial deployment of the standard army ammunition system level 4 (SAAS-4) in Korea, and the SAAS worldwide conference.

A draft revision of army regulation 700-22, WARS, was completed in September 1986, to be forwarded to DA for staffing in FY 1987.

### PLANT OPERATIONS DIRECTORATE

#### Mission

The mission of the Plant Operations Directorate was to to direct and control government-owned, contractor-operated (GOCO) army ammunition plants (AAPs) and Alabama AAP, to execute the responsibilities of installation commander for standby GOCO AAPs without military commanders, and to provide directorate-to-directorate interface, as required, to effect problem resolution. Contracting officer authority resided in the GOCO Division of the Procurement Directorate. 10/

#### Organization

The directorate was divided into an Industrial Management Division and a Plant Activities Division.

The Industrial Management Division examined and evaluated functional areas of the GOCO AAPs in relation to their overall mission accomplishment. It conducted on-site industrial

## Independent Directorates and Offices

management assistance team reviews, recommended management improvement actions that would result in more effective and efficient operations, and assured that corrective action was taken. The division worked with other AMCCOM elements to effect generic problem resolution, and served as the coordination focal point for long-range review of technical requirements to be placed on the GOCO AAPs.

The Plant Activities Division served as the focal point within AMCCOM for individual plant actions that had multi-element responsibilities, that required immediate and intense management control, that did not have clearly defined directorate or office responsibility, or were directed by the CG or DCGPR.

### Staffing and Personnel

Colonel David M. Pojmann and Mr. Murray S. Bicknell continued to serve as director and deputy director, respectively, of the Plant Operations Directorate.

In December 1985 Mr. Bicknell was selected to serve on the munitions and demilitarization study team. This detail ran through the remainder of the fiscal year. The two division chiefs, Wesley J. Hunstad and Paul H. Woodhouse, served in dual roles to cover the duties of the deputy director. It was also learned during the year that the directorate would be losing its deputy director position in fiscal year 1988. This was a result of a study conducted by the manpower and organizational review team to reduce high grades in the command.

Personnel levels for the directorate were 3 military and 24 civilians authorized, and 3 military and 22 civilians actually assigned.

### Director's Overview

Fiscal year 1986 was a challenge. The Plant Operations Directorate was faced with manpower reductions and a hiring/firing freeze for both government and contractor personnel in the plant base. The desire of high officials at the Department of Army level to stabilize plant work forces brought about a fundamental change in the perspective of operating GOCO plants. The flexibility of contractors to adjust the work force to fluctuations in workload had always been considered a major advantage of the GOCO system. The new guidance required that workload be adjusted to maintain a stable work force. Political influences continued to play a part in major workloading and plant retention decisions.

A special staffing study done in the headquarters resulted in the elimination of the position of deputy director effective 1 October 1987. Mr. Murray Bicknell, the incumbent in the position, was selected to participate in a functional task group to rectify conditions identified by an AMC study of ammunition storage and demilitarization procedures. Mr. Bicknell assumed his temporary position in December 1985 and remained there throughout the year.

Industrial management assistance teams (IMAT) continued past successes and identified additional potential savings from plant visits. The directorate took on a new mission, the competition evaluation review team, during the year to evaluate the ammunition plants and select two plants, one active and one inactive, to be competed during FY 1986. Two additional personnel were authorized for the new mission. However, three authorized spaces were lost during the year, so the directorate ended up with additional mission, but fewer people.

There were two major conferences for plant leadership during the year. The first, for plant commanders only, was held at Lake City and Sunflower AAPs on 6-7 November 1985. A conference involving all commanders, commander's representatives, plant managers, and corporate officials was held at the Holiday Inn, Moline, Illinois, on 23-27 June 1986. Both conferences were used to promulgate AMC/AMCCOM policy on a variety of subjects, with plant safety a major area of discussion. Presentations were made by a number of attendees to make the conferences more participatory than those held in previous years. The objective was to transfer knowledge from experiences at some plants to the total plant constituency.

Changes of command occurred at Hawthorne, Indiana, Kansas, Louisiana, Milan, Newport, Radford, and Scranton Army Ammunition Plants. New plant commanders were afforded orientation training at AMCCOM headquarters, in addition to pre-command courses at Fort Lee, Virginia, and Fort Leavenworth, Kansas. Most of the new commanders were able to attend the June conference.

#### Major Activities

##### Alabama AAP

The US Army Toxic and Hazardous Material Agency (USATHAMA) awarded a contract on 21 August 1986 for the decontamination of Area A (2,800 acres). The \$1,154,364 contract was awarded to Weston Service Corporation of Decatur, Georgia, and had an estimated completion time of six months. Work began and progressed on schedule. After decontamination was complete, the land could be made available to the General Services Administration for sale.<sup>11/</sup>

Badger AAP

On 2 October 1986 Badger AAP received the Department of Energy federal energy efficiency award. Badger AAP was one of 17 federal organizations to receive this award.

Cornhusker AAP

Planning continued with the Nebraska Army National Guard for the use of the installation for field training exercises, a service school, and a maintenance facility. AMCCOM's deputy for industrial preparedness and installations determined that a licensing arrangement would be the most appropriate vehicle to accomplish this objective.

The permanent drinking water system for all affected residents of the Capitol and Lee Heights areas was completed. This finished remedial action to cope with off-post research department explosive (RDX) groundwater contamination originating from within the boundaries of the plant. Work began to eliminate the source of RDX groundwater contamination on-post, cesspools and leaching pits.

Hawthorne AAP

New bomb area clean up was completed on 15 August 1986 by UXB, Incorporated. A total of 910 acres was cleared at a cost of \$2.2 million. The clean-up netted 4,364 short tons, including 17,672 items of unexploded ordnance.12/

A General Accounting Office evaluation of contractor performance at Hawthorne began in July 1986, and was expected to be completed in January 1987. The objectives were to determine whether projected savings from the conversion to contractor operations had occurred; whether there had been a change in the plant's ability to fulfill its mission, and if the scope of the mission had changed; and whether lessons learned from Hawthorne's contractor operations had been applied to contracting studies at other locations.

Holston AAP

In April 1986, Tennessee Governor Lamar Alexander signed a bill into law that allowed counties to tax federal property used for non-public purposes. Hawkins County, where part of Holston AAP was located, tried to collect \$7.2 million in property taxes from Holston AAP. The army filed suit contesting the constitutionality of the law.13/

Kansas AAP

Continued problems with grenade consolidation press incidents created increased visibility during the year. Contributing factors were being investigated.

The combined plant operations center (CPOC) was completed during the year and all personnel moved into the new facility. As the year ended, however, funding for modular furniture was still an issue. Demolition began of the 11 WWII buildings which the CPOC replaced.

Lake City AAP

Olin Corporation took over operation of Lake City AAP on 2 November 1985. It was the first time in over 40 years that the plant had changed operating contractors. The new contract called for an award fee based on a unique set of criteria for evaluating contractor performance. The contractor was evaluated monthly with quarterly rollups. This eliminated much of the subjectiveness in awarding the annual fee. The results of the first year indicated this method of evaluating the contractor had merit and could be adapted for use by other plants.

Lone Star AAP

Lone Star AAP was selected for competitive solicitation of plant operations in November 1985. However, a request for proposals elicited insufficient interest, and the solicitation was cancelled in May 1986.

Work began on cleaning up the inactive demolition ground. Workers collected contaminated explosive items from the surface of the area.

A revised report of availability (ROA) for oil and gas exploration, drilling, and exploitation was forwarded to AMC on 9 April 1986 with the addition of an exhibit illustrating 141 potentially historical sites on the installation. The standardized wording for the mineral lease stipulations contained in the ROA were rewritten by installation personnel to better assure exploitation of any potential resource.

Longhorn AAP

A high melt explosive (HMX) process demonstration model successfully completed its proveout run in April 1986. Efforts continued through the year to execute a fixed price contract for the pilot plant as directed by Congress. Final design was scheduled to be completed in April 1987. Thiokol Incorporated was

selected as the sole source contractor for this unique process. Negotiations of a fixed price contract were not completed by the end of FY 1986 due to the complexity of development work still required. Longhorn AAP was officially designated as the site of the full scale HMX production plant by higher headquarters in June 1986.

On 22 November 1985, Longhorn AAP was selected by AMCCOM for competitive solicitation for operation of the plant. However, due to concern over interference with completion of the high priority HMX pilot plant, it was decided by DA in May 1986 to defer competition.

#### Louisiana AAP

Louisiana AAP was designated as the lead plant in a multiple RDX production plant program. Congress authorized a capability for 2.5 million pounds of RDX to be produced each month. The total project would take four years to complete at an estimated cost of \$350 million. Design funds totaling \$19.5 million were released, but no construction funds were included in the budget. A public meeting was held to discuss the Army's proposal to draw water from Bayou Dorcheat for use in the RDX facility.

#### Milan AAP

The contractor's workforce held informal discussions concerning whether or not to organize a union. Allegations were made that the contractor was using government money to counter the effort to organize. These allegations were determined to be unfounded.

Milan AAP was selected to produce the M60 applique armor. Estimated production start date was 1 April 1987.

Proveout of the automated mortar propellant increment loading system, expanded under project 5802007, was completed in July 1986.

#### Newport AAP

Newport AAP was competed in 1985 with Mason and Hanger-Silas Mason Company, Incorporated, selected as the operating contractor. Transition began on 1 October 1985 and was completed on 1 January 1986. Provisions in the cost-plus-fixed-fee contract clarified chemical surety requirements, substantially improving the plant's surety posture.14/

Congressional legislation in FY 1986 directed the disposal of DOD's stockpile of outdated and deteriorating lethal chemicals by 1994. Newport was being considered as a disposal site, should the army opt for on-site disposal. A final decision on disposal options was not expected until after the second quarter of FY 1987.

Radford AAP

A new project to replace the NG-1 nitroglycerin (NG) production facility, destroyed in February 1985, was approved by Congress in January 1986. Commercial NG had to be procured by the plant and used to support production requirements until the NG-2 line was put into production in December 1985 and could meet requirements. The NG-2 line was run during the night shifts while the Corp of Engineers construction contractor completed modernization work during the day shift.

Riverbank AAP

Though classified as an inactive plant, Riverbank AAP produced M42/M46 grenade metal parts, 60mm and 81mm mortar metal parts, and 40mm cartridge cases. This occurred because NI Industries, as a mobilization producer, bid on and received these competitively awarded contracts.

During the fiscal year groundwater contamination of nearby private residence drinking wells was discovered. The contamination was from the plant. Of 74 wells tested, 7 had detectable levels of chromium, but only 2 had levels exceeding safe drinking water standards. In these two cases, new contamination-free wells were drilled for the homeowners at government expense. USATHAMA was developing a clean-up plan.<sup>15/</sup>

St. Louis AAP

Three renovation/replacement projects were funded during the fourth quarter of FY 1986. A \$10 million project for replacement of the electrical distribution system was funded in August 1986. Work was expected to begin in January 1987. Funding was also received in August for replacement of the perimeter security fence. The \$85,000 project was to start in November. In September \$700,000 was received to replace the existing roof at the plant. Work was expected to begin in December.

Efforts were undertaken to replace Donovan Construction Company as the operating contractor. Plant Facilities and Engineering, Incorporated, was to officially take over operations on 1 October 1986.

Sunflower AAP

Over 10.2 million pounds of nitroguanidine (NQ) had been accepted into the government inventory as of the end of FY 1986. The government staff and operating contractor continued to address problem areas in an effort to increase production and lower costs. During June 1986 a high of 913,000 pounds of acceptable NQ was produced. A number of projects were in design to further improve NQ production capability. In addition, efforts were being made to broaden the production base by evaluating the plant's capability to produce other products and trying to obtain additional workload.

Volunteer AAP/Phosphate Development Works

A no-cost facilities use contract between Raytheon Company and AMCCOM was signed on 14 January 1986. The purpose of the contract was to allow Raytheon Company to use facilities at Volunteer AAP for final assembly and test of the Maverick infrared missile for the US Air Force. First missile delivery was scheduled for March 1987. Raytheon Company expected to employ 20 to 30 people.

1986 Executive Officers' Conference

The conference was held 9-10 September 1986 at Rock Island Arsenal. Executive officers from the GOCO plants, as well as members of the AMCCOM staff, attended. Discussions included GOCO security, safety, and public affairs, with a Military Personnel Center briefing and a key note address by the AMCCOM DCGPR.

1985 Fall Plant Commanders' Conference

The fall conference was held 6 and 7 November 1985 at Lake City AAP and Sunflower AAP, respectively. Participants included active plant commanders, Crane AAA, McAlester AAP, Twin Cities AAP, and Pine Bluff Arsenal. Brigadier General Greenberg, Colonel Pojmann, and various AMCCOM headquarters personnel participated in plant tours and discussions of government furnished materiel, industrial stock accountability and reporting, personnel staffing, plant competition and contractor transition lessons learned, safety, and third party contracting.

1986 Spring Plant Conference

The nineteenth annual army ammunition plant conference was held 24-26 June 1986 at the Holiday Inn, Moline, Illinois. An organizational development session for the plant commanders and selected AMCCOM headquarters personnel preceded the conference. Training information on acquired immune deficiency syndrome (AIDS)

was provided the commanders, and testing was administered. In addition to discussions on numerous topics, the commanders, commander's representatives, and plant managers participated in several working groups analyzing assigned topics and reported their conclusions and recommended actions. The featured speaker was Brigadier General Michael Pepe, AMC's deputy chief of staff for procurement.

#### Command Responsibilities for Inactive Plants

The command responsibilities for several inactive plants were assigned to commanders of active plants whose missions were similar. This "satelliting" of the inactive plants served to enhance their currency and coverage of various mission areas, with the assistance of active plant contracting officer's representative (COR) personnel. Additionally, the span of control of the director of plant operations was reduced.

The following plants were assigned command of others effective on the dates indicated:

<u>Active Plant</u>	<u>Inactive Plant Assigned</u>	<u>Effective Date</u>
Indiana AAP	Ravenna AAP	1 March 1986
Scranton AAP	Hays AAP	1 March 1986
Iowa AAP	Joliet AAP	15 July 1986
Holston AAP	Volunteer AAP	1 August 1986
Holston AAP	Phosphate Development Works	1 August 1986
Lake City AAP	Twin Cities AAP	1 November 1986

#### Safety Information Exchange Conferences

In order to promote the exchange of safety information and initiatives, and to discuss the latest guidance as well as provide opportunities for enhanced awareness of manufacturing processes and protective systems, the Plant Operations Directorate sponsored two meetings of active plant safety representatives at Iowa and Milan AAPs. The inclusion of engineering and technical personnel at the Milan AAP conference provided increased benefits in idea "exportation" and "cross fertilization."

#### Personnel Staffing at the GOCO AAPs

During FY 1986 the GOCO AAPs were placed on a year-end government personnel strength "glide path" along with the rest of AMCCOM. The "glide path" was instituted for FYs 1986 through 1988. Each AAP was given its own individual "glide path" within which to manage its personnel resources to accomplish the plant mission. The GOCO AAP actual end strength for FY 1986 was 652, which was within the established "glide path." The FY 1986 "glide

## Independent Directorates and Offices

path" number (678) represented a reduction of 36 spaces from the pre-glide-path GOCO plant total of 714 spaces. This action continued to hinder the ability of the already strapped COR staffs to accomplish the mission of the GOCO complex. The Plant Operations Directorate was able to obtain relief from the original "glide path" numbers which would have reduced GOCO COR staffing to 636 by the end of FY 1988.

### Industrial Management Assistance Teams

During FY 1986 IMATs visited Ravenna, Lone Star, Badger, Louisiana, and Mississippi AAPs, securing validated savings in excess of \$818,000. Total validated savings for FY 1985 and FY 1986 were \$3,925,099.

At Louisiana AAP the IMAT developed a scope of work for the upgrade of the railway system. The scope of work and execution plan were embraced by the COR and operating contractor with completion to class II standards expected in the second quarter of FY 1987.

Mississippi AAP experienced the first on-site naval facility (NAVFAC) engineered performance standards (EPS) training session taught by IMAT personnel. This method of on-site training not only saved precious travel dollars for the command, but also provided a realistic environment for the students, since they could relate the problems to their individual work areas. NAVFAC EPS training was scheduled for Radford, Newport, and Indiana AAPs during FY 1987.

### Competition Evaluation Review Team

A competition evaluation review plan was approved by the DCGPR on 29 April 1986, clearing the way for the official formation of the competition evaluation review team on 1 May. The initial evaluation criteria was formalized on 16 May. Headquarters staff and AAP commander ratings were received in June, and the initial briefing to the senior review board was given on 11 July. As a result of lessons learned during the initial evaluation with regard to the appropriateness of using the should cost analysis as a cost base, the DCGPR directed all active AAPs be evaluated. The senior review board was briefed on the results of that analysis on 1 October 1986.

### Plant Operations Center

The plant operations center evolved into a focal point for information on trend analysis for the GOCO plant base. Each active AAP was represented by charts depicting essential data. The center tracked monthly trends in production, product cost, and

staffing levels. Through the use of program evaluation review techniques, the center had the capability to track major project efforts. The major thrust in the future was to track the top ten issues at each AAP and effect solutions.

#### AUTODIN Terminal Replacement

The Seventh Signal Command started action during December 1985 to replace all its AUTODIN terminals located at AAPs. The new equipment, known by the acronym "FAST" (fast, accurate, simple-to-operate, tempest-secure), was based around the CPT 8100 word-processor plus special telecommunications hardware. The PM, FAST, in conjunction with the Seventh Signal Command and AMCCOM, conducted a 30-day prototype test at Indiana AAP during FY 1986. The test at Indiana AAP was successful, and it was planned to install "FAST" at 16 other AAPs during FYs 1987 and 1988.<sup>16/</sup>

#### Comprehensive Review of AAPs

The groundwork was laid during FY 1986 to perform a comprehensive review of the GOCO AAPs with the Plant Operations Directorate as the focal point. The intent was to consolidate all findings and recommendations of major headquarters review teams into an overall assessment of the operation of each AAP. The ultimate goal was to reduce or eliminate redundant inspections. A major part of the review was to be validation and follow-up of the munitions and demilitarization study functional task group findings identified by the Hardin team during FYs 1985 and 1986.

### COMPETITION MANAGEMENT OFFICE

#### Mission

The mission of the Competition Management Office was to establish, coordinate, and integrate the overall AMCCOM program for competition in accordance with the Competition in Contracting Act (CICA), Public Law 98-368. It planned and executed the command program for spare parts breakout in accordance with defense acquisition regulation (DAR) supplement number 6 and the AMC spare parts review initiatives. Finally, it served as the principle advisor to the deputy commanding general for procurement and readiness in the areas of competition and the spare parts breakout program.<sup>17/</sup>

#### Organization

The Competition Management Office was established in April 1985, and resulted from the CICA. The office was formerly known as the Spare Parts Breakout Office. The chief of the office was known as the advocate for competition, and reported directly to

## Independent Directorates and Offices

the deputy commanding general for procurement and readiness. The advocate for competition provided guidance to all AMCCOM elements, project managers, and functional activities to assure that CICA and DAR supplement number 6 were implemented in accordance with higher headquarters guidance.

### Staffing and Personnel

Mrs. Jean Robinson was the advocate for competition and Lieutenant Colonel Paul Janecek was the deputy. The office had an authorized strength of 2 military and 12 civilians, and an actual strength of 2 military and 14 civilians.

### Director's Overview

The command's competition goal for FY 1986 was set at 40 percent of the dollars to be awarded competitively. AMCCOM exceeded the goal by 3.8 percent, awarding 43.8 percent of the dollars competitively. In the procurement of spare parts, 66.9 percent of the actions were competitive, and 72.9 percent of dollars were awarded competitively.

AMCCOM was actively involved in the AMC reverse engineering program. Several items were identified as good reverse engineering candidates, and were provided to the reverse engineering contractor.

Employee awareness of the need for competition was enhanced with video tapes, posters, and newspaper articles. Three separate classes of the spare parts management course were presented in FY 1986 by personnel from Fort Lee. A total of 94 employees participated.

A great deal of enthusiasm was generated as a result of the competition management program. The year ended on a strong note, with increased awareness, high morale, and a great sense of accomplishment.

### Major Activities

The Congress, secretary of defense, all services, and major subordinate commands continued to place strong emphasis upon increasing competition. Quarterly competition advocates conferences were held to discuss accomplishments, problems encountered, and possible resolutions to these problems. At AMCCOM, all subordinate arsenals and activities were fully indoctrinated, and were fully aware of the program to increase competition and the procurement of materiel at fair and reasonable prices.

## NOTES

1/This section is based on the annual historical submission of the Readiness Directorate, Mr. Jerry D. Brakhage, Acting Director, 12 Dec 86.

2/FONECON, author with Ms. Debbie Carstens, Readiness Directorate, 11 Feb 87. For further information on the "Frost study," see the Management Directorate section of chapter VII.

3/HQ, AMCCOM, Record of Weekly Staff Meeting, 6 May 86, p. 20.

4/Ibid., 16 Sep 86, p. 19.

5/Ibid., 5 Nov 85, p. 35.

6/Ibid., 1 Jul 86, p. 29.

7/Readiness Directorate submission, p. 27. SRFX stands for "service response force exercise." Staff Meeting, 5 Nov 85, p. 36.

8/This section is derived from an amendment to the annual historical submission of the Readiness Directorate, Mr. Jerry J. Followwill, Chief, Policy, Plans, and Programs Division, 9 Feb 87.

9/This section is derived from the annual historical submission of the Joint Activities Office, Mr. John W. Masengarb, Chief, 26 Nov 86.

10/This section is based on the annual historical submission of the Plant Operations Directorate, Colonel David M. Pojmann, Director, 4 Dec 86.

11/Staff Meeting, 26 Aug 86, p. 37.

12/Ibid., 16 Sep 86, p. 30.

13/Ibid., 15 Apr 86, n. p.

14/Ibid., 8 Oct 85, p. 45.

15/Ibid., p. 46.

16/Ibid., 17 Dec 85, p. 42.

Independent Directorates and Offices

17/This section is derived from the annual historical submission of the Competition Management Office, Mrs. Jean L. Robinson, Competition Advocate, 12 Nov 86.

## CHAPTER IX

### SPECIAL STAFF OFFICES

In addition to the organizations listed in the previous chapters, the commanding general was assisted by a number of special staff offices under the supervision of the chief of staff. The activities of these offices are discussed in the following sections.

#### COMMAND CHAPLAIN

##### Mission

The command chaplain served as advisor to the commanding general of AMCCOM on matters pertaining to religion, morals, and morale, as well as on religious activities within the command. He was an integral part of command programs which assisted the commanding general in implementing the human self-development program, including ethical decision making.<sup>1/</sup>

##### Staffing and Personnel

The AMCCOM command chaplain was Chaplain (Lieutenant Colonel) Robert D. Hall. Cynthia Zarley was the civilian secretary. Authorized and actual strength was one military and one civilian.

##### Major Activities

FY 1986 was Chaplain Hall's first year as an industrial chaplain. Previously he had ministered exclusively to military troops. However, significant contributions were made to the chapel program.

Three prayer breakfasts were held. The national prayer breakfast was highlighted with Army Chief of Chaplains (Major General) Patrick Hessian as the guest speaker. The prayer breakfast was held in the officers' club, which was filled to capacity with military and civilian employees. A subordinate installation, Radford Army Ammunition Plant, began having quarterly prayer breakfasts which were sponsored by quality circles. Chaplain Hall was the guest speaker for one of these.

The chaplain provided a two-minute telephone devotional which could be heard by dialing extension 26904. Chaplain Hall contributed in the initiation of an AIDS assistance program, and a committee was formed of which the chaplain was a member. He also assisted in the suicide prevention program.

## Special Staff Offices

A contract was made with Monsignor W. Robert Schmidt to provide Catholic Mass on Holy Days of Obligation which fell on work days. These services were held in the training auditorium of building 60. In each service the auditorium was filled to capacity and persons stood in the hall, which served as an overflow room.

Chaplain Hall assisted Rock Island Arsenal (RIA) by providing services for the military community. Protestant worship services were held in the community center chapel area on Sunday mornings. Sunday School was provided for military children, and vacation bible school was held one week during the summer. Also, pot luck dinners were held for the chapel congregation. Chaplain Hall performed weddings, funerals, and baptisms for the military and their dependents.

The chapel area of the community center was renovated with the installation of new drapes, carpeting, and lighting. The improvement in facilities was an enhancement to, and encouraged community participation in, the worship services.

However, the lack of a chapel building on Rock Island was still a major problem. The designated area of the community center which served as the chapel had limited seating capacity, which discouraged use by the military community. It was difficult to perform weddings and impossible to perform funerals in the designated chapel area. Funerals were performed off post, and graveside services were held in the Rock Island National Cemetery.

There were complaints from employees, military members, and visitors attending the Army Management Engineering Training Activity needing a place to quietly meditate. Chaplain Hall checked into the feasibility of providing a centrally located area which could be made into a meditation room. Plans were made to provide this for persons working at RIA and tenant activities.

### EQUAL EMPLOYMENT/EQUAL OPPORTUNITY OFFICE

#### Mission

The mission of the Equal Employment/Equal Opportunity (EE/EO) Office was to develop and carry out both the civilian equal employment opportunity (EEO) and the military EO programs within AMCCOM. The office formulated and recommended policies, established program objectives, directed command studies, and conducted evaluations for the two programs. In addition, it provided EE/EO guidance and assistance to commanders of AMCCOM centers, installations, army ammunition plants, and activities. Finally, the EE/EO Office advised the commanding general and the chief of staff about command-wide implementation of the EE/EO

program.2/

Staffing and Personnel

Mr. Eugene R. Evans was the office chief during FY 1986. The two senior equal employment specialists, Mr. Ernest M. Rodriguez and Ms. Mary L. Bland, served as command Hispanic employment and federal women's program managers, respectively.

The authorized strength for the EE/EO Office for FY 1986 was six civilian positions and two military positions. Prior to and during FY 1986, however, there were ten civilians and two military personnel on board. All of these positions became authorized in FY 1986.

Of the ten civilian employees in the office at the end of FY 1986, six were women, and four were men. Four were minority group members: two black women, 1 Hispanic man, and one black man. At the end of the fiscal year the average grade for women was 7.3, the average grade for men was 12.8, and the average grade for minorities was 11.0. The average grade for the EEO Office was 8.8.

Major Activities

During FY 1986 staff members finished automating the preparation of all 60 EEO review and analysis (R&A) charts. Consequently, the EEO Office could prepare the review and analysis presentation much more quickly. The office also saved money, because it was not necessary to use contracting services from off the island.

The EEO Office has desired an automatic data processing capability since FY 1985. The Information Management Directorate and the EE/EO Office worked together to automate EEO statistical data for preparing R&A charts. The Information Management Directorate also loaned a multi-user INTEL computer system which was used extensively by the EEO staff in preparing correspondence and reports and thus reducing time constraints and error rate.

There were 42 formal complaints filed within AMCCOM during FY 1986. Chart 1 breaks down the number of complaints by activity and quarter.

Chart 1  
AMCCOM Complaints

<u>Activity</u>	<u>Total</u>	Number Per Quarter			
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>

## Special Staff Offices

HQ, AMCCOM	13	4	3	0	6
ARDEC	6	3	0	2	1
CRDEC	0	0	0	0	0
RIA	10	6	3	0	1
PBA	5	0	3	0	2
WVA	5	0	2	0	3
Crane AAA	1	0	0	0	1
McAlester AAP	0	0	0	0	0
Holston AAP	1	0	1	0	0
Kansas AAP	1	1	0	0	0
TOTALS	42	14	12	2	14

Although 42 formal complaints were filed during this fiscal year, the same number as in FY 1985, the number of substantiated findings of discrimination decreased. While 24 case closings in FY 1984 produced 2 findings of discrimination and 43 case closings in FY 1985 produced 5 findings of discrimination, the 47 case closings in FY 1986 produced only 1 finding of discrimination.

During the fiscal year the EEO Office continued its efforts to involve command career program managers to further employment opportunities for minorities and women. The AMCCOM commander issued a directive to subordinate commanders to establish goals to insure that a proportionate rate of awards were received by minorities.

The number of women employed by AMCCOM decreased from 7,036 at the end of FY 1985 to 6,529 at the end of FY 1986, along with a decrease in the total workforce. Most of the decrease occurred in grade levels GS 1-4. However, there was a meaningful increase in the representation of women in grades GS 9-12, thus indicating that the EEO program had met one of its goals -- to help women break through into the higher level jobs.

The number of minority women decreased slightly concurrent with overall employment figures in both GS and WG positions. The number of minority employees saw a similar decrease, but there was a slight increase in GS 9-14 positions.

During the fourth quarter three program evaluation surveys were conducted by the EEO staff, with an appraisal of EEO performance standards. At each of the three installations surveyed, the performance standards of managers and supervisors included EEO as a critical element. At one of the three installations, the performance standards, although identified as critical elements, lacked specificity, were passive rather than "proactive," contained no time-phased action oriented activity, and required little or no initiative. The accomplishment of these performance standards would not contribute to the attainment of

EEO goals. The program evaluation reports addressed this issue and provided appropriate recommendations where required.

#### CHIEF COUNSEL FOR PROCUREMENT AND READINESS

##### Mission

Responsibility for the AMCCOM legal mission remained divided between the chief counsel for research and development, located at the Dover site, and the chief counsel for procurement and readiness, located at the Rock Island site. The chief counsel for research and development had overall responsibility for all research and development legal issues arising from both the Dover and Edgewood sites. He was also responsible for providing legal services to the commander, ARDEC, for essentially all matters arising at the center.<sup>3/</sup>

The chief counsel for procurement and readiness was responsible for virtually all other AMCCOM legal services. This included all procurement matters other than research and development, all legal services to Rock Island Arsenal and the US Army Defense Ammunition Center and School, all legal services to the government staffs at the contractor-operated army ammunition plants, and virtually all legal services for Crane Army Ammunition Activity. He was also functionally responsible for the attorneys assigned to Pine Bluff, Rocky Mountain, and Watervliet Arsenals and McAlester Army Ammunition Plant.

##### Organization

The Office of Counsel (Rock Island site) was organized into three divisions: the Adversary Proceedings Division, the General Law/Congressional Affairs Division, and the Procurement Law Division. The Adversary Proceedings Division handled contract disputes and appeals, litigation, and coordination or requests from witnesses and other support from the Department of Justice, other legal government agencies and courts. The General Law/Congressional Affairs Division provided legal service and advice on AMCCOM general mission activities, legal assistance to active and retired military personnel and their authorized dependents, and handled matters pertaining to congressional/legislative liaison affairs. The Procurement Law Division provided legal service and advice involving the administration and execution of all AMCCOM procurement programs and the use of appropriated funds for them. It also advised on matters pertaining to nonappropriated funds, and directed the AMCCOM mission on all matters involving patents and related legal activities, except with respect to research and development matters.

## Special Staff Offices

### Staffing and Personnel

During FY 1986 Mr. Marvin L. Hancks was the chief counsel and Mr. Mike G. Patramanis served as deputy chief counsel in the Rock Island office. The authorized and actual personnel strength for civilians was 42, and there were 4 military assigned.

### Director's Overview

The workload in the Office of Counsel for Procurement and Readiness continued to escalate markedly without any corresponding increase in authorized personnel. Major areas of increase included procurement action reviews, Freedom of Information Act requests, increased involvement in civilian personnel matters as a result of revisions to army regulation (AR) 690-700, litigation against civilian employees, and General Accounting Office protests. Furthermore, new legislation enacted by the US Congress often created additional workload for the office. Examples included increased application of environmental requirements to government facilities and revised procurement statutes such as the Competition in Contracting Act.

### Major Activities

#### Adversary Proceedings Division

Caseload experience for the fiscal year was as follows:

	<u>Year Start</u>	<u>Filed</u>	<u>Closed</u>	<u>Year End</u>
Appeals	97	56	57	96
US Litigation	45	11	6	50
GOCO Litigation	76	11	8	79
Public Law 85-804	2	1	2	1

#### Appeals

New docketings approximated the figure registered in FY 1985 and were slightly exceeded by cases closed. Default terminations continued to dominate such matter with the balance of the disputes representing a variety of controversies, including some substantial defective pricing claims and a heavy sprinkling of disallowed cost conflicts. Favorable decisions in several key A.C. Ball Company appeals eventually accounted for the closing of 15 cases.

#### US Litigations

Here, too, activity closely paralleled the prior year recordings. Direct access contract suits were the most prevalent type. Most noteworthy was an action initiated by a Rock Island

Arsenal employee, injured on the job, against his fellow workers. At year's end, one of the cases arising from the 9mm handgun selection process remained on appeal following a district court proceeding favorable to the government; earlier, the initially appealed decision (for the government) was sustained.

GOCO Litigation

This category continued to witness a decline in numbers, both filings and closings. No significant developments occurred.

Public Law 85-804

The necessity of contacting other departments delayed completion of the single application, alleging essentiality, presented for evaluation.

General Law/Congressional Affairs Division

The division's workload continued to increase, especially with Freedom of Information Act requests, bankruptcies, and frauds. Many of the active AMCCOM fraud cases involved allegations of product substitution and defective materials. The division continued to provide legal support in connection with numerous unresolved environmental matters involving approximately 18 major problems at subordinate facilities.

During the fiscal year the division handled 1,873 Freedom of Information Act requests; 1,196 confidential statements of affiliation and financial interest; 286 congressional inquiries; 750 legal assistance cases; 33 contracting officer appointments; 37 labor-management relations cases; 42 bankruptcies; and 13 delegations of authority.

Procurement Law Division

The Procurement Law Division continued to be actively involved in all of the sensitive and routine procurements issued by the command. Some of the many items of a special nature with which the division was involved were the 9mm handgun, the product improved Vulcan air defense system, the squad automatic weapon, the Chinese plant modernization project, the Bradley fighting vehicle, the disposition of the SGT York program, the M26 muzzle boresight, a variety of value engineering change proposal problems, problems dealing with warranties, competition of various GOCO plants, and environmental problems at GOCOs. In addition, all members of the division were involved in efforts to meet year-end obligations.

## Special Staff Offices

In addition to the numerous items of a special nature, the division was involved in 19,805 procurement actions in FY 1986. This figure included 7,113 contracts; 676 invitations for bid; 1,404 requests for proposal; 103 scopes of work; 520 foreign military sales/munition cases; 1,149 memoranda for record; 1,969 letters; 218 miscellaneous teletypes; 564 teletype obligations of funds; 77 teletype deobligations of funds; 584 determinations and findings; 1,144 justifications and approvals (J&A); 52 statements of applicability to a class J&A; 31 determinations of award to delinquent contractors; 358 summary sheets; 156 approvals of ceiling priced delivery orders; 47 determinations to cancel solicitations; 558 determinations of nonresponsibility; 86 determinations of nonresponsiveness; 1,560 disposition forms; 16 warranties; and 57 business clearance review boards. There were 11 mistakes in bid and 85 protests processed by the division. Members of the division also participated in 312 boards of award.

The attorneys of the division continued to be involved in such matters as review modifications, supplemental agreements, cancellations of solicitations, reviews of specifications, purchase descriptions, show cause letters, cure notices, terminations, funding problems, information papers, acquisition plans, commanding general notes, procurement related conferences, and administrative matters.

### INTERNAL REVIEW AND AUDIT COMPLIANCE OFFICE

#### Mission

The mission of the Internal Review and Audit Compliance Office was to direct, coordinate, and conduct the command's internal review and audit compliance (IRAC) program. It formulated, directed, and coordinated policies and programs for the conduct of internal reviews and for surveillance and onsite follow-up on all audits and reviews conducted by the office and by external audit organizations.<sup>4/</sup>

The internal review and audit compliance program was the commander's management tool to perform unbiased examinations of the command's operations. In addition, it provided command liaison and coordination with representatives of the General Accounting Office, the Army Audit Agency, and the Department of Defense (DOD) inspector general for auditing. The office assured that responsive command replies were prepared to interim or tentative findings, draft reports, and final audit reports.

#### Organization

The Internal Review and Audit Compliance Office reported directly to the chief of staff, HQ AMCCOM. The office of the chief, Rock Island, was responsible for the Rock Island and Dover field offices. Each of these offices were functionally organized into an internal review staff and an external audit liaison staff. In addition, the Dover field office was responsible for the Edgewood audit staff at CRDEC.

#### Staffing and Personnel

Mr. Richard A. Castle continued as the chief of the IRAC Office during FY 1986, and Mr. Gary G. Lutz served as the chief of the Dover field office.

There were no major changes in personnel or authorized spaces during FY 1986. One auditor space was transferred from the Dover field office to the Edgewood audit staff at CRDEC. Personnel strength on 30 September 1986 was 7 at Dover, 3 at Edgewood, and 16 at Rock Island, for a total of 26. The authorized strength was also 26, but 9 were authorized at Dover and only 14 at Rock Island.

#### Director's Overview

At the direction of the Army Materiel Command (AMC), the annual internal review program was changed from a fiscal year to a calendar year basis. This change was made with a minimum of interruption. The new program for calendar year 1986 was issued on 21 January. The combined field offices completed 32 internal reviews through the first 9 months of 1986. These reports included 28 findings and 84 recommendations. There were 16 reviews in progress on 30 September 1986.

During FY 1986 the office completed onsite follow-up on corrective actions taken to implement 272 audit recommendations and found that only 63 percent of the recommendations had been implemented as stated. Aggressive actions were taken to raise the command's implementation rate to the goal of 80 percent. External auditors worked on a total of 79 audits at all three headquarters' locations. This represented an 11 percent increase in the number of external audit contacts over the prior fiscal year. Several of the newer audits required extensive coordination and liaison work because of the complexity and sensitivity of the audits.

Staff assistance visits were made to four of the six subordinate IRAC functions. In addition, through evaluation of approved annual internal review and audit compliance programs, program quarterly updates, and semiannual reports of accomplishments, complete analyses were made of all six subordinate functions.

## Special Staff Offices

### Major Activities

During the year both field offices made extensive use of computer equipment to gather and transmit data between the offices. In limited cases the computer was used as part of the audit process. A major thrust was established to continue this initiative of using computers in the audit process.

The second annual AMCCOM subordinate internal review and audit compliance workshop was held in June 1986. This conference was attended by the chiefs of the six subordinate IRAC offices, representatives of the AMCCOM HQ IRAC staff from both field offices, the assistant comptroller of the army for internal review, and a representative of the AMC HQ IRAC office. The primary thrust of the meeting was "audit payback." Representatives from each subordinate activity and headquarters field office presented audits or projects that illustrated positive audit payback at their installations. These presentations were well received as were presentations from AMC and the Department of the Army (DA) on IRAC thrusts.

To provide additional audit capability to CRDEC, IRAC responded to the CRDEC commander's request by transferring an auditor space from the Dover field office to the Edgewood audit site. The space was filled by an auditor intern from the Dover site.

### OFFICE OF THE INSPECTOR GENERAL

#### Mission

During fiscal year 1986 the inspector general (IG) served as the "eyes and ears" of the commander, helping to protect the interests of the government and the welfare of its military and civilian personnel. His duty was to inquire into and report on matters that affected the performance of the mission and the state of discipline, efficiency, economy, and morale within AMCCOM. He also coordinated IG matters within the respective headquarters and investigated matters concerning waste, mismanagement, and fraud. Finally, he served as the local point of contact for all IG matters.5/

#### Organization

The Office of the Inspector General was organized into three divisions. Two of these divisions, the Rock Island and Dover Inspection and Investigations Divisions, performed general, special, and procurement inspections. Both conducted investigations, inquiries, surveys, follow-up reviews and studies,

and processed IG action requests. The Rock Island-based Coordination and Control Division maintained and coordinated administrative control over the inspector general's activities and assisted the other divisions in the performance of their missions.

#### Staffing and Personnel

Lieutenant Colonel (LTC) Robert J. Walker served as inspector general throughout FY 1986, aided by LTC Fredric C. Fairman and Captain Patrick C. Dunkle, assistant inspectors general at the Rock Island office, and LTC Robert A. Lo Pinto, the assistant inspector general and head of the Dover Inspection and Investigation Division.

The authorized personnel strength was 4 military and 18 civilians. During the fiscal year, the military strength rose to the authorized level, while the civilian strength was augmented by one overhire.

#### Director's Overview

Fiscal year 1986 proved to be an interesting and challenging period for the Office of the Inspector General due to the dramatic increase of assistance/inquiry/investigation workload in spite of controls and restrictions, limited investigative/systemic inspection capability, and inadequate clerical support for administrative requirements.

As a result of new DA inspector general policy, annual/cyclic inspections were no longer conducted. These inspections were replaced by issue-oriented inspections identifying the root-cause of problems and a more in-depth analysis. This new concept increased pre-inspection/visit planning arrangements for the DA and AMC inspector general representatives.

Effort was directed toward productivity; to do more with less. New internal control procedures were initiated for tracking the status of inspector general action requests. Electronic mail was utilized on a more frequent basis to inform the AMCCOM staff of inspector general inspections/visits and various IG highlights/tips. Additional use of automation for the office was planned to assist in the effective monitoring of IG activities. New DA IG procedures/reporting requirements/workload made this necessary.

Via the video conferencing network, the AMC IG hosted a meeting to share ideas and discuss areas of mutual concern and a variety of topics with major subordinate command IGs. This type of conferencing proved to be very beneficial in addition to saving travel costs associated with quarterly conference meetings.

## Special Staff Offices

### Major Activities

Fifteen general inspections and four follow-up visits of AMCCOM installations/activities were programmed and completed. Due to an increase of mission workload and a shortage of manpower, all functional areas were not inspected. Inspection teams were augmented with technical staff experts from the US Army General Materiel and Petroleum Activity and AMCCOM staff personnel from the Personnel and Training Directorate and the Procurement and Production Policy and Management Directorate. Inspections focused on operations in support of mobilization, contract administration, financial management, maintenance, administration, program and resource management, configuration management, development and producibility, engineering, logistics, manpower resources, environmental protection, petroleum management, safety, training, leading, and "caring".

A review of the AMCCOM HQ command inspection program was conducted. The objective was to provide the commanding general with an evaluation of the effectiveness and efficiency of command inspections. Primary emphasis was on planning, preparation, scheduling, reporting, and follow-up of safety and security inspections, records management surveys, contractor procurement system reviews, command review of industrial base, command equipment, supply and maintenance, quality systems, environmental, equal employment opportunity, and alcohol and drug control reviews.

The office received and processed 293 inspector general action requests from military and civilian personnel. These dealt with housing, medical care of dependents, travel, civilian personnel management, and fraud, waste, and abuse of government property.

Eleven DOD fraud, waste, and abuse hotline cases were directed to AMCCOM for examination and inquiry. Also, eight investigations were conducted at the direction of the commanding general to examine specific issues, situations, and circumstances that affected mission performance.

Representatives from the DA and AMC IG offices visited AMCCOM in connection with eight issue oriented inspections pertaining to safety, chemical and biological warfare defense, repair parts management, automated data processing management, the advanced weapons cleaning system, and AMC school programs. Additionally, a follow-up inspection of the "AMC Independent Review of Munitions Demilitarization and Stockpile Management" and a review and verification of corrective actions of inspector general findings pertaining to AMCCOM were conducted.

PUBLIC AFFAIRS OFFICE

Mission

The mission of the Public Affairs Office was to develop, staff supervise, and evaluate the army public affairs program within AMCCOM. It also advised and assisted in the information aspects of AMCCOM relations with industry and the public, provided public affairs services for RIA, and furnished information services to RIA and tenant activities.6/

The Public Affairs Office had three functions: command information, public information, and community and industrial relations. Under the command information program, the office provided services to people and organizations within AMCCOM, including research centers, arsenals, and ammunition plants. The RIA Target newspaper was part of the command information program and was published bi-weekly. It was distributed to every employee on Arsenal Island, retirees of the island workforce, and other army agencies.

Under the public information program, the office provided assistance to people and organizations not associated with the command, primarily the news media and the general public. The office prepared news releases and answered inquiries. It also wrote, reviewed, and edited speeches and reviewed and edited technical papers, special reports, and articles for publication or presentation.

The community and industrial relations program included intercommunication with the local chambers of commerce and the operation of the arsenal's speakers' bureau. The office also responded to numerous letters and telephone requests from industry for various types of information concerning DA procurement programs.

Staffing and Personnel

Mr. Peter S. Copeland served as the public affairs officer, while Mr. Paul Powell, Jr., served as the deputy. There was one additional public affairs specialist who was cross-trained and worked in several areas of the public affairs program.

The overhire position vacated by Mr. Powell in February 1985 remained unfilled due to a hiring freeze and mandatory reduction of high-grade personnel. In early September the Target editor for nearly five years vacated his position for a public affairs officer position in Germany. The vacated position was to be filled in early November 1986. An AMC intern, added to the staff

## Special Staff Offices

in August 1985, continued on-the-job training. The office was aided during the summer by a journalism major from the University of Iowa. Completing the staff was a GS-6 secretary/administrative assistant. Thus the office had an actual strength of four civilians, and an authorized strength of five.

### Director's Overview

"Better ways of doing business" received much emphasis in the command during the year. A major effort was effected in the Public Affairs Office to develop smarter ways of using the computer, both as a faster means of communicating and for filing data. With deskside computers, the ability to retrieve and print information provided a greater responsiveness to the public affairs community. It is hoped, as more sophisticated systems evolve and expand, communication linkage in the command will make the job easier, faster, and more accurate.

### Major Activities

Explosion and pollution problems attracted the majority of media interest during fiscal year 1986, necessitating considerable public affairs guidance. However, new systems, new policies, policy changes, and procurement actions all required considerable public affairs interface with the media and the work force.

#### AIDS Health Program

The fiscal year began with the army attacking the acquired immune deficiency syndrome (AIDS) problem. In an effort to protect the fitness of army personnel and their families, army officials took significant actions to test, treat, and educate soldiers on the AIDS virus, known as HTLV-III. The army policy on AIDS generated much media and work force interest requiring extensive public affairs involvement. This included feature articles and other command information material developed for internal consumption.

#### Welding Shop Fire

At the start of the new year, flames were spotted atop building 230, the RJA welding shop. This was the first major fire at the arsenal since 1979, when the Army Management Engineering Training Activity suffered \$850,000 in fire damage.

The welding shop fire started during the early hours of 8 January 1986, when hot metal rivet cuttings ignited a stack of pallets used for transporting heavy metal parts. The rivet cuttings were left overnight by a contractor employee who was in the process of replacing girders and rails on the overhead crane

system. Damage to the shop totaled \$208,322. The fire generated major interest requiring news releases and considerable media interface.<sup>7/</sup>

#### Army Ammunition Plants

In early FY 1986 a railway spill occurred outside of Radford Army Ammunition Plant's boundary. The chemicals reached the plant's water source causing a partial shut-down of the plant and the furlough of some employees. The shut-down, and a subsequent suit for lost wages, generated considerable media interest and public affairs guidance to the Radford team.

Radford also fell victim to an employee strike during the fiscal year, which resulted in the walk-off of more than 2,600 employees. The strike lasted for 21 days, the fourth and longest in the plant's history.

Later in FY 1986, Radford's safety program was questioned by the media. The queries were a result of an FY 1985 nitroglycerine explosion and the release of Radford's safety record. Both incidents required close coordination between the headquarters Public Affairs Office and the plant.

An explosion occurred on 2 January 1986 at the Kansas Army Ammunition Plant. The explosion caused minor damage to manufacturing hardware, and one contractor employee suffered injuries to his right hand. Media interest was high.

A Louisiana AAP civilian employee struck a slow moving train with his private vehicle. The employee's vehicle struck the first flat car of the train, causing a load of railroad ties to fall from the car and strike a rail crew member. The crew member fell underneath the railcar's wheels, and was pronounced "dead on arrival" at a nearby hospital.

Groundwater contamination cleanup began at Twin Cities AAP via a system referred to as "insituvolitization." Mr. Lewis D. Walker, the assistant secretary of the army for environment, safety, and occupational health, visited the plant on several occasions and briefed state and local officials during these visits.

Pressure continued throughout the year by these officials to have the army accept the responsibility for off-post groundwater monitoring and cleanup. The army continued to decline responsibility for the off-post contamination. Mr. Walker conducted a congressional and media tour of the insituvolitizat on process at the plant in an effort to better explain the army's position and efforts to stop the spread of on-post contamination.

## Special Staff Offices

A local reporter became interested in mercury contamination along Lone Star AAP's boundary. Mercury contamination was found, but there was no evidence that it was leaving the post, or that it posed a hazard. The reporter was trying to sensationalize a non-issue. Guidance on handling the issue was provided to the plant commander.

### Commercial Activities Studies

Commercial activities (CA) studies became a major concern for government employees in fiscal year 1986. It began when Crane Army Ammunition Activity was notified it was going under a CA study that could effect 800 civilian employees. Following that, McAlester AAP was notified it was undergoing a CA study that could result in the loss of 700 civilian employees. Both the Crane and McAlester studies were suspended by army officials as a result of congressional actions. The Public Affairs Office prepared press releases for, and offered guidance to, the field.

The results of the Rock Island Arsenal CA study were announced on 4 June 1986. The news was bad for employees when the RIA commander, Colonel John Gamino, announced that installation support functions would be performed by a private contractor resulting in the displacement of 345 positions, of which 315 were at that time filled. Colonel Gamino summed it up with his opening remarks, "I have got bad news -- very bad news . . . The simple facts are, we lost the bid."

### Drug Testing

The initiation of drug testing on Rock Island Arsenal generated media interest. The majority of inquiries concerned who and how many people were involved, what types of tests were being conducted, and what type of disciplinary actions could and would be taken.

### DA Smoking Policy

The DA smoking policy took hold on Arsenal Island on 7 July 1986 with the banning of smoking in all buildings, offices, vehicles, and aircraft under army control. The intent of the newly implemented policy was to "protect non-smokers and to encourage smokers to quit." Supervisors were given the option of designating smoking areas once all ventilation criteria had been met. The policy was gradually implemented on the island. Media involvement included television interviews with the public affairs staff and employees of Rock Island Arsenal, including a television interview program on a local station.

Changes of Command

Colonel John S. Cowings became the 34th RIA commander on 8 July 1986. The Public Affairs Office prepared messages to field activities and news releases to announce the change of command, escorted media, and updated the headquarters lobby exhibit of RIA commanders. Good media coverage was achieved both internally and externally.

Brigadier General Peter D. Hidalgo became the commander of AMCCOM's Chemical Research, Development, and Engineering Center and the deputy commanding general for chemical materiel for AMCCOM in an 11 June change of command ceremony at the Edgewood area of Aberdeen Proving Ground. Once again, media coverage was good.

RIA Demonstration

On 1 August 1986 approximately 50 demonstrators, part of a national peace march from the west to east coasts, showed up at the foot of RIA's Government Bridge. Twenty-nine of the demonstrators crossed the bridge in violation of the arsenal's ban on demonstrations and were apprehended by the island's security officers, given bar letters, and then removed from the island.

Project REARM

RIA's project REARM (renovation of armament manufacturing) phase I construction came to a conclusion in early September 1986. Secretary of the Army John O. Marsh, Jr., was the guest speaker for the dedication ceremony which marked the end of nearly three years of construction work. The \$221 million modernization program was to consolidate manufacturing operations into a single area. This consolidation would decrease 3 miles of production item travel to a total distance of 1 3/4 miles. Phase I, budgeted at \$22 million, was completed for a cost of \$15.3 million.

9mm Pistol (Beretta)

The army's new 9mm pistol, the Beretta, received considerable attention from the media and Congress due to the phase out of the .45 caliber pistol and the subsequent "pork barrel" actions at the congressional level to recompute the handgun.

Operation Kinship

The AMC commander, General Richard Thompson, announced a new program known as "Operation Kinship." The program was designed to remind employees that their responsibilities for manufacturing and managing quality items not only had an impact on the armed forces, but also directly supported the sons, daughters, and relatives of

## Special Staff Offices

the island work force. To implement the program, the office along with the arsenal's graphics office, set-up five display cases in high traffic employee areas: the headquarters lobby, post restaurants, and the personnel office lobby. Photographs were continuously being solicited from the island work force, and the response was excellent.

### Office Automation

The second quarter of FY 1986 brought computer automation to the Public Affairs Office. Though somewhat outdated, the receipt of three Kaypro microcomputers and two high-speed printers created word processing capabilities which allowed rapid dissemination of news releases and printed material.

Through an on-line Washington-based system known as Dialcom, the office could access such services as the UPI, AP, and Washington wires; health networks; state news services; the Pentagon and DA public affairs news wires; weather; and much more.

### RIA Speaker's Bureau

The RIA speakers' bureau was offered to local communities and individuals on a request basis. It offered more than 30 qualified speakers covering over 50 topics, such as arsenal history, the army story, the strategic defense initiatives, and weapons systems. The bureau provided speakers for nearly 50 different groups within the local community during the year. This program provided an excellent medium for telling the army and command stories.

### Unofficial Guide and Directory

The Public Affairs Office successfully completed a new edition of the Unofficial Guide and Directory of HQ, AMCCOM and Rock Island Arsenal. This brochure updated the 1981 edition which had become dated and inaccurately portrayed the command's structure. The brochure included information on Rock Island Arsenal, AMCCOM HQ, and the Quad Cities. It also included 16 "yellow pages" for an easy reference to local businesses, hotels, restaurants, and services.

## ORGANIZATION DEVELOPMENT OFFICE

### Mission

The Organization Development (OD) Office acted as the principal OD consultant and advisor to the commanding general. It served the command group by concentrating on problems of a

systemic nature that cut across functional or command lines, and provided guidance and assistance on OD matters to the headquarters staff and subordinate commanders. The office developed and administered the command OD program, and represented AMCCOM to other army commands, government agencies, and private industry.8/

#### Staffing and Personnel

During fiscal year 1986, the Organization Development Office was headed by Mr. Patrick G. Hardy. The staff consisted of three organization development consultants and one part-time secretary.9/

#### Director's Overview

Based on the high priority assigned to field operations by the AMCCOM command group, the attention and resources of the Organization Development Office were re-directed toward the army ammunition plants. During the fiscal year, OD consultants supported 12 of the field installations by conducting a variety of workshops and organizational reviews in support of change of command transitions, improved communication, teambuilding, and improved relationships between the contracting officer's representative (COR) and contractor personnel.

In addition the organization development staff was assigned the lead responsibility for developing and implementing an AMCCOM "values" program in support of the "Army Year of Values, 1986."

#### Major Activities

Eight transition change of command workshops were conducted for new commanders transitioning to government-owned, contractor-operated (GOCO) plants and active arsenals. These workshops included an assessment of COR staff operations, relationships with operating contractors, and identification of mission improvements.

In June 1986, the office conducted an organization development session for the purpose of improving working relationships between the ammunition plants and AMCCOM headquarters elements at Rock Island. This session was held in conjunction with the plant commanders' conference, and was attended by all the plant commanders and key personnel from headquarters directorates and staff organizations. The outcome of this session was the development of several plans of action to improve the level of communication and responsiveness of those headquarters organizations supporting the plants.

## Special Staff Offices

In September and December 1986 the office conducted two planning sessions for the commanding general, the three deputy commanding generals, and other military and civilian members of the top AMCCOM staff. These sessions were held in Clarksville, Indiana and Columbus, Ohio, respectively. They resulted in the development of six command-wide initiatives to be implemented during FY 1987 and FY 1988.

The Organization Development Office was assigned primary responsibility for developing and implementing an AMCCOM "values" program in support of the "Army Year of Values, 1986." Several initiatives were developed during the year to fit this requirement. The office sponsored an command-wide contest to develop an AMCCOM symbol and slogan depicting army values. It also developed a four hour "Leadership and Values" workshop, resulting in the training of 630 AMCCOM supervisors and leaders. Finally, it developed an extensive publicity program which included newspaper articles, posters, and sign boards.

The Organization Development Office was occasionally requested to provide OD support to outside commands. During FY 1986 the office provided support operations to the Baltimore regional Defense Contract Administration Services Management Activity office, the RIA Corps of Engineers, and the Troop Support Command in St. Louis, Missouri.

### SMALL BUSINESS OFFICE

#### Mission

The Small Business Office served as the principal advisor to the commanding general on small business matters. The office directed, promoted, controlled, and enhanced the small and disadvantaged business utilization program within the command. The office encouraged government patronage to small business by monitoring the command's goals for procurement from small business, reviewing proposed procurement plans, and by encouraging small business in bidding for government contracts.<sup>10/</sup>

#### Staffing and Personnel

Mr. Kenneth P. Turner was chief of the Small Business Office during the entire fiscal year. At the beginning of the fiscal year, the authorized civilian strength was 10 at Rock Island, 4 at Dover, and 1 at Edgewood. Edgewood also had 1 overhire and 1 temporary. At the end of the fiscal year, these figures had changed to authorized strengths of 9 at Rock Island, 3 at Dover, and 3 at Edgewood.

Director's Overview

The Small Business Office participated in 30 small business opportunity conferences at which an estimated 10,908 small business participants were counseled. Rock Island participated in 24, Dover in 4, and Edgewood in 2. These conferences proved to be a positive avenue by which the command reached businesses outside the immediate area to explain its mission and encourage competition. A relatively new area in which the Small Business Office provided assistance was for conferences sponsored by Iowa and Illinois state and federally funded procurement assistance centers. Due to the large number of these centers across the country, it was anticipated that an increasing number of requests would be received in subsequent years.

Staffing of the office continued to be a major problem and concern. FY 1986 began with a workforce of 17 personnel, consisting of 15 authorized, 1 overhire, and 1 temporary position. Due to hiring constraints and the ominous outlook for future hiring plans, it was necessary to revise the office organization to replace the unauthorized spaces at Edgewood with permanent positions. One space each from the Rock Island and Dover sites were transferred to Edgewood. While this action caused increased workload for the remaining personnel and a revamping of duties, it realized a 12 percent reduction in workforce and a cost control initiative program savings of \$42,918 for FY 1986.

In addition to the above hardship, the Dover office suffered downgrading of its GS-1102 positions. This was a result of the AMCCOM merger, new federal employment system standards for the 1102 series, and the Dover civilian personnel office's evaluation of duties and responsibilities. The chief of small business anticipated unsatisfactory results from this determination due to the lack of experience of new personnel in those positions. Time-in-grade and series were the best means of getting a broad and sound knowledge of the procurement process, and the new grade structure simply did not assure that foundation.

Major Activities

The FY 1986 socio-economic goals assigned to AMCCOM were higher in almost every category when compared to the prior year.

The 8(a)/minority direct goal was changed from prior years. In the past, credit was allowed for subcontracting to minority owned businesses accomplished by operators of GOCO plants. Beginning in FY 1986 a separate goal was established for these actions. Therefore the 8(a)/minority direct goal, not including GOCO awarded subcontracts, was \$176 million. This increased from a prior goal of \$79 million. The additional goal for minority

## Special Staff Offices

subcontracts was \$29.7 million. Combined performance against these two goals was almost \$100.5 million. This was an increase over FY 1983 through FY 1985 performance which were \$51.2, \$84.7, and \$91.4 million, respectively. Performance was considered extremely commendable when compared with FY 1985, especially with the total business dollar base decreased by approximately \$800 million.

The women-owned business goal of \$24.0 million was not met, with performance of \$14.8 million. Unfortunately, performance in this category was difficult to control as there was no program which gave preferential treatment to women-owned business; they had to compete against the field for contract awards.

The goal of percentage of dollars subcontracted by GOCO plants to small business firms was virtually met with performance of 53 percent against a goal of 54.2 percent.

The assigned goal for total percentage of awards to small business firms was 17.2 percent. Performance against this goal was 21.5 percent, which was the highest since the formation of AMCCOM. Also, 87.5 percent of all procurements were awarded to small business firms in FY 1986. The assigned small business set aside goal was 5.0 percent for FY 1986. Actual achievement of 6.7 percent was also the highest performance since the formation of AMCCOM.

Performance of 11.5 percent of research and development dollars awarded to small business firms exceeded prior performance in this category. Unfortunately, the goal of 12.6 percent, which was almost double the prior year goals, was not met.

Responsibility for the National Industry for the Blind/National Industry for the Severely Handicapped program was transferred to the Small Business Office during FY 1986. Although no goals were assigned, high interest in the program and its priority for certain items could have adverse affects on socio-economic goals and accomplishments.

Due to the acceleration of obligations in FY 1986, and the projections for early solicitation and award of FY 1987 requirements, no advanced planning acquisition information (APAI) was issued during FY 1986. The list of projected FY 1988 requirements was made available to the office, permitting APAI releases to be developed and released in a time-frame consistent with program goals.

SAFETY OFFICE

### Mission

The mission of the Safety Office was to establish, direct, and staff supervise the AMCCOM safety program. It helped to provide the optimum degree of safety to the serviceman in the field for all material developed, produced, or managed by AMCCOM. It also helped to ensure the maximum readiness of AMCCOM and the armed services through the application of loss prevention and resource conservation to the facilities and activities of the command and its managed materiel. The office monitored the safety and health of AMCCOM personnel in all phases of command activities and eliminated from the environment those effects of command operations that otherwise represented a hazard to the civilian population. Finally, the office provided for the development of safety policy guidance, advice and support to the command group, headquarters staff, all safety element staffs, subordinate installations and activities, other DOD elements, non-DOD government agencies, and private sector establishments. Within the AMCCOM safety community, it coordinated resource management and directed policy administration, data management, and communications.11/

### Organization

During fiscal year 1986 the Safety Office continued operating in two divisions, each with a separate supervisor. The Systems, Chemical, and Radiation Division operated with 11 positions and was responsible for life-cycle system safety, chemical agent safety, nuclear weapon safety, nuclear material licensing, and radiation safety. The Projects and Programs Division operated with 11 positions and was responsible for contract safety, accident reporting and records, safety program policy and review, component safety data, explosives manufacturing and operations safety, preoperational surveys, ammunition peculiar equipment (APE), and depot maintenance work requirements (DMWR). The office of the chief was assigned two positions.

### Staffing and Personnel

During fiscal year 1986, Mr. Lawrence E. Smith remained as the office chief. Mr. David P. Skogman remained as chief of the Systems, Chemical, and Radiation Division, and Mr. Glenn S. Leach remained as chief of the Projects and Programs Division. There were no additions or deletions to the 24 authorized personnel spaces during the year. The actual strength on 30 September 1986 was 22.

### Major Activities

Radiation Safety

During fiscal year 1986 the Safety Office prepared and submitted 16 requests for amendments to existing AMCCOM Nuclear Regulatory Commission (NRC) licenses covering AMCCOM radioactive commodities. Amendments submitted included updates of radiation protection officer resumes, clarification of the NRC requirement to conduct annual physical inventories, and a request to include the newly developed M829 depleted uranium ammunition under NRC license SUC 1380. The Safety Office submitted requests for renewal of two DA authorizations covering tritium wrist watches and various radium indicators. In addition, a complete renewal application was submitted for the NRC license covering the army's depleted uranium ammunition. The total number of AMCCOM NRC licenses was 11.

The Safety Office assisted the US Army Chemical School in developing training and video tapes for the M43A1 chemical agent alarm. An AMCCOM health physicist accompanied the materiel fielding team in Europe to assist in the handoff of the M43A1 to using units and to provide specific training concerning the radiological hazards associated with the device. At the request of the Training and Doctrine Command, the Chemical School, the 200th Theater Materiel Management Center, and DA, an amendment to the NRC license covering the M43A1 was prepared. The purpose of this amendment was to obtain relief from some of the stringent requirements placed on the use of this device. This amendment was being staffed with affected commands for concurrence prior to submission through AMC to the NRC.

The Safety Office visited eight AMCCOM installations to assess their radiation safety programs and compliance with their NRC licenses for radioactive materials in use there. Three subordinate installation NRC license applications and twenty-three DA permits for subordinate installations were reviewed. Nine DESCOM depots and Fort Carson were inspected for compliance with the AMCCOM NRC license for AMCCOM radioactive commodities stored or used at those locations.

In fiscal year 1986 the transfer of the Weldon Spring Chemical Plant to the Department of Energy was completed and AMCCOM's NRC license covering uranium contamination there was terminated in December 1985.

The Safety Office also prepared detailed guidelines for safe response to handling, storage, and transportation accidents involving army munitions that contained depleted uranium. These guidelines were finalized and were to be published and distributed as a technical bulletin in FY 1987.

The office began development of AMCCOM pamphlet 385-3 entitled, "Radiation Safety Guide." The purpose of this pamphlet was to assist Defense Contract Administration Service (DCAS) personnel in the performance of pre-award safety surveys of potential contractors who were to produce AMCCOM radioactive commodities. The pamphlet would enable DCAS to ensure that contractors were capable of safely handling the radioactive material involved.

During the fiscal year, three AMCCOM quality assurance personnel were provided training to enable them to perform "wipe tests" on AMCCOM radioactive commodities in use in the field. Training lectures on radioactive waste disposal were provided for the AMC Field Safety Activity radiological protection management course, the Army Environmental Hygiene Agency nuclear science medical officers' symposium, the Forces Command annual radiological protection officer (RPO) symposium, the Depot Systems Command RPO workshop, and the US Army Defense Ammunition Center and School transportation of hazardous materials course. AMCCOM also sponsored three one-week courses on regulatory awareness for radioactive waste packaging, transportation, and disposal. These courses were attended by 150 people representing the army, navy, air force, marines, and DCAS.

A major radioactive decontamination project was initiated at Lake City AAP in fiscal year 1986. This depleted uranium contamination was the result of firing and production operations performed in the 1960s. The project called for decontamination of the interior and exterior of buildings 12A and 3A. The project was initiated on 1 August 1986 and was expected to be completed by mid-FY 1987.

A consolidation center for small shipments of radioactive waste from army and air force generators was established at Snelling, South Carolina, adjacent to the Barnwell, South Carolina, burial site. This resulted in significant volume reduction, thereby reducing the overall cost of disposal. A total of 64 army shipments were made to the burial sites and/or the consolidation center without any major problems.

#### Installation Safety

During FY 1986 23 subordinate installation safety programs were evaluated by on-site safety office personnel. An agreement was developed for the AMC Field Safety Activity to cooperatively participate in 10 of these inspections and include evaluation of the industrial hygiene programs. Appropriate recommendations were made to improve installation safety programs. CRDEC participated in the inspection of installations with a chemical agent mission. Staff assistance on problem areas identified by installations were

## Special Staff Offices

addressed. Preoperational surveys were conducted on the Radford AAP nitroguanadine-2 line, the Pine Bluff Arsenal white phosphorus line, the Johnston Island propellant downloading line, the Tooele Army Depot ton container program, and the Mississippi AAP LAP and projectile metal parts lines.

The AMCCOM Safety Office participated in 14 accident investigations at Pine Bluff Arsenal, Lake City AAP, Rock Island Arsenal (2), Kansas AAP (3), Lone Star AAP, Tooele Army Depot, Radford AAP (2), Louisiana AAP, Longhorn AAP, and Mississippi AAP. Cooperation with the Defense Logistics Agency in the administration of AMCCOM contracts was provided through on-site visits to seven private industry production facilities for inspections and accident investigations.

The office participated as a member of the AMC munitions and demilitarization study, phase two, inspecting 16 ammunition plants. Followup surveys with the facility tracking group were made at all 16 plants, ARDEC, and CRDEC. Other actions included multi-command coordination of recommendations, development of regulatory and contract changes, and briefings to AMC and AMCCOM general officers.

The AMCCOM Safety Office revised the safety portion of AMCCOM regulation 210-1 and blanket letters of authorization to strengthen safety requirements in third-party contracting. Over 65 third-party requests for the use of idle AMCCOM facilities were reviewed in fiscal year 1986. A presentation on safety requirements in third-party contracts was made to industry officials at the third, third-party contracting conference.

A safety office representative chaired a session of the twenty-second DOD explosive safety seminar and presented a paper on high speed deluge systems for explosive operations.

A special on-site survey of safety deviations was conducted at 15 installations to reconcile records and validate waiver elimination programs. Actions to reduce waivers resulted in waivers being reduced from 236 in FY 1985 to 83 in FY 1986.

The Safety Office continued technical support through the engineering review of programs and projects related to APE, DMWR, site plans, construction drawings, hazard analyses, and product configuration management, in addition to management review of scopes of work, P-15 summary sheets, and selected installation operating procedures. Over 1,200 packages for procurement of hazardous materials from private industry were reviewed and appropriate safety contract clauses inserted. The office also reviewed 2,620 planning work directives.

Accident Information

The AMCCOM Safety Office expanded its accident information collection and sharing efforts in FY 1986. The AMCCOM supplement to AR 385-40 was revised. Telephone notification of recordable explosive accidents and monthly reporting of all explosive incidents were required. Computer mail was utilized to establish a "NET ALERT" sharing of all accident information and "lessons learned" were developed and sent to all command installations and other service agencies. The Institute of Makers of Explosives agreed to share industry explosive accident information. A presentation was made to the Industrial Committee of Ammunition Producers to elicit interest and support in information exchange. Finally, contact was made to the American Defense Preparedness Association to discuss information sharing.

In July 1986 a safety engineer in the AMCCOM Safety Office received the commander's award for civilian service from General Richard H. Thompson, the AMC commander. The award was presented for significant contributions while serving as the primary safety engineer for the M55 functional task group. The award citation recognized outstanding ability to foresee, detect, and quickly resolve issues which were paramount to completing the assessment safely and without incident. Additionally, industrial and explosives safety personnel received 12 letters of commendation and awards for their on-the-job performance. System safety engineers received five, and health physicists received seven for their on-the-job performance.

Accident Statistics

Total AMCCOM accident statistics for FY 1986 were as follows:

Total Cost of Accidents	\$5,887,287.00
Total Number of Accidents	353
Average Number of Personnel	47,230
Cost per Capita	\$ 124.65
Accidents per 1,000 People	7.47
Total Number of Injuries	248
Military Injuries	3
Army Motor Vehicle Accidents	11
Civilian Injuries	172
Contractor Injuries	73
Fatalities	2
Injuries per 1,000 People	5.25

AMCCOM safety awards were earned during FY 1986 by installations in two categories. For installations with greater than 800,000 man-hours of exposure, the award of honor was earned by McAlester AAP, and the award of merit was earned by Crane Army

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Ammunition Activity. For installations with less than 800,000 man-hours of exposure, the award of honor was earned by Twin Cities AAP, and the award of merit was earned by Volunteer AAP.

### COMMAND SURGEON

#### Mission

The mission of the command surgeon was to develop and staff supervise the army occupational health program within AMCCOM, act as the chief medical advisor to the commanding general, provide guidance involving medical matters to AMCCOM HQ, and formulate and disseminate medical policy to subordinate installations within the command.<sup>12/</sup>

#### Staffing and Personnel

Major Joseph A. Jakubowski served as the command surgeon until June 1986. Major George Murnyak assumed the position in July. The authorized and actual strengths were one military and one civilian secretary.

#### Major Activities

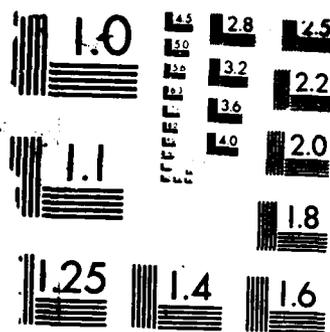
During FY 1986 the command surgeon began awareness training for AIDS. By the end of the fiscal year all installation commanders and executive officers, and most of the military personnel at RIA, had received the training. The office also provided medical input to an AMCCOM plan on enforcing the DA AIDS policy.

The office was also the single point of contact within AMCCOM for the health hazard assessment (HHA) program. During the fiscal year over 30 HHAs were processed, including the XM22 chemical agent alarm and the M10A1 canister. The command surgeon also suggested the microclimate controlled toxicological protective outfit be removed from the inventory due to numerous health hazards.

The command surgeon requested and tracked all US Army Environmental Hygiene Agency reports, and provided replies to all of the occupational health and industrial hygiene studies.

At the end of FY 1986, the office was rewriting the medical services clause in GOCO contracts. The existing two-paragraph clause was deemed outdated and not appropriate for further use. The clauses were being prepared as each contract came up for revision. By the end of the fiscal year, the office had rewritten the clause for Hawthorne, Iowa, Kansas, Lake City, Lone Star, Longhorn, Louisiana, Milan, McAlester, and Newport AAPs.





MICROCOPY RESOLUTION TEST CHART

Copper and zinc naphthenate was found to be a replacement for pentaclorophenal (penta) as a wood preservative. Penta had been found to be a skin irritant. Existing stocks of penta-treated lumber would be used until depleted, along with new copper and zinc-treated wood.

#### SECURITY AND INTELLIGENCE OFFICE

##### Mission

The mission of the Security and Intelligence Office was to formulate and direct the execution of security and intelligence policies and procedures required and necessary to support AMCCOM.13/

##### Staffing and Personnel

Mr. Joseph Weston II served as the acting chief of the Security and Intelligence Office throughout the fiscal year. While a final table of distribution and allowance had not been established by the end of the fiscal year, the actual strength of the office was five civilian employees.14/

##### Director's Overview

At the direction of AMC HQ, AMCCOM formed the Security and Intelligence Office in October 1985. The purpose of the organization was to incorporate the traditional information security programs and foreign intelligence management into one office. The office was formed from existing assets in the Foreign Intelligence Office, and from a segment of the Provost Marshal's Office.

#### OFFICE OF THE PROVOST MARSHAL

##### Mission

The mission of the command provost marshal was to develop plans, policies, and programs to assure the complete defense of command assets. The AMCCOM Provost Marshal Office provided staff supervision to all subordinate command centers and activities and served as the focal point for all security related interfaces with higher headquarters and outside agencies unless direct interface was authorized elsewhere per regulation. The office provided security support and services to all AMCCOM elements located at Rock Island Arsenal, except installation law enforcement-security functions normally provided by the installation provost marshal/security officer.15/

## Special Staff Offices

### Organization

The office was divided into three divisions: the Physical Security Division, the Law Enforcement Operations Division, and the Inspections and Surveys Division. An administrative section provided clerical support to all three divisions.

As part of the reorganization of the security system, information security operations were transferred to a separate office. The provost marshal retained responsibility for law enforcement, physical security, and physical security surveys and inspections.

### Staffing and Personnel

The provost marshal, LTC Allen Shirley, retired in September 1986 and was replaced by Major Richard Benjamin. Mr. D. Joe Griffin assumed responsibility as deputy provost marshal. During the fiscal year, the office had an authorized strength of 10 civilians and 1 military, but had an actual strength of 10 civilians and 2 military.

### Director's Overview

The year proved to be one in which continued progress to accomplish previously established goals was recognized. With the detachment of information security functions, the provost marshal office was able to concentrate more specifically on traditional provost marshal functions: law enforcement, physical security, and security surveys and inspections.

### Major Activities

In fiscal year 1986 provost marshal's representatives conducted 61 visits to installations. Of these, 12 were security surveys or inspections, 5 were re-inspections, and 44 were technical assistance visits.

The office was tasked to provide security assistance to the AMCCOM munitions and demilitarization study functional task group verification team review. This required one security specialist to accompany the team to various installations from June to October, reviewing corrective action taken on security deficiencies cited in the initial reports. Any new deficiencies were also cited.

The increase in technical assistance visits to various installations prior to surveys conducted by AMC security support activities proved beneficial to the overall command readiness posture by reducing recurring deficiencies that could have proved

detrimental to the in-place security measures of the visited installation.

FY 1986 saw the overall command investigative powers increased following the addition of an experienced detective to the provost marshal's team and "the simultaneous educational augmentation of existing force personnel capabilities" (training).

The AMCCOM Provost Marshal Office performed all on-site investigations throughout the command, acting as the sole investigative agency or as part of a co-lateral investigative team when necessary. As part of the continuing emphasis on the law enforcement mission initiated in FY 1985, a high priority was placed on the deployment of law enforcement personnel at every level of command within AMCCOM.

FY 1986 saw a dramatic rise in terrorist activities worldwide. In recognition of the dangers posed by this form of modern day warfare, the law enforcement division recognized the necessity to maintain a higher state of terror counter-action readiness. Contingency plans at the installation level were continuously revised and upgraded as the result of a vigorous testing program enabling AMCCOM to aggressively counter the terrorist threat.

A smooth and effective separation of the Security Office into two offices, the Provost Marshal's Office and the Security and Intelligence Office, was carried out in September 1986.

#### AVIATION OFFICE

##### Mission

The mission of the Aviation Office was to manage and conduct the AMCCOM aviation program. It provided aviation transportation support to AMCCOM on an area support basis, and provided aviation support to AMCCOM for operational support airlift; research, development, test, and evaluation (RDTE); and RDTE support mission requirements. 16/

##### Organization

The AMCCOM Aviation Office was given responsibility for two subordinate flight detachments organized as the Rock Island Flight Detachment located at the Quad City Airport, Moline, Illinois; and the Dover Flight Detachment located at the Morristown Municipal Airport, Morristown, New Jersey. This brought all the aviation assets of the command under a single AMCCOM level office in order to centrally manage the total aviation program, standardize operations, and maximize the efficient use of the

## Special Staff Offices

limited aviation assets of the command.

The key element was the centralized scheduling and single AMCCOM mission approval authority. Each flight detachment provided air mission support on an area basis with missions combined and coordinated throughout AMCCOM and other AMC aviation units as required. Aviation support requests were coordinated by the three flight coordinators at Rock Island, Morristown, and Edgewood.<sup>17/</sup>

### Staffing and Personnel

Mr. Neil L. Pobanz remained the chief of the AMCCOM Aviation Office during FY 1986. He also commanded the Rock Island Flight Detachment. A civilian, Mr. James Tobin, replaced Major Ronald Allari in command of the Dover Flight Detachment. Mrs. Joanne Greathouse remained the flight coordinator for the CRDEC geographical area. Overall personnel strength authorizations for FY 1986 was 22, while the office's actual strength was 19.

Numerous changes occurred in the composition of the Aviation Office manning structure as a result of contracting most maintenance functions and dispatching. The flight coordinator contract was changed from Imperial Aviation to Beech Aerospace Service, Inc., at the beginning of FY 1987 at Rock Island. The maintenance contract was also awarded to Beech Aerospace.

The reduction of AMCCOM fixed wing fleet assets by two aircraft, the contracting of two flight coordinator positions and some aircraft maintenance, the conversion of three military maintenance positions to two civilian positions, and the reduction of one civilian maintenance position all contributed to an overall reduction of spaces.

### Director's Overview

Implementation of the AMCCOM Aviation Office reorganization was completed in FY 1984 with responsibility for the Dover Flight Detachment assumed by the Aviation Office, and centralized mission scheduling, coordination, and approval. Army aviation support request procedures were published standardizing those procedures throughout AMCCOM. In addition, standardizing these procedures insured efficient, cost effective utilization of the command's aviation assets and compliance with higher headquarters directives. A major effort was made throughout the fiscal year to integrate, coordinate, and consolidate air missions within and outside the command. This effort resulted in a significant increase in mission completion and cost effectiveness.

Aviation assets still did not adequately support the entire command, under the area support concept, due to equipment, personnel, facilities, and monetary limitations. The critical shortage was the lack of available fixed wing aircraft. The Aviation Office's goal was to acquire the additional aircraft and funds necessary to fully support the entire command on an area basis, and execute Technical Escort Unit missions efficiently and cost effectively.

Major Activities

The Dover Flight Detachment moved to a new location that was still under construction. The hangar had greater area for aircraft.

Aircraft at the Dover Flight Detachment sustained damage during a storm in August. A hangar door at the old location blew in on a U-21 and a UH-1, damaging both. While the UH-1 was quickly restored to flight condition, the U-21 was anticipated to be down for several months. This shortage of assets made completion of the flying hour program difficult and restricted the ability to complete all necessary missions.

Additional aviation activities included significant rotary wing support provided to the search and destroy armament program and other test projects. One hundred twelve technical escort missions were performed, with eight for the M55 rocket. Significant aviation support to other AMC units was provided requiring both flying hours and dollar reimbursement.

Special Staff Offices

NOTES

1/This section is based on the annual historical submission of the Command Chaplain, Chaplain (LTC) Robert D. Hall, 14 Nov 86.

2/This section is derived from the annual historical submission of the Equal Employment/Equal Opportunity Office, Mr. Eugene R. Evans, Chief, 28 Nov 86.

3/This section is derived from the annual historical submission of the Office of Counsel, Mr. John A. Rock, Acting Chief, General Law/Congressional Affairs Division, 5 Jan 87.

4/This section is derived from the annual historical submission of the Internal Review and Audit Compliance Office, Mr. R. A. Castle, Chief, 21 Nov 86.

5/This section is based on the annual historical submission of the Office of the Inspector General, LTC Robert J. Walker, Inspector General, 14 Nov 86.

6/This section is based on the annual historical submission of the Public Affairs Office, Mr. Peter S. Copeland, Chief, 3 Nov 86.

7/Ibid.; "Fire fighters douse welding shop blaze," Rock Island Arsenal Target, 10 Jan 86, p. 1.

8/AMCCOM Regulation 10-1, 1 Apr 86, p. 14-2.

9/This section is derived from the annual historical submission of the Organization Development Office, Mr. Patrick G. Hardy, Chief, 3 Nov 86.

10/This section is derived from the annual historical submission of the Small Business Office, Mr. Kenneth P. Turner, Chief, 17 Nov 86.

11/This section is based on the annual historical submission of the Safety Office, Mr. Lawrence E. Smith, Chief, 20 November 1986.

12/This section is derived from the annual historical submission of the Office of the Command Surgeon, Major George R. Murnyak, Command Surgeon, 21 Nov 86.

13/AMCCOM Regulation 10-1, 1 Apr 86, p. 22-2.

14/This section is derived from the annual historical submission of the Security and Intelligence Office, Mr. Joseph Weston II, Acting Chief, 21 Nov 86.

15/This section is derived from the annual historical submission of the Office of the Provost Marshal, MAJ Richard A. Benjamin, Provost Marshal, 4 Feb 87.

16/AMCCOM Regulation 10-1, 1 Apr 86, p. 06-2.

17/This section is based on the annual historical submission of the Aviation Office, Mr. Neil L. Pobanz, Chief, 10 Feb 87.

APPENDIX A

Key Personnel

1 October 1985 - 30 September 1986  
(unless otherwise specified)

Commanding General

MG Fred Hissong, Jr.

Deputy Commanding Generals

DCG for Armament and Munitions

BG Richard D. Beltson

DCG for Chemical Material

BG James R. Klugh

1 Oct 85 - 11 Jun 86

BG Peter D. Hidalgo

11 Jun 86 - 30 Sep 86

DCG for Procurement and Readiness

BG Paul J. Greenberg

Chief of Staff

COL James R. Poole

1 Oct 85 - 7 Nov 85

COL George T. Murray (Acting)

8 Nov 85 - 15 Feb 86

COL Murray G. Swindler

15 Feb 86 - 30 Sep 86

Command Sergeant Major

CSM Eugene Stevens

1 Oct 85 - 10 Apr 86

CSM Nelson R. Ham

10 Apr 86 - 30 Sep 86

Deputy for Procurement and Production

COL Stanley L. Fonken (Acting)

1 Oct 85 - 20 Nov 85

Mr. Jimmy C. Morgan

20 Nov 85 - 30 Sep 86

Deputy for Industrial Preparedness and Installations

Mr. Dale Kinney

1 Oct 85 - 14 Feb 86

COL Donald R. Reinhard (Acting)

14 Feb 86 - 30 Sep 86

Deputy for Logistics Readiness

COL L. W. Stock

1 Oct 85 - 21 Oct 85

Mr. Perry C. Stewart

21 Oct 85 - 30 Sep 86

Deputy for Resources and Management

Mr. Donald R. Lathrop

Secretary to the General Staff

LTC Gerald J. Braun

1 Oct 85 - 2 Jun 86

MAJ James M. Welch

2 Jun 86 - 30 Sep 86

Appendix A

HEADQUARTERS AMCCOM STAFF

Procurement and Production Policy and Management Directorate  
Mr. David L. Herington

Procurement Directorate (R)  
COL Carl N. Price

Procurement Directorate (A)  
Mr. Charles D. Solloway

Production Directorate (R)  
COL Joel E. Gregory

Procurement and Production Directorate (D)  
COL David L. Dunham

Industrial Preparedness & Installations Program Management Office  
LTC Henry M. Rosenbaum, Jr.

Installations Support Directorate  
Mr. Bernie M. Connelly

Production Base Modernization Activity  
COL Francis L. Mulcahey

Industrial Readiness Directorate  
Mr. Richard W. Janick (Acting)

Integrated Logistics Support Office  
Mr. John H. Allcott

Material Management Directorate  
COL David L. Measles 1 Oct 85 - 30 Jun 86  
Mr. Deane L. Warnecke 1 Jul 86 - 30 Sep 86

International Logistics Directorate  
Mr. Richard E. Harris

Transportation and Traffic Management Directorate  
Mr. Robert J. Surkein 1 Oct 85 - 31 Dec 85  
Mr. Wilfred E. Schwietzer 1 Jan 86 - 30 Sep 86

Maintenance Directorate  
COL John S. Cowings 1 Oct 85 - 30 Jun 86  
LTC Stephen L. Etzel 14 Jul 86 - 30 Sep 86

Defense Ammunition Directorate  
COL Wayne C. Boyd 1 Oct 85 - ?? Jan 86  
Mr. Masaru Kojima (Acting) ?? Jan 86 - 5 Feb 86

Key Personnel

COL James H. McAllister 5 Feb 86 - ?? May 86  
Mr. Masuru Kojima (Acting) ?? May 86 - 30 Sep 86

Comptroller

COL David L. Click 1 Oct 85 - 26 Aug 86  
Ms. Suzanne Wells (Acting) 26 Aug 86 - 30 Sep 86

Management Directorate

Mr. Gerald T. Cannon

Resource Management Systems, Policy and Analysis Office

Mr. Allan L. Shimp

Information Management Directorate

Mr. David L. O'Melia

Personnel and Training Directorate

COL Malcolm S. Shaffer 1 Oct 85 - 24 Jun 86  
Mr. Milton B. Bossch 24 Jun 86 - 30 Sep 86

Cost Analysis Directorate

Mr. Robert E. Lee

Defense Standard Ammunition Computer System Office

Mr. Greg F. Legare

Readiness Directorate

COL James H. McAllister 1 Oct 85 - 25 Nov 85  
Dr. Marion Z. Thompson (Acting) 25 Nov 85 - 23 Jul 86  
Mr. Jerry D. Brakhage (Acting) 23 Jul 86 - 30 Sep 86

Systems Analysis Office

Mr. Bernard C. Witherspoon 24 Jan 86 - 30 Sep 86

Plant Operations Directorate

COL David M. Pojmann

Joint Activities Office

Mr. John W. Masengarb

Product Assurance Directorate

Mr. Hugh F. Lazar

Weapon Systems Management Directorate

COL George T. Murray

SPECIAL STAFF

Appendix A

Command Chaplain  
CH (LTC) Robert D. Hall

Command Surgeon  
MAJ Joseph A. Jakubowski  
MAJ George Murnyak

1 Oct 85 - 14 Jul 86  
14 Jul 86 - 30 Sep 86

Organizational Development Office  
Mr. Patrick G. Hardy

Public Affairs Office  
Mr. Peter S. Copeland

Historical Office  
Mr. James R. Cooper, Jr.

Small Business Office  
Mr. Kenneth P. Turner

Inspector General  
LTC Robert J. Walker

Aviation Office  
Mr. Neil L. Pobanz

Internal Review and Audit Compliance Office  
Mr. Richard A. Castle

Equal Employment/Equal Opportunity Office  
Mr. Eugene R. Evans

Safety Office  
Mr. Lawrence E. Smith

Provost Marshal  
LTC Allen Shirley  
MAJ Richard A. Benjamin (Acting)

1 Oct 85 - 10 Sep 86  
10 Sep 86 - 30 Sep 86

Chief Counsel for Procurement and Readiness  
Mr. Marvin L. Hancks

ACTIVE ARMY AMMUNITION PLANTS/ACTIVITIES

Crane  
LTC David L. Sims

Hawthorne  
LTC Rodney S. Tanaka  
LTC John J. Bixus, Jr.

1 Oct 85 - 30 Jun 86  
30 Jun 86 - 30 Sep 86

Key Personnel

Holston

LTC James F. Bald

Indiana

LTC Kent W. Fontaine

1 Oct 85 - 27 Jun 86

LTC Trannie W. Sanderson

27 Jun 86 - 30 Sep 86

Iowa

LTC Michael Roddy III

Kansas

LTC Charles T. Wallschlaeger

1 Oct 85 - 6 Jun 86

LTC David L. Iverson

6 Jun 86 - 30 Sep 86

Lake City

LTC Dennis O'Brien

Lone Star

LTC Douglas R. Baker

Longhorn

LTC Joseph P. Phillip

Louisiana

LTC David G. Jeffery

1 Oct 85 - 2 Jul 86

LTC Gary F. Andrew

2 Jul 86 - 30 Sep 86

McAlester

COL Walter L. Busbee

Milan

LTC Kennard G. Karr

1 Oct 85 - 7 Jul 86

LTC Van E. Roberts

7 Jul 86 - 30 Sep 86

Mississippi

LTC Richard W. Bregard

Padford

LTC Travis W. Curtis

1 Oct 85 - 25 Jul 86

LTC George J. Sawitzke

25 Jul 86 - 30 Sep 86

Scranton

LTC Grayson T. Augsburg

1 Oct 85 - 15 Jul 86

LTC Horace Worthy

15 Jul 86 - 30 Sep 86

Sunflower

LTC Michael M. Neer

Appendix A

ARSENALS

Pine Bluff

COL George H. Conner, Jr.

Rock Island

COL John M. Gamino

1 Oct 85 - 8 Jul 86

COL John S. Cowings

8 Jul 86 - 30 Sep 86

Rocky Mountain

LTC Craig M. Dexter

Watervliet

COL Edward V. Karl

1 Oct 85 - 22 Jan 86

COL Robert T. Walker

22 Jan 86 - 30 Sep 86

OTHER SUBORDINATES

Defense Ammunition Center and School

Mr. John L. Byrd, Jr.

Central Ammunition Management Office (Pacific)

COL Stephen H. French

Technical Escort Unit

LTC C. C. Smith

## APPENDIX B

### GLOSSARY

AA&E	arms, ammunition, and explosives
AAA	army ammunition activity
AAH	advanced attack helicopter
AAI	automated AUTODIN interface
AAMMIS	AMC automated manpower management information
AAP	army ammunition plant
AAR	Association of American Railroads
AARDBS	automated acquisition requirements data base system
ACADA	automatic chemical agent detector alarm
ACF2	access control facility version 2
ACP	asset capitalization program
ACS	Army Community Services
AD	air defense
ADADS	army depot automatic diagnostic system
ADAM	area denial artillery munition
ADAPCP	alcohol and drug abuse prevention and control program
ADEA	Army Development and Employment Agency
ADF	auxiliary detonating fuze
ADP	automated data processing
ADPA	American Defense Preparedness Association
ADS	ammunition distribution system
AEG	AMCCOM exercise guide
AEHA	Army Environmental Hygiene Agency
AEMS	ammunition executive management system
AERB	Army Educational Requirements Board
AERB	advanced education requirements board
AFAS	advanced field artillery system
AFES	AMC financial entitlements system
AFT	annual financial target
AGES	air-to-ground engagement system
AGES/AD	air-to-ground engagement system/air defense
AGPS	automatic gun positioning system
AGS	armored gun system
AH	alternate headquarters
AHB	attack helicopter battalion
AIDECs	automatic inspection device for explosive charge in shell
AIDS	acquired immune deficiency syndrome
AIF	army industrial fund
AIMS	automated information management steering
AIN	approved item names
AIWC	AMCCOM integrated workloading committee
ALA	army logistics assessment
ALAD	automatic liquid agent detector
ALMSA	Automated Logistics Management Systems Activity

Appendix B

ALRAM ammunition lot reporting and malfunction  
ALSB AMC logistics sustaining base  
AMARRS AMCCOM manpower automated resource requirements system  
AMC U.S. Army Materiel Command  
AMCCOM U.S. Army Armament, Munitions and Chemical Command  
AMCLA AMC logistics assessment  
AMCR AMC regulation  
AMD average monthly demand  
AMDF army master data file  
AMETA Army Management Engineering Training Activity  
AMFLT automated multiple filter life tester  
AMIM army modernization information memorandum  
AMMOLOG ammunition logistics  
AMMS acquisition milestone management system  
AMOD army mobility opportunity development  
AMP army materiel plan  
AMPED automated maintenance procedures engineering data  
AMPMOD army materiel plan modernization  
AMS army management structure  
AMSAA Army Materiel Systems Analysis Agency  
AMTA army modernization training automation  
ANAD Anniston Army Depot  
AP acquisition plan  
AP antipersonnel  
AP armor piercing  
APA aircraft procurement, army  
APACS AMCCOM plant/arsenal computer system  
APAI advanced planning acquisition information  
APARS army procurement appropriation reporting system  
APBI advanced planning briefing for industry  
APC armored personnel carrier  
APE ammunition peculiar equipment  
APFSDS armor-piercing, fin-stabilized, discarding-sabot  
APG Aberdeen Proving Ground  
APORS army performance oriented review and standards  
AR army regulation  
ARBAT application of radar to ballistic acceptance testing  
ARDC U.S. Army Armament Research and Development Center  
ARDEC U.S. Army Armament, Research, Development, and Engineering Center  
ARES AMC readiness evaluation system  
ARNG Army National Guard  
ASF army stock fund  
ASL authorized stockage list  
ASLWRB AMCCOM Senior Level Warranty Review Board  
ASRP ammunition stockpile reliability program  
ATC acquisition tracking center  
ATE automatic test equipment  
ATWESS antitank weapons effects signal simulator  
AVFTG aviation functional task group  
AVSCOM U.S. Army Aviation Systems Command

AXIS	automatic x-ray inspection system
BCS	battery computer system
BDAR	battlefield damage assessment and repair
BFA	blank firing attachment
BFV	Bradley fighting vehicle
BFVS	Bradley fighting vehicle system
BII	basic issue item
BIT	built-in-test
BLU	bomb live unit
BMY	Bowen-McLaughlin-York, Co.
BO	back order
BOA	basic ordering agreement
BOIP	basis of issue plan
BP	black powder
BPRR	budget program resource review
BRDC	Belvoir Research and Development Center
BRDEC	Belvoir Research and Development Engineering Center
BRI	Barnes and Reinecke, Inc.
BRIMS	budget resource information system
BRL	Ballistics Research Laboratory
BUCS	backup computer system
C/SCSC	cost/schedule controls systems criteria
CA	commercial activities
CAA	Concepts Analysis Agency
CAA	chemical agent alarm
CALS	committee for ammunition logistic support
CALS	computer aided logistic support
CAM	chemical agent monitor
CAMDS	chemical agent munitions disposal system
CAMO-PAC	Central Ammunition Management Office-Pacific
CAMS	computer aided milestone system
CAPE	customer acquisition plan entry
CARC	chemical agent resistant coating
CARMS	chemical armament resources management system
CASBL	continuous automated single-based line
CAWCF	conventional ammunition working capital fund
CAWS	cannon artillery weapon system
CBS	crew ballistic shelter
CBU	cluster bomb unit
CCB	configuration control board
CCIP	cost control initiatives program
CCRR	closure, consolidation, reduction, and realignment
CCSS	commodity command standard system
CDC	child development center
CDP	civil disturbance plan
CDS	child development services
CDS	command disable system
CEB	combined effects bomblets
CECOM	U.S. Army Communications-Electronics Command
CEE	civilian employment estimate

Appendix B

CEM combined effects munition  
CEP civilian employment projection  
CFC combined federal campaign  
CFC customer feedback center  
CFM cubic feet per minute  
CG commanding general  
CGS commander's guidance statement  
CIE computer integrated engineering  
CITV commander's independent thermal viewer  
CLS contractor logistics support  
CLSSA cooperative logistics supply support arrangement  
CMSP chemical materiel surveillance program  
COB command operating budget  
COCP customer order control point  
COE center of expertise  
COFT conduct of fire trainer  
CONUS continental United States  
COOP continuity of operations  
COR contracting officer's representative  
COSIS care of supplies in storage  
CPCI computer program configuration item  
CPE contractor plant equipment  
CPIR command performance indicator review  
CPP camouflage paint pattern  
CPSR contractor procurement system review  
CPU central processing unit  
CRA continuing resolution authority  
CRB configuration review board  
CRDC U.S. Army Chemical Research and Development Center  
CRDEC U.S. Army Chemical Research, Development, and Engineering Center  
CRIB command review of industrial base  
CSA chief of staff, army  
CSS constant surveillance service  
CUCV commercial utility cargo vehicle  
CY calendar year  
DA Department of the Army  
DAAS defense automatic addressing system  
DAR defense acquisition regulation  
DATS drill and transfer system  
DBM dynamic battalion maintenance  
DCAA Defense Contract Audit Agency  
DCAS Defense Contract Administration Services  
DCASMA Defense Contract Administration Services Management Activity  
DCG deputy commanding general  
DCGCM deputy commanding general for chemical materiel  
DCGPR deputy commanding general for procurement and readiness  
DCM defense chemical materiel  
DCP disaster control plan  
DCSPER deputy chief of staff for personnel  
DCSRDA deputy chief of staff for research, development and acquisition

DDESP DOD explosive safety board  
DDRS dud destroyer/retrieval system  
DEERS defense eligibility enrollment reporting system  
DES data entry service  
DESCOM U.S. Army Depot Systems Command  
DI data interchange  
DID data item description  
DIF deficiency investigation  
DIVADS division air defense system  
DLA Defense Logistics Agency  
DLSC Defense Logistics Services Center  
DMMP dimethyl methyl phosphonate  
DMPE depot maintenance plant equipment  
DMS defense materiel system  
DMWR depot maintenance work requirement  
DNA Defense Nuclear Agency  
DOD Department of Defense  
DODAAC DOD activity address codes  
DODD Department of Defense directive  
DOE Department of Energy  
DOIM directors of information management  
DPECCS dual purpose equipment chemical company system  
DPICM dual purpose improved conventional munition  
DRIS defense regional interservice support  
DRM deputy for resources and management  
DRS deficiency reporting system  
DSACS defense standard ammunition computer system  
DSESTS direct support electrical system test set  
DSETS direct support electrical test set  
DSIM distribution simulation model  
DSTA DSESTS SRU test assembly  
DSWS division support weapon system  
DT data transcription  
DT developmental testing  
DTC design to cost  
DTII development test II  
DU depleted uranium  
DU display unit  
DVT design verification test  
EAP employee assistance program  
ECAP enhanced Cobra armament project  
ECOD cost of repair and damage  
ECP engineering change proposal  
EDCA executive director for conventional ammunition  
EE/EO equal employment/equal opportunity  
EEO equal employment opportunity  
EIR equipment improvement recommendation  
EMI electro-magnetic interference  
EOD explosive ordnance detachment  
EOQ economic order quantities

Appendix B

EPA Environmental Protection Agency  
EPPS enhanced provisioning preparation system  
ERR engineering revision report  
ESS environmental stress screening  
ET engineering for transportability  
EUP equipment upgrade program  
EUSA Eighth U.S. Army  
FAA functional area assessment  
FAAD forward area air defense  
FAAT first article acceptance test  
FACC Ford Aerospace and Communications Corporation  
FACT first article confirmatory test  
FADAC field artillery digital automatic computer  
FAN feedback analysis network  
FAO finance and accounting office  
FAR federal acquisition regulation  
FASCAM family of scatterable mines  
FAST fast, accurate, simple and tempest  
FAT first article test  
FATR first article test report  
FBI fluidized bed incineration  
FCC family child care  
FCG functional coordinating group  
FD functional description  
FDT first destination transportation  
FEJE facilities engineering job estimate  
FERS federal employees retirement system  
FHMA family housing maintenance account  
FIO Foreign Intelligence Office  
FITS fuel injection test stand  
FM force modernization  
FMS foreign military sales  
FN Fabrique Nationale  
FOB freight on board  
FOE follow-on evaluation  
FORSCOM U.S. Army Forces Command  
FPA functional process assessment  
FPLT first production lot test  
FSA Field Services Activity  
FSD full scale development  
FSED full scale engineering development  
FSR fielded system review  
FTG functional task group  
FTR functional technical representative  
FUE first unit equipped  
FVS fighting vehicle system  
FWPA Fort Wingate Depot Activity  
GAO General Accounting Office  
GBL government bill of lading  
GEMSS ground emplaced mine scattering system

GFI	government furnished information
GK-84	Exercise Gallant Knight
GMG	grenade machine gun
GN	guanidine nitrate
GOCO	government-owned, contractor-operated
GOGO	government-owned, government-operated
GOR	gross operating result
GPFU	gas-particulate filter unit
GS	general support
GSA	General Services Administration
GSSP	general supply support package
GTR	government travel request
GVW	gross vehicle weight
HAC	Hughes Aircraft Company
HC	high capacity
HDL	Harry Diamond Labs
HE	high-explosive
HEAT	high-explosive, anti-tank
HEDP	high-explosive, dual purpose
HEIT	high-explosive, incendiary tracer
HEL	Human Engineering Laboratory
HELP	howitzer extended life program
HERA	high explosive, rocket assisted
HHA	health hazard assessment
HIP	howitzer improvement program
HMMWV	high mobility, multipurpose wheeled vehicle
HMX	high melt explosive
HOPE	health opportunities program for executives
HQDA	Headquarters, Department of the Army
HTLD	High Technology Light Division
I&KP	instructor and key personnel
I&S	interchangeability and sustainability
IBEA	Industrial Base Engineering Activity
ICAMP	integrated conventional ammunition maintenance plan
ICAP	industrial committee of ammunition producers
ICAPP	integrated conventional ammunition procurement plan
ICBM	intercontinental ballistic missile
ICM	improved conventional munition
ICR	internal control review
ICSP	internal control systems program
ICU	image control unit
ICU	integrated control unit
ID	Infantry Division
IDP	individual development plan
IDS	ionization detector set
IER	independent evaluation report
IG	inspector general
IGAR	inspector general action requests
IIB	incident investigation board
III	Information International, Inc.

Appendix B

IL international logistics  
ILM International Light Metals  
ILS initial logistics support  
ILS integrated logistic support  
ILSMRS ILS milestone reporting system  
ILSP integrated logistic support plan  
IMA information mission area  
IME international materiel evaluation  
IMIP industrial modernization incentives program  
IMMP information management master plan  
IMP information management plan  
IMR industrial management review  
IMS integrated management system  
IMWRF installation morale, welfare, and recreation fund  
IOB internal operating budget  
IOC initial operational capability  
IP improved performance  
IPI industrial preparedness and installations  
IPM industrial preparedness measures  
IPM1 product improved M1  
IPR in-process review  
IPS integrated procurement system  
IPT initial production test  
IR&D independent research and development  
IRAC internal review and audit compliance  
IRO Inventory Research Office  
ISC Information Systems Command  
ISC International Signal Corporation  
ISDA interior surface decontaminating apparatus  
ISN item sequence number  
ISP information systems planning  
ISU integrated sight unit  
IUP improved upload procedure  
J&A justification and approval  
JATF Johnston Atoll Task Force  
JCAP-CG joint conventional ammunition program coordinating group  
JCS joint chiefs of staff  
JLC joint logistics commanders  
JOCG joint ordnance commanders group  
JPG Jefferson Proving Ground  
JSM job scheduling model  
JWG joint working group  
KE kinetic energy  
KIED kit, individual equipment decontamination  
KMU Gator modification unit  
LAD laser aiming device  
LAN local area network  
LAO logistic assistance office  
LAP load, assemble, and pack  
LAR logistics assistance representative

LAV	light armored vehicle
LAW	light antitank weapon
LBDA	Lexington Blue-Grass Army Depot Activity
LCA	Logistics Control Activity
LCAAP	Lake City Army Ammunition Plant
LCWSL	Large Caliber Weapon Systems Laboratory
LDM	logistic data management
LDS	lightweight decontamination system
LEA	Logistics Evaluation Agency
LEAD	Letterkenny Army Depot
LEC	Lockheed Electronics Corporation
LIF	logistics intelligence file
LOA	letter of offer and acceptance
LOCC	logistics operations control center
LOG R&D	logistics research and development
LOGAMP	logistic & acquisition management program
LOI	letter of instruction
LOPA	local payment of airlines
LORA	level of repair analysis
LOS-F-H	line of sight-forward-heavy
LOS-F-L	line of sight-forward-light
LOS-R	line of sight-rear
LOVA	low vulnerability ammunition
LP	limited procurement
LP&P	logistics policies and procedures
LRF	laser rangefinder
LRIP	low rate initial production
LRU	line replaceable unit
LSA	logistics support analysis
LSAR	logistic support analysis record
LSI	Lear Siegler, Inc.
LSSA	Logistics Systems Support Activity
LTC	lieutenant colonel
LWCMS	lightweight company mortar system
MAA	mission area analysis
MAC	Military Airlift Command
MAC	maintenance allocation chart
MACI	military adapted commercial item
MACRIT	manpower authorization criteria
MADP	materiel area development plan
MADS	munitions and demilitarization study
MAIT	maintenance assistant instruction team
MANPRINT	manpower and personnel integration
MAP	military assistance program
MARAD	Maritime Administration
MARB	materiel acquisition review board
MARC	manpower requirements criteria
MCA	military construction, army
MCAAP	McAlester Army Ammunition Plant
MCL	main charge lead

Appendix B

MCN management control number  
MCPE modular collective protection equipment  
MDEFD master duplicate emergency files depository  
MDEP management decision package  
MDMS maintenance data management system  
MECI mission essential contingency item  
MEL maintenance expenditure limit  
MEO most efficient organization  
MEWG methodology and evaluation working group  
MFA materiel fielding agreement  
MFP materiel fielding plan  
MFT materiel fielding team  
MICAD multipurpose integrated chemical agent detector  
MICLIC mine clearing line charge  
MICOM U.S. Army Missile Command  
MIF malfunction investigation  
MILES multiple integrated laser engagement system  
MILPERCEN Military Personnel Center  
MILPO Military Personnel Office  
MILSCAP military standard contract administration procedures  
MILSTAMP military standard transportation and movement procedures  
MILSTREP military supply and transportation evaluation procedure  
MILSTRIP military standard requisitioning and issue procedures  
MILVAN military van  
MIP management improvement plan  
MIPR military interdepartmental purchase request  
MISD Management Information Systems Directorate  
MLP mid-life product improvement program  
MLRS multiple launch rocket system  
MMP mobilization master plan  
MMT manufacturing methods and technology  
MOA memorandum of agreement  
MOBEX mobilization exercise  
MOBSIM mobilization simulation  
MOP maintenance, operations, procedures  
MOPMS modular pack mine system  
MOU memorandum of understanding  
MP merit pay  
MP military police  
MPS maritime prepositioned ships  
MRIS modernization resource information submission  
MRL materiel requirements list  
MRSA materiel readiness support activity  
MSA materiel system assessment  
MSA Mine Safety Appliance  
MSC major subordinate command  
MSM maintenance support manager  
MSP mission support plan  
MSSG munitions supply subgroup  
MTBF mean-time-between-failure

MTMC	Military Traffic Management Command
MTP	materiel transfer plan
MTSPR	modified total system performance responsibility
MTZ	motorized
MWO	modification work order
MWOCRB	MWO control release board
MWOFP	MWO fielding plan
MZAD	Mainz Army Depot
NAF	nonappropriated fund
NATO	North Atlantic Treaty Organization
NAVAIR	Naval Air Systems Command
NAVDS	nonaqueous vehicle decontamination system
NAVSEA	Naval Sea System Command
NBC	nuclear, biological, and chemical
NBCRS	nuclear, biological, & chemical reconnaissance system
NDI	nondevelopmental items
NET	new equipment training
NETT	new equipment training teams
NIB	National Industries for the Blind
NICP	national inventory control point
NISH	National Industries for the Severely Handicapped
NMCS	not mission capable supply
NMIBT	new materiel introductory briefing teams
NMP	national maintenance point
NMSC	National Machinery and Supply Co.
NOV	notice of violation
NQ	nitroguanadine
NRC	Nuclear Regulatory Commission
NSN	national stock number
NSNMDR	national stock number master data record
NTPF	near term prepositioning force
NWC	Naval Weapons Center
NWFDFS	nuclear weapons field data feedback system
NWS3	nuclear weapons survivability, security, and safety
NWTCWG	nuclear weapons transport certification working group
O&O	operational and organizational
O&S	operation and support
OA	operating agency
OB/OD	open burning/open detonation
OC	operations center
OCD	overhaul consumption data
OCONUS	outside the continental United States
OCR	optical character reader
OC&S	Ordnance Center and School
OD	organization development
OEDCA	Office of the Executive Director for Conventional Ammunition
OJT	on-the-job training
OMA	operations and maintenance, army
OMAR	operations and maintenance, army reserve
OPA	other procurement, army

Appendix B

PE/ST/STE other plant equipment/special tooling/special test equipment  
 OPLAN operations plan  
 OPM Office of Personnel Management  
 OPMS officer personnel management system  
 OR operations research  
 ORR Operation Rock Ready  
 OSD Office of the Secretary of Defense  
 OSHA Occupational Safety and Health Administration  
 OT operational testing  
 P&P procurement and production  
 PA procurement appropriation  
 PA2 procurement appropriation, secondary  
 PAA procurement appropriation, army  
 PADDS procurement automated data and document system  
 PAL permissive action link  
 PAMUPS procurement automated manpower utilization projection system  
 PARR program analysis resource requirement  
 PARR program analysis resource review  
 PAUS projected asset update system  
 PBA Pine Bluff Arsenal  
 PBC program budget committee  
 PBMA Production Base Modernization Agency  
 PBS production base support  
 PBX plastic bonded explosives  
 PC personal computer  
 PCB printed circuit board  
 PCIP productivity capital investment program  
 PCO procurement contracting officer  
 PCU power control unit  
 PDIP program development increment package  
 PDL permanent duty location  
 PDM production demonstration module  
 PDSS post deployment software support  
 PDW personal defense weapon  
 PE protective entrance  
 PEP People Enhancing Picatinny  
 PEP plant equipment package  
 PEP production equipment package  
 PEPMIS plant equipment package management information system  
 PIC performance information center  
 PICA primary inventory control activity  
 PIF productivity investment fund  
 PIP product improvement proposal/package/program  
 PIVADS product improved Vulcan air defense system  
 PLL prescribed load list  
 PM project/program/product manager  
 PM-AGS PM for armored gun systems  
 PM-ATACMS PM for army tactical missile systems  
 PM-BFVS PM for Bradley fighting vehicle systems  
 PM-CAWS PM for cannon artillery weapon systems

PM-IEW	PM for intelligence, electronic warfare
PM-M1	PM for M1 tank
PM-NUC	PM for nuclear munitions
PM-TMAS	PM for tank main armament systems
PM-TRADE	PM training devices
PMCS	program management control system
PMCT	PAL management control team
PMDR	provisioning master data record
PMR	provisioning master record
PMRS	performance management recognition system
PMSA	program management system assessment
PO	purchase order
POC	point of contact
POD	place of destination
POM	program objective memorandum
POMCUS	prepositioning of materiel configured in unit sets
POMINS	portable mine neutralization system
POTMC	protective outfit, toxicological, microclimate controlled
PPWR	prepositioned war reserves
PQM	product quality manager
PREPO	prepositioned ammunition
PRODEX	productivity exchange
PRON	procurement request order number
PS	power supply
PS & ER	production support and equipment replacement
PSE	peculiar support equipment
PT/LD	physical teardown/logistic demonstration
PUDA	Pueblo Army Depot Activity
PWD	procurement work directive
QC	quality circle
QDR	quality deficiency report
QQPRI	qualitative and quantitative personnel requirements information
QRP	quick reaction program
QSR	quality systems review
R&A	review and analysis
R&D	research and development
RA	risk analysis
RAAMS	remote anti-armor mine system
RAC	Remington Arms Company
RAM	reliability, availability, maintainability
RAM-D	reliability, availability, maintainability, & durability
RAMCAD	RAM computer aided design
RAP	rocket-assisted projectile
RBL	recommended buy lists
RCF	repair cycle float
RCRA	resource conservation recovery act
RCS	range control station
RD&E	research, development and engineering
RDA	research, development, and acquisition
RDTE	research, development, test, and evaluation

Appendix B

RDX research department explosive  
REARM renovation of armament manufacturing  
RESHAPE resource self-help affordability planning effort  
RETS remoted target system  
RFD request for deviation  
RFP request for proposal  
RFTR ready for test review  
RFTS request for test samples  
RFW request for waiver  
RIA Rock Island Arsenal  
RIF reduction in force  
RMA Rocky Mountain Arsenal  
RMS rocket management system  
RMSRC resource management systems review committee  
ROC required operational capability  
ROKIT Republic of Korea indigenous tank  
ROM read only memory  
RP range practice  
RPO radiological protection officer  
RPSTL repair parts special tools list  
RRAD Red River Army Depot  
S&A safety and arming  
SA stock availability  
SA systems analysis  
SAAD Sacramento Army Depot  
SAAM special assignment airlift mission  
SAAR significant AMC action report  
SADARM sense and destroy armor  
SAIMS selected acquisition information management system  
SAO systems analysis office  
SASIP supplemental ammunition surveillance inspection procedure  
SATO Scheduled Airlines Traffic Office  
SAW squad automatic weapon  
SAWS squad automatic weapon system  
SBWDB sharing better ways of doing business  
SCOS standard customer order system  
SCP system change package  
SCPE simplified collective protection equipment  
SCTD self-contained tiedown straps  
SDAF special defense acquisition fund  
SDC sample data collection  
SDS standard depot systems  
SDT second destination transportation  
SEES standard entry exit system  
SES senior executive service  
SESI Secure Engineering Services, Inc.  
SETAF southern European task force  
SIFS standard industrial fund system  
SIO standard installation organization  
SIP safety improvement program

SKO	sets, kits, and outfits
SLAB	senior level approval board
SLRP	strategic long-range plan
SMA	subject matter assessment
SMA	special mission alteration
SMART	supply and maintenance assessment and review team
SMAW	shoulder mounted assault weapon
SMCA	single manager for conventional ammunition
SOA	short of award authority
SOI	surety and operational inspection
SOMARDS	standard operations, maintenance, and R&D system
SOP	standard operating procedures
SOPLC	senior officers preventative logistics course
SOW	statement of work
SPC	statistical process control
SPH	self propelled howitzer
SPID	systems programming, integration, and design
SPRINT	spare parts review initiatives
SRIP	soldier robot interface project
SRS	stratification report system
SRU	shop replaceable unit
SSEB	source selection evaluation board
SSO	special security office
ST	scientific/technical
ST	short ton
STAJE	small turbine alperin jet ejectors
STARS	streamlined acquisition requirements system
STS	stockpile-to-target
SUPLECAM	surveillance program, lethal chemical agents & munitions
SWS	sniper weapon system
T&E	test and evaluation
TAADS	the army authorization documents system
TACOM	U.S. Army Tank-Automotive Command
TAGO	The Adjutant General's Office
TAMMC	Theatre Army Materiel Management Center
TAMS	the army maintenance system
TB	technical bulletin
TCC	telecommunications center
TCE	trichlor ethylene
TCLP-U	type classification limited production-urgent
TCM	toxic chemical munition
TDA	table of distribution and allowance
TDP	technical data package
TDY	temporary duty
TECOM	U.S. Army Test and Evaluation Command
TEMP	test and evaluation master plan
TIPS	tool improvement program suggestions
TIR	test incident report
TIR	total item record
TIS	thermal imaging system

Appendix B

TIWG test integration working group  
 TLFC Turkish Land Forces Command  
 TLR/S total logistics readiness/sustainability  
 TM technical manual  
 TMDE test, measurement, and diagnostic equipment  
 TMSS transportation management support system  
 TOA total obligation authority  
 TOW tube launched, optically tracked, wire guided  
 TP total package  
 TP-T target practice-tracer  
 TP/UMF total package/unit materiel fielding  
 TPS test program set  
 TRADOC U.S. Army Training and Doctrine Command  
 TS top secret  
 TSFO training set fire observation  
 TSS TOW subsystem  
 TSTS thermal system test set  
 TТОМТ/ТОМТ tank turret and turret organizational maintenance trainers  
 TTS tank thermal sight  
 TWI training with industry  
 UCARS uniform cost accounting and reporting system  
 UCОFT unit conduct of fire trainer  
 UDC universal demolition charge  
 UK United Kingdom  
 ULO unliquidated obligations  
 UMF unit materiel fielding  
 UMFР unit materiel fielding point  
 URR unserviceable return rate  
 USACARA U.S. Army Civilian Appellate Review Agency  
 USACAW US Army Chemical Activity Western Command  
 USADACS U.S. Army Defense Ammunition Center and School  
 USAFAC U.S. Army Finance and Accounting Center  
 USAFAS U.S. Army Field Artillery School  
 USAMPS U.S. Army Military Police School  
 USANCA US Army Nuclear and Chemical Agency  
 USAREUR U.S. Army, Europe  
 USARJ US Army, Japan  
 USASAC U.S. Army Security Assistance Center  
 USATHAMA U.S. Army Toxic and Hazardous Materials Agency  
 USFS U.S. Forest Service  
 USMC U.S. Marine Corps  
 VA vulnerability assessment  
 VADS Vulcan air defense system  
 VCH variable cost to hold  
 VCP variable cost to procure  
 VCSA vice chief of staff of the army  
 VE value engineering  
 VЕСР value engineering change proposal  
 VEP value engineering proposal  
 VERT Venture evaluation review technique

VERT-R	VERT-reactivation
VFDMIS	vertical, force development management information system
VIGS	videodisc gunnery simulator
VOC	volatile organic compound
VSL	variable safety levels
WVC	Vulcan wheeled carriage
WADF	Western Area Demilitarization Facility
WADS	weapons access delay system
WARM	warranty model
WARS	worldwide ammunition reporting system
WASPM	wide-area side-penetrating mine
WATS	wide area telephone service
WEP	war emergency plan
WESSAM	weapon system supply and maintenance
WESTCOM	U.S. Army Western Command
WHS	warhead section
WORCS	work order reporting communication system
WP-PAC	white phosphorus-phosphoric acid conversion
WPC	Word Processing Center
WQEC	weapons quality evaluation center
WRSA	war reserve stock allies
WSCP	Weldon Spring Chemical Plant
WSMM	weapon systems matrix manager
WSSPA	weapon system supply performance analyzer
WVA	Watervliet Arsenal
WY	work year
XRF	x-ray fluorescence

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