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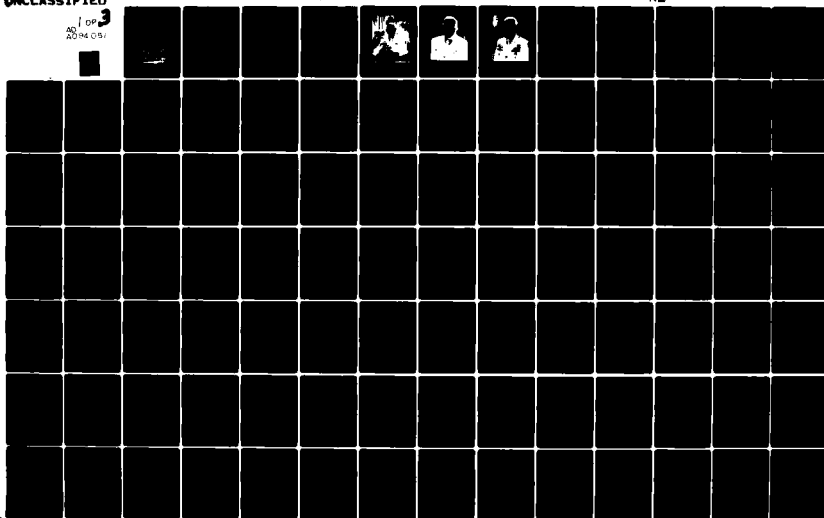
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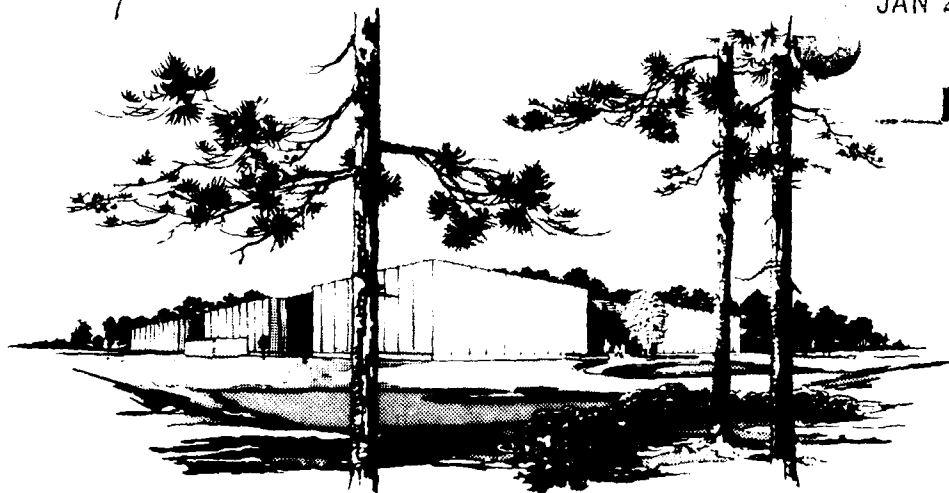
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UNITED STATES ARMY
LOGISTICS CENTER
HISTORICAL SUMMARY

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LEVEL II

(RCS-HIS-6 (R2))

1 OCTOBER 1978 TO 30 SEPTEMBER 1979.

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UNITED STATES ARMY LOGISTICS CENTER
FORT LEE, VIRGINIA 23801



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(RCS-HIS-6 (R2))

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FOR THE COMMANDER:

1 Incl
as

Gaither C. Bray
GAITHER C. BRAY
Colonel, GS
Chief of Staff

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HISTORICAL SUMMARY
(RCS-HIS-6 (R2))

US ARMY TRAINING AND DOCTRINE COMMAND
US ARMY LOGISTICS CENTER
FORT LEE, VIRGINIA 23801
1 OCTOBER 1978 TO 30 SEPTEMBER 1979

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FOREWORD

This volume is the fourth of the US Army Logistics Center's Annual Historical Summaries. A look at the Table of Contents will indicate its scope and coverage. While the Summary contains information on many of the Center's most important projects, it does not include all of these undertakings. That would be an impossible task, given the nature and length of the summary. The decision to include some and exclude others was based on directorate input and coordination and was not an arbitrary decision on the part of the LOGC Historian.

The history has been based in large part on the annual and semiannual directorate feeder reports, the Commanders' Annual Report to TRADOC, selected correspondence, trip reports, and Command Quarterly Reviews and Analyses. Prepared in compliance with AR 870-5, this history will be used by TRADOC as a source of their annual historical review. It will also be used by the US Army Center of Military History as a guide for more comprehensive histories. Within the LOGC, it will serve as a documented record of events and their courses, and as a briefing and orientation document.

The history was typed by the LOGC Word Processing Center.

ROBERT P. SMITH
Command Historian

This summary is a compilation of the most important events of the year. It is not intended to be a complete history of the year. It is intended to be a summary of the most important events of the year. It is intended to be a summary of the most important events of the year.



Major General Oren E. Dellaven
Commanding General
United States Army Logistics Center
31 July 1979 - Present



Major General Homer D. Smith, Jr.
Commanding General
United States Army Logistics Center
28 July 1977 - 31 July 1979



Brigadier General Kenneth A. Jolemore
Deputy Commanding General
United States Army Logistics Center
15 June 1978 - Present

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Major General Oren E. DeHaven Commanding General United States Army Logistics Center 31 July 1979 - Present	Frontispiece
Major General Homer D. Smith, Jr. Commanding General United States Army Logistics Center 28 July 1977 - 31 July 1979	Frontispiece
Brigadier General Kenneth A. Jolemore Deputy Commanding General United States Army Logistics Center 15 June 1978 - Present	Frontispiece

CHAPTER 1

MISSION AND ORGANIZATION

Background

"Personal satisfaction is what has kept me in for so long," remarked MG Homer D. Smith, Jr., when asked about his 34 years active army career. "In all my military career, I've never had a job in which I didn't receive a great deal of personal satisfaction."¹ With those words, MG Smith prepared for retirement from active Army service and from command of the US Army Logistics Center (LOGC). On 31 July 1979, MG Smith handed over command of the Center to MG Oren E. DeHaven, marking not only his own retirement but 6 years of USALOGC history.

In awarding Smith the Army's Distinguished Service Medal (Second Oak Leaf Cluster), the President applauded his "decisive leadership and depth of understanding of the myriad of problems arising in the TRADOC logistics arena," marking Smith "as one of the Army's most forward looking logisticians and a skillful innovative leader and manager." Working under unusual personnel restraints, MG Smith, "achieved both mission and cost effective support levels that insured continued development of the TRADOC-trained soldiers." As Commander, USALOGC, he "exercised operational control of four associated schools and exhibited exceptional ability to provide unified logistics guidance to the diverse elements of his command." Concluding, the citation lauded "his personal direction and combat development initiatives in the area of personnel development, force structuring and new weapons supportability," which provided the Army with significant benefits.²

In interviews conducted prior to his retirement, MG Smith expressed his feelings on a number of diverse topics. "I've been in three wars," he explained, "and I've seen the Army expand and contract," As a result, America's preparedness suffered. The General noted advances in other areas, however, which more than offset these deficiencies. "We've gone from the infantryman who fought in World War II with a rifle," he noted, to today's infantry soldier who possesses the fire power of a World War II company. "These technological changes in our combat capability . . . have forced changes in our support-logistical-arena," he added.³

When asked to comment on major accomplishments while commander of the LOGC, Smith proudly acknowledged that, "the Army now knows that there is an Army Logistics Center." More importantly, the Center has become "known as a center of expertise in the theater of logistics."⁴ Additionally, US Army Training and Doctrine Command (TRADOC) recognized the importance of Reliability, Availability, and Maintainability (RAM), Integrated Logistics Support (ILS), LOGEX, Manpower Authorization Criteria (MACRIT), and planning factors. "Logistics is great in wartime," Smith continued. "We're the guys they see when they look back over their shoulders and here comes the ammunition and the fuel and all that sort of stuff." In peacetime, however,

the combat element holds center stage. But, he added, "you can't go to war without sustainability."⁵

As Commander of the senior Army logistics integrating center, MG Smith exercised operational control over four associated logistics schools--the Transportation School, the Quartermaster School, the Ordnance School, and the Missile and Munitions School. Throughout his tenure, he exhibited an exceptional ability to provide unified logistical guidance to the diverse elements of his command. His broad experience and expertise were continually applied to the integration of the logistics functional areas of supply, transportation and maintenance to assure each was adequately addressed in conceptual and doctrinal matters. His personal involvement in such key initiatives as the Master Mechanic Program proved especially significant. As a result of his personal recommendation, the Master Mechanic Program will be employed only at the organizational level. His concern for the supportability of the numerous weapons systems currently in development, especially as pertains to RAM and the development of Integrated Logistics Support plans, provided the Army with significant long range benefits that an officer with less vision may well have overlooked. In the materiel systems development area, Smith stood, not as critic, but as a concerned logistician who often undertook the unpleasant task of pointing out that excessive optimism or reductions in weapons support planning would prevent full realization of weapon potential and attendant logistics problems.

Upon relinquishing his command, MG Smith bequeathed to MG DeHaven a much improved, more visual, and highly motivated Logistics Center. Homer Smith served well in the Army and the logistics community and his absence will be sorely missed.

MISSION

The US Army Logistics Center was provisionally established at Fort Lee, Virginia, on 1 March 1973. On 1 July of that year, the LOGC officially became one of the three integrating centers for combat development within the US Army Training and Doctrine Command. In September 1977, the Center's mission was broadened to include institutional training and training developments, and in 1979, the Center assumed the mission of Tactical Wheeled Vehicle Requirements Management.

The Center developed, tested, integrated, and disseminated logistics concepts, doctrine, systems, and organizations for the Army in the field. It functioned as the principal user's representative with respect to Integrated Logistics Support and reliability, availability and maintainability for all materiel systems under development or in process of being product improved. Additionally, the Center monitored logistical training in the Army--both individual training and that carried out by units. This overview involved not only the active army but also the reserve components.

In carrying out this mission, the Center worked closely with the Department of the Army staff on logistics policy and doctrine; with the several elements of the wholesale logistics system; with the Computer Systems Command; and with all of the service schools. In particular, the Center dealt directly with, and in fact oversaw, the operation of the Transportation and Quartermaster Schools, and the Ordnance and Missile and Munitions Centers and Schools.

Finally, the Center served as a principal advisor to the Department of the Army, Training and Doctrine Command, and Materiel Development and Readiness Command on logistics matters, including the career development of logistics personnel; it also provided a consulting service on army logistics for CONUS and overseas commands.

ORGANIZATION

MG Smith, Commanding General since 28 July 1977, exercised command through 31 July 1979, retiring on that date in ceremonies at Fort Lee attended by the TRADOC Deputy Commander, LTG John R. Thurman III. Succeeding Smith was MG Oren E. DeHaven, former Commanding General, US Army Transportation Center, and Commandant, US Army Transportation School.

Nine directors managed the major elements of the Center--Operations and Administration, Concepts and Doctrine, Management Information Systems, Operations Analysis, Materiel Systems, Force Structure and Test, Training and Education, Unit Training, and Organization. In addition to the major directorates, the command group included a Scientific Advisor and a Technical Advisor. (Figure 1 provides a list of incumbents of key LOGC positions.) The Tactical Wheeled Vehicle Requirements Office was in the planning stages awaiting final TDA approval and publication.

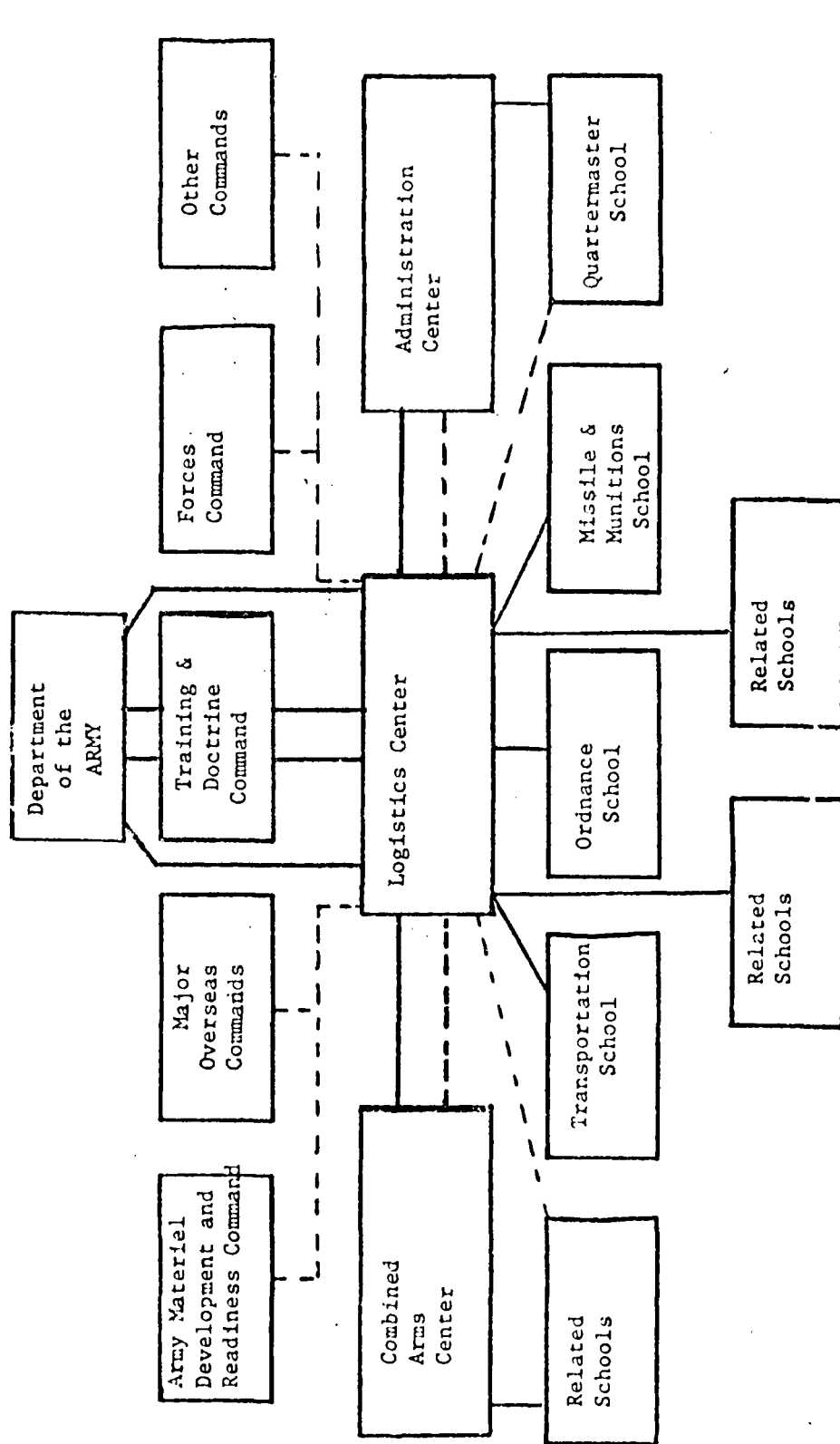
The LOGC Commander operated under the supervision of the Commander, TRADOC, who issued directives, policies, planning, and program guidance, approved programs, priorities, resource allocations, and other matters of command direction. LOGC was authorized direct communications with other major Army commands and with heads of DA staff and field operating agencies on matters of mutual interest.

The LOGC Commander was assigned two principal TRADOC missions--the major Army mission of retail and user level field logistics and the mission of coordinating its four associated schools: Quartermaster, Ordnance, Transportation, and Missiles and Munitions. (See figure 2.)

The Commander directed, correlated, and integrated logistical concepts and developments for TRADOC. He developed training programs and materials and monitored the training of Army personnel in the field and in the schools. He

<u>Position</u>	<u>Name</u>	<u>Date of Assignment/Departure</u>
Commanding General	MG H. D. Smith, Jr. MG O. E. DeHaven	Until 31 July 1979 31 July 1979
Deputy Commanding General	BG K. A. Jolemore	15 June 1978
Chief of Staff	COL G. C. Bray	1 July 1978
Scientific Advisor	Mr. E. C. Hurford	November 1968
Technical Advisor	Mr. F. H. Terry	June 1973
Command Sergeant Major	CSM J. H. Nixon CSM A. L. Munoz	Until 30 June 1979 16 August 1979
<u>Directorate</u>		
Unit Training	COL R. G. Rennebaum	1 August 1974
Materiel Systems	COL S. Millimet COL A. C. Livingston	Until 15 September 1979 15 September 1979
Management Information Systems	COL D. C. Poorman Mr. H. T. Wilvert COL B. L. Place	Until 1 July 1979 Until 27 August 1979 27 August 1979
Operations and Administration	COL P. C. Hains LTC E. L. Mansfield Mr. T. T. Tew	Until 9 August 1979 Until 2 September 1979 2 September 1979
Force Structure and Test	COL J. O. Hayes COL N. C. Petree, Jr.	Until 22 August 1979 22 August 1979
Concepts and Doctrine	COL H. W. Lacquement Mr. C. S. LeCraw, Jr.	Until 31 July 1979 31 July 1979
Training and Education	CUL J. J. Harris	19 July 1977
Operations Analysis	COL E. L. Phillips COL L. B. H. Young, Sr.	Until 1 May 1979 1 May 1979
Organization	LTC W. L. Mazyck	1 September 1979

Figure 1. Key Personnel--LOGC FY79



Channels of Communication:

Command

Coordination

Tasking

Figure 2 Evolution of the US Army Logistics Center

developed training materials and provided support for both individual and collective unit training. He formulated and changed logistical doctrine, developed needed materiel and logistics training for the Army, and provided other logistical support for training. As one of the Army's principal logistics innovators, he helped guide, coordinate, and integrate the total logistics developments effort of TRADOC and DA.

Internal LOGC Organization

The Director, Concepts and Doctrine exercised responsibility for creating new and improved concepts and doctrine for logistics procedures, organizations, and support systems. These were largely confined to the current and near future time frames. The director was involved with solving problems resulting from voids and deficiencies in current systems. Three additional Directorate functions included the training literature program, overall design of combat service support forces, and the development of logistics operation plans supporting the combat portion of Training and Doctrine Command standard scenarios.

The Director, Materiel Systems, as combat developer and user representative, managed and provided staff supervision over the materiel mission of the Center. His primary functions included: serving as the LOGC functional directorate for acquisition of materiel systems and for the intermix of these materiel systems with logistics doctrine, organization, and training; providing LOGC interplay with TRADOC materiel proponents in the preparation of materiel requirements documents to include supporting studies and Cost and Operational Effectiveness Analyses; providing LOGC interrelation with the materiel developer to assure that user needs in RAM and logistics acceptability/suitability are accommodated throughout the acquisition process; providing LOGC intermingling with development and operational testers to assure that RAM performance and logistics acceptability/ supportability are adequately evaluated during materiel systems testing; conducting life cycle review of materiel systems in the field; serving as LOGC and TRADOC executive agent for all matters pertaining to Integrated Logistics Support; serving as the LOGC and TRADOC executive agent and the TRADOC Systems Manager for all matters pertaining to Test, Measurement, and Diagnostic Equipment; serving as the USALOGC and USATRADOC executive agent on all matters pertaining to management and review of Sets, Kits, and Outfits; serving as the TRADOC materiel proponent for selected materiel systems where assignment to a specific school may be inappropriate; providing Center staff supervision and management of the materiel and materiel test functions and activities of LOGC associated schools; providing TRADOC with an independent evaluation of RAM performance and logistics acceptability/supportability for use in establishing the TRADOC position at decision review milestones.

The Director, Management Information Systems, developed and coordinated the functional plans, design, installation, maintenance, and customer assistance of retail logistics operating/management information systems and TRADOC/Forces Command unique requirements necessitating over 3 man-years of effort for

supply, maintenance, and transportation organizations. The director also insured the compatibility of these systems with the financial and wholesale logistics systems developed by the US Army Finance and Accounting Center, US Army Materiel Development and Readiness Command, Defense Logistics Agency--formerly Defense Supply Agency, and the General Services Administration as well as other DOD/DA logistics policies, objectives, and programs. This director worked closely with the US Army Computer Systems Command Support Group Fort Lee, collocated with the LOGC.

The Director, Unit Training integrated, coordinated, and managed the logistics' community efforts as they related to improving training assistance to logistics units. This included management of the Army Training and Evaluation Program and the Training Extension Course program. The primary training assistance effort focused on early deploying logistics units, with exportable training as the principal mode. This directorate served as the focal point for planning, preparing, and conducting the annual Joint Chiefs of Staff programed, Department of the Army sponsored command post exercise known as LOGEX, which provided a realistic mission training vehicle in a simulated wartime environment for commander and key staff personnel of combat support and combat service support units, both active and reserve. The Navy, Air Force, Marine Corps, and NATO elements also participated in LOGEX. The directorate provided field organizations with individual unit command post exercise training packets.

The Director, Operations Analysis provided a technical research and evaluation capability in support of Army logistics activities through: application of operations research/systems analyses, cost/economic analyses, analytical models, and computer simulations; development and management of logistics planning factors; design and use of automated logistics data; and operations of a computer center.

The Director, Training and Education monitored logistics training and education at all Army schools and centers. He evaluated the courses of instruction and training requirements and he assured that programs of instruction incorporated current logistics doctrine. The development and improvement of career management systems and programs for professional military and civilian logistics personnel fell under his control. Additionally, he planned for the orderly development of instruction and training materials to support weapon systems and logistics systems.

The Director, Organization developed and maintained viable logistics tables of organization and equipment for the Army combat service support units. As such, he investigated the adequacy of coordination within logistics units. He also examined the sufficiency of Manpower Authorization Criteria which established the number and type of personnel required; Qualitative and Quantitative Personnel Requirements Information, used to establish and revise Military Occupational Specialities which impact on training needs; and the Basis of Issue Plans which determined initial distribution of new items of equipment.

The Director, Force Structure and Test joined in numerous field experiments and operational tests to evaluate logistics concepts, support new equipment, and new logistics management systems. The director participated in the Scenario Oriented Recurring Evaluation System to evaluate logistical adequacy and soundness. He also participated in the Army force structuring process through the annual Total Army Analysis and in logistics manpower analysis of new organizations, concepts, and items of equipment.

The Director, Operations and Administration furnished resource management and general administrative support and evaluated and coordinated the efforts of the LOGC staff. Most importantly, the directorate ensured that the Center's products were total packages, best suited to support the army in the field.

MAJOR REORGANIZATIONS

The organizational modifications of this fiscal year were more cosmetic than substantive and reflected the growing awareness within the Center of the need for functional streamlining and centralization. As part of this process, the Systems Design Directorate changed its name to the Management Information Systems Directorate, thus more accurately reflecting its true responsibilities within the LOGC. This same directorate followed this alteration by realigning three of its branches: the Supply Branch of the Field Systems Division was transferred to the Standard Army Intermediate Level Supply Subsystem Division, later retitled the Supply Systems Division; the Configuration Management Branch and Plans Office merged into the Plans and Management Division; and the Field Systems Division assumed responsibility for the Ammunition Branch. This realignment divided the directorate into functional branches and divisions, added more management visibility over ammunition systems, and eliminated duplicate management functions. (See figure 4.) In a further effort to streamline the directorate, the Plans and Management Division became the Management Support Office on 6 August 1979. This action combined the Plans Branch and the Standardization Branch into a straight-line organization. Distribution management functions for the supply subsystems user manuals was transferred to the Management Support Office, thus centralizing the distribution management function. In addition, all system change requests⁸ functions were transferred to the functional divisions of the directorate.

In an effort to provide better internal management services, to highlight the importance of the civilian personnel and training functions by placing them directly under the Chief, Resources Management Division, to better align functions among divisions, and reduce unnecessary layering, the USALOGC Chief of Staff approved the realignment of the Operations and Administration Directorate. As depicted in figure 5, this realignment became effective 7 May 1979.

Two months later, on 18 July 1979, all integrated logistics support management functions previously performed by Operations and Administration,

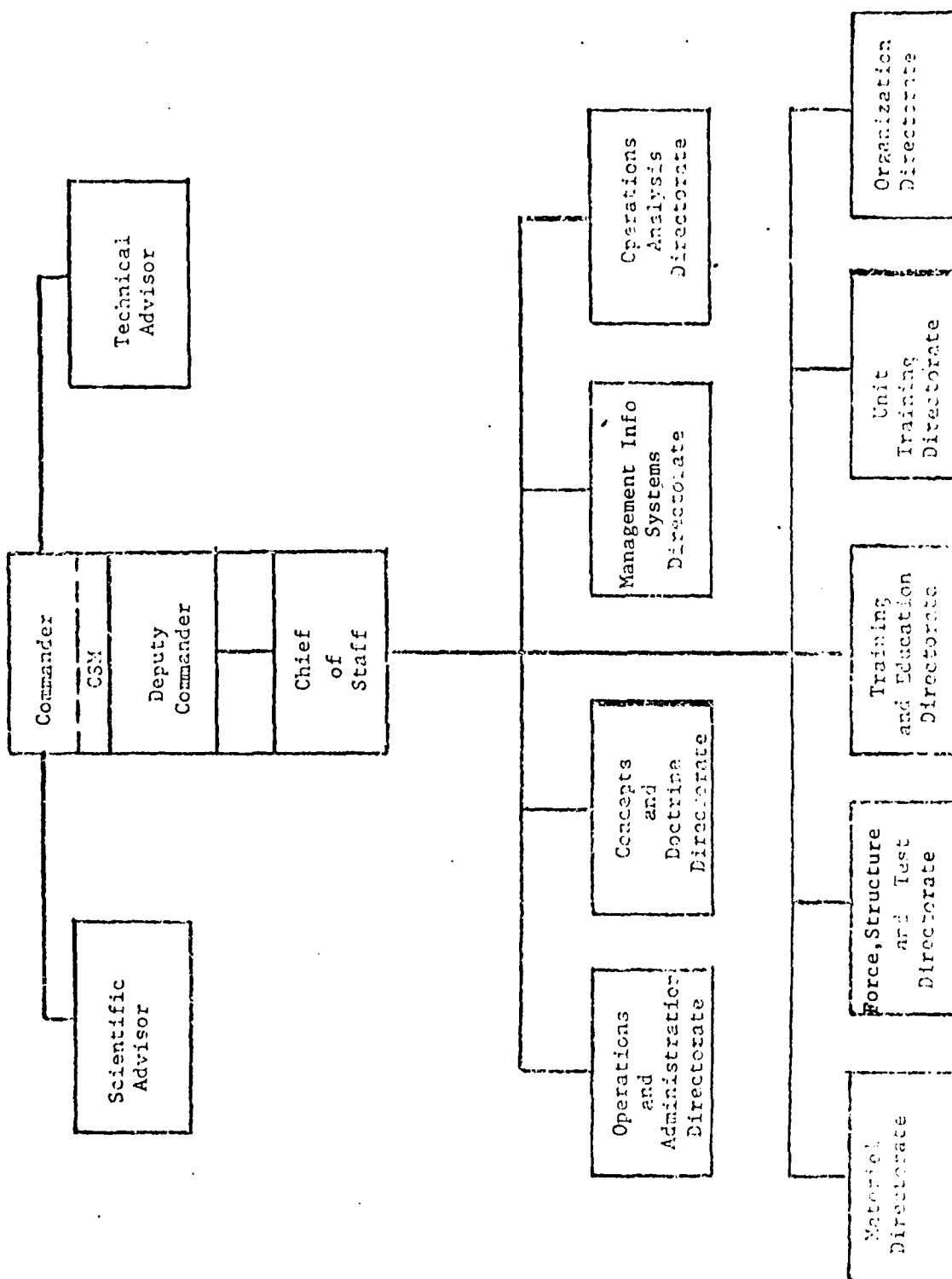


Figure 3. US Army Logistics Center Organization Chart (FY 1979)

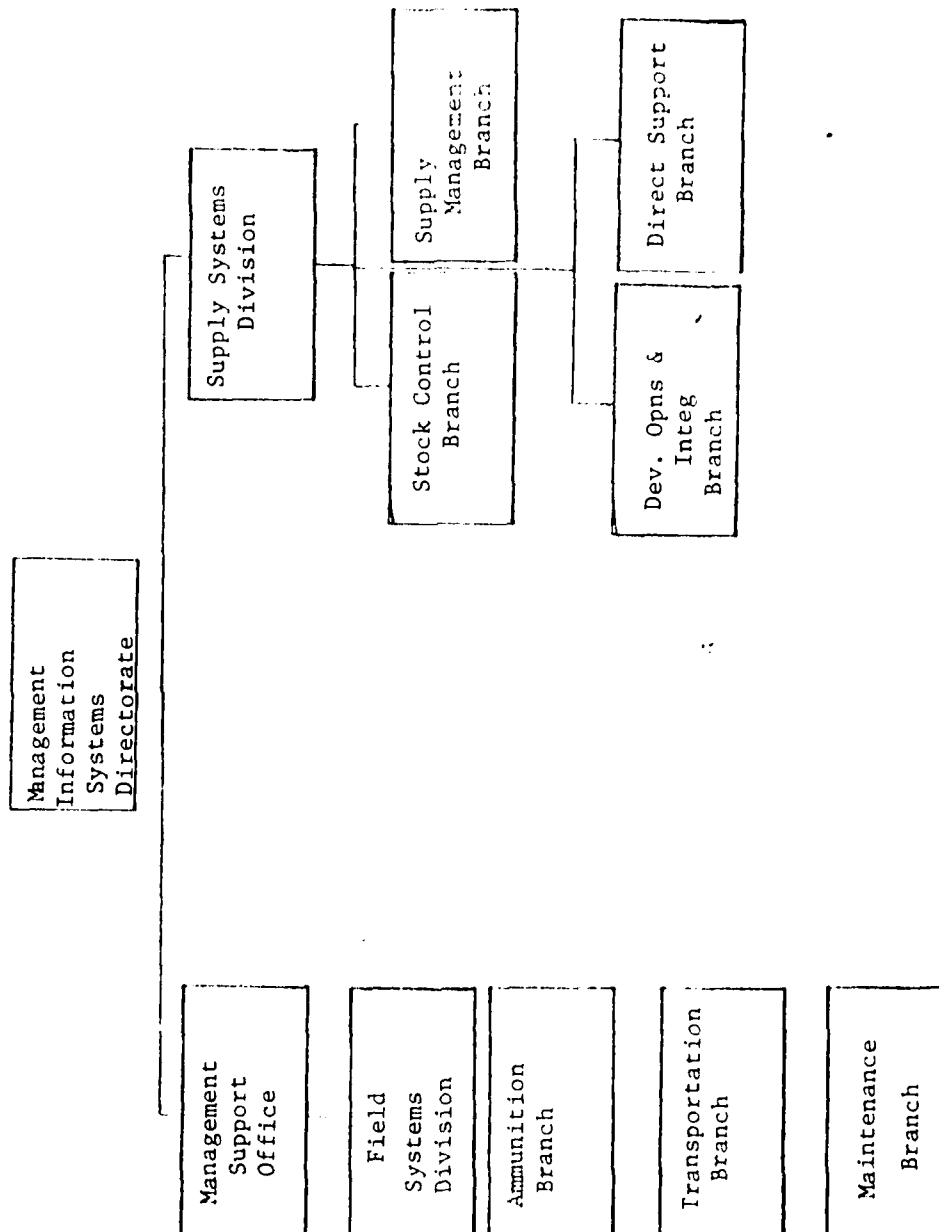


Figure 4. Management Information Systems Directorate (FY79)

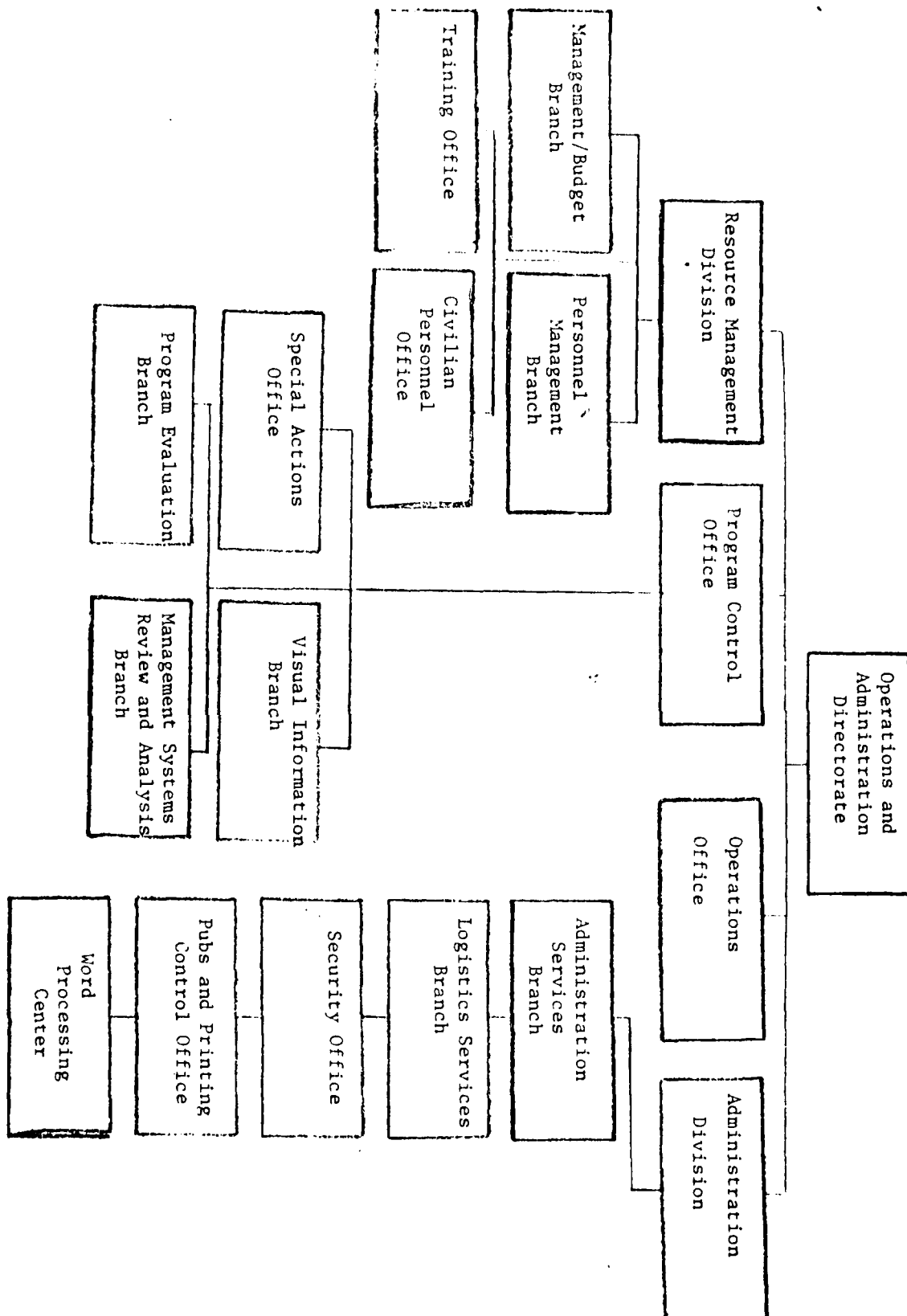


Figure 5. Operations and Administration Directorate

were transferred to the Materiel Systems Directorate. It became increasingly apparent prior to this transfer that the fragmented management of LOGC Integrated Logistics Support actions by Materiel Systems and Operations and Administration Directorates confused outside agencies and required excessive interdirectorate coordination within the Center. This consolidation went a long way towards eliminating that confusion.¹⁰

Within the Training and Education Directorate, several changes occurred which greatly enhanced and solidified that organization's mission. In January 1979, the Professional Development Division split into three branches: the Enlisted Career Development Branch, Officer/Warrant Officer Career Development Branch, and the Pre-Command Course Branch. That same month, the LOGC transferred management responsibility for the development of all pre-command courses to the US Army Combined Arms Center, Fort Leavenworth, Kansas.¹¹ (See figure 6.)

Early in 1979, the Force Structure and Test Directorate altered its Exercise Evaluation Division and Test Design and Evaluation Division by changing from the latter title to Test and Evaluation Division. This division absorbed user testing functions of the Exercise Evaluation Division.¹² (See figure 7.)

The Materiel Systems Directorate underwent a major reorganization during this period as well. This was the first great change in the organizational structure since its formation in 1973. In April, TRADOC directed the LOGC assume combat development responsibility for all test measurement and diagnostic equipment for the Army. The following July, the Integrated Logistics Support mission and functions formerly performed by the Operations and Administration Directorate were assigned to Materiel Systems Directorate. To accommodate these new missions and to continue to provide quality support in accomplishing the requirements of the life cycle management model, the Materiel Director established six new divisions: Ground Combat Systems Division, Combat Service Support Division, Communications/Aviation Division, Integrated Logistics Support/Management Division, Test Measurement and Diagnostic Division, and a Reliability, Availability, and Maintainability Division. He completed this reorganization in September 1979.¹³ (See figure 8.)

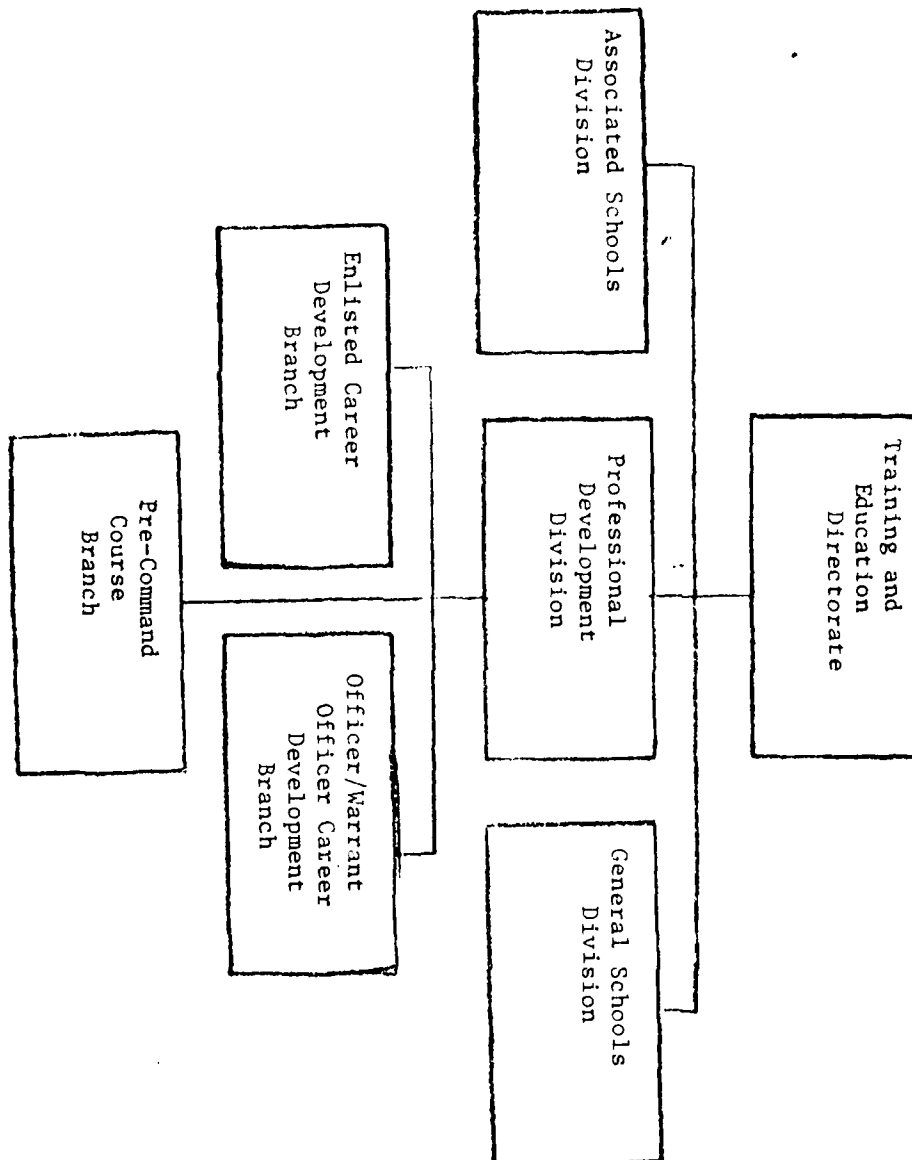


Figure 6. Training and Education Directorate, FY 79

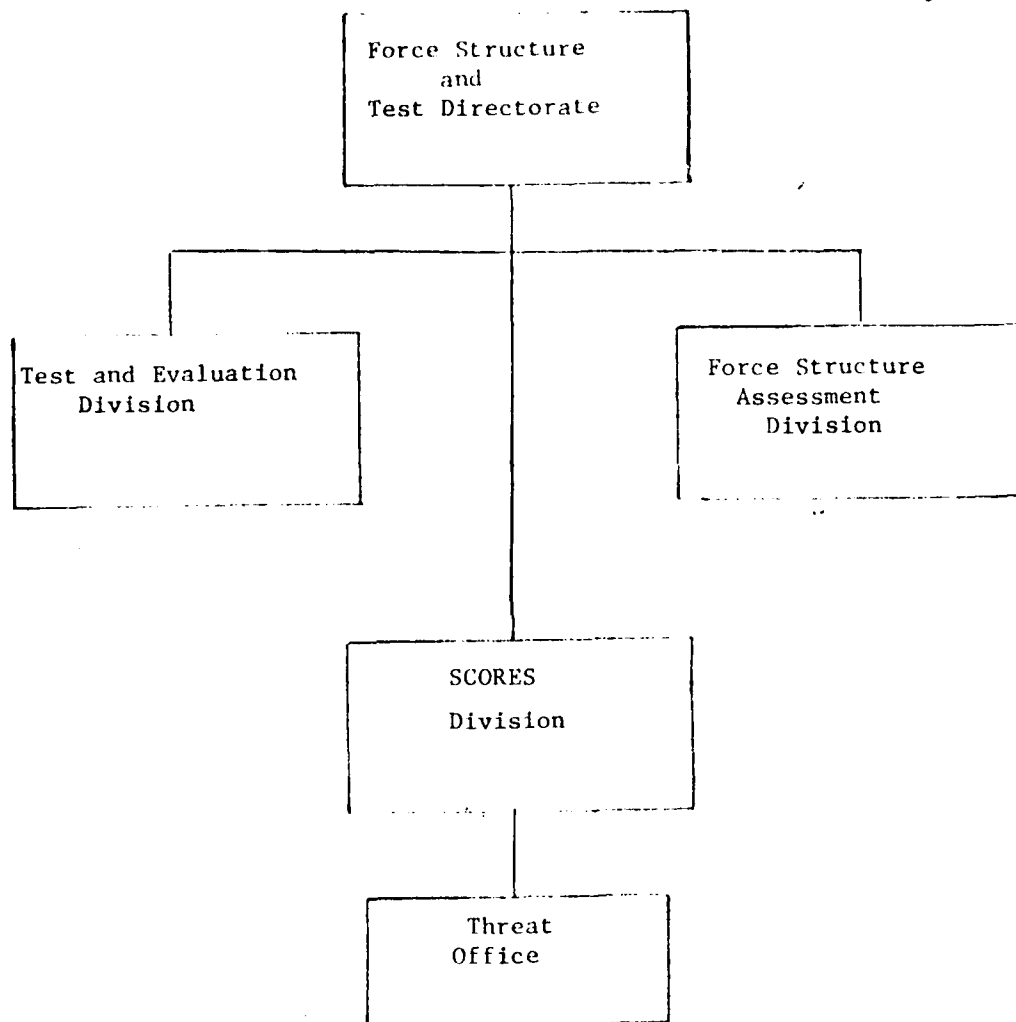


Figure 7. Force Structure and Test Directorate, FY 79

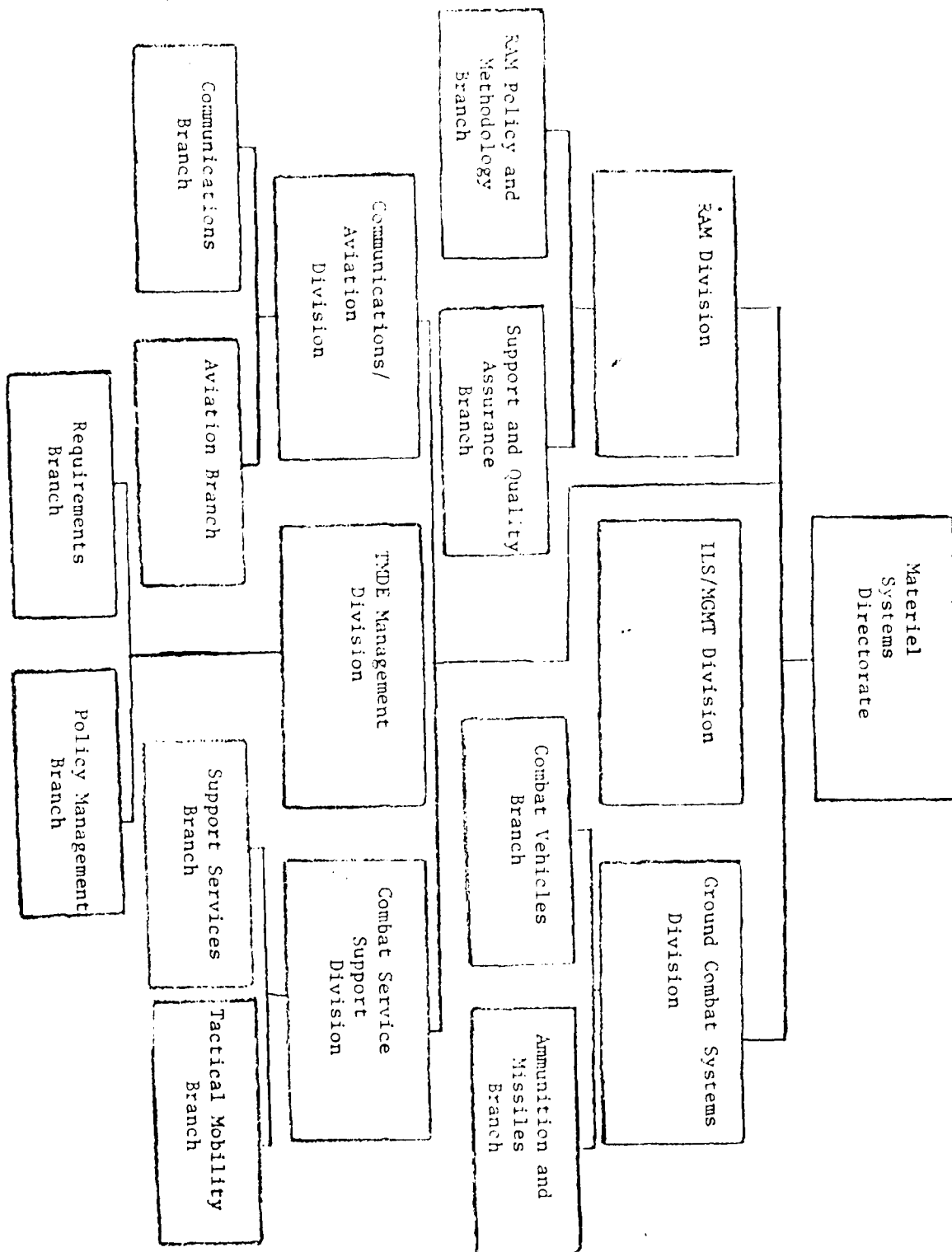


Figure 8. Materiel Systems Directorate, FY 79

NOTABLE LOGC VISITORS

As the center of logistics doctrinal expertise for the Army, the LOGC attracted a great number of visitors during the last fiscal year. While this list by no means includes all of these guests, it does cover the most important ones.

Mr. Roy Werner, Principal Deputy to the Assistant Secretary of the Army (Installations, Logistics and Financial Management): 3 Oct 78

LTG John W. Norris, USA Chief of Engineers: 9 Oct 78

BG C. E. Vuono, Deputy Chief of Staff, Combat Developments, TRADOC: 10 Oct 78

Mr. Ralph W. Vandergrift, GS-17; Mr. George Carter Baird, GS-17, House Appropriations Committee, Studies and Investigation Staff, to review 5 ton truck program: 12 Oct 78

COL J. Molsen, Senior German Liaison Officer to TRADOC: 22 Oct 78

COL Harry L. Foradori, Commandant, US Army Munitions and Missile Center and School, Orientation Briefing: 24-25 Oct 78

BG Ross R. Condit, Former Commander, Personnel and Logistics Systems Group: 16 Nov 78

BG Walter E. Adams, Director, Systems Integration, Office of the Assistant Chief of Staff for Automation and Communications, Department of the Army: 22 Nov 78

MG Thomas D. Ayers, Deputy Chief of Staff for Logistics, USA Forces Command: 28 Nov 78

MG Edwin B. Taylor, Deputy Commanding General, TRADOC, Mobilization Designee (MORDES): 13 Dec 78

BG Ross R. Condit: 19 Dec 78

MG Oscar C. Decker, Jr., Commander, US Army Tank-Automotive Research and Development Command: 14 Feb 79

BG Hiram K. Tompkins, Commander, 200th Theater Army Materiel Management Center (TAMMC): 24-25 Apr 79

MG Charles R. Myer, Assistant Chief of Staff for Automation and Communication, Department of the Army: 27 Apr 79

GEN Robert M. Shoemaker, Commander, USA Forces Command: 27 Apr 79

GEN Donn A. Starry, Commander, USA Training and Doctrine Command: 30 Apr 79

BG Carl McIntosh, Deputy Chief, Army Reserves: 1 May 79

LTG(R) Joseph M. Heiser: 8 May 79

BG Choon Sik Park, Director, Operations and Management, Deputy Chief of Staff for Logistics, Republic of Korea Army: 9 May 79

COL Hans Karl Braune, Commandant, German Army Technical School: 17 May 79

BG John W. Woodmansee, Jr., Assistant Deputy Chief of Staff, Combat Developments, TRADOC: 11 Jun 79

Mr. Vandergrift and Mr. Baird, Review of 2 1/2-Ton Truck Program: 13-14 Jun 79

BG Louis H. Ginn III, Deputy Commanding General, 80th Division (Training): 20 Jun 79

MG Oren E. DeHaven, Commanding General, USA Transportation Center and School: 11 Jul 79

MG George E. McGovern, Jr., MOBDES Assistant Deputy Chief of Staff for Logistics, HQDA, and Commander, 22d Army Reserve Command, Little Rock, Arkansas: 25-26 Jul 79

MG Sampson Bass, Deputy Chief of Staff for Logistics, US Army Europe: 21 Aug 79

GEN Edward C. Meyer, Army Chief of Staff (LOGEX): 23 Aug 79

Mr. Robert Schneider, Office of the Assistant Secretary of Defense for Program Analysis and Evaluation: 29 Aug 79

General Sir Richard E. Worsley, Quartermaster General of the British Army: 17 Sep 79

GEN Donn A. Starry, Commander, USA Training and Doctrine Command: 17 Sep 79

MG M. R. Thurman, Director, Program Analysis and Evaluation, Office of the Chief of Staff, Army: 24 Sep 79

BG T. Wilson, Office of the Deputy Chief of Staff, Operations:
24 Sep 79

BG R. C. Hawlk, Office of the Deputy Chief of Staff, Logistics:
24 Sep 79

BG W. K. Hunzeker, Office of the Deputy Chief of Staff, Logistics
24 Sep 79¹⁴

LOGC SIGNIFICANT CONFERENCES

Army Logistics Policy Council (ALPC), 4-5 Oct 78.

Standard Army Intermediate Level Supply (SAILS) (Subsystem) ABX Functions
Working Conference, 9-10 Oct 78.

Automation of Wartime Functional Supply Requirements (AWFSR) Working
Conference, 17-18 Oct 78.

Division Support Command (DISCOM) Commander's Conference, 16-18 Oct 78.

Reserve Components Logistics Trainers Conference, 6-8 Nov 78.

General Officer Repair Parts Seminar, 29-30 Nov 78.

TRADOC Reliability, Availability, and Maintainability Conference,
30 Nov 78.

General Officer Meeting on MOS 63X (Master Mechanic), 15 Jan 79.

Decentralized Automated Service Support System (DAS3) Pre-Award Training
Conference, 23-24 Jan 79.

Associated Schools' Commandants' Conference, 23 Mar 79.

LOGEX Pre-Exercise Conference, 24 Mar 79.

In-Process Review Conference, 2 Apr 79.

TRADOC Commander's Training Conference, 3 Apr 79.

Division 86 General Officer Workshop, 4-5 Apr 79.

Organization Effectiveness Review, 3-8 Apr 79.

Deputy Commanding General Conference with Deputy Commandants of the
Associated Schools, 1 Jun 79.

Mobilization Designee (MOBDES) Conference, 2-3 Jun 79.

Decentralized Automated Service Support System Conference, 20-21 Jun 79.

Standard Army Intermediate Level Supply (Subsystem) ABX Conference,
1-2 Aug 79.

Communications Security Logistics Conference, 8 Aug 79.

Periodic Proponent/Developers Coordinated Conference, 9 Aug 79.

LOGEX 79, 12-25 Aug 79.

Test Program Set Management Conference, 21 Aug 79.

Logistics Instructors Conference, 5-7 Sep 79.

Direct Support (Units) Standard Supply System (DS4), 24-26 Sep 79.

Associated Schools Reserve Components Advisory Conference, 25 Sep 79.¹⁵

FUNDING

The LOGC Annual Funding Program for FY 79 was \$12,281,100; FY 80 will be \$13,824,800. Temporary duty funds earmarked for FY 79 were \$1,190,500; for FY 80 it will be \$1,369,700. FY 79 reflected actual expenditures for operation and maintenance of the Center. FY 80 reflects amounts currently being negotiated with TRADOC and FORSCOM. Unfinanced requirements for FY 80, which will be submitted in the LOGC contract to TRADOC, are as follows:¹⁶

<u>Priority No</u>	<u>Description</u>	<u>Amount</u>
1	LOGEX 80 Building Modification	\$248,000
2	Design and Develop a Planning Factors Data Base	<u>\$420,000</u>
Total		\$668,000

MANPOWER

During FY 79 the LOGC continued to experience increases in workload primarily in Task Force Management, Review of Education and Training for Officers, and Planning Factors Management mission efforts. Concurrently, the percent of support, manpower authorizations versus manpower requirements, within the Center decreased from 85 to 82 percent. In an attempt to achieve programed workload, LOGC management accomplished the following actions:

a. Overhire positions were created to compensate for hire lag in allocated end strength.

b. Liberal overtime was utilized.

c. Management tools; i.e., management surveys and quarterly reviews, were employed to maximize resource utilization.

	<u>30 Sep 78</u>	<u>30 Sep 79</u>
TDA Authorized	606	643
TDA Assigned	544	539
<u>Officers</u>		
TDA Authorized	201	212
TDA Assigned	148	158
<u>Civilians</u>		
TDA Authorized	333	352
TDA Assigned	326	302
<u>Enlisted</u>		
TDA Authorized	72	79
TDA Assigned	70	79

(10 Mar 80 figures from Mr. Stephen A. Nemeth, Jr., Management/Budget Branch, Operations and Administration Directorate.)

Figure 9. Changes to LOGC TDA Over a 1-Year Period

CHANGE OF COMMAND

MG DeHaven's assumption of command of the USALOGC from MG Smith (31 July 1979) occasioned no immediate break in policies or programs. As a senior logistician, DeHaven had a long and distinguished career in logistics prior to assuming command. Formerly Commanding General of the US Army Transportation Center and School, Fort Eustis, Virginia, he served as Commander, 54th General Support Group, Vietnam; Director of Logistics, Army Readiness Command, MacDill Air Force Base, Florida; Director, Transportation, Energy and Troop Support, Office, Deputy Chief of Staff for Logistics, Department of the Army; and Assistant Deputy Chief of Staff for Logistics, Department of the Army. The Center marked a peak in DeHaven's long and impressive career; it gave him the opportunity to implement many of the logistics theories he had long espoused but had been unable to act upon.

In a 24 January 1980 letter to the commandants of the LOGC associated schools, he promulgated not only his logistics philosophy but also the mission of the Center. "The Logistics Center's primary concern," he wrote, "lies in training, systems, and doctrine. Close coordination with the LOGC staff is essential for positive results in the entire logistics community progression. Each new development, task, program, or system must be run through a thorough analysis to insure we can 'live with it' in the field. Even though our resources may appear to be diminishing, our mission remains the same--combat service support for the fighting soldier."¹

During MG Smith's and DeHaven's tenures, the LOGC continued many of the same policies and programs pursued by the Center since its inception in 1973. As if confirming this trend, DeHaven highlighted many of these same projects in his February 1980 letter to General Donn A. Starry, Commander, TRADOC; DeHaven mixed LOGC accomplishments with failures and frustrations.

For achievements, MG DeHaven proudly cited the growth and development of the Combat Service Support Pre-Command Course; a Systems Mechanic (formerly Master Mechanic) course; LOGEX 79; a highly successful reserve components logistics trainers conference; the type classification and release for fielding of the M915-920 series of vehicles; the establishment of the Tactical Wheeled Vehicle Requirements Management Office; the establishment of methods and procedures for performing manpower and logistics analyses; progress on Division '86; the Munitions System Support Structure presentation to the Army staff; continuation of the automation of logistics management and information systems, especially the Standard Army Intermediate Level Supply Subsystem ABX, Direct Support Unit Standard Supply System, Department of the Army Standard Port System, DA Movements Management System, and Standard Army Maintenance System; and broad Operations Research and Systems Analysis and computer support.

Mixed in with these accomplishments were some sobering reminders of problem areas that affected not only the Center but also logistics. Of special concern was the shortage of personnel, which, DeHaven noted in his letter to TRADOC,

"... hampers our efforts here at the Center."¹⁸ In this same letter, he cited several instances where "dwindling resources" gravely affected the LOGC mission. In the RAM and logistics supportability areas, for example, the General acknowledged that, "due to manpower limitations," the Center "delegated the bulk of the work" to its schools. Since the schools suffered similar constraints, the Center struggled "to remain abreast of the test and evaluation process for each system to insure that it has been adequately evaluated."¹⁹ Some other programs similarly affected were force structuring, improved manpower authorization criteria, planning factors, and economic analyses.

Additionally, the Center continued to be hampered in its mission by inadequate automatic data processing equipment support. This was an area of concern in FY 78, and it remained so during this period. Despite an attempt by the Computer Systems Command-Fort Lee to fill this gap, "the various modes of systems software, and the basic problems of using CSC tested ADPE to run the cycle production applications for the LOGC this arrangement is," argued DeHaven, "at best, an interim measure."²⁰

Stressing the need for some in-house LOGC hardware, the Commander argued that, "when we consider the future ADPE implications of the improved MACRIT project, force structuring, PCC, TWVRMO, planning factors management, and the model improvement program, we face a staggering increase in computer support requirements."²¹ The LOGC Commanding General gratefully acknowledged TRADOC support and felt confident that in time the Center would acquire sufficient in-house capabilities to handle all Center projects requiring ADPE support.

In spite of these shortcomings, MG DeHaven trusted in the Center's ability to overcome these deficiencies and to meet its obligations and mission responsibilities. As he told General Starry, "the Logistics Center has been involved in a multitude of projects, all vital to the readiness and strength of today's Army."²² How well the Center responded to these challenges in FY 79 formed the background for this annual historical summary.

REFERENCES

1. The Traveller, 19 July 1979, p. 6.
2. Change of Command Ceremonies, US Army Logistics Center, 31 July 1979. See also orders #144-8, 27 July 1979.
3. Traveller, 19 July 1979, p. 6.
4. Interview with MG Homer D. Smith, Jr., 10 July 1979.
5. Traveller, 19 July 1979, pp. 6, 7.
6. Msg, DA, Wash, DC, DTG 292825Z Jun 79, subj: General Officer PCS Orders.
7. LOGC Weekly Staff Meeting, 30 October 1979, p. 5.
8. Management Information Systems Directorate, Semi-Annual Historical Feeder Report, FY 79.
9. DF, ATCL-DR, 9 May 1979, subj: Operations and Administration Realignment.
10. DF, ATCL-DPE, 18 July 1979, subj: Transfer of Integrated Logistics Systems (ILS) Management to Materiel Systems Directorate.
11. Training and Education Directorate, Semi-Annual Historical Feeder Report, FY 79.
12. Force Structure and Test Directorate, Semi-Annual Historical Feeder Report, FY 79.
13. Materiel Systems Directorate, Semi-Annual Historical Feeder Report, FY 79.
14. Assorted LOGC Weekly Staff Meetings and Calendar of Planned Events. See also msg, DA, DTG 101500Z September 1979, subj: Visit of HQDA Personnel to LOGC.
15. Assorted LOGC Weekly Staff Meetings and Calendar of Planned Events.
16. DF, ATCL-DRB, 31 October 1979, subj: Semi-Annual Historical Feeder Reports.
17. Letter from Commanding General, LOGC, to Commandants, Associated Schools, 24 January 1980.
18. Commanding General's Annual Letter to General Donn A. Starry, CY 80, 15 February 1980, p. 1.

19. Ibid. , p. 5.

20. Ibid. , p. 22.

21. Ibid. , p. 23.

22. Ibid. , p.23.

CHAPTER 2

TRAINING THE FORCE

"Training is a principal Army activity in peacetime," Clifford L. Alexander, Secretary of the Army, and General Edward C. Meyer, Chief of Staff, US Army, reported to Congress. "Individuals and units must be trained to the levels of proficiency necessary to ensure mission accomplishment." Continuing, they noted that, "effective training is at the heart of near-term readiness. Recent years have seen substantial improvements in both individual and unit training and in the training support needed Army-wide."¹ General Meyer observed in his "White Paper" that, "fully trained individuals and fully trained units are a corporate responsibility."²

INDIVIDUAL TRAINING

"Individual training," the Army Chief wrote in his White Paper, "develops military skills and is the basis for advancing to more complex skill levels." It began with initial entry training, offered through a variety of strategies designed to make the most of training resources while providing a soldier to the force sooner. "The first task of individual training," the Chief acknowledged, "is to properly match the new soldier to a targeted skill needed by the force. To do this well--fulfilling the needs of both the individual and the Service--requires that we refine and standardize our understanding of and measure of such things as trainability, motivation, and aptitude, as well as the optimal method for conduct of training."³ The individual training phase, argued Meyer, graduates, "motivated, disciplined, and physically capable soldiers who are equipped with those specific skills they need to survive in combat." Additionally, "it must be a tough and challenging experience by which each new soldier gains an appreciation that unit success comes only from individual commitment to a team effort." Accepting this challenge, the US Army Logistics Center continued, with renewed vigor, its contributions to Army training and education.

Noncommissioned Officer Logistics Program Training

Individual training and team-building demand a strong cadre of qualified trainers. These individuals, the Army's noncommissioned officers, require comprehensive training and education equal to the complex nature of the Army of the 1980s. "NCO development programs pointed to molding effective leaders and trainers," announced the Army Chief, "have top priority, not only in formal courses, but in unit schooling under the tutelage of officers and experienced NCOs."⁵ By hosting on 30 August, a working group session to review the Noncommissioned Officer Logistics Program (NCOLP), the LOGC pushed this training from the professional to the technical. The participants recommended that the Deputy Chief of Staff for Logistics approve continuation of the program; that TRADOC examine training courses for possible expansion; and finally, that TRADOC establish a noncommissioned officer logistics program

mobile training team course. The Department of the Army staff took the recommendations under consideration.⁶

Combat Service Support Pre-Command Course

"Among the more important training developments at the LOGC," observed MG DeHaven, "was the creation of a Pre-Command Course (PCC) Branch tasked with the management of the Combat Service Support (CSS) PCC program." Only a year earlier, MG Smith, in a letter to BG Duard D. Ball, Commander, US Army Ordnance and Chemical Center and School, wrote that, "I cannot overemphasize the interest of Generals Rogers and Starry in this course. Both have been personally involved with the development and implementation of the combat arms PCC. I believe that our course deserves and will receive, the same visibility and command emphasis."⁸

Scheduled to begin in July 1980, the Pre-Command Course followed Combined Arms Center and TRADOC guidelines. The Center conducted a job/task analysis of designated command positions and tested input from surveys and interviews for critical tasks required of commanders within their first ninety days of command. Additionally, this branch investigated several possible simulations, long-range and short-range, and provided the logistical results to the Combined Arms Center's Phase IV of the course.

Logistics Center personnel participated in numerous in-process reviews and conferences at TRADOC, the Combined Arms Center, and the Military Personnel Center to coordinate the various aspects of the course. The LOGC also conducted three workshops and in-process reviews in order to provide definitive guidance to the associated schools. Representatives from appropriate major headquarters also participated in these meetings.

The four associated schools were tasked to develop Phase II of the course. This phase consisted of functional reorientation, "how to train", and logistics management for the separate support battalion commanders. Each school progressed with course development in these areas. The Ordnance School Professional Development Division developed lesson plans and training materials for Phase I for 05/06 maintenance commanders with a scheduled completion date of January 1980. In his annual letter to General Starry, BG David W. Stallings, Commanding General, US Army Ordnance and Chemical Center and School, acknowledged that, "on the pleasant side is the knowledge that our first Ordnance Pre-Command Course (PCC) is scheduled to begin 7 July 1980. I am very optimistic that this PCC training will provide the attendees with a big head start in performing their command duties."⁹

As proponent for organizational logistics content for the Combined Arms Center Pre-Command Course, the Logistics Center revised the program of instruction guidelines used by the Combined Arms Center and the Combat Service Schools to develop the logistics instruction for Phase II. During this period, the Logistics Center conducted course content evaluation for the Field Artillery, Armor, and Engineer Schools. General observations indicated these schools complied with the LOGC requirements.

The Logistics Baseline Curricula for Officer Basic and Officer Advanced courses were updated and distributed to the service schools in mid-July 1979. The Quartermaster School revised the supply procedure subject area. This revision was required by the publication of Change 5 to AR 710-2 and the revision of AR 735-11. The Ordnance School completed development of the maintenance portion of the baseline program of instruction and the supporting instructional material. The Transportation School identified common transportation tasks for officer training and developed the transportation portion of the Baseline Program of Instruction.

The LOGC conducted the Logistics Instructors Conference IV on 5, 6, and 7 September. The conference updated the service schools' logistics instructors and training developers on new logistics doctrine and emerging concepts; and it provided a forum for the attendees to exchange ideas, discuss concepts, provide recommendations, and present problems which affected logistics instruction at the Army service schools. Initial feedback from attendees indicated that the conference was well received and provided a definite service for the target audience. Personnel shortages delayed development of Non-Commissioned Officer Logistics Baseline Curricula.

Officer and Warrant Officer Job/Task Analysis

The Center served as an integrating center for the associated schools in the development and execution of the officer and warrant officer job/task analysis. After a series of independent program reviews and the publication of TRADOC Pamphlet 350-2, pilot surveys began during the May-June time frame. Lessons learned from these pilot programs, as well as the arrival of authorized school and center personnel, led to several iterations of task, duty, and job statements. By the end of September, an accepted list of common company grade task statements evolved. This list was included in all future company grade surveys.

The US Army Missile and Munitions Center and School reported that Officer Job/Task Analysis Surveys were developed for the Conventional Ammunition Materiel Management Officer, SSI 75B; Nuclear Weapons Materiel Management Officer, SSI 75C; and Explosive Ordnance Disposal Officer, SSI 75D, and sent them out for field validation. The results were processed and consolidated and the instructional systems development model continued. Officer and warrant officer job/task analysis surveys were also conducted by proponent missile system combat service support areas, both overseas and in the United States, by onsite visits and by mailed questionnaires. The resulting data was machine-processed and analyzed for training implications and for the type as well as the site of training. The US Army Transportation School submitted documented company grade officer common tasks; it also continued work on the development of special task inventories for surveys to be fielded in April 1980.

Work began on the development of common field grade task statements. Because of the experience factor, a better product resulted. Additionally,

much effort was expended in the school's development of specialty task lists. The Logistics Center continued to serve as the coordinating and integrating agent for this effort.

On 23 March 1979, the Center submitted the final draft of the Systems Mechanic (formerly Master Mechanic) concept to the Military Personnel Center for staffing. All the major commands concurred; final Army approval was forthcoming. The Ordnance School completed critical task listings for each military occupational specialty in the revised career management field 63 under system mechanic. The Center assisted the Ordnance School in course design and course development.

Logistics Assessment and Assistance Team (LAAT)

In a 12 April 1979 letter to MG Robert C. Hixon, Chief of Staff, US Army Training and Doctrine Command, MG Thomas D. Ayers, Deputy Chief of Staff, Logistics, US Army Forces Command announced the creation of a Logistics Assessment and Assistance Team, "to look collectively and comprehensively at the 'Total Logistics Picture,' pinpointing areas requiring systemic improvement and developing a coordinated attack on the logistic system deficiencies."¹³ TRADOC tasked the Center in May to develop, coordinate, and implement a program to augment the Forces Command in the conduct of logistics assessment and assistance visits. "This is an interesting idea," wrote MG Smith to MG Ayers, "that shows a real potential for improving our logistics readiness by determining logistics deficiencies at the working level."¹⁴ BG Stallings agreed. Writing to General Starry, the Ordnance Center and School Commander acknowledged that the, "recently instituted logistics assessment and assistance team (LAAT) visit program gives us easy access to FORSCOM units and is showing promise of being a highly effective method of systematically collecting meaningful data."¹⁵

Prescribed Load List (PLL)/The Army Maintenance Management System (TAMMS)

In January 1979, the LOGC Commander chaired a general officers meeting on the Master Mechanic concept and Maintenance Administrator military occupational specialty, and he recommended that the Quartermaster School develop an occupational specialty for the prescribed load list (PLL)/the Army Maintenance Management System (TAMMS) clerk (MOS 76C); creation of a maintenance administrator in career management field 63 be deferred pending field evaluation of the 76C PLL/TAMMS clerk over the next 3 years; and the Ordnance School insure PLL/TAMMS training be included in the Motor Sergeant Training Extension Course currently under development. The Quartermaster School submitted the proposed package to the LOGC on 21 February 1979 and to TRADOC on 14 March 1979.

Part 1 of the proposal eliminated the Materiel Supply Specialists, MOS 76D. The majority of the tasks performed by these specialists were duplicated in either the tasks performed by the Stock Control Specialists, MOS 76P, or the Storage Specialist, MOS 76V; therefore, those stock control positions and

storage positions now staffed and trained as Materiel Supply Specialists, MOS 76D, were converted and staffed by either MOS 76P or MOS 76V, depending upon the tasks to be performed.

Part 2 of the proposal created a new MOS 76C, Equipment Records and Repair Parts Specialist. This new MOS provided progression through skill level 20 and fed into MOS 76Y, Unit Supply Specialists, at skill level 30. The tasks performed by the equipment records and repair parts specialist, with the exception of shop stock clerk and shop clerk tasks, were taught in the MOS 76D training and positions were staffed with MOS 76D personnel. The conversion of the equipment records and repair parts specialists to the new MOS 76C, and the conversions discussed in part 1 above, included all the tasks now performed by MOS 76D, thus eliminating the requirements for MOS 76D.

Part 3 of the proposal upgraded the skill level of the second unit supply specialists, the unit armorer, from skill level 10 to skill level 20 in those table of organization and equipment containing a high density of individual weapons and those where densities increased with the new weapon systems coming into the inventory; i.e., infantry, field artillery, and armor units. TRADOC approved the proposal and forwarded it to the Military Personnel Center on 24 April, recommending approval.¹⁶

Army Logistics Specialty Committee (ALSC)

Army Regulation 15-25, dated 23 March 1977, established the Army Logistics Specialty Committee as a continuing intra-Army committee which advised the Deputy Chief of Staff, Logistics, on discharging his proponent responsibilities for officer personnel management system (OPMS) specialties. On 15 May 1979, the Ordnance Working Group met to consider combining Specialties 76 (Armament Materiel Management), 77 (Tank/Ground Mobility Materiel Management), and 91 (Maintenance Management) as an improved management tool. As a result of the meeting, the working group recommended roll-up of Specialties 76, 77, and 91 into Specialties 91, 91A (Maintenance Management Officer), and 91B (Armament/ Mechanical Maintenance Management Officer). The full committee convened on 11 September 1979 and recommended that the Deputy Chief of Staff, Logistics, support the consolidation. The Deputy also approved the consolidation of the Transportation Specialties 86 and 95, which had been proposed in January 1979.¹⁷

Logistics System Training

In the first half of fiscal year 1979, logistics system training actions emphasized reserve training requirements in the Standard Army Intermediate Level Supply Subsystem (SAILS) area and preparations for meeting the Decentralized Automated Service Support System (DAS3) contract and user test requirements. Work on the Direct Support Unit Standard Supply System (DS4) sustainment training package continued at the Quartermaster School. Meetings were held with the school's course developers to insure they were abreast of the latest Direct Support developments and were prepared to monitor the May-June 1979 field validation test. Test results modified the evolving

school lesson plans. Resident direct support instruction was scheduled to begin 120 days after completion of the field test and become part of the enlisted, noncommissioned officer and officer courses.

The Direct Support problems which surfaced during the 101st Division (AASLT) field validation test influenced the Training Development Program at the Quartermaster School. A September meeting of interested action officers from the Center and the School was held to develop a new schedule for initiation of divisional training.¹⁸ Revisions were envisioned as aids to school training developers to produce the sustainment training now scheduled to begin in September 1980. School trained direct support graduates were scheduled to enter the field in November 1980.

TRADOC approved and distributed the Decentralized Automated Service Support System (DAS3) Individual Collective Training Plan developed by the LOGC in November.¹⁹ The plan outlined resident training responsibilities and provided for the required training systems. LOGC personnel participated in a December training conference called by the System's Project Manager which confirmed contractor training quotas, conversion and extension training responsibilities,²⁰ and the sustainment training tasks of the Quartermaster and Signal School.

In January 1979, the Center held a conference to prepare government training representatives for participation in a post-award meeting with the successful Decentralized Automated Service Support System contractor. Quartermaster and Signal School representatives acted as technical assistants to the US Army Communications Research and Development Command individual charged with meeting the training provisions of the contract.²¹

The first system contractor conducted training course opened at the Honeywell Phoenix, Arizona test plant on 4 June. Training development and test personnel attended both the first and second operator and maintainer training sessions. The training offered was not entirely appropriate and an August 1979 meeting with the prime contractor, General Electric Space Division, in King of Prussia, Pennsylvania, addressed the training problems surfaced at Phoenix.²² The contractor undertook corrective action and on 24 September 1979 the third class opened.

The Standard Army Intermediate Level Supply (SILS) training program improved tremendously. ABX instruction was included in the Army Logistics Management Center resident course and the exportable training modules were restructured to better satisfy the requirements of the field. The Quartermaster School additional skills identifier producing course was converted to tracks which related more closely to individual assignments and reduced the time a soldier spent at the school.

A Formal Intermediate Level Supply Training Review was held at the Center on 15 March. The FY 80 school training programs were reviewed as was the current status of ABX developments. Major commands' comments indicated satisfaction with training improvements initiated by the schools and with future plans to provide onsite assistance to the field.²³

The main training effort was directed toward support of the ABX conversion program. The Army Logistics Management Center conducted training sessions in Europe where 96 individuals were trained, and in Korea, where 32 were trained. At a 6 September conference, the FY 80 training programs of the Quartermaster School were reviewed and approved. Training emphasis again went to the support of SAILS ABX.²⁴ SAILS AB instruction was scheduled to be phased out as the new ABX training material became available. These efforts were directed toward developing the training material as rapidly as new ABX functional guidance was made available.

Again, during this period, Standard Army Intermediate Level Supply training programs for our reserve components became an issue. Working closely with the Army Training Support Center and the Forces Command, the LOGC produced a new schedule for this project and FORSCOM agreed to provide a clear definition of the Reserve Component requirement.²⁵

Center personnel participated in the Standard Army Maintenance System (SAMS) worldwide in-process review held at the US Army Materiel Development and Readiness Command in April. The tasking arising from this meeting caused a training milestone schedule to be developed and coordinated with the Ordnance and Quartermaster Schools' representatives.²⁶ This initial schedule was furnished the Army staff in August.²⁷ Action was also taken to update the System's Training Management Plan and initiate its worldwide staffing in September.²⁸

In June, the Center participated in a Division Level Data Entry Device Conference at the Signal School.²⁹ As a result, the LOGC coordinated the training requirement for this system with the associated logistics schools and tasked them to provide the required individual and collective training plan input to the system proponent, the Army Signal School.³⁰

A decision to provide mobile automatic data processing equipment to the Reserve Components created a requirement to develop a unit training system. The LOGC and TRADOC co-chaired a meeting in January in order to more precisely define the training requirement. An outline concept evolved from this effort which portrayed the interaction between the reserve data processing installation and the corps material management center.³¹ A more detailed plan was scheduled for a later date.

Reserve Component School Logistics POI. During the first half of this fiscal year, support to US Army Reserve schools was severely limited due to personnel shortages. Assistance was provided upon request. Only four Reserve schools were visited. Self-paced instruction expanded from 9 to 17 courses and met the needs of the Reserve schools.

Skill Performance Aids. During this period, small and large group trials continued on the five fielded systems. Camera-ready copies of manuals and extension training materials were finalized. All systems progressed toward scheduled completion dates. Several TRADOC system managers (for developing systems such as Fighting Vehicle Systems and XMI) developed skill performance aids materials for their systems.

After the December 1978 briefing presented to the Chief of Staff, Army, a Skill Performance Aids Working Group was formed. The Deputy Chief of Staff, Operations, was named the Army staff proponent and tasked to furnish a member to the skill performance aids working group. The Materiel Readiness and Development Command chaired the meetings and had two representatives; TRADOC also had two from the Army Training Support Command, and the Forces Command, US Army Communications Command, and the US Army Intelligence and Security Command each sent a representative. The general officer steering committee was then disbanded.

The FY 79 fielded systems list was approved. The working group effected implementation and operation of the program. As a result, a letter of intent was prepared and staffed that defined the program, fixed responsibilities, outlined application criteria and funding procedures. Due to maturation of the program, the military specifications (MIL-M-63035-63040) relating to the program were revised. Logistics support analysis and review data provided the required input to preclude purchasing the same information twice. Materiel Readiness Support Activity led in this area and provided instructions to the Development and Readiness Command.

Division/Corps/COMMZ 1986 Concept Studies. These studies developed the most combat effective organization for the Army's heavy divisions and a corps/COMMZ supportive in concepts, procedures, organizations, manpower, and systems in the European environment of 1986. The studies integrated new and advanced materiel systems, operational concepts, and human resources into the Army. During the report period, there was continuous monitoring of documents and correspondence relating to the concept studies. LOGC personnel attended conferences and work group sessions to assess the integration of future training requirements.

During April and May, the fixed brigade division study update package and participation in Division '86 LOGC workshops and conferences were reviewed and commented upon. Division '86 situation report and task force developments, combat development study plan Division '86, and the logistics planning factors Division '86 were reviewed in June. Documents were reviewed for training implications and comments provided as necessary. A LOGC representative attended development of a Communications Zone meeting to review a draft implementation plan for "Logistics Operations in the Communications Zone." In July and August, the Center participated in a Combined Arms Center Combat Service Support concept briefing and reviewed the transition plan/Corps '86 combat development study, draft C2, FM 54-2 (DISCOM and Separate Support Battalion), and Division '86 situation reports and task force developments. Comments on documents were provided as necessary. The LOGC attended a followup (June) "Development of COMMZ" meeting. During the month of September, Division '86 representatives attended a reconstitution study advisory group (Div '86), reviewed and commented on a draft evaluation report "Variable Class IX ASL Add/Retain Policy for DISCOM", and coordinated with LOGC contacts on task force developments.

NEW EQUIPMENT TRAINING

During this period, the Logistics Center monitored and participated in new equipment training courses which provided transfer of knowledge from the contractor to the proponent LOGC associated school. Courses of instruction developed from this training guaranteed sufficient school-trained logistics personnel to support operational testing and the new fielded equipment.

Improved TOW Vehicle. Instructor and key personnel initial production test and follow-on evaluation training was conducted at Fort Knox, Aberdeen Proving Ground, and Fort Benning to support these tests. TRADOC System Manager personnel visited Europe to coordinate the new equipment training to be presented during July-August 1979. TRADOC instructors conducted the training of selected personnel from Europe at 7th Army Training Center.

XM915 Series Vehicles. A joint US Army Tank Automotive (Materiel) Readiness Command/TRADOC team developed the force development test and experimentation training package to support the Fort Campbell (XM915) and Fort Stewart (XM917-920) tests. The Tank Automotive Readiness Command New Equipment Training Branch personnel, assisted by the concerned school, presented the required training.

The training received and evaluated by the testing activity was determined adequate for the XM915, 916, 917, and 920. Training for the special bodies XM 918 Bituminous Spreader and XM919 Mobile Concrete Mixer required more emphasis in the areas of dials, gages, mixture of ingredients and preventive maintenance checks and services. At the close of this period, the method by which the training would be improved on the XM918 and XM919, was still being discussed.

General Support Rocket System. The US Army Field Artillery School and the US Army TRADOC Systems Analysis Activity conducted the comprehensive effectiveness analysis. Coordination was effected for the 9th Division test students and US Army Combined Arms Center monitors required to participate in the small group trials that were conducted at the Boeing facility during the period 14-15 May 1979. A meeting was held at Vought on 18-20 April to discuss the conduct of the Rocket System small group trials. The requirement and time frames for six test students (MOS 150) to participate in the Vought rocket system small group trials were identified and were required from 11-29 June at the Dallas Vought facility. A conference was held at Redstone Arsenal on 24-25 April for the purpose of updating the current Military Personnel Center Initial Recruiting and Training Plan. This conference initiated action by the US Army Missile Readiness Command on the final qualitative and quantitative personnel requirement information for the rocket system. The military occupational specialty structure for general support rocket system-related maintenance courses were scheduled for 29-31 August and 17-28 September 1979. These two courses were set up to train the operational test I player, collector, and additional development test personnel. Operational test I included testing of organizational maintenance. Boeing conducted large group trials at White Sands Missile Range, 1-12 October.

US ROLAND. The ROLAND project manager placed new emphasis on personnel, training, and logistics. At a conference held at Fort Bliss on 1-2 November 1978, the manager stated these areas were ROLAND-problem areas and would be remedied. Contractor maintenance support of ROLAND at Redstone Arsenal and Fort Bliss, during the initial training phase, utilized Army personnel to maximize the eventual phase out of contractor support. This overlap was expected to take more than one year. The preliminary plan called for the direct support unit to train at the Missile and Munitions Center and School (individual skills) and then transferred them to Fort Bliss for collective training, and finally, deployed the battalion to Europe. The Missile School trained the short range air defense (SHORAD) system test specialist, the land combat small missile system repair technician, and the ROLAND system repairer. The Missile Readiness Command conducted an instructional and key personnel course review in February 1979.

The LOGC reviewed and concurred with the development plan for personnel and training requirements for the US ROLAND system. Since this plan intended to be a "living document", the Center periodically evaluated and recommended changes on a quarterly basis to include new information in the development program. During a meeting hosted by the Missile School, the US ROLAND manager and Training System Manager agreed to store the technology transfer fabrication and test equipment spares at Redstone Arsenal (vice Boeing's Seattle plant). This agreement eliminated a possible US ROLAND training equipment shortfall and also provided a source of backup spares for maintenance. The ROLAND project manager, training system manager, and the Missile School compiled a list of simulation devices which acted in lieu of actual hardware for providing training of ROLAND System Repairers and SHORADS Test Specialists. The Missile School envisioned having a mix of simulated actual hardware to be used for training operational test players.

PATRIOT. The PATRIOT maintenance enhancement program support concept exploited advanced technology to reduce the materiel and personnel resources needed to the absolute minimum. For PATRIOT peculiar items, this allowed allocation of all maintenance actions to include preventive, diagnostic, and readiness restoration to operator and organizational levels, thereby eliminating both direct support and general support maintenance levels. Another aspect of this program was the establishment of a single military occupational specialty with 3 skill identifiers for PATRIOT peculiar equipment. The three levels were operator, maintenance, and supervisor. At this time, both LOGC and TRADOC concurred with the project manager's maintenance enhancement program proposal.

LOGC received, reviewed, and commented on the PATRIOT individual and collective training plan on 10 October 1978. On 15 November, the LOGC attended the TRADOC Systems Manager's alternative briefing to the PATRIOT maintenance enhancement program held here.

Improved HAWK Product Improvement Program

Initial comparisons of job performance for Improved Hawk Product Improvement Program Package training personnel with that of individuals assigned directly from the replacement stream indicated that the program was working. The IHAWK package training gave lieutenants experience in providing leadership in tactical operations. In addition, it allowed them to work with an integrated system as opposed to individual equipment training normally conducted in the basic course. The warrant officer provided cohesiveness between maintenance and operator personnel. He was normally experienced and assisted in training the enlisted maintenance personnel at school and continued the training upon arrival at his unit of assignment. The senior noncommissioned officers lacked experience but were good noncommissioned officers. Both the officers and junior enlisted personnel depended on the non-commissioned officers to maintain group cohesiveness, and this proved successful.

The missile crewmen required substantially less onsite training than an individual directly assigned from advanced individual training. Sixty days or less onsite training was required for the IHAWK package individual as compared to approximately 6 months onsite training required for the advanced graduate. The value of the training was demonstrated during a satisfactory 32d Army Automation Directorate Command operational readiness evaluation of a battery in which the majority of the crew consisted of IHAWK package personnel. The package had been assigned to the unit approximately 60 days when the evaluation occurred. The packages were better prepared for Europe and the 32d Army Automation Directorate Command due to the "European training environment" created by the use of NATO doctrine and 32d regulations at Fort Bliss. To date, all packages remained together at their assigned unit; however, individuals did not continue on the same crew. Movement³² of the package personnel within the battery created no morale problems.

The Missile and Munitions School implemented an improved HAWK support maintenance course during April 1978. This program was originally designed to be supported by multi-level training for the entry and primary levels; however, due to anticipated problems in getting the soldier back for additional resident training, SL1 and SL2 tasks combined into Advanced Individual Training. Later, this was deemed unsatisfactory, which caused a reassessment of the training requirements of the entry level soldier in the missile maintenance areas. This assessment coincided with the revision of the courses to implement Phase I of the Improved HAWK Product Improvement Program; the revision was implemented in April 1979.³³

New equipment continued to cause frustration at the Center and at the associated schools. "Frequent introduction of new equipment into the inventory," observed the Ordnance School historian, "continues to cause turbulence in POI revisions, leading to frequent 'crash efforts' to accommodate fielding dates. Additionally, such new equipment³⁴ introduction has caused considerable workload for some MOS instruction."

Through its many efforts, the Logistics Center played an integral part in accomplishing the Army Chief of Staff's individual training objectives.

UNIT TRAINING

Unit training emphasized the capability to deploy rapidly in support of contingency plans and the ability to fight as cohesive combined arms teams. Simulations and wargaming provided alternative means to train commanders and staffs while non-commissioned officers took soldiers through multi-echelon training. This occurred in the Reserve Components as well as the active Army. To meet their unique situation, the Reserve Components needed clear linkage to their wartime missions, planning, and command relationships for those missions and hands-on skill training with that equipment which they were assigned upon mobilization.

But constrained resources placed a premium on training management. The cost of training effective soldiers remained high. Wherever practical the use of alternative, more economical, training devices was encouraged. Increased emphasis was placed on focusing unit training more directly on wartime missions, improving deployability, and sharpening initial combat capabilities. Command post exercises measured readiness and deployability, as well as reception procedures in the projected theater of operations. They also provided unique training opportunities for unit commanders in the active Army and the Reserve Components and National Guard.

LOGEX

The annual Joint Chiefs of Staff scheduled, Department of the Army Deputy Chief of Staff, Logistics sponsored Logistics Exercise (LOGEX) continued its contribution to a balanced training of active and Reserve Component combat, combat support, and combat service support personnel. TRADOC prepared, designed, and conducted it and the logistics Center acted as the chief TRADOC coordinating agent. US Army Forces Command shared responsibility for selecting and coordinating unit participation.³⁵

LOGEX 78. The TRADOC-approved LOGEX 78 After-Action Report was completed and distributed to over 300 different defense agencies and major headquarters, the Federal Republic of Germany, and the Adjutants General of the 22 states that participated.

LOGEX 79. LOGEX 79 presented for the second year the NORTHAG scenario with a US Corps and a Marine Amphibious Force. The exercise included joint and combined operational aspects with participation by each of the sister services and representatives from HQ, Northern Army Group (NORTHAG), the German Army, and the US Army Europe (USAREUR). The exercise brought together commanders and staffs from 8 active Army, 40 Army Reserve, and 45 Army National Guard units selected by FORSCOM. The 3,382 participants included, besides the Army, service representatives from Tactical Air Command, Military Airlift Command, Military Sealift Command, US Marine Corps, and North Atlantic Treaty Organization.³⁶

LOGEX 80. "Building upon lessons learned and participant feedback," explained MG DeHaven, the Center developed LOGEX 80, "with expanded battle simulations play for more detailed and realistic generation, integration, and flow of battle damage and loss data into the automated logistics systems emulated in the exercise." The Center streamlined automatic data processing systems and reports, "to better interface with the manually derived battle simulations data and to provide more useful management information to commanders and staff members," LOGEX 80 will conclude the last of a 3-year series of scenarios located in Northern Germany. Of 104 player units required for LOGEX 80, 85 units were selected as of 30 September 1979.³⁷

LOGEX 81. "Looking beyond the coming year," the LOGC Commander noted, "DA guidance calls for development of a CENTAG scenario with a USAREUR player corps for LOGEX 81." Continuing, the General reminded TRADOC of an earlier recommendation, "to incorporate into LOGEX needed mobilization training for reserve component units." This mobilization training, he noted, "would include structured phases to present home station, mobilization station, deployment overseas, and employment in theater actions and planning requirements." He further stated that, "this would be piggy-backed onto LOGEX as we now know it with the early stages of the exercise representing the austere corps and the later stages the maturing corps." The LOGC, DeHaven assured Starry, "will develop this proposal with cognizance of resource implications and the willingness of other agencies to support these enhancements."³⁸

LOGEX-Local 78. The LOGEX-Local program, covering 26 type Table of Organization and Equipment (TOE) units, concluded on 30 September with a total of 790 exportable exercise packets. Active Army troop units and Reserve Component advisors requested approximately 43 percent of the packets. Field reports indicated that the LOGEX-Local program led to development of three major Reserve Component exercises: LIBERTY BELL III (75th MAC); ORBITAL SHIELD (353d CA Comd); and the 167th COSCOM REGIONAL CPX (167th COSCOM). In his White Paper, the Army Chief of Staff summed up the importance of LOGEX-type exercises when he wrote: "Throughout, we must make better use of the wealth and training materials available. Realistic training at much reduced cost is of obvious benefit to the entire Army."³⁹

Army Training and Evaluation Program (ARTEP)

Unit training was regularly evaluated to ensure its effectiveness and to provide feedback to commanders. Such feedback was necessary if commanders were to concentrate on those areas where improvement was most needed. The Army Training and Evaluation Program assisted unit commanders as they planned, conducted, and evaluated training. The Army continually sought ways to improve evaluation techniques in order to standardize effective unit training throughout the Army.

The Army Training and Evaluation Program, MG DeHaven told General Starry, "continues to make significant advancements in the logistics community."⁴⁰ Since the Army Training and Evaluation Program inception in 1974, the Center

directed its efforts toward the initial production of documents to provide training and evaluation coverage for logistics units currently in the field. With the program so near completion, the LOGC worked toward improving the product. By consolidating the program for units with similar organizational structure and/or missions, the Center and its associated schools substantially reduced the number of programed documents.

During this period, 82 Training and Evaluation Program documents entered the field in a useable draft or Army print. This represented 97 percent coverage of the approximately 1,780 active Army and Reserve Component logistics units in the force structure. The remaining 3 percent consisted of small teams and detachments and obsolete JOE for which program support was not planned. This completed the first generation; development of the second⁴¹ generation was in full swing with 24 revisions currently in draft status.

On a more basic level, draft copies of training and evaluation outlines (Chapters 3 and 4), for a proposed Forward Area Support Team were distributed for review and comment on 28 September 1979. This document was developed in response to requests from the field for a consolidated Evaluation Program to support training and evaluation of Division Support Command forward elements that operate in the brigade support area.

During the period October 1978 to January 1979, the LOGC developed and distributed a book of common logistics Army Training and Evaluation Program tasks. This task list contained approximately 120 proponent schools-developed logistics tasks that were considered to be common to all Army units. The areas addressed included such areas as field feeding, unit supply, organizational maintenance, and S4 operations. Distribution was made to all TRADOC Program developers to provide assistance in preparation of tasks in the logistics areas.

Field liaison visits were made to observe ARTEP evaluations of Company C, 726th Maintenance Battalion (CT ARNG); Headquarters and Headquarters Company, 228th Supply and Transportation Battalion (PAARNG) and the 631st Light Maintenance Company (FLARNG); a visit was also made to the Division Support Command and 1st Brigade of the 5th Infantry Division at Fort Polk, LA. In addition, numerous unit coordination calls were made during LOGEX 79 and on 12 through 13 September 1979, the LOGC hosted a Training and Evaluation⁴² Program Action Officer Workshop for personnel from the associated schools.

In commenting to General Starry about the Ordnance School's Program, BG Stallings acknowledged that his school's effort, "fell below expectations during 1979 due primarily to personnel shortages." Improvements were made, he reported, and, "although the quantity is not yet up to the desired level, I do see a noticeable improvement in the quality of the ARTEP's now being produced."⁴³

Training Extension Course (TEC)

In 1971, the US Army Board for Dynamic Training, later redesignated the Combat Arms Training Board, identified a critical need for a type of instruction geared to the needs of soldiers who finished initial formal military training. After three years of research and development to find more effective and useful ways to train individuals, TRADOC introduced the Training Extension Course (TEC) Program.

Designed to upgrade and maintain MOS skill proficiency for combat arms soldiers, Training Extension Course lessons became an alternative to traditional group instruction in which soldiers participated regardless of qualifications and knowledge. The overall course system incorporated the philosophy of performance-oriented training, training objectives, using standard "go/no-go" testing, and validated lesson development.

It was only natural that the Logistics Center become involved and from 1974 through this period, the Center developed innumerable lessons. Commenting on this progress, MG DeHaven informed the TRADOC commander that LOGC Training Extension Course (TEC) development was on track. "We fielded 290 lessons and are developing 256 additional lessons," he added. Job training packages (JTP) became the main thrust of the programs during this period. "Under the JTP concept," DeHaven continued, "all training support material, including TEC, for a particular MOS or duty position will be developed according to a comprehensive plan, providing complete coverage of the MOS or duty position without duplication of the material."⁴⁴

The US Army Ordnance School initiated the development of a job training package for the motor sergeant duty position. Under this concept, the duty position (or MOS) was viewed as a whole, and necessary Extension Course lessons developed accordingly. The developer reviewed all previously developed material to insure that there was no duplication.⁴⁵

The Missile and Munitions Center and School reported that their Training Extension Course program was directed primarily at the Munitions Career Field. This priority, the School reported, resulted in the consideration of the reserve component needs, plus the requirement of active Army units for military occupational specialty qualifications. During this period, the school also approached completion of programs in storage, stock control, transportation, and disposal operations, for the conventional ammunition unit.⁴⁶

Reserve Component (RC) Training Managers Conference

In November 1978, the Center conducted a very successful 3-day Reserve Component (RC) Training Managers Conference. Active Army logistics training coordinators from FORSCOM, the three Armies, and the Readiness Regions and Groups were the targeted audience. "This forum," MG Smith reported, "provided the TRADOC community an opportunity to update the RC training managers on

combat and training developments, while giving equal time to the field representatives to identify their logistics training requirements." ⁴⁷ Some 99 personnel representing 34 agencies, including the Department of the Army, the Materiel Development and Readiness Command, Forces Command, Army Training Support Center, US Army Training Board, the other integrating centers and TRADOC staff members, attended. Highlighting the conference were presentations by MG Henry Mohr and MG Emmett H. Walker, Jr., Chief, Army Reserve and Director, Army National Guard, respectively.

Among the schools, Ordnance provided training during one weekend each month in eight military occupational specialties for Reserve Component (RC) personnel. Seventeen weekend sessions were conducted for over 1,700 personnel. They expanded this effort to include groups of officers and non-commissioned officers responsible for training subordinate units. Reserve Component units also used their facilities and equipment for annual training of maintenance personnel. "We hear reports," boasted their Commander, "that this 2 weeks of instruction equals 4 years or more of most annual training experiences." ⁴⁸

Conclusion

Looking back, the challenges were clear. The Center ensured the timely development of training doctrine, programs, facilities, and devices as new weapons and equipment systems emerged. It learned to forecast new skills inherent in the modernization process, provided for those skills in an already active training base, and accurately measured the complexity of modern equipment and trained soldiers to employ it effectively.

But most important, the Center helped train Army leaders to train their units. Effective unit training enhanced mission accomplishment and built teamwork and confidence in unit leaders. Effective unit training challenged soldiers. Making it happen challenged the Army's leaders. Challenging training was the critical ingredient of battlefield effectiveness and of a dedicated, cohesive, and disciplined Army in peacetime, and the US Army Logistics Center played a vital part in making it happen.

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MATERIEL DEVELOPMENTS: WEAPONS AND EQUIPMENT

"The Army, its Active and Reserve Components and civilian members," the Army Secretary and Chief of Staff reported to Congress, "must be ready to go to war--today and tomorrow." The Soviet Union, they continued, represented, "the greatest military threat to the preservation of peace in the world, a threat which determines to a large degree our own defense needs."¹ To meet the threat, the Army mounted a weapons and equipment modernization campaign and the US Army Logistics Center played a major part in that action.

"The acquisition of modern weapons and equipment systems," argued the Army's top leaders, "...is critical to the effectiveness and survivability of the force." Equipping the force assumed major importance during this period and involved, "the timely design, development, production, procurement, and integration of essential modern, maintainable, and affordable weapons and equipment systems." Since 1960, the report noted, "the Soviet Union has fielded 60 new systems--tanks, surface-to-air and antitank missiles, attack and troop carrying helicopters, and sophisticated electronic warfare equipment." During the same period, the United States Army "applied incremental improvements to those systems already in the field and in the early 1970's began investing heavily in research and development of new systems." In 1978-1979, the Army stood, "on the threshold of the largest peacetime modernization in the Army's history."² The Logistics Center performed well in that modernization and the fruits of its labor brought Logistics to the forefront as an integral element in this renewal process.

The US Army found itself during this period in the midst of a major new effort that was expected to bring it from the technology of the 1950s and 1960s to that of the 1980s and 1990s. Within the next two years, the Army expected to be provided with a new tank and infantry fighting vehicle, two new helicopters, four new air defense systems, multiple rocket launchers, laser homing artillery projectiles, radars, communications gear and other weapons and equipment. As the doctrinal center of logistics expertise for the Army, the Logistics Center reacted quickly and surely to these changes. Its successes far outweighed its failures.

TANK/ANTI-TANKXM-1 Tank System

Considered by many the Army's most important new weapon, the XM-1 tank is thought to be the most powerful, lethal, and survivable combat vehicle ever developed. It incorporates a 1500-horsepower gas turbine engine and improved suspension system that permits it to achieve cross-country speed in excess of 30 mph. Its stabilization system, laser rangefinder, and solid state computer allow the crew to fire accurately while traveling rapidly across the battlefield. It is protected by a radical new armor concept that substantially decreases its vulnerability to present antitank weapons. The XM1 has been de-

signed to eventually accommodate the German 120mm smoothbore gun system. It presently is being produced with the standard US 105mm tank gun. The 4-man crew of the XM1 is protected by separation of their compartment from the fuel tanks and ammunition, and by an automatic Halon fire detection and suppression system. The XM1 replaces the M60 series on a one-for-one basis as the Army's principal offensive weapon.

Pursuing its active involvement in the XM-1 tank development program, General DeHaven informed General Starry that, "the Center concentrated on test design planning for the DT/OT III testing and evaluation phase, including logistics supportability and RAM issues." He noted further that, "while it is understood that the XM1 Integrated Logistics Summary (ILS) package will be in a metamorphic state of development at the time of DT/OT III testing," the LOGC remained confident that any "significant impact on XM1 tank logistics supportability will be fully justified and assessed during this testing."³

Additionally, the Center participated in a conference convened to review the XM1 maintenance allocation chart revisions developed by Chrysler Corporation. The chart revisions were made due to LOGC's expressed desire to move a significant number of XM1 component tasks from depot to general support level. The Chrysler proposal prior to this review totaled \$30 million, which included procedures, tools and test requirements. As a result of the conference, approximately \$4.5 million in nonessential tasks were eliminated. Chrysler delivery dates for the revision were established and agreed upon.

The mission profile and operational mode summary used in the original XM1 petroleum, oil, and lubrication analysis were changed by TRADOC and the XM1 TRADOC system manager. This analysis, using the changed profile and summary, resulted in a reduction in the petroleum supply equipment and personnel originally estimated as required due to the XM1 tank.

TRADOC tasked the Logistics Center to take the lead in performing a detailed evaluation of the impact of the increased XM-1 weight on the Army's transportation and support systems. This tasking also included preparation of a draft proposed required operational capability (DPROC) for the heavy equipment transporter and a statement of requirements for a 140-ton vice 125-ton flatbed rail car. The Transportation School was made aware of this requirement and began working on the operational capability for the transporter. The Center dispatched a message on 14 September 1979 to the US Army Armor Center and the Transportation School, requesting the Armor Center provide the LOGC with a copy of their briefing for the Vice Chief of Staff, Army, given on 14 August and copies of all documentation used in preparation of that briefing. The Center message further tasked the Transportation School to prepare the draft proposed required operational capability for the heavy equipment transporter. HQ, Military Traffic Management Command, Washington, DC participated in the XM-1 weight study to determine the cost of developing a special fleet of flat cars for the expressed purpose of continental US transportation.

The Combat Vehicle Branch of the Materiel Systems Directorate, Logistics Center, conducted a detailed review of the XM-1 Logistics Support Concept to identify potential test problem areas. There were some discrepancies noted in Class VII and in the transportation procedure. This same branch also reviewed and updated the problems and findings raised by the Deputy Director of Readiness, HQ, DARCCM, during the conduct of its independent readiness review. The update focused on how development test and operational test III testing actions addressed these problems and findings.⁴

Improved TOW Vehicle (ITV).

The Improved TOW Vehicle was designed to thicken the Army's antitank capability in response to significant Soviet and Warsaw Pact numerical armor superiority. The Vehicle combines two existing weapon systems: the TOW wire-guided missile and the M113 armored personnel carrier, and fires two TOW missiles from its launcher while the crew remains under armor. Reloading is effected from inside the vehicle with minimum exposure. The hammerhead launcher allows the vehicle to remain behind cover, hence protected from direct fire, even while firing its mission.

The Center's only involvement with the vehicle centered on publications and in this respect, the Ordnance School assumed the Center's role, playing host in February, 1979, to a 2-week user verification conference on the entire Improved TOW Vehicle publications series. The LOGC also attended, along with representatives from Army Readiness Management System, Inertial Navigation System, DARCOM Materiel Readiness Support Activity, Improved TOW Vehicle Office, TRADOC Systems Manager, and Emerson Electric. This review recommended a number of needed changes to the publications series. A May-June 1979 follow-on verification confirmed these changes.⁵

Giant Viper

A short-range, unguided antitank rocket, the Viper serves as a "last ditch" defense against enemy armor. It is a one-shot, disposable round of ammunition, and was issued on the same basis as, for instance, hand grenades. Viper replaced the LAW rocket, first fielded in 1962. It is considerably superior to it in range and lethality, and will defeat the vast majority of tanks currently fielded.

The Logistics Center acquired equipment for training and testing for the Giant Viper. It accomplished a safety analysis, mobility and towing compatibility tests, and it distributed a required operation capability for coordination. Technical and feasibility tests were accomplished; a test integration work group took place on 15 May 1979.⁶

Advanced Attack Helicopter - YAH-64.

The Advanced Attack Helicopter was designed as the Army's quickest reacting and most mobile antitank weapon. Geographical considerations, the

unfavorable balance in armor, and NAIO's likelihood of accepting the first blow in a conventional conflict dictated the need for a system that could fly quickly to the area of the heaviest enemy penetration and destroy, or disrupt and delay his attack long enough for friendly armor and ground units to reach the scene. The YAH-64 employs the cover of hills, vegetation, and even buildings to avoid enemy air defenses. Once targets are detected, the aircraft emerges from cover and fires its high-speed, laser-homing Hellfire missiles. The helicopter is equipped with a Target Acquisition Designation System and Pilot Night Vision System which permits its two-man crew to navigate and attack in darkness and in adverse weather conditions. Its twin engines provide survivability, and it has the agility needed to avoid detection by enemy air defense weapons. Its design and the redundancy of critical flight systems enable it to take multiple hits from cannons and machine guns that normally destroyed current helicopters. Although the principal mission of the aircraft was the destruction of enemy armor, it comes equipped with a 30mm chain gun that could defeat enemy targets, including lightly armored vehicles, as well as 2.75-inch free-flight rockets that are lethal against a wide variety of targets. When deployed, the AAH will be the Army's primary attack helicopter and will be backed up and complemented by the earlier generation Cobra that is now in the field.

The Center participated in the YAH-64 staff planners course, 5-9 November 1978, and as a member of Integrated Logistics Management Team, at the Hughes Plant, during the period 27-30 November 1978 and 29-31 January 1979. The Center reviewed and coordinated Section V and VI of the Advanced Attack Helicopter Acquisition Plan and provided input to the project manager during this period.

Hellfire Modular Missile System.

A third-generation antiarmor weapon that can be air- or surface-launched, Hellfire was designed for use as the main armament of the Advanced Attack Helicopter. Hellfire homes in on a laser spot that could be projected from a number of sources, including ground observers and other aircraft as well as the launching aircraft itself. This enables the AAH to launch its missiles indirectly, in some situations, without even seeing the target. One follow-on seeker planned for development allows the missile to find its target with no need for outside designation. The AAH was designed to carry up to 16 Hellfire missiles. Ground launched modes for Hellfire were also under consideration, as were uses on other Army and Air Force aircraft. Hellfire provides significant improvement over TOW: (1) much greater lethality, (2) increased firing rates, (3) greater standoff range, (4) greater versatility, and (5) less time of flight.

The LOGC participated in the 3rd Integrated Logistics Support Management Team Conference for the HELLFIRE modular missile system at Rockwell International, Columbus, Ohio, on 14-16 May 1979. The following week, the Center attended the 5th Integrated Logistics Support Management Team Conference for the Advanced Attack Helicopter at the Hughes Helicopter Plant in Culver City, California. The Center reviewed and coordinated Section VI, Plan for

Logistics Support, of the Acquisition Plan for the Fire and Forget HELLFIRE Missile on 5 July 1979 and provided input to the HELLFIRE project management office.

National Guard Request for Test Equipment to Support the Wire Guided DRAGON Missile System.

A medium-range, wire-guided antitank missile, DRAGON replaced the 90mm recoilless rifle. It was designed to provide an accurate antitank capability at platoon level. A Dragon gunner needs only to keep his sight crosshairs on the target to score a hit. An electronic mechanism at the launcher tracks an infrared flare in the tail of the missile and keeps it aligned with the gunner's line of sight via commands sent along two thin wires. Course corrections are made by tiny thrusters in the body of the missile.

The National Guard requested 42 sets of Dragon Missile System-D test equipment designed for use at the direct support level of maintenance. It was designed to fault-isolate DRAGON equipment to the plug-in unit and subassembly level and calibrate the Tracker Test Set. It was further planned to provide the same DRAGON diagnostic capability as the Land Combat Support System, provided personnel were adequately trained. This equipment found use in the foreign military and the Marine Corps and not in the Army.

TRADOC, the Logistics Center, and the Missile School recommended that the Test set, Guided Missile AN/TSM-128(DMS-D) not be procured by the National Guard for support of the DRAGON Weapon System. Every effort was made to establish a support structure in the Guard that would interact with the active Army upon mobilization. Active Army MOS 27E TOW/DRAGON repairers were not trained on the DMS-D and did not utilize the equipment assigned to a mobilized National Guard unit.

Headquarters, Department of the Army, Deputy Chief of Staff, Operations (DA DCSOPS), took the position that additional buys of equipment to support a new maintenance concept for the Guard held no hope of being funded in FY 81 and was at least 3 years away from hardware delivery. Essentially, the meeting concluded that it was best not to approve the DMS-D concept at this time and rely on the old support concept as approved. The TRADOC position was supported.

AIR DEFENSE

PATRIOT.

The Army's new high and medium altitude anti-aircraft missile system designed to simultaneously attack and destroy several enemy aircraft while tracking scores more, PATRIOT employs a radically new concept called Track-Via-Missile guidance. As the missile reaches the vicinity of the enemy aircraft it informs the radar of its location in relation to its target. A computer then makes calculations and directs the missile on a path that insures a kill. The missile has a proximity fuzed warhead, so it needs only

to pass near the target to destroy it. An important feature of the system is its ability to operate under the intense electronic jamming conditions that will be a part of future combat, and that threatened the usefulness of Nike Hercules and HAWK, the systems Patriot replaced. The Patriot fire unit consists of a truck-mounted, electronically scanned phased array radar, a control unit housing the computers and operators, a power plant vehicle and up to eight truck-mounted launchers, each containing four factory-sealed missiles. The missiles require almost no maintenance and are launched directly from their containers. Despite its advanced technology, Patriot requires less manpower to operate than its predecessor systems. It is designed to be the keystone of theater air defense and to defeat saturation raids by large numbers of sophisticated aircraft employing jamming, chaff, and other countermeasures.

"Reliance on high RAM characteristics and sensitive automated test support equipment," MG Smith observed in his CY 1978 annual letter to TRADOC, "has led to a proposal by the PATRIOT Project Manager to eliminate all GS and depot maintenance for that missile system." However, Smith continued, "the success of this 'Maintenance Enhancement Program' (MEP) depends on a very optimistic projection for organizational level fault-isolation capability and a very high reliability of system essential equipment." Fortunately, the LOGC Commander confided, "if the MEP proves unacceptable at any point during test, or even during the first 2 years of deployment, the Army can return to limited or full implementation of the original concept of support without an unacceptable risk." The Logistics Center and the Missile and Munitions Center and School were actively involved in PATRIOT development and testing during this period, "to insure that the system will be supportable under MEP and to insure that an alternative support concept can be implemented should MEP not prove successful."¹⁰

ROLAND.

The Soviet and Warsaw Pact forces fielded an enormous number of high-performance aircraft and helicopters over the past several years. Many of them, such as the MIG-23, were designed for bombing and missile attack of ground units. In addition, the trend was toward aircraft that could attack in darkness and bad weather. The US Army had no all-weather short-range air defense missile system. A European-designed system adapted for use by the Army, Roland was radar guided (with an optical backup capability) and mounted entirely on one vehicle. A single fire unit tracked and destroyed up to ten enemy aircraft in a matter of minutes. Roland was planned initially to defend high-value rear area targets such as airfields.

The United States, German, and French delegations agreed at the October 1978 meeting of the ROLAND Joint Logistics Subcommittee that the costs incurred to maintain international interchangeability of ROLAND components and parts could not be justified on a logistics basis. The fact that the US chose to build the US ROLAND from piece-parts different from those used in the European sets, precluded joint logistics support by direct support and general support units in the field. The requirement to maintain different stocks of

repair parts and different software test programs to test two versions of each ROLAND component was too expensive and complicated to properly control. General Smith put it bluntly in his letter to General Starry when he wrote: "Early in the US ROLAND program, a decision was made to build the US system of high-reliability parts different from those used by the Europeans. It apparently was not recognized at the time that this decision effectively eliminated the possibility of joint logistics support and exchange of parts for the repair of systems. Consequently, one of the major presumed advantages of the ROLAND program, easy, multinational logistics support, will not be fully realized."¹¹

As expected, the TRADOC Systems Manager representative to the ROLAND data aggregation meeting wanted the LOGC to either concur or nonconcur with the failure definition scoring criteria. The Center made no objection to its use for scoring the PQT-C/G/OT III tests, but it made clear that it could not concur with the criteria. A memorandum of agreement was prepared and signed which noted that there were provisions in the criteria which required careful use when comparing test data with the RAM requirement. The agreement further endorsed the careful use of the criteria to score these tests.¹²

On 15 March 1979, at an 06/action officer conference in preparation for Army Systems Acquisition Review Council/Defense Systems Acquisition Review Council III (24 April-22 May), HQ TRADOC tasked the LOGC to provide (1) a risk assessment of going to full production without having developed, tested, and evaluated logistics support above the organizational level, and (2) a risk assessment of deploying ROLAND without having tested and evaluated general support. MG Smith was briefed on the ROLAND Program on 29 March and attended the TRADOC ROLAND review on 30 March, where he was directed to develop and coordinate a paper on the definitions of logistics supportability risks.¹³

Improved HAWK.

An all-weather low-to-medium altitude air defense missile system, the Improved HAWK incorporated superior fire control, lethality, range, reliability, and effectiveness against jamming. The HAWK system has never been used in combat by US forces, but in its basic configuration destroyed over a score of high performance aircraft in the Middle East War of 1973. The Improved HAWK platoon consisted of an acquisition radar, a data processor, a high power illuminator, and three launchers containing a total of nine ready missiles. The HAWK missile carries a large, proximity fuze warhead and needs only to pass near the target to destroy it.

An informal I-HAWK Support Briefing was presented to the Commander-designee, 2d Support Center, Fort Bragg, North Carolina. The briefing was presented in conjunction with a Materiel Systems Directorate presentation of small missile support. Emphasis was given to the modifications applied to the CONUS support structure which resulted in the deletion of the general support unit for the newly fielded I HAWK units at Fort Bragg, Fort Rucker and Fort Lewis. General support deletion was

accomplished in favor of an augmented direct support unit capable of providing both direct support and general support level support colocated with the battalion.

Division Air Defense Gun System (DIVAD SYSTEM).

The Army's forward maneuver units lacked adequate air defense coverage. The need for such coverage became more critical with the proliferation of Soviet ground attack aircraft and antitank guided missile launching helicopters. The Division Air Defense Gun was designed to have the capability to move with the forward elements and provide them with an effective defense against these threats due to its rapid reaction capability, increased range, and improved fire control system. Additionally the system will be capable of engaging and defeating most ground targets, except tanks, in a self-defense mode. The present Army air defense gun, the Vulcan, lacks the lethality, accuracy, mobility, and armor protection to perform this mission. The DIVAD Gun development involved a competition between contractors employing existing European cannons and US fire control systems. The chassis employed by both contractors was a modified, government-furnished, M48A5 tank. Both development contractors were given maximum flexibility to encourage design of a less costly, more effective system. The Vulcan system was retained in airborne and airmobile units.

HQ TRADOC hosted a DIVAD Gun review on 3 October 1978. The DIVAD Gun TRADOC System Manager and the DIVAD Gun Project Manager conducted the review to consider the impact of the DARCOM Commander's 19 September 1978 decision to prevent amendment of the DIVAD Gun Phase-II Development Contract to include integrated logistics support. The review provided a complete program update as well as a discussion of the possible impact of the deleted support items. MG James H. Merryman, Commanding General, US Army Aviation Center and Fort Rucker and MG John W. Seigel, Deputy Commanding General, Allied Land Forces Southeastern Europe, indicated that although continued deletion of integrated logistics support from the Phase-I contract was not a desirable approach, sufficient time would remain in the Phase-II development program to effectively develop integrated support prior to the initial operating capability.

The project manager developed an alternative support plan (Phase-II milestone chart). LOGC provided comments and recommended that additional emphasis be given to the development of test planning and test milestones. It reviewed the DIVAD Gun test concept with comments forwarded to the project manager. RAM and logistics support issues remained austere in Phase-I planning. The Center also conducted a review of the DIVAD Gun Operational Mode Summary and forwarded its development concept paper to the DIVAD TRADOC Systems manager.

The Center examined the DIVAD Gun draft development concept paper and provided comments to TRADOC. Preliminary DIVAD Gun direct support and general support maintenance military occupational specialty recommendations were made to the DIVAD TRADOC systems manager who in turn forwarded them to the project

manager for inclusion in the DIVAD provisional qualitative and quantitative personnel requirements information. Quarterly reviews were held at the Aero-nutronic Ford and General Dynamic Plant facilities during October, 1978 and March, 1979. Due to the "skunk works" nature of the development program, government participation was held to a minimum. US Army Operational Test and Evaluation Agency held a DIVAD Gun test integration work group on 1 March 1979; Fort Bliss conducted another one on 24 September.¹⁵

Air Defense Program.

The Air Defense Program submission to HQDA was postponed to April, 1979 and outlined Air Defense requirements in the out years and included the TRADOC-approved and DARCOM-coordinated results of the ROLAND cost operational effectiveness analysis, Phase-I of the High-to-Medium Altitude (Air) Defense Study and Phase-I of the Short Range Air Defense/Man Portable Air Defense System Study. This input satisfied both the Congressional Air Defense Program Requirement and the ROLAND Defense and Army System Acquisition Review Council III.¹⁶

FIRE SUPPORT

General Support Rocket System (GSRS).

The General Support Rocket System program provided the Army with its first multiple rocket artillery capability since World War II. Because of the numerical imbalance our forces face in Europe there are a number of targets which exceed the firepower of our cannon artillery. The rocket system was designed for use on concentrations of enemy vehicles, as counterfire against enemy artillery, and as a method of suppressing enemy air defenses. The rockets themselves contained a large number of submunitions, which dispensed from the rocket high over the target area and blanketed it with explosives and fragments. The submunitions was effective against the thinner top armor of tanks and other fighting vehicles. The rockets are sealed in pods and require no maintenance after leaving the factory. They may be fired singly or in ripples. After firing, the empty pod is discarded, and the tracked carrier reloads another pod from an ammunition storage point. The rockets are ballistic in flight. When fielded, the system will provide the Army with tremendous surge firepower capacity.

HQDA tasked TRADOC to perform a total logistics impact assessment on the General Support Rocket System. At the verbal request of the TRADOC system manager, the Logistics Center hosted a conference on 14-15 November 1978 to determine the methodology, models, logistics data elements, and a milestone schedule to meet the DA-imposed 15 May 1979 suspense. While the force structure remained shakey, DA provided basic information. The manager produced the proposed organization and the operational concepts and the associated logistic-oriented schools furnished the maintenance and ammunition resupply concepts. The elements needed to begin a complete logistical assessment were identified and/or inputted. A further meeting took place on 14-15 December 1978 to update data. The results of this assessment were inputted to the

Concepts Analysis Agency for the Total Army Analysis '86. Several computer runs were made in January, and February and a further conference conducted in March to finalize inputs.¹⁷

In a message sent to MG Frank P. Ragano, Commander, US Army Missile Research and Development Command, MG Smith expressed concern over the rocket system support concept. "It seems to me," he wrote, "we should retain the entire system in 'normal' channels--that is, the headquarters and light maintenance company in the division and the light equipment maintenance company (or the RGS equivalent) at GS level." Continuing, Smith argued that, "this way the artillerymen will have one channel to do business with. All that you need to do is to relax the mandate with respect to GSRS and plan to use the M410 (Equate) as the TMDE at GS level." This could be accomplished, he argued, "without undue effort." Concluding, the LOGC Commander reminded MG Ragano that, "the GSRS is going to be a back breaker in many respects and we want to make sure that our support for the system is as uncomplicated as possible."¹⁸

M198 155mm Medium Towed Howitzer.

The M198 was created to be employed in the active Army and reserve components in the direct support field artillery battalions of the infantry divisions and separate brigades and in corps battalions supporting the airborne and air assault divisions. It was designed to be employed by the US Marines in their divisions. It replaced the World War II vintage M114A1 howitzer and the 105mm howitzer of the light divisions. The M198 provided major increases in range and reliability over its predecessor howitzers, and may be parachute delivered or carried by a variety of cargo aircraft or medium helicopters. It fired all projectiles, including nuclear, currently in the inventory.

The M198, 155mm Howitzer, Towed, a new system, was type classified standard in December 1976. A Force Development and Experimentation (FDTE) was completed at Ft Bragg, NC, on 27 October 1978 to evaluate use of the M198 in the direct support role in light infantry divisions. A follow-on evaluation conducted by the Operational Test and Evaluation Agency was conducted at Ft Bragg in November 1979, to assess reliability, maintainability and operational availability of the M198 with all hardware modifications and fixes subsequent to Operational Test-II. All hardware changes resulting from this evaluation were product improvements since the M198 was already in production. Ft Bragg was the first unit equipped with an 18 howitzer battalion.¹⁹

XM 785/W-82 Atomic Fired Artillery Projectile (AFAP) 155mm.

LOGC participated in a logistics working group meeting at US Army Nuclear-Chemical Agency, Springfield, VA, 25-26 July 1979. In view of evolving technology, the group evaluated and provided changes to the current logistics techniques. Although reliability had always been a prime requirement, the XM785 received additional emphasis. This emphasis was more

stringent on nuclear projectiles because 6 development phases, concepts, and validations were used in the materiel acquisition process, versus 4 phases that were used on the conventional materiel development phases.²⁰

XM 753 Projectile Logistics Working Group.

LOGC participated on a working group for a nuclear munition, its maintenance van and specialized training equipment. The Center reviewed and provided comments on a training device simulator for the Prescribed Nuclear Load Simulator Container for XM 753 Projectile. Principal recommendations were in the area of reliability and the methods of logistically supporting the device.²¹

Improved Conventional Munitions, 4.2 (107mm) Mortar.

A joint working group meeting was held 14-15 November 1978 at Fort Benning. An update on new munitions developments was given and the draft letter of agreement was reviewed. The group determined that the letter of agreement be held until the Army reviewed the Norwegian 120mm mortar and the Division '86 study became available.²²

Observed Fire Trainer (OFT).

The USA Field Artillery School requested LOGC comments and recommendations regarding RAM performance of the Observed Fire Training for consideration in preparing an independent evaluation and position for input to a development and acceptance in process review, 16 January 1979. A message was forwarded on 13 December 1978 which emphasized the poor performance of the Observed Fire Trainer in achieving essential characteristics of the training device requirement and recommended against further production of the device due to the poor RAM performance of the device during its evaluation. HQ TRADOC agreed with the findings and conclusion contained in US Army Field Artillery School independent evaluation report that the Observed Fire Trainer developed by MB Associates, San Ramona CA, does not meet requirements specified in requirement 1977. Production of this item was not recommended.

The Artillery School brought in two British Trainer-type devices to the United States for a test and evaluation of their abilities to fulfill the Army's approved training device requirement during 3Q FY79. The two training devices were developed by Inventron Simulated Systems, LTD (Inventron Trainer) and MARCONI Space and Defense Systems, LTD (Master Gunner) and were tested at the Royal School of Artillery in CY 78 and observed by the Artillery School and Project Manage-Training Devices representatives on a visit there that both devices had significant potential and were superior to the MB Associates Trainer.

The Revised Proposed requirement for the Trainer was reviewed by this Center on 1 October 1979. This Center nonconcurred with the document due to

insufficient RAM and RAM rationale annex content. Comments on the Trainer Test Support²³ Package and Independent Evaluation Plan were also reviewed by this Center.

Investigations of Developments in Conventional Cannon Field Artillery Systems.

Investigation disclosed that a requirements document was not prepared for a follow-on howitzer system and that such a system was not in development. However, the US Army Field Artillery School prepared and forwarded to TRADOC in a mission element need statement a broad statement of need for a follow-on system in the 1990's. The statement was staffed at Army in May 1979, and approved by the Secretary of Defense in August.

M110A2 Self-Propelled 8-Inch Howitzer.

An improved version of the Army's heaviest cannon artillery weapon, the M110A2, was employed by divisional general support battalions and separate corps and Army battalions. Some of its missions, aside from general support of friendly units, included counterartillery and air defense suppression. It has both a conventional and nuclear capability. Reliability, safety, fire control, and crew protection improvements were made to the weapon. Development of a shelter is in progress to protect the crew from small arms fire and artillery fragments.

M109A2 Self-Propelled Howitzer.

The M109A2 was an improved version of an existing howitzer. The improvements consisted of reliability and maintainability, safety, ammunition storage, and range. The M109A2 provided support to armored and mechanized infantry columns. Being tracked, it had the capability of accompanying these units in any terrain. The M109A2 was air transportable and fired any 155mm howitzer ammunition, nuclear or conventional, currently in the inventory.

Current developments in these two existing conventional systems involved product improvements for safety, operational efficiency and extended range objectives. Impact on tube supply with high zone firings was not expected during peacetime since the number of high zone firings was limited for health reasons and geographical limitations of impact areas.

A product improvement proposal was approved to develop crew ballistic protection for the M110A2. User interest caused funding to be accelerated and a sole source contract was awarded to PACAR, Renton, Washington, to produce mockups. The Artillery School supported an armored cap concept and fielding in FY 81 which required high priority efforts to select configuration and materiel early in development. During testing of mockups, it was anticipated the weight of the traversing armored cap would place excessive stress on the hydraulic system and impact on RAM and mobility of the entire vehicle.²⁴

MOBILITY

BLACK HAWK - UH-60A.

The Black Hawk will replace or supplement the UH-1 "Huey" in the air assault, air cavalry, and aeromedical evacuation missions. While the UH-1 is an excellent and reliable helicopter, it is power-limited to the degree that under hot weather and high altitude conditions early versions sometimes took as few as two passengers. In addition, it proved in Vietnam to be extremely vulnerable to small arms fire. The twin-engine Black Hawk was designed to carry more than twice the UH-1 payload and to transport an entire 11-man, fully equipped squad 42 knots faster under all weather and altitude conditions. Its critical components are armored or redundant to enable it to withstand multiple small arms hits, and its airframe was planned to progressively deform on impact to protect the crew in a crash. In addition, it is easier to maintain in the field than the UH-1 it replaces. Black Hawk's full-squad carrying ability made it considerably easier for small unit commanders to retain control of their forces under chaotic combat landing zone conditions, and permitted more rapid replacement of ammunition and other combat consumables in a high-intensity war.

Environmental testing was conducted during the October 1978 - March 1979 time frame; Northern CONUS testing was completed February-March 1979. The LOGC and the TRADOC Systems Manager developed, in coordination with the US Army Materiel Systems Analysis Activity and the US Army Aviation Research and Development Command, the final failure and scoring criteria documentation to be used in RAM evaluations of the initial operational capability force development test and experimentation. The LOGC participated in an Integrated Logistics Support Management Team Meeting 13-16 November 1978 at the Sikorsky Factory where the planes were being manufactured.

During the later half of the period, the Center reviewed force structuring and scoring criteria with changes proposed by DARCOM. It recommended changes and solutions which were accepted. In June, Center personnel participated with an integrated logistics support management team in Lynn, Massachusetts, home of one of the contractors, General Electric. That same month, the Center sent representatives to a scoring conference at Fort Rucker, and in July and September, to one at Fort Campbell.

Finally, on 19 June, the 101st Airborne Division (Air Assault) received four UH-60A Black Hawk Helicopters, thus becoming the first US Army combat-ready unit to receive the utility tactical transport helicopters. General John R. Guthrie, Commander, US Army Materiel Development and Readiness Command (DARCOM), attended the ceremonies and observed that, "we are seeing the first production models of a modern, much-needed troop carrying helicopter of greatly increased capability . . . This is truly an historic day for the Army and for the 101st."²⁵ The LOGC could feel proud that it had played a vital role in this development.

CH-47 Modernization.

The CH-47 Chinook, the Army's medium-lift helicopter, was designed in the 1950's for the transport of personnel, artillery, missiles, downed aircraft and other cargo, either internally, or externally in sling loads. Rather than embark on an entirely new development program to replace the aging inventory of 449 aircraft, the Army made several major improvements to the helicopter that extended its useful life past the year 2000. Improvements were developed for the rotor, power drive, hydraulic, electrical, flight control and the auxiliary power systems. Cargo handling was greatly improved by installing three cargo hooks, a unique system in the Army. These improvements enhanced the reliability, productivity, and flight safety of the entire medium-lift fleet.

In a letter to the future LOGC commander, MG Smith remarked that, "Modernization of the CH-47 fleet appears to me the sensible way to provide the future Army with a medium lift capability to meet the logistics support requirements for the battle area while at the same time providing a flexibility uncommon to other modes of transportation." Continuing, Smith noted that, "improvements in Reliability, Availability and Maintainability (RAM) promise a reduction in the number of maintenance personnel required to support the CH-47. This will be an accomplishment of great significance," the LOGC Commander continued, "as it comes at a time when the trend is to require additional support." He expressed concern with the budget cuts which he felt adversely affected this much-needed program. "The aviation requirements for the combat structure of the Army III (ARCSA III) study has identified a serious shortage of medium life helicopter assets to satisfy the combat support/combat service support requirements in the European theater," argued Smith. "I see the modernization program as the only way we insure that the aging CH-47 fleet will be ready to meet the support requirements of the future battlefield."²⁶

Fighting Vehicle System (FVS) Infantry Fighting Vehicle (IFV) and Cavalry Fighting Vehicle (CFV).

The Fighting Vehicle System (IFV and CFV) provided the mechanized infantry with a full-track, lightly armored fighting vehicle with a highly diversified volume of mounted firepower, and it offered the Armored Cavalry a scout vehicle for its screening, reconnaissance, and security missions. Both Infantry and Cavalry Fighting Vehicles employed a 2-man turret which mounts the 25mm automatic stabilized cannon, its primary armament, supported by the TOW antitank guided missile system, the 7.62mm coaxial machine gun and, in case of the Infantry Fighting Vehicles, six firing port weapons. The overall mobility of the vehicle is compared favorably to that of the XM1. The Infantry Fighting Vehicle carried a 9-man squad. Aside from the driver, gunner, and commander, six additional squad members were carried with the capability of fighting mounted--using firing port weapons--or dismounted. The Cavalry Fighting Vehicle carried a 5-man team for reconnaissance missions. The vehicle employed a space laminate armor designed to offer significant protection against enemy small caliber weapons up to the 14.5mm, overhead crew

protection against the 155mm airburst, and hull protection against an antipersonnel mine. The vehicle came equipped with day and night thermal sight capability.

As executive agent for TRADOC for test, measurement, and diagnostic equipment matters, the LOGC wrestled with the problem of having insufficient information to decide what equipment should be used to support the Fighting Vehicle System and TOW. The Center voiced particular concern about the lack of an in-country test and alignment capability for the integrated sight unit upon fielding of the system and TOW in Europe.

The Missile and Munitions Center and School strongly advocated modification of the land combat support system to accommodate this particular workload and believed this alternative to be more cost effective than increasing the integrated sight unit float quantity. In a 20 December 1978 letter to MG William J. Livsey, Commandant, US Army Infantry School, MG Smith noted that, "in our view, the most critical and immediate problem, in terms of support to the IFV/CFV, pertains to the CSS, LCSS, and future development of ATE."²⁸ Going further, the Center, in another letter to the Infantry School, wrote that, "The Logistics Center believes the three phase TMDE plan is not the most cost effective way of supporting the IFV/CFV and we are especially concerned that this plan does not provide for an in-country capability to²⁹ perform optical repair and alignment of the Integrated Sight Unit (ISU)."

The Center viewed the Infantry and Cavalry Fighting Vehicles as unsupportable unless a direct support capability to accomplish this particular workload was provided. Additionally, the Center concurred in the need for simplified test equipment-T (STE-T) to be developed and utilized during the early production time frame to provide technical feasibility of using these test, measurement, and diagnostic equipment in their intended manner. The Center recommended that when future production starts in 1984 all test, measurement and diagnostic equipment for the fighting vehicle system used at organization and direct support be configurations of the standard automatic test support system family.³⁰

WHEELED VEHICLES

XM915-920 Series Vehicles.

In the wheeled vehicle arena, the type classification and release for fielding of the M915-920 series of vehicles was a major achievement during this period. As executive agent for this program, the Logistics Center and its associated schools proposed various design and performance changes to be incorporated in the vehicles. "These changes," wrote MG DeHaven to General Starry, "as well as the satisfactory correction of the problems identified in the in-process review (IPR), allowed us to concur in release of the vehicles to the field." This fielding, he continued, "replaces the overage and over mileage vehicles in the inventory."³¹

A formal in-process review was conducted at HQ US Army Tank-Automotive (Materiel) Readiness Command during October, 1978; it was decided to leave open 17 deficiencies reported during the ongoing XM915 initial production evaluation. The deficiencies basically addressed vehicle sheet metal cracks and transmission malfunctions during cold weather testing. During this period it was decided to dispatch a vehicle to Fort Greely, Alaska, for arctic testing to determine the suitability of contractor proposed corrective fixes to vehicle frame and sheet metal components and to establish the vehicle reliability and functional capabilities under arctic conditions.

In addition to the US Army Test and Evaluation Command controlled testing, it was decided to loan two XM915 vehicles to a commercial contractor for normal line haul operations in Greely, Colorado, for a 6-month period. The vehicles were delivered in January, 1979, and monitored to establish vehicle suitability and reliability.

Formal TRADOC forced development test and evaluation testing of the XM915 began at Fort Campbell in January, 1979. Under the control of the Armor and Engineer Board, this evaluation required troop operation of four vehicles for a minimum of 3,000 miles each over a period of 90 days. It established the adequacy of the training, publications, repair parts and special tools to be provided to using organizations during initial fielding.

As a result of these tests, several vehicle design changes were proposed and accepted by the design agency, HQ US Army Tank-Automotive (Materiel) Readiness Command. These changes included an engine retarder override to prevent free wheeling of the vehicle at low RPM, a sliding back window for cab cooling and better driver visibility, a spare tire winch and removable vehicle mud flaps to prevent damage while towing the M127A2C vehicle.³²

Of even greater consequence was the establishment at the Logistics Center of the Tactical Wheeled Vehicle Requirements Management Office (TWVRMO). In March, HQDA convened an Active Planning Conference to formulate recommended courses of action to resolve known problems impacting on the Army's vehicle programs. One of the recommendations approved by the Chief of Staff called for the establishment, within TRADOC, of an office for the central management of vehicle requirements. TRADOC tasked the LOGC, and in May, 1979, received a concept plan, which included possible mission and functions, a proposed organization, and a time-phased schedule for getting into operation. At the same time, the Center submitted resource requirements as part of its FY 80 Command Operating Budget. TRADOC approved the plan on 29 May and forwarded the request for spaces and money to HQDA. In September, HQDA allocated 16 civilian spaces and the money to support establishment of the office.³³

Heavy Expanded Mobility Tactical Truck (HEMTT).

With the approval of the letter of agreement for the 10-ton expanded mobility tactical truck and the preparation of the proposed required operational capability for heavy expanded mobility tactical truck, a program review was conducted in October, 1978. DARCOM, TRADOC, and DA elements participated

in the review. A DA coordinated acquisition strategy was prepared with two acquisition alternatives. Proposals included the acquisition of a truck for worldwide employment procured by unrestricted competition, and acquisition of a German 10-ton M.A.N. truck for use in Germany only.

On 23 October 1978, a meeting was held with the Office, Deputy Chief of Staff, Research Development and Acquisition, Dr. R. Trainer. Trainer viewed the 10-ton truck program as politically sensitive, and stated the need to insure that the program was legal, viable, and identified the risks associated with an acquisition of this type. He reminded the participants of the need to assure the Assistant Secretary of the Army that all vehicles being considered for acquisition received fair and objective consideration.

In November, a 10-ton M.A.N. truck testing meeting was held at Aberdeen Proving Grounds. It was agreed that a new transmission and transfer assembly would undergo testing which consisted of 10,000 additional miles of testing per vehicle to prove RAM-D of components. An additional 10,000 miles of testing was then conducted per vehicle as the payload requirements of the General Support Rocket System program. One hundred percent of the testing time was pulling a trailer with rocket system payload requirements.

In January and February, 1979, the US Air Force Ground Launched Cruise Missile program office identified its requirements for offroad mobility to enhance prelaunch survivability. The current Army tractor (M818) did not meet their offroad requirements. Analysis by Waterways Experiment Station using the Army Mobility Model (AMM74X) indicated that the Heavy Truck could satisfy the Air Force requirements. The truck was then identified by the Air Force missile program office as suitable for procurement to satisfy their requirements.

In February, the Pershing II Project Manager's Office indicated that the Pershing II development was experiencing a growth in weight of the first stage missile motor which required a missile handling crane capacity greater than that which was currently available with the M543 wrecker. Vehicles selected to support rocket system requirements also satisfied the Pershing II life requirement. The Pershing II requirement was therefore added to the required operational capability.

With the introduction of the Air Force Missile Program and the PII missile system into the required operational capability, it became necessary to minimize downtime for the missile systems. Recovery capability was required. Recovery crews had to be provided with necessary mobility, load carrying capacity, tools, lift and winch capability to recover the truck. At that point, a truck recovery vehicle was added to the required operational capability.

In March 1979, TRADOC identified the Heavy Expanded Mobility Tactical Truck as a potential major system requiring a Mission Element Needs Statement (MENS). The US Army Transportation School, as proponent for the truck, was tasked to prepare a statement. A joint working group meeting was held at Fort

Eustis on 26 and 27 March and a proposed draft statement prepared. The proposed statement was forwarded to interested agencies within DARCOM, TRADOC, and the DA staff requesting comments/concurrence. A final joint working group was held 8-10 May to finalize the mission statement for submission to TRADOC and DA.

On 20 March 1979, Office, Deputy Chief of Staff, Research Development and Acquisition directed that a Materiel Systems Requirements Specification (MSRS) be prepared for the truck program. This was accomplished by representatives of this Center, US Army Tank-Automotive Research and Development Command (TARADCOM) and Deputy Chief of Staff for Research, Development and Acquisition (DCSRDA). The specification provided the necessary system description and defined relevant elements which must be considered in developing a credible cost estimate of the system and overall program. The cost estimates developed from this document were to Headquarters, Department of the Army Staff.³⁴

Armored Combat Logistics Support Vehicle Family (ACLSVF).

As a result of studies by the Tank-Automotive Research and Development Command and subsequent coordination with TRADOC, it was decided to include the General Support Rocket System chassis as a candidate for the Armored Combat Logistics Support Vehicle Family. The rocket system chassis also had the payload capacity required for a ballistically protected Field Artillery Ammunition Support Vehicle (FAASV) replacement for the M548; therefore, the Ammunition Support Vehicle had now been included in the Support Vehicle Family concept. A letter of agreement was forwarded to HQ TRADOC for worldwide staffing.

Because of the magnitude of the project and the multi-proponency involved, LOGC requested TRADOC formally appoint the Center as the central management agency for the system, and appoint each responsible school as the proponent for their particular vehicle. Additionally, to provide dedicated management of the program, TRADOC was requested to appoint a TRADOC system manager under the operational control of the LOGC. TRADOC complied, but held the establishment of the systems manager's office in abeyance until the program's formal designation as a major system.

Since the Armored Combat Logistics Support Vehicle Family did not reach ASARC/DSARC status prior to December, 1978, a mission element need statement was developed. In conjunction with this action, LOGC developed a preliminary Combat Service Support Mission Area Analysis to support the statement. At the request of the Office, Deputy Chief of Staff, Research, Development, and Acquisition, an information briefing was presented to that office and the Operations office. At issue was the finding required to continue efforts in the program. Operations agreed to support research and development funding through FY '80 and FY '81 but only for the Field Support Vehicle and the Armored Forward Area Rearm Vehicle. Requirements documentation efforts continued to recognize the maintenance assistance vehicle and medical evacuation vehicle requirements in the event future finding becomes available for these vehicles.³⁵

Concept Evaluation Program, Fifth Wheel Wrecker.

Based on a decision to have the Concept Evaluation Program (CEP) conducted by the US Army Armor and Engineer Board (USAARENB) the Ordnance School was designated as proponent agency for the Program. The Concept Evaluation Program was conducted in January and February 1979. Only two of the three commercial test items, the Holmes and the Towmaster, were tested. The third test item, the Big Ben, was not received in time for testing. The conclusions tentatively indicated that the concept was valid, but that the commercial items tested were not satisfactory for military application without significant modifications.³⁶

Family of Military Engineer Construction Equipment (FAMECE).

This Center played a major role in forming the TRADOC in-process review position for the Family of Military Engineer Construction Equipment program. The Center assisted the Engineer School with the Logistics Support Analysis substudy portion of the cost and operational effectiveness analysis, and it participated with the School in the evaluation and scoring of the development test and operational test II equipment performance reports and in the review of integrated logistics support actions within the program. Utilizing the cost and effectiveness analysis, development test and operational test II test reports, and the US Army Operational Test and Evaluation Agency and the US Army Materiel Systems Analysis activity independent evaluation, the Center prepared an in-depth analysis of the RAM audit trail. TRADOC based the demise of this program on this evaluation. "We share your concern over the proliferation of and need for standardization of engineer construction equipment," MG DeHaven wrote General Starry, "and along with the Engineer School, we're seeking an acceptable program to achieve your goals."³⁷

MILVANS.

Several years ago, Armor, Infantry, Mechanized Divisions received MILVANS and chassis as a temporary solution to their authorized stockage list mobility problem. "Many divisions installed locally fabricated bins," which worked so well the LOGC Commander observed, "we asked the field if they would suffice as a permanent solution". The field liked the locally fabricated bins but still wanted an improved repair parts van. "We directed the QM School to stop action on the requirement for MILVAN kits," the LOGC Commander continued, "and to expedite action on an improved repair parts van." MG DeHaven promised TRADOC the requirements document by FY 80.³⁸

Watercraft Program.

Two significant events took place in the Army Watercraft program during this period: the type classification and award of the production contract for the LACV-30 and the Army Watercraft Requirements Master Plan. The LOGC and the Transportation School worked together to develop the LACV-30 TRADOC-type classification position which DA accepted. The LACV-30 was designed to

modernize the Army amphibian fleet and to provide the service with a watercraft that was both transportable and easily deployable with the initial cargo shipments.³⁹

In January, 1979, TRADOC tasked the Center, in conjunction with the Transportation School, and the Project Manager, Army Watercraft, to quantify and prepare the Army Force Structure and requirements for watercraft. After establishing a joint working group, the Center developed a final draft of a requirements plan, and briefed Generals Starry, Guthrie, and Shoemaker, on this plan. It was anticipated that the final version would be ready by Spring, 1980.⁴⁰

COMMAND AND CONTROL

Automatic Test Support Systems (ATSS).

The proposed required operational capability for General Support/Automatic Test Equipment (GS/ATE) submitted to HQDA for approval 27 July 1978 was returned 18 January 1979. HQDA directed that due to the life cycle cost and level of interest, the General Support/Automatic Test Equipment effort was considered a major program in accordance with Army Regulation 1000-1. This classification required the preparation of a mission area analysis and a mission element need statement. The LOGC prepared and distributed a development program mission elements needs statement with the DARCOM/TRADOC community for coordination 7 March 1979. The Center also took action to obtain supporting documentation for the maintenance deficiencies identified by the mission area analysis and the mission element needs statement effort. In early April, 1979, the Center hosted a joint working group to refine the development program need statement and further define maintenance deficiencies areas.⁴¹

TRI-TAC Switch.

A family of multichannel switches designed to pass both data and voice, these switches ranged in size from 12 lines to 600 lines and were designed for use on unit level through Corps. The TRI-TAC program consisted of a family of joint services communications switches, which were hybrid, modular, mobile, transportable tactical automatic switching equipments, providing automatic circuit switching service for both analog and digital traffic, with store-and-forward switching for message traffic. Development test II/operational test II was completed. The Center actively participated in the acquisition process to insure supportability.⁴²

TARGET ACQUISITION

Firefinder Radars: Counterbattery Radar, AN/TPQ-37 and Countermortar Radars, AN/TPQ-36.

Each division was designed to be equipped with two counterbattery radars and three countermortar radars. These devices enabled friendly forces to locate and bring immediate fire upon enemy mortar, artillery, and rocket-launching positions, silencing them before they could adjust their fires on friendly units and positions. Both systems employed advanced phased array antenna techniques and computer-controlled signal processing. They functioned by spotting enemy projectiles in flight and mathematically backplotting their trajectory. The position of the weapon was reported in grid coordinates that were fed automatically into artillery fire direction centers, enabling them to target the enemy weapons with guns, rockets, or other ordnance. In tests both radars, in combination with fire control devices, enabled an artillery unit to have accurate counterfire on the way before the first enemy projectile struck the ground.

The Logistics Center continued its part in the acquisition of these major radar programs by participating in the Integrated Logistics Management Team. This team, composed of members from DARCOM and TRADOC, monitored the logistics plans and resolved potential logistics problem areas to insure the supportability of systems when fielded.⁴³

Defense Acquisition Radar (DAR).

Missile Research and Development Command hosted a joint working group during January and March 1979 to develop a defense acquisition radar plan incorporating a nondevelopmental procurement philosophy. HQDA decided that a required operational capability be prepared for the radar in lieu of the previously planned letter of agreement.⁴⁴

German Air Defense Ground Environment (GEADGE).

LOGC participated in a German air defense ground environment briefing at Fort Monroe on 28 February 1979. This environment is the tactical fighter, surface-to-air missile command control and coordination (C3) equipment presently being considered for procurement by the German Air Force to replace the aging 412L Fighter/SAM C3 system. As a consequence, costly modifications were expected for US Army AN/TSQ-73 systems to permit exchange acceptable to both US and German tactical philosophies. LOGC recommended early coordination with the Bonn government to minimize the impact of fielding on US systems.⁴⁵

Navigational System Tracking and Range - Global Position System (NAVSTAR-GPS).

A joint services developmental project, the NAVSTAR Global Positioning System, was designed as a space-based radio navigation system providing accurate position, velocity and time to users located anywhere on or near the

earth. The system has three major segments: space, control, and user. When fully operational there will be a total of 24 satellites deployed. Development Test I and Operational Test I have been completed. There were no major problems. The Logistics Center played an active role in the acquisition process to insure commonality, interchangeability, and supportability.⁴⁶

RELIABILITY, AVAILABILITY, MAINTAINABILITY (RAM)

As the executive agent for TRADOC on all matters pertaining to RAM the LOGC reviewed and approved the content and proper statement of RAM criteria in requirements documentation, test plans, and test reports. LOGC also provided technical RAM assistance to all TRADOC combat development activities. This responsibility required a continuing RAM effort in all materiel commodity areas. Listed below were representative projects in each commodity area which required RAM support during the last 12 months.

<u>AREA</u>	<u>SYSTEM</u>	<u>ACTION</u>
Armaments and Missiles	Miles Air Defense Trainer	Training Device Requirement
	Squad Automatic Weapon	Required Operational Capability
	Defense Acquisition Radar	Required Operational Capability
	Observed Fire Trainer	Training Device Requirement
	General Support Rocket System	Failure Definition & Scoring Criteria
Aviation	Inertial Navigation System	Required Operational Capability
	Airborne Target Handoff System	Letter of Agreement
Communications-Electronics	Tactical Operable System	RAM Rationale Annex
	Remotely Monitored Battlefield/Battle Area Sensor Systems	RAM Rationale Annex
	Automatic Test Support System	Operational Mode Summary

	Multimeter USM-451	Letter Requirement
	Interim Automated Staff Message Processing System	Required Operational Capability
	Tactical Emitter Location and Identification System II	Required Operational Capability
	Stand-Off Target Acquisi- tion Reconnaissance Surveillance System	Required Operational Capability
	Firefinder Radar	Failure Definition & Scoring Criteria
	Multiple Target Electronic Warfare System	RAM Rationale Annex
	Decentralized Automated Service Support System	Independent Evaluation
Tank-Automotive	Ammo Handling Crane for 5-Ton Ammo Truck	Required Operational Capability
	Tactical Wheeled Vehicle Systems	Letter of Agreement
	Main Battle Tank (XM-1)	RAM in Cost and Operational Effec- tiveness Analysis; Log Issues for Opera- tional Test III
RAM and Analysis Position	Infantry Fighting Vehicle	RAM in Cost and Opera- tional Effectiveness Analysis, Manpower and Logistics
	5-ton Truck Product Improvement Program	In-Process Review
	Winterization Equipment for Ground Vehicle Systems	Letter of Agreement

Troop Support

Lightweight Amphibious Container Handler	Letter Requirement
Universal Engineer Tractor	Independent Evaluation Plan
Aerial Radiac Meter	Letter Requirement
Scuba System	In-Process Review Position
Protective Mask	Independent Exchange Plan for Operational Test II
Family of Swiss Boschung Compactors	In-Process Review Position
Silent Generator Set	Independent Exchange Plan
50,000 lb Airdrop System	Required Operational Capability
Topographic Support System Photomechanical	Independent Evaluation Report
Radiac Set VDR-1()	Independent Exchange Plan
Military Amphibious Reconnaissance System	In-Process Review Position
Tunnel Detection System	Letter of Agreement
X-Ray Probe	Letter Requirement
Personnel Bundle & Airdrop System	Letter Requirement
Family of Engineer Construction Equipment	In-Process Review Position
Pipeline Outfit, Petroleum	Required Operational Capability
Radiacmeter IM-185 & Charger PD-4370	Independent Evaluation Report

Command level interest in RAM intensified when LTG John R. Thurman III, Commander, US Army Combined Arms Center (CAC), advised General Starry of a severe shortfall within TRADOC in performing its RAM mission.⁴⁸ Recognizing the problem, TRADOC instructed the Center to recommend corrective action; it also ordered a multifaceted RAM improvement program for TRADOC. Plans for effecting this improvement were then developed and submitted to the LOGC for action. This program included emphasizing command interest in RAM, establishment of an identifiable RAM element in the combat developments directorate of each center and school, establishing the LOGC as the TRADOC final approval authority for RAM content of materiel acquisition, and revision of the coordination and approval process for documents in TRADOC.⁴⁹

The first group of TRADOC RAM interns began classroom instruction at the Army Management Engineering Training Activity on 9 July. Four engineering graduates were recruited and reported to the training activity to satisfy Phase I (6 months) of the 3-year TRADOC RAM Intern Program. After graduation, they will be assigned to TRADOC activities to receive on-the-job training for the remainder of the training. The Transportation School, Engineer School, Ordnance Center and School, and the Missile and Munitions Center and School were selected to train these interns.⁵⁰

"One of the most persistent problem areas of the RAM effort within TRADOC," MG DeHaven acknowledged in his letter to General Starry, "has been the lack of sufficient justification for RAM demands in requirements documents."

In an all-out effort to provide the combat developer proponents with the detailed guidance apparently needed for properly developing acceptable RAM Rationale Annexes, the Center developed an extensive RAM Rationale Annex Handbook. Though still in draft form, this handbook received wide distribution.

Several meetings of the DARCOM/TRADOC/Operational Test and Evaluation Agency RAM Review Panel were conducted. In addition to addressing current problem areas on high visibility systems, providing input and comments on draft defense RAM guidance, and projecting long-range directions for RAM in the Army, the Panel also developed new guidance for scoring and evaluating RAM test data.⁵¹

The TRADOC RAM Course was conducted twice; once at Fort Gordon and once at Fort Lee. The course was significantly revised, including shortening it from 3 to 2 weeks. The revisions resulted in 86 students graduating from the two courses.

In response to a TRADOC request to improve the RAM data situation, the Logistics Center initiated in February, 1979, a TRADOC RAM Data Evaluation System Study (TRADES), which, wrote MG DeHaven in a 10 September 1979 letter to General Starry, enables "TRADOC Centers, Schools, Test Boards, and other activities to access raw data from DARCOM tests, OTEA and test board operational testing, MRSA, LSAR data, the Standard Army Maintenance System

(SAMS), and other RAM and RAM related records." DeHaven commented that, "TRADES will process these raw data and provide custom products for TRADOC combat developers, training developers, and testers." This effort, concluded the LOGC Commander, "coupled with TRADOC support for DARCOM expansion of sample data collection efforts, should go a long way to eliminate our problems in the areas of unavailable/incomplete RAM data and unrealistic RAM requirements."⁵² The Center prepared a contract procurement package and forwarded it to TRADOC for competitive contract services.

As a result of the 6 August 1979 letter from General Starry designating the Logistics Center as the final approval authority on the technical RAM content of all materiel acquisition documents, the Center established a RAM quality assurance review system. The system provided for detailed record keeping, coordinating with HQ, TRADOC, and a detailed review of the RAM portion of all materiel acquisition documentation. There were problems due to the increased workload and the inability to obtain qualified RAM personnel at authorized grade levels.⁵³

While the bulk of the Center's RAM programs moved steadily forward, there were several shortfalls. Writing to General Starry, the LOGC Commander noted that while the Center made significant strides in the user testing policy and methodology area, "our progress in the actual conduct and evaluation of the user test of materiel systems, however, was less gratifying." Regretfully, DeHaven continued, "this situation has not improved...and with dwindling resources the outlook for the future is not promising." The LOGC should do the bulk of the RAM and logistics inputs to evaluation plans and reports and delegate such tasks to the schools on only those systems with limited potential logistics impact. But, he acknowledged, "due to manpower limitations, we delegated the bulk of the work to our schools, while we work directly on only the most involved systems, and merely review the school's inputs on the others." Unfortunately, DeHaven added, "the school's resources are as constrained as ours." Consequently, "we continuously struggle to remain abreast of the test and evaluation process for each system to insure that it has been adequately evaluated." The Center developed improved management tools and procedures to assist in keeping abreast of this process, he continued, "but because of resource shortfalls, I feel sure that not all systems are getting the attention needed. Thus, we continue to incur risks that we are buying and fielding systems which may not be logistically supportable or meet the operational RAM requirements of the user."⁵⁴

MISCELLANEOUS MATERIEL DEVELOPMENTS

Onboard Ammunition Handling Cranes (AHC) for 5-Ton Ammunition Trucks.

The Ammunition Initiatives Task Force identified a need for materials handling equipment (MHE) in forward areas. The equipment was to be installed on 5-ton trucks used to transport ammunition. The task force study further indicated that 5183 trucks were used to haul field ammunition in field artillery, armor, air cavalry, attack helicopter, and mechanized infantry units worldwide. In each of the units, ammunition rounds were being

manhandled as they have been for many years, by breaking down the pallets at the weapon or in unit trains areas. The task force study stated that units operating in future combat situations at the committed rate of fire in artillery units and surge rate in armor units cannot be sustained by sole reliance on manpower.

On 22 September 1978, USAREUR Material Management Center emphasized the need for materials handling equipment by preparing a Proposed Required Operational Capability for onboard ammunition handling cranes for 5-ton ammunition trucks. Headquarters, TRADOC asked this Center on 2 November to review the USAREUR needs and to identify action elements for the development and staffing of a TRADOC and DARCOM required operational capability for the onboard ammunition handling crane for the 5-ton ammunition truck. In January 1979, the US Army Transportation School was assigned as TRADOC proponent agency. Headquarters, DARCOM assigned the US Army Mobility Equipment Research and Development Command as lead materiel developer agency.

A joint work group meeting for the development of a proposed capability for an onboard ammunition handling crane for a 5-ton ammunition truck was conducted 15 February 1979. A proposed required operational capability was developed and forwarded to interested agencies within DARCOM and TRADOC and the DA staff requesting comments and concurrence. A final joint work group meeting will be held in May to finalize the operational capability for ammunition handling cranes for 5-ton trucks.

Squad Automatic Weapon System (SAW).

The LOGC participated in the evaluation of the Squad Automatic Weapon as an alternative to the M16A1AR. Four candidates were nominated to be tested: (1) Ford Aerospace and Communication Corps., for the XM248 Machine Gun, (2) Fabrique Nationale - Belgium, for the XM249 Machine Gun, (3) Heckler and Koch - Germany, for the XM262 Machine Gun, (4) US Army Armament Research and Development Command site for the XM106 Rifle.

The first Squad Automatic Weapon cost and operational effectiveness study advisory group was held in February 1979 to discuss key elements of the study directive and draft study plan. The results supported a required operational capability document which won approval in September, 1979. The second study advisory group took place on 10 July 1979 and discussed key elements and changes to the study plan. During this meeting the Ordnance School stated that the logistical impact could not be sufficiently addressed as input to the cost and effectiveness analysis without data from the direct testing IA and operational testing IA. The study advisory group tasked the LOGC to develop a logistical study plan to address alternate routes of approaching a sufficient analysis of the squad automatic weapon system logistical impact.

The LOGC tasked the Ordnance and Quartermaster Schools to identify and define the logistics implications resulting from fielding the Squad Automatic Weapon in the area of integrated logistics support, Manpower Alterations and

Reliability, Availability and Maintainability . A completed cost and operational effectiveness analysis was scheduled for 25 October 1979.⁵⁶

Anti-Armor Missile Test, Measurement, and Diagnostic Equipment (TMDE).

The Center hosted a conference on 23 March 1979 for TRADOC action officer personnel responsible for direct support and general support Anti-Armor Missile test, measurement, and diagnostic equipment. The TRADOC action officers agreed that evolving missile support doctrine (missile support detachment stationing at brigades) currently being staffed by the Missile School was to be forwarded to the LOGC. LOGC completed the staffing and forwarded it to TRADOC for approval. This gave the materiel developer the missile support doctrine and environment in which this equipment operated. The Missile School developed a task list of support actions at direct support and general support. This was provided to the materiel developer as criteria for the test equipment recommendations. TRADOC and DARCOM hosted a conference to determine the equipment to be modified, to be developed, the scheduling and funding.

In a 26 March 1979 DA Deputy Chief of Staff, Logistics message, DARCOM was directed to establish the necessary program for an Automated Contact Shop Set, complete with risk analysis, schedule and funding requirements for consideration advisory council. They considered FY '79 and FY '80 reprogramming actions if required for accelerated development. TRADOC provided DARCOM with manpower, organization and force structure requirements for inclusion in the program. This action facilitated development of the overall program.⁵⁷

Advanced Heavy Anti-Armor Weapon System (AHAWS) Special Task Force (STF).

The special task force formed at the direction of the Vice Chief of Staff, Army, in June 1978 for selection of the technology and supporting rationale for a TOW follow-on missile was dissolved and the function transferred to the Infantry School. The task force completed Phase I of the TRADOC-study plan which required an investigation of improvements in present systems that could be fielded soonest to defeat the postulated threat. The recommendation of the Task Force to the Anti-Armor Strategy Board was to product-improve the current TOW system. This involved no new technology. The operation and organizational aspects were identical to the present system and only involved improvement to the warhead and propellant in today's missile.

Phase II of the study plan required investigation of new technologies and improved present and proposed systems to include allied nation plans. The Infantry School assumed responsibility for concluding efforts and was designated the study agency for conduct of the cost and operational effectiveness analysis. The Infantry School hosted a joint working group on 21 February 1979 to draft a cost analysis study plan for long range Advanced Heavy Anti-Tank Missile Systems alternatives that supported a Defense and Army Systems Acquisition Review Council and decision in August 1979. A 6

March 1979 study advisory group-1 meeting evaluated the study plan and provided guidance for conduct of the analysis, with a milestone completion date of August 1979.

DARCOM developed technical and performance characteristics for 16 Advanced Heavy Anti-Armor Weapon System alternatives and TRADOC Systems Analysis Activity developed methodology and modeling to integrate and deploy decision data and provide analytical support as required by the study agency, USA Infantry School. The LOGC evaluated the logistics impact when concepts were defined and conducted logistical analysis as requested by the study agency.⁵⁸

Ground Emplaced Mine Scattering System (GEMSS).

Development Test-II continued at Aberdeen Proving Ground. Environmental tests on the XM74 and XM75 mines also continued. A scoring conference covering just the mines was conducted at Aberdeen in March, 1979. The #6 and #7 dispensers were checked and prepared to be sent to Fort Knox, for operational test-II which began in June, 1979.⁵⁹ The last scoring conference, May, 1979, covered mines and the dispensers.

Artillery Delivered Anti-Personnel Munitions (ADAM).

Development Test-III was completed in August 1979, with a production in-process review scheduled for November, 1979.⁶⁰

Remote Antiarmor Assault System (RAAMS).

Currently in production, the remote antiarmor assault system went into follow-on evaluation at Fort Sill in May, 1979, and was completed in August. Development test-III was scheduled for October at Yuma Proving Grounds with a February, 1980, completion date.⁶¹

Surface Launched Unit Fuel Air Explosive (SLUFAE).

A mine neutralization system consisting primarily of a rocket launcher mounted on a M548 track vehicle, the surface launched unit fuel air explosive completed operational test-II in May 1979, with numerous problems being experienced with employment, training, and hardware reliability. A test integration working group meeting was held at Fort Belvoir in August to determine the time frame for conducting operational test-IIA. In conjunction with the US Army Engineer School, the US Army Mobility Equipment Research and Development Command conducted additional tests in September to correct some of the employment and training problems prior to operational test-IIA which was scheduled for the spring and summer, 1980. In conjunction with the Engineer School, the Logistics Center prepared the RAM₂ and logistics annexes to the current evaluation plan, December, 1979.⁶²

Portable Mine Neutralization System (POMINS).

A test integration work group was held on 7 March 1979 at Fort Belvoir, chaired by Mr. Timothy Small. In the safety analysis it was determined that the fuse configuration did not meet current military standards and it was replaced. Consequently, the portable mine neutralization system was taken out of the international materiel evaluation process and placed in research and development.

Collective Protection Equipment (CPE).

On 1 February 1978, HQDA forwarded to Congress a proposed Army plan for incorporation of Nuclear, Biological, Chemical (NBC) collective protection into selected combat vehicles having Congressional interest. This plan was jointly prepared by TRADOC and DARCOM and approved by the Vice Chief of Staff on 12 January 1978. As a result of no Congressional feedback, TRADOC was informed, in October, by HQDA, to proceed with the plan as recommended to Congress. A broad spectrum of vehicles and systems were identified by TRADOC for inclusion in the plan.

A meeting was held at Chemical Systems Laboratories (CSL), Edgewood Area, APG, MD, on 2-3 May 1979. The purpose of the meeting was to report to the armored vehicle user-developer community the status of CSL activities in the combat vehicle program. Discussions centered on threat, current data gaps, decontamination studies and vehicular protection to crews. CSL looked at three types of chemical, biological, radiological protection for combat vehicle crews: (1) an overpressure filtered system, (2) a ventilated face mask system, and (3) a combination of these, called the hybrid system. Of the three, the hybrid system appeared to be the most promising while considering the activities required of the crew during combat operations. Also, under study were interior and exterior paints which resist chemical agents and decontamination, and changes to water-based decontaminants which were not as destructive to paints, gaskets and instrumentation.

A second meeting was held at CSL specifically on Hybrid Collective Protection Equipment (HCPE). Three systems--XM1 Tank, ROLAND and Forward Area Alerting Radar--were selected. Hybrid application requirements were discussed and input by Mr. Dunstone from Project Managers Office, ROLAND was accommodated. Representatives for the XM-1 Tank and the Forward Area Alerting Radar, although invited, did not attend this meeting. Mr. Pieszack, from NBC Task Force Office of US Army Tank-Automotive Research and Development Command, stated that he will insure that XM-1 and Forward Area Alerting Radar representatives attend future meetings.

On 27 April 1979, HQDA tasked TRADOC to identify and develop a priority list for collective protection application for all vehicles, vans, and shelters. LOGC Associated schools were tasked to develop a list of those systems for which they were proponent, that required collective protection, the type of application preferred and the recommended development and application

priority. Negative replies were received and forwarded to TRADOC from the Quartermaster and Transportation Schools. These schools considered nuclear, biological, and chemical individual protection equipment adequate. The Chemical Directorate of the Ordnance School cited a collective protection equipment need for the NBC Reconnaissance Vehicle. The Ordnance Directorate of the Ordnance School requested collective protection for all equipment shops that they utilized. Missile and Munitions Center and School desired protection equipment for PERSHING, NIKE, and TOW/Dragon DS/GS shelters and vans.

Sergeants Major Academy.

Three research study topics were provided for inclusion in the research study projects to be undertaken at the Sergeants Major Academy. The three study topics consisted of, (a) impact of the restructuring of career management field 23 on the Army's ability to maintain complex tactical air defense equipment, (b) impact of consolidation of Army MOS duties, and (c) the ability of the current Army personnel acquisition process to provide manpower⁶⁵ assets tailored to meet the quality and quantity requirements of the future.

SUMMARY

"Next to manning the force," argued General Meyer, "the management of modernization is the most complex challenge facing the Army in the 1980s. Modern weapons systems will be integrated into the force at an unprecedented rate." Unfortunately, inflation greatly affected this modernization and as a consequence, "if we are to exploit the technological advantages of these modern weapons and support systems," concluded the Army's Chief, "we must make the hard decisions that maximize the return on the defense resource investment."⁶⁶ By supporting the Army's modernization efforts during this fiscal period, the US Army Logistics Center more than did its share in making General Meyer's plan a reality.

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Chapter 4

CONCEPTS AND DOCTRINE

"The decade of the 80s, beginning as it does with evident hazard to critical national interests, looks to be a time of challenge, a time of continuing potential crisis," noted Army Chief of Staff, General Edward Meyer. "Such situations pose great dangers. For the nation prepared, they also provide great opportunities. The US Army--by its preparations toward a real and visible military capability--seeks to see the nation and its values sustained through the critical decade of the 80s."¹

General Meyer's great concern after assuming his present position was with the Army of the future. "Throughout the Army, creative minds are working to lay out the basic skeletal structure of the Army of the eighties to ensure that we package the kind of exciting innovations now on the horizon into a force which guarantees an Army prepared for this coming decade--an Army prepared for war."²

One of the major innovations initiated by the Army in the past few years which was designed to prepare the Army for the eventuality of war was Division '86 and the Battlefield Development plan, which laid out alternative structures for the Army of tomorrow.

ANALYSES

DIVISION '86

Initiated in 1978 by General Donn A. Starry, Commander, US Army Training and Doctrine Command, the Division '86 project was designed to restructure the Army's heavy division organization, "laying out alternative structures for the Army of tomorrow."³ Drawing on his experience as Commander of the V Corps in Europe, General Starry saw the Corps' primary functions in terms of a "central battle," that part of the battlefield where all aspects of firepower and maneuver merge to cause a decision in the outcome of the battle. What was needed, he argued, was a battlefield development plan, and he set 1986 as the date for implementing it.

As the proponent for Army logistics doctrine, the US Army Logistics Center received instructions from General Starry to study battle support and reconstitution during the central battle. Battle support entails the provision of those critical supplies and services necessary to support the force and systems committed to the conflict. It should be noted that the armored division of 1986 will be larger, have more firepower, higher consumption rates, and much more sophisticated equipment than the current "H-series" TOE armored division. Logistics support will require a commensurate increase in quantity and effectiveness.

The Army moved ahead with the Division '86 study and the concept of a standard heavy division with flexible tactical organizational structure. Division '86 was designed to provide an objective force from which analysis of the equipment and personnel requirements could be conducted, and the necessary follow-on decisions made. Specifically, it addressed such major force structure issues as the size of the division, its required administrative and logistics capability, its aviation structure, and the allocation of responsibilities at each echelon.

In addition to Division '86 (Heavy), the Army '86 studies also encompassed the light division, corps, and echelons above corps. Force structure requirements resulting from these studies were viewed from a total Army standpoint to ensure proper force balance.

Current battlefield technology dictated a major review of structural requirements. Clearly, the roles of brigade and division commanders were expanded: The brigade commander will be required to take on more of the first echelon fight, while the division commander must see deeper and be capable of also engaging the second echelon regiments. As a consequence, the Army must focus on determining the proper division of functional effects and responsibilities among corps, division, and brigade.

The Division '86 study plan was developed by the Combined Arms Center in November 1978 and updated in December. This plan assigned specific responsibilities to the 10 Task Force leaders, identified the problems facing the Army to meet the numerically superior and increasingly sophisticated threat of the next decade, assessed the impact of the problem by comparing current organizations and doctrine with new systems to optimize the potential of new materiel systems of the 1986 time frame, and stated the objective of the study. Also, the plan identified essential elements of analysis and directed the study methodology.

The LOGC Commander was designated as Task Force Leader for the task of Logistics Support during the Central Battle and Reconstitution during Force Generation. The support team consisted of associated centers and schools; i.e., Quartermaster, Transportation, Ordnance and Chemical Center, Missile and Munitions Center, Administration Center, Academy of Health Sciences, other task forces and proponents in the TRADOC community. The task force leader was assigned responsibility for developing and analyzing the Division '86 Combat Service Support Operational Concepts and Unit Organizations of the Division Support Command. Specifically, the overall objectives were to assess force structure and unit TOEs of the DISCOM, develop a basis for resource decisions regarding materiel and manpower, assess the impact of echelons above division (EAD) on the DISCOM, identify deficiencies and shortfalls and potential solutions to DISCOM structure, and finally, identify potential near improvements to current combat service support doctrine.

To accomplish its stated goals, the Center participated in a 16 November Pre-General Officer Workshop, and a General Officer Workshop I, G01, 29-30

November, at Combined Arms Center Headquarters. It also conducted three Logistics Support/Reconstitution task force meetings on 6-7 November, 19 December, and 31 January-2 February.

During the 12-13 March 1979 Pre-General Officer Workshop, the TRADOC Commander introduced an expansion of the Division '86 project by directing the task forces to conduct an analysis of the corps due to its mission and interaction with division operations. The title assigned this task was "Corps 86." It was concluded that the Division '86 organizations couldn't stand alone and were therefore dependent upon required corps involvement.

The TRADOC Commander also directed the Combined Arms Center to chair a study group to evaluate the alternative fixed brigade division structure which featured rigid assignments of maneuver battalions to brigade headquarters and decentralization of current division base units and functions to the brigade. The study was asked to determine whether a fixed brigade division organization should undergo specific analysis as a candidate for the Division '86 study.

Division/Corps 86. During this report period, the LOGC and its associated schools continued development of the Division Support Command structure for the objective 1986 heavy division. The LOGC Commander remained the Task Leader for Logistics Support during the Central Battle and for Reconstitution. In the case of Reconstitution, a personnel constraint required contractual assistance. In July, a contract was let with the BDM Corporation to accomplish this part of the LOGC tasking. On 7 August, an initial study advisory group (SAG) meeting was held with the contractor. The contractor's work plan was approved with some changes. One significant modification involved the extension of the contract completion date to 15 December 1979. A subsequent meeting was held on 27 September to review the contractor's efforts and to provide guidance. The next group meeting was scheduled for November 1979.

On 4 and 5 April, the LOGC hosted a General Officer workshop on Division '86. Guidance was received on the development of alternative operational concepts, as well as on continued development of the DISCOM automated unit reference sheets. The LOGC and associated schools entered initial reference sheets into the computer files for their proponent organizations. The Ordnance and Chemical Center and School (OCC&S) assisted the Armor, Artillery, and Infantry Schools in the development of consolidated maintenance companies for tank, mechanized infantry, and artillery battalions. The LOGC and associated school representatives also participated in work groups of other Division '86 task forces.

In July, the Combined Arms Center directed that in addition to a conventional DISCOM, the LOGC should explore the development of an alternative DISCOM concept employing brigade support battalions. The brigade support battalion concept was developed through task force action during the period 6-10 August and briefed to the Commander, TRADOC, during the Pre-General Officer 13 August meeting. "Several issues are still in the process of being completed," MG DeHaven told General Starry. "These include a final

evaluation of cooks and field feeding by the Quartermaster Schools, HETS and trucks by the Transportation School, and a report by BDM Corporation on reconstitution." Continuing, he commented that, "any major organizational structure changes to support reconstitution will most likely be effected within the Corps CSS structure."

An alternative DISCOM size of 3,317 spaces was presented at the General Officer Workshop, 22-23 August. The Commander, TRADOC directed a 100-space reduction in the DISCOM and an addition of a nuclear, biological, and chemical company of 152 spaces. During this same workshop, the development of light divisions was also directed. That same month, TRADOC asked the LOGC to develop the combat service support operational and organizational concepts required to support a light infantry division. "In order to do this," wrote MG DeHaven, "we coordinated several meetings with proponent schools and supporting centers to develop the logistical support in a machine-intensive, high-mobility environment and these reports were then forwarded to CACDA."⁶

In a 31 August message, TRADOC directed the DISCOM size be kept to a maximum of 3,150 spaces (excluding the NBC company). On 19 September, this issue was presented to TRADOC, along with a decrement list of 63 additional spaces required above the 3,150 figure. The LOGC proposed a heavy equipment transporter (HET) company. Also, the LOGC was advised to justify additional spaces and present recommendations concerning organizational maintenance companies for maneuver battalions.

On 3 October, the CG, TRADOC, was again briefed. He approved the 63 additional spaces and directed that the concept of battalion organizational maintenance companies at armor, mechanized, and artillery battalion levels be deleted and organizational maintenance be returned to company/battery level. This action returned 97 direct support spaces to the DISCOM. In summary, a DISCOM strength of 3,213 (excluding the NBC company) was approved. With the NBC company and the 97 direct support spaces, the DISCOM strength reached 3,462. Automated unit reference sheets supporting this strength figure were being finalized.

During the period 18-21 September, the initial task force met at Fort Lee to develop a concept for the support of the light division. The task force reconvened from 1-5 October, to further develop the concept. Concept statements were prepared for an initial review by TRADOC.

TRADOC issued the Corps '86 tasking directive, study directive, and study plan. Additional personnel were assigned to the Logistics Systems Division for Corps '86 development. This study developed the most combat effective organization for the Army's heavy corps to facilitate integration of new and advanced materiel systems, operational concepts, and human resources into corps elements outside the division. Corps '86 interacted with Division '86, supplying the necessary command structure and support needed to permit Division '86 to utilize its full potential on the battlefield.

The study was divided into three phases: the formulation phase (September 1979-January 1980); the objective corps development phase (January-July 1980); and the evaluation and synthesis phase (July-December 1980). The formulation phase was designed to see the development of missions, operational concepts, and candidate organizations. The last phase was planned to see the finalization of the objective corps, its gaming/analysis and presentation to the Chief of Staff of the Army (CSA).

The scenario-type analysis used during the Division War Gaming (DIVWAG) represented yet another portion of the overall Division '86 Study involving the Center and its associated schools. Based primarily on War Gaming results, the analysis focused on a comparison of the present division (C-series) updated with 1986 Equipment and the Objective/Division '86 (S-series) organizations. Because these results were limited in the logistics area, in terms of time and scope of gaming, other data sources and military judgment filled the void. Gaming of the C-series base case began originally in February and ended in July with data being received at the Center and disseminated to the Schools in August. However, according to the LOGC Commander, "CACDA discovered an error in a calculation made by the model that CACDA considered significant enough to require the regaming of the C-series." As a result of the error, DeHaven contigued, "we scrapped the alternative level 2 game which began in late July." Regaming of C-series defense began in late September and was scheduled to end in late November. The Objective Division S-series defense (incorporating the Brigade Support Battalion) game was planned for 30 November. The LOGC was prepared to brief interim results of the C-series versus Objective Division (Defense) at the General Officer IV Workshop scheduled for next May.

Impact of Division '86 on Army Intra-Theater Airlift Requirements. During the course of Division '86 development, TRADOC agreed to provide the US Air Force Military Airlift Command (MAC) with two estimates of Division '86 impact on intra-theater airlift support provided by the airlift command to the Army. The first estimate was developed by the LOGC and briefed to them in August. This briefing provided a general estimate of the impact based on data available at that time. The second estimate will be in more detail, and it will be developed by the US Army Transportation School and provided to them by June 1980.

32d Army Air Defense Command

On 17 August 1979, MG Charles F. Means, Commander, 32d Army Air Defense Command requested LOGC assistance in the development and validation of the optional support structure for the 32d. MG Means noted the complexity of the current concept of operation and felt it made effective management of logistics resources difficult to achieve. He argued that because three major USAREUR support commands and their subordinate units and communities provided command logistics support, he depended upon outside resources for conventional support including ADP management information. He concluded that under the present concept of operation, his command lacked adequate wartime support. The LOGC acknowledged his request for assistance, and on 1 November, LOGC

personnel visited the 32d and discovered a number of areas where the LOGC could support efforts to improve their logistics structure and operations. The Center forwarded him its suggestions on 15 November and asked for comments and approval.

PROGRAMS

Retail Inventory Management Stockage Policy (RIMSTOP). On 9 August 1978, the Office of the Deputy Chief of Staff, Logistics, established an Army Retail Inventory Management Stockage Policy steering group chaired by its own Director of Supply and Maintenance and composed of representatives of the Army staff and TRADOC/LOGC, US Army Forces Command (FORSCOM), and US Army Materiel Development and Readiness Command (DARCOM). SAILS/DS4 milestones were established for implementation of the mandatory (shortage cost equations) and nonmandatory (essentiality code considerations) provisions of the stockage policy.

On 19 October, the initial steering group meeting was held at the Office of the Deputy Chief of Staff, Logistics, and the Concepts and Doctrine Directorate represented the LOGC. LOGC briefings were provided to the steering group on the Retail Stockage Policy Evaluation of candidate RIMSTOP equations by the Operations Analysis Directorate; SAILS/DS4 and Selected Items Management System-Expanded by the Management Information Systems Directorate; and the Combat Authorized Stockage List by the Concepts and Doctrine Directorate. This initial meeting offered no specific guidance.

RIMSTOP requirements remained firm except for the choice of a safety level equation, which was determined by the Retail Stockage Policy Evaluation. All RIMSTOP equations were incorporated by the Management Information Systems Directorate Systems Change Request for SAILS and DS4. These requests were programed by the Computer Systems Command. The Management Information Systems Directorate envisioned increases in runtime for both SAILS and DS4 for fielding in CY 1981 due to the revised stockage determination logic.

Administration/Logistics Systems Program Review (A/LSPR). The LOGC, its associated schools, the Administration Center, and the Academy of Health Sciences were scheduled to conduct an A/LSPR for the Vice Chief of Staff of the Army (VCSA) in February 1980. The eight issues developed for discussion at the Review were personnel replacement operations; medical treatment and evacuation; ammunition supply; POL supply; maintenance, recovery, and evacuation; transportation movements management; and deprocessing and issuing of theater reserves-1 (TR-1). The issues evolved within a conventional "transition phase" (M to D+30) war in Europe considering real world constraints. The Review hopes to find a better way to perform those critical combat service support functions necessary to support tomorrow's war with today's force structure on the ground. Briefings are currently scheduled in November for the Commander, LOGC, and in January for the Commander, TRADOC.

Communications Support Requirements (COMSR). The Communications Support Requirements program completed a special review of corps and division requirements in conjunction with the US Army Signal Center's Integrated Tactical Communications System Update Requirement. This review resulted in the addition of the division ammunition officer's communications requirements for the control of class V operations within the division area of operations. Additionally, selected needlines were identified as representative of position and location needline requirements for class III and V distribution points, maintenance contact teams, convoy control, and movements control.

Reparable Secondary Items Recovery Improvement Program (RSIRIP). At the 7 and 8 December 1978 meeting of the Army Logistics Policy Council, the desirability of removing retail direct support, general support, and installation retention levels from all items with recoverability codes D and L and placing these items on the automatic return item (ARI) list was questioned. The LOGC Commanding General recommended that the retention levels for retail (SAILS, DS4, and MCR-500) systems for all recoverability code D and L items be removed. The result of this removal would be to automate in SAILS the reporting, as "excess", of nonautomatic return item assets and the automatic return of those assets held above the requisitioning objective. He suggested that retail level systems automatically generate excess reports or return item retrograde orders for unserviceable recoverability code D and L assets held below the requisitioning objective not locally reparable. Furthermore, he argued the need for the manager to override the above routines for the purpose of managing unserviceable assets that apply to installation maintenance programs and theater army repair programs. And finally he ruled against adding all recoverability code D and L items to the item list as this would result in an unnecessary expenditure of transportation funds and inflate wholesale level retention inventories and excesses. In a letter dated 22 January 1979, the Deputy Chief of Staff, Logistics, stated that retention levels would be removed from recoverability code D and L items concurrent with the fielding of SAILS ABX and DS4 and that the automatic return item lists would not be expanded to include all items with recoverability codes D and L.

On 20 September 1978, the ODCSLOG, DA, hosted a Discipline of Army Maintenance Management action planning conference. The meeting developed specific tasks required to alleviate and resolve problem areas and, if possible, assign responsibility for corrective actions. Representatives from the LOGC, various schools, FORSCOM, and field units attended. Topics discussed included command emphasis and training and inspection procedures. On 15 February 1979, the DA DCSLOG announced to all major commands that the Chief of Staff approved a program to improve maintenance operations throughout the Army. The message identified five primary areas that required immediate and sustaining action:

- (1) Strength command knowledge and attention.

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- (2) Streamline maintenance operations.
- (3) Improve maintenance training for all personnel.
- (4) Improve maintenance personnel management.
- (5) Improve publications, tools, and repair parts support.

Specific DA directives to appropriate agencies implemented the program.

General Support (GS) Base Expanded. Commensurate with the Army's "Implementation of Logistics Concepts for Use in Policy, Planning, Doctrine and Training" (Phase II Concepts), actions were initiated to forward deploy three general support repair parts companies and establish corps level combat authorized stockage lists (ASLs) for support of anticipated wartime consumption rates for repair parts within the US Army Europe. This expanded base policy established a "depth" of general support inventory stockage of air line of communication (ALOC) items based on "anticipated wartime consumption rates" and "air eligibility" in lieu of experienced peacetime demand. The policy required a methodology for determining these anticipated consumption rates, or the ASL "depth", and it demanded DA ODCSLOG guidance. The inventories were to be operation and maintenance, Army (OMA) and procurement, Army (PA) funded, and accountability/control of these assets rested with the general support unit (GSU). USAREUR considered two proposals to establish these unit lists.

One proposal produced an expanded unit listing consisting of two major segments:

(1) A combat ASL segment of from 6,000 to 7,000 lines established for 30 days of supply based on subjectively determined anticipated wartime consumption rates (depth). This segment provided backup support (range) only for combat essential repair parts that the direct support units stocked for a 45-day level at the organizational level.

(2) A demand supported ASL segment of 3,000 to 7,000 lines based on an aggregate of all issue priority designator 01 through 03 equivalent demands actually received from all supported units (range). The "depth" of this ASL segment was relatively shallow (a minimum stockage of two each per item and a maximum stockage based on IPD 01 through 03 demands) since they supported only peacetime readiness and did not enhance wartime sustainability.

The other proposal required that DARCOM compute the anticipated combat consumption rate (depth) and select appropriate combat essential items (range) based on engineered wartime failure factors or on war reserve computation "X factors", item essentiality codes, and maintenance allocations loaded into the support list allowance card (SLAC) program and the Provisioning Master Data Record (PMDR) contained in the Commodity Command Standard System (CCSS). The computation was based on the USAREUR time phased force deployment list (TPFDL), the DA Logistics Structure and Composition System (LOGSACS), and the major item line item numbers and densities provided by the DARCOM Depot

Systems Command (DESCOM) to support USAREUR's 2d, 3d, 21st, 7th, and 13th Support Commands (GS). This was basically the initial materiel support computation method used to support the deployment of new equipment or organizations or to effect "preplanned resupply" actions by DARCOM under the provisions of AR 700-18 and AR 700-120. The expanded general support base also included the distribution of a 10- to 15-day portion of the non-air line of communication theater war reserve for class IX and selected class II items to the general support unit level. The requirements were determined under the commodity command standard system automation of the provisions of AR 11-11 which based "depth" and "range" on the item's "noneligibility" for ALOC; the essentiality code of the repair part and logistics control code of the end item; peacetime demands mathematically increased via an "X factor" to a wartime consumption rate; item recoverability; and the determinations of the support major command (MACOM) commander. These assets were Army Stock Fund and Procurement, Army funded, and accountability and control of these assets remained with the theater materiel management center (TAMMC). On 2 March 1979, DA ODCSLOG published guidance for the implementation of an expanded inventory base at the general support level.

This general support supply base (GSSB) stocked and managed 30 days of supply (DOS), based on expected wartime usage rates, to support deployed and reinforcing forces. Additionally, the supply base was authorized a 2-year retention level, except for recoverability coded D and L items, at peacetime rates to support deployed forces only.

Air line of communication items eligible for stockage were assigned essentiality code C for class IX items and essentiality code A for selected class II items as obtained from the Army Master Data File (item must be essential); on at least one direct support unit or general support unit authorized stockage lists supported by the supply base (ASL umbrella); and be approved for addition or retention by an stockage lists review board.

General support supply base stocks were considered a general support safety level, "owned" and controlled by the corps, to be expanded during wartime to support the direct support units 45 days of supply class IX ASLs at combat rates. Additional procedures for direct supply support (DSS) in wartime were stated in DA Cir 700-28 dated 1 Dec 78.

The Theater Materiel Management Center managed and "owned" non-ALOC class IX items. These items were considered part of the prepositioned war reserve materiel stocks (PWRMS). A minimum of 10 days of these items were to be located forward in the corps supply base. At a planned state of alert, the prepositioned war reserve materiel stocks in the corps were transferred from the management and ownership of the Management Center to the management and ownership of the corps Materiel Management Center.

50,000-Pound Rough Terrain Container Handler (RTCH). Mr. Eric Orsini, Deputy for Logistics to the Assistant Secretary of the Army for Installations, Logistics, and Financial Management, in a memorandum, dated 8 December 1978, raised a number of questions concerning the 50,000 pound Rough Terrain

Container Handler. The questions involved the suitability of the item to operate in environments other than joint logistics over-the-shore (JLOTS); types, sizes, and quantities of containers handled by different types of supply units; low-density authorizations for the item; and mobility and transportability considerations. The Center responded to these questions and issues at a 28 February 1979 briefing. The area of greatest concern involved the field testing of supply and ammunition units to operate effectively when equipped with the 50,000 pound Handler. The Center pointed out that such testing was not yet possible since the item had not reached that stage in the acquisition process. All attendees agreed that such field testing of the units must be accomplished at the earliest date practicable.

Water Distribution in an Arid Environment. The LOGC conducted the fourth Joint Working Group (JWG) on Water Distribution in an Arid Environment on 13 February 1979. After discussing completed and ongoing efforts, the group concurred that its objectives had been met. The group initiated several mid-and long-term developmental efforts, and the LOGC was tasked to monitor them. Also, additional assistance for the XVIII Corps was requested, if required. Due to the many ongoing efforts, increased interest, and many commands and agencies involved, the group concurred that a yearly or an "as required" meeting was necessary as an update. As the central management office for all water related research and developments, the Office, Chief of Engineers, was asked to become actively involved in these efforts.

Logistics in the Overseas Theater of Operation (Briefing). In November 1978, TRADOC tasked the LOGC to develop a briefing for General Starry that addressed the logistics support systems from the forward platoon of the covering force back to the water's edge. The Functional Logistics Division, Concepts and Doctrine Directorate, undertook this action and presented its findings on 30 April. This briefing provided a baseline description of how the logistics system, less medical and personnel, worked doctrinally. It was viewed as a possible starting point for other actions such as the mission area analysis (MAA) and Admin/Log Systems Review. Once staffed, presented, and its content approved, the briefing was to be refined and published to provide the TRADOC logistics community a baseline for development of more detailed statistics and analysis.

STUDIES

Weapons System Replacement Operations (WSRO). In February 1979, TRADOC representatives briefed USAREUR staff and Corps and division commanders and staffs on the Weapons System Replacement Operations concept. In a 20 February letter, General George S. Blanchard, Commander in Chief, USAREUR, told General Starry, that with certain changes, "the WSRO concept can be incorporated into existing procedures and substantially improve our capability to sustain USAREUR forces in combat." Blanchard suggested that the Weapons System Status Report not serve as a requisition and that the scope, role, and authority of the Weapons System Manager be further defined.¹¹ Representatives from the LOGC, Administration Center, and the TRADOC Tactical Doctrine Office were scheduled to refine the concept in late 1979.

Communications Security Equipment Logistics Review (COMSECLOG). The Communications Security Equipment Logistics Review final report was staffed with all major commands by the Signal Center and forwarded to the LOGC for Review Advisory Group (RAG) Chairman action. On 4 April 1979, the LOGC forwarded the commands' comments to all group voting members requesting their concurrence or nonconcurrence on action(s) taken on the comments. All voting members concurred and the report was forwarded to TRADOC recommending approval of the final report. LOGC involvement in the study ended during FY 79-3.¹²

Army Command and Control Master Plan (AC²MP). In December 1978, the LOGC Commander dispatched a message proposing expansion of the current AC²MP effort to include combat service support organizations. Concurrences were received from DA DCSOPS, TRADOC, CAC, and ADMINCEN and on 18 December 1978, the proposal was presented to the steering group.² Final action was deferred for further evaluation and presentation to the AC²MP Council on 17 January 1979. On 10-11 January 1979, the Combined Arms Center chaired a work group conference at LOGC to develop recommendations for incorporating combat service support into AC²MP. The work group recommended that the present contract be expanded to accomplish as a minimum the baseline identification and assessment for all combat service support functional areas and levels to include division support command battalions through DARCOM. This was completed by 20 September 1979. \$500,000 was the estimated cost. On 17 January 1979, DCSOPS agreed with the AC² Council concerning the need to develop a support systems architectural plan that was consistent with and supportive of the ongoing AC²MP effort. During the coordination phase, ODCSRDA and DARCOM voiced strong opposition for using \$500,000 of research, development, testing and evaluation funds for contractor study efforts. An alternate solution was developed that provided a less ambitious effort for lesser funds (\$75,000).¹³

Restructured General Support (RGS). Comments on the draft restructured general support final report were received from the field. There was one nonconcurrence from the Office of the Chief, Army Reserve. The associated schools provided their input on comments relevant to their proponentcy areas, and this data was incorporated into the final report. The report consisted of two parts: Appendix T, Coordination, and appropriate errata sheets pertaining to the main report. The LOGC Commander approved the final report and forwarded it to TRADOC on 27 February 1979. The report recommended approval of the restructured general support concept followed by detailed unit to unit implementation planning to include an analysis of the force structure impact, personnel supportability assessment, and quantification of its impact on the program objective memorandum. The TRADOC Commander approved the final report on 7 March and subsequently forwarded it to DA, the Army staff, major commands, and interested agencies.

On 21 May, the support concept was briefed to the Select Committee (SELCOM) and the Army Vice Chief of Staff. The concept was approved and detailed unit-to-unit implementation planning was authorized. DA DCSLOG tasked various agencies on implementation planning. Present LOGC participation included updating the related draft planned TOEs. The Concepts Analysis Agency (CAA) was to conduct various analyses associated with

implementation impacts. A target date for resubmission¹⁴ to the select committee and vice chief was scheduled for March 1980.

Forward Arming and Refueling Point (FARP). A Forward Arming and Refueling Point Conference was convened at the LOGC on 26 October 1978. Representatives from the US Army Aviation Center, US Army Training Center, Quartermaster School, TRADOC, the Combined Arms Center attended. The conference addressed each of the ten problem areas identified at the Forward Arming and Refueling Point Logistics Support Conference held at Fort Eustis, Virginia, during FY 78-3. Two problems were resolved: Draft TC 1-60, FARP Operations, was corrected and the mechanicals were sent to the Training Support Center for publication; and immediate NATO cross-servicing actions were accomplished. The primary proponent briefed other problems, and discussed progress towards resolution. Additional effort was required in the basic areas of class III resupply, class V resupply, MHE requirements, and simultaneous hot refueling and rearming. These actions were outlined with applicable milestones.¹⁵

Special Analysis of Standard Tactical Wheeled Vehicle Requirements (TACV). The Fifth General Officer Study Advisory Group for Comprehensive Program of Wheeled Vehicle Needs met at the Pentagon on 23 January 1979. The Northrop Services Corporation, retained by the group, presented an evaluation of the Army's Tactical Vehicle Program and outlined a plan for its defense during Program Objective Memorandum and budget deliberations. A part of that plan involved the adoption of TACV study recommendations that defined the future tactical vehicle fleet by specific vehicles. The Study Group approved the Northrop report and accelerated the processing of the TACV study. The Transportation School distributed the coordination draft for review on 6 February with a suspense of 23 February for receipt of comments. TRADOC forwarded the final draft report to DA for approval on 28 February. The Sixth General Officer study advisory group met on 16 March and approved a DA DCSOPS proposal that the TACV study be approved for baseline planning except for vehicles in the 1/4- to 5/4-ton ranges, which should be examined for possible replacement by configurations of the high mobility weapons carrier, under examination by the Combined Arms Center. The final report was published in July.

The Army staff adopted it as a baseline planning document for development of the future tactical wheeled vehicle fleet. At the same time, the staff approved the "Special Analysis of Standard Tactical Wheeled Vehicle Requirements Expansion (TACV-EX) Study" and the LOGC published it in May. Based on this study, the Army adjusted its requirement for 2 1/2-ton and 5-ton vehicles by substituting about 9,000 5-ton tactical vehicles for 2 1/2-ton vehicles. In September, the Transportation School published the final draft report, "Addendum to the Special Analyses of Standard Tactical Wheeled Vehicles (TACV-Addendum)." This study determined that a 10-ton tactical wheeled vehicle was the most cost-effective vehicle in the 5- through 10-ton payload range for the resupply of ammunition in armor, mechanized infantry and artillery battalions in the European theater. An excursion to the study also ascertained that this same 10-ton vehicle worked better in the General¹⁶ Support Rocket System support role. The study was sent to HQDA for staffing.

Bulk Petroleum Distribution. The Department of the Army sponsored, US Quartermaster School performed study on Bulk Petroleum Distribution in a Theater of Operations was approved by the Vice Chief of Staff, Army on 30 March 1979. The Army Deputy Chief of Staff for Logistics created a project advisory group to direct, manage and monitor the implementation of the study recommendations. As members of this group, the LOGC and the Quartermaster School supported the implementation program by revising applicable field manuals to incorporate doctrinal changes; revising petroleum unit TOEs to reflect study recommendations; and identifying petroleum material requirements and preparation of a material requirements plan. (As a basis for this action, the Quartermaster School hosted a worldwide material requirements conference in November 1978.)¹⁷

Development of a Communications Zone (COMMZ). On 19 December 1978, the Deputy Chief of Staff for Logistics provided the major commands a draft tasking letter concerning implementation instructions for Phase II, Logistics Operations in the Communications Zone. In response to a TRADOC request, the LOGC reviewed the draft tasking letter and forwarded comments to TRADOC on 18 January. In accordance with the draft tasking, the Center acted as the executive agent for TRADOC, and TRADOC acted as executive agent for the Army Logistics Chief of Staff. This meant that the Center coordinated all of the actions underway with all of the major commands. The title of the project was changed to Development of a COMMZ. This was done within the Logistics Center to more accurately reflect the projects.¹⁸

On 25 May, TRADOC forwarded the 24 April DA tasking letter concerning the development of the COMMZ. This tasking required a management plan for conducting the project and a milestone schedule to be submitted to HQDA within 120 days of the receipt of the tasking letter. The LOGC held meetings on 6 and 14 June, at which it distributed the draft management plan for comments. A serious reservation existed as to whether the project could be completed within the two years envisioned by HQDA. In June, the LOGC advised TRADOC that either it receive additional manpower or the project would take 4 years. The management plan was forwarded on 24 September to HQDA. As General DeHaven noted in his letter to TRADOC, "we are running the COMMZ project as a separate but closely related effort to the Echelons Above Corps Study."¹⁹

Munitions System Support Structure (MS3). The LOGC received a Department of the Army message on 13 March 1979 listing the issues that had surfaced during their review of the Munitions System Support Structure. On 27-28 March, representatives from the Center and the Missile School attended a conference at the Pentagon at which many of these issues were resolved. The Office of the Chief Army Reserves raised the only dissenting voice, objecting to the increased size of support structure units without corresponding increases in supervisory grades. On 13 June, the Center presented their study to the Army staff, concluding that this study offered the potential for improved ammunition handling capability in the Army.

The Missile and Munitions School restructured the two ammunition companies to provide smaller units with increased supervision as required for the

reserve component acceptance. The Transportation School conducted a complete transportation impact assessment to provide a clearer view of what the structure concept does in terms of movement requirements. The Center's Force Structure Assessment Division prepared a manpower analysis paper to provide a space trade-off analysis for the ammunition transfer point and the quantification of the total source requirements for implementation of the proposed munitions concept. The Center planned to forward these results to TRADOC not later than 29 February 1980. The ongoing extended study effort (MS3-X) was formulated to look at the developments scheduled for the 1981-1989 time frame.²⁰

Improved Maintenance Concept for Lead-Acid Batteries. On 25 October, the LOGC developed and forwarded to the Army staff proposed doctrinal changes for an improved maintenance concept for lead-acid batteries. The Center argued that user organizations be allowed to charge batteries in service, in equipment but not in confined areas. The organization mechanic was responsible for charging the batteries. They further recommended that the table of distribution and allowances and the modified table of organization and equipment authority be established for the activation, testing, charging, repairing, and direct exchange of batteries only at the direct and general support levels as authorized by commanders of post, camp, station, or comparable commander. Based on this proposed doctrinal approval, 20 additional actions were also recommended to the staff for approval. The Logistics Deputy expanded this recommendation doctrinal change to include a concurrent effort to update base tables for maintenance support units and in September, requested comments from the major commands. Both the LOGC and TRADOC advised the Logistics Chief that they took exception to updating the base table of organization and equipment for direct support and general support units.

Development of a Maintenance Concept for Nickel-Cadmium (NICAD) Batteries. On 19 February, the Center sent the major commands and other interested agencies a draft proposed concept paper for the support of sealed NICAD batteries for their review and comments. The LOGC hosted a final joint working group meeting on 1 and 2 May 1979. Representatives from DARCOM, FORSCOM, TRADOC, Deputy Chief of Staff for Logistics, the Logistics Evaluation Agency, the Missile, Ordnance, Transportation and Signal Schools attended. This meeting recommended that one configuration charging station with 15 chargers (PP 7286), two analyzers and an adequate number and mix of adapter cables mounted in an S-280 shelter be assigned to each division forward maintenance company and located in each brigade trains area. The approved concept was forwarded to the Army Deputy Chief of Staff for Logistics on 3 August²¹ and was approved contingent upon the conducting of a concept field test.

Development of a Battlefield Recovery Concept. The study plan for the development of a battlefield recovery concept was conducted in two phases. Phase I covered tracked vehicle recovery and evacuation, and Phase II covered wheeled vehicle recovery and evacuation.

Battlefield Recovery and Evacuation (BRE) Capabilities. On 26 April, the second in-process review study advisory group was held at the Ordnance School, and the essential elements of analysis were approved with minor changes. The study incorporated three phases: Phase I addressed combat vehicle operations within the division; Phase IA examined Division '86 requirements; and Phase III looked at battlefield recovery and evacuation requirements within the corps. Phases I and IA was scheduled for completion by 31 March 1980; Phase II by September 1980, and Phase III by July 1981. The Center briefed the preliminary findings to the Commander, Combined Arms Center, in June.²²

Retail Stockage Policy Evaluation (RSPE). The final report on the retail stockage policy evaluation Phase I, Part I, received Army staff approval on 20 October 1978. Phase I, Part II evolved as a single-echelon analysis of retail inventory management and stockage policy and current (Army Regulation 710-2) policies comparing only cost and supply performance. The Army staff approved this plan on 12 March, and changed its scope to consist of only a choice between two alternative equations for the determination of safety level quantity. The targeted date for completion was set for December 1979.²³

Variable Class IX ASL Add/Retail Policy for Division Support Commands (DISCOMs). The initial evaluation of the Variable Class IX ASL Add/Retail Policy for Division Support consisted of simulation, which began with a baseline date of 31 October 1978 utilizing input from the 1st Infantry Division, 2d Armored Division, 3d Armored Division, 3d Infantry Division, and 82d Airborne Division. Simulation input from each division consisted of baseline authorized stockage list tapes as of 31 October, 12-month demand history for the period 1-31 October, and monthly demand history updates for the period 1 November 1978 - 30 April 1979. The LOGC conducted the field validation of the proposed policy from 1 July to 31 December 1979. The evaluated unit (1st Infantry Division) built a test authorized stockage list utilizing variable add and retain criteria developed during the earlier simulations. For the six months evaluation period, the 1st Infantry Division maintained the test list and provided monthly demand history updates. The Center built and maintained a control stockage list by utilizing the 1st Infantry Division present add and retain criteria and monthly demand history updates.²⁴

The simulation portion of this evaluation was completed with the following results:

Difference Between Current and Proposed Criteria

<u>Performance Measure</u>	<u>Essential</u>	<u>Nonessential</u>	<u>Overall</u>
Demand Accommodation (%)	+3	-12	-4
ASL Size (lines)	+3,689	-8,173	-4,484
ASL Turbulence (%)	+6	-12	+2
Dollar Value of R0	+\$606,220	-\$1,051,532	-\$445,312
Corrected Weight of R0 (pounds)	+173,688	-406,462	-232,774
Corrected Cube of R0 (cubic feet)	+1,563	-39,499	-37,936

Field validation of the proposed policy is presently in progress at the 1st Infantry Division, Fort Riley, Kansas, with a target date for completion of 31 December 1979. The initial results appear to favor adoption of the concept. ²⁵

Army Tactical Automatic Data Processing Equipment (ADPE) Maintenance. The Logistics Center hosted the first study advisory group meeting on 16 November 1978. The study included all automatic data processing equipment in the theater. Later, the Signal School initiated their data collection effort to identify the many different types of equipment systems which were expected to be fielded by 1986. A second study group was held at Fort Gordon on 22 February to review and evaluate the collected baseline data.

The scope of the study went beyond the capabilities of the Signal School, however. Problems in data collection and the use of models and simulations to evaluate that data resulted in a request from that school to contract the effort. On 1 August, the study was briefed to the Deputy Chief of Staff, Logistics, and an agreement was made to sponsor the study in the Department of the Army study program. With the assistance of TRADOC and the LOGC, the Signal School prepared a procurement package. The LOGC planned to approve it on 12 October, and to forward it to TRADOC for review. Phase I of the study examined the Corps equipment; Phase II echelons above Corps equipment. In addition, Phase II compared the recommended equipment maintenance system with the existing communications-electronics maintenance baseline system and recommended appropriate changes. ²⁶

Signal Intelligence/Electronic Warfare (SIGINT/EW) Maintenance Concept (Post 1980). The Army staff approved the maintenance concept for SIGINT/EW Systems and on 12 September, TRADOC directed publication and world-wide distribution of the approved concept for implementation by combat developers, material developers, training developers, proponents of doctrinal material and tables of organization and equipment, training activities, and others as appropriate. The Center distributed the approved concept to the field on 21 December for full implementation. ²⁷

Printed Circuit Board Repair (PCBR) Concept. TRADOC tasked the US Army Signal Center and Fort Gordon, as the TRADOC proponent for printed circuit board repair, to develop a coordinated concept and plan and identify resources required to enable the Army in the field to assume the repair mission at the earliest possible date. "I agree with the DA stated position that repair of selected PCBs can and should be done in the field at selected GS facilities," wrote MG Smith to MG Louis Rachmeler, Commander, US Army Materiel Readiness Command. "I also believe that the work should be done by properly trained military technicians using the specialized tools and test equipment that are required to do the job right."²⁸

Initial DA guidance, published in a DA letter dated 15 March 1974, stated that, "major commands achieve and retain an organic GS maintenance capability to support electronics equipment boards/cards and modules." This was later modified in AR 750-1, 1 April 1978, to be, "GS units designated by major commands and approved by DA will be provided the capability to repair selected items where the cost of automatic test, measurement, and diagnostic equipment limits the basis of issue to a mobilization base." Those selected items included the repair of selected printed circuit boards/cards constructed of conventional pieceparts and selected solid state integrated circuits in accordance with the appropriate maintenance allocation charts.

In March 1979, the Signal School hosted a conference for all major material developers, repairers, trainers, users, and suppliers who had an interest in printed circuit board repair to answer questions and to solicit input necessary to develop and staff a coordinated concept. "When the PCB repair concept is approved," MG Smith's letter observed, "USASIGS will then prepare a standard POI for PCB repair techniques which will be used at those TRADOC schools that need to teach this special skill. The repair of PCBs does not appear to require a skill that is systems dependent," he continued, "but I'm not convinced that we need a special MOS, as some have suggested, to do PCB repair in the field. Before a decision is reached on that particular question, more data are needed for a careful evaluation." Smith cautioned that, "We do, however, have an obligation to properly train and certify repairmen in PCB repair techniques. This will make it easier to insure that those GS activities that are selected and equipped to do PCB repair have sufficient qualified and experienced personnel assigned to do the job."³⁰ In concluding his letter, the Center Commander pledged continued LOGC assistance in this one area, "where DARCOM and TRADOC must work together to insure the best possible product is given to the field."³¹

Rear Area Combat Operations (RACO). Effective September 1979, the Combined Arms Center assumed proponentcy for Rear Area Combat Operations. Three levels of enemy threat and the type of US units responsible for responding to each level were identified. Level I, small groups of civilian partisans, was designated unit responsibility; Level II, small military forces, a military police responsibility; and Level III, the airmobile battalion and the airborne regiment, a brigade-size tactical unit responsibility. The preliminary concepts were briefed to the CG, TRADOC, on 13 August.

As part of this study, in conjunction with its associated schools, the LOGC examined requirements for a high mobility weapons carrier for logistics units. This carrier enhanced the capability of logistics units to defend themselves against a rear area threat. On 9 November 1978, the LOGC forwarded to the US Army Military Police School a consolidated list of requirements for the carrier. On 11 December 1978, the coordination draft of the rear area study was sent out for review by the Police School. The LOGC review indicated that the draft FM 90-14, Rear Area Combat Operations, portrayed what should be done except in one key area. This concerned shifting the rear area operations center from corps support command to corps control in the event of a threat. The LOGC comments on the draft study were sent to the Police School on 31 January 1979 and stated that the rear area combat operations should remain under the control of the corps support command.³²

Development of a Safety Level Protection Concept. In November, DA DCSLOG tasked the LOGC to develop a concept for reduced safety level protections in the automated installation and retail supply system. This proposed concept met both the requirements for supply economy desired by DOD and selective management capability desired by units in the field. During review of comments from the proposed concept, changes recommended for NCR-500, Division Logistics System (DLOGS), and SAILS AB and ABX were eliminated. NCR-500 and DLOGS replacement by DS4 dictated removal of the systems. Additionally, Direct Support System (DSS) customer access to items which were allocated against other customer demands warranted removal of SAILS AB and ABX systems from the concept.

The DS4-recommended changes included a parameter loaded critical commodity safeguard quantity for safety level protection adjustment, and a safety level penetration by only IPD 01-03 requisitions. This protection represented an interim policy change pending the future revisions of DS4 to limit its application to Army Master Data File (AMDF) essentiality codes A, C, D, and J. This system required major changes to implement an essentiality code variable to accommodate this policy, as well as future combat authorized stockage list and retail inventory management and stockage policy enhancements. The comments from the proposed safety level protection concept sent worldwide in April were received and incorporated into a final draft concept. The final recommendation is presently being prepared and will be forwarded³³ to the Deputy Chief of Staff, Logistics, after final staffing within the LOGC.

General Officer Repair Parts Seminar. On 29-30 November 1978, the Concepts and Doctrine Directorate hosted this seminar which the LOGC Deputy Commanding General chaired. In attendance were general officers or their representatives from each of the major command Deputy Chief of Staff for Logistics (DCSLOGs), HQ DARCOM, the DARCOM Materiel Readiness Command, the Defense Logistics Agency, TRADOC Deputy Chief of Staff, Combat Development, the Quartermaster School, Ordnance and Chemical Center and School, and DARCOM's Materiel Systems Analysis Agency and Human Engineering Laboratory, and appropriate LOGC Directors. The topics briefed and discussed covered repair parts operations all the way from organizational to wholesale level in both the demand supported and nondemand supported areas. Among the early

results of this seminar was the establishment of an intensive management program structured around various agenda by the DA ODCSLOG Director of Supply and Maintenance; issuance of DA guidance on establishing the "GS Base Expanded" stockage levels in USAREUR;³⁴ and increased command interest and emphasis on provisioning techniques.

Alternative Operational Concepts.

As part of the effort to address the reality of fighting a war in the transition period with limited available assets, the Logistics Center developed alternative operational concepts. Following the guidelines in TRADOC Reg 11-7, Operational Concepts, the Center submitted concept statements to TRADOC Headquarters on 14 September on Major Item Supply (TR1); Maintenance; Recovery and Evacuation; Graves Registration; Transportation Movement Management; Resupply of Bulk Petroleum; and Ammunition Supply. In March, the Transportation School published "The CH-47C Self-Deployable Capability to Europe" study. This study provided the basis for development of a concept evaluation plan that ultimately led to self-deployment by elements of the 179th Aviation Company from Continental United States to the Federal Republic of Germany in August. This accomplishment satisfied the stated requirement for such a capability made by the Army Vice Chief during the Army Aviation Program Review-78, held at Fort Rucker in December 1978.³⁵

Interoperability. In the international arena, the LOGC participated as a member of the US delegation to the Quadripartite Working Group for Logistics (QWG/LOG) American, British, Canadian, and Australian (ABCA) cooperative effort. That effort addressed 19 agenda items, including 70 logistics standardization and interoperability issues and recommended projects to be accomplished prior to the March meeting. In the German/United States Army Staff talks, the logistics interoperability handbook differences needed to be worked out. The Center requested an author's meeting in February 1980, to try and reach an agreement on the format and contents to be included. The Center proposed to the United Kingdom at the United Kingdom/United States Army Staff Talks their inclusion in the logistics interoperability handbook. They expressed interest but agreed to wait until the Center was further along with the Germans. The Center's commander assured TRADOC that, "we will continue to pursue this area."³⁶

DOCTRINAL PUBLICATIONS AND FILMS

How-to-Support Manuals and Films. During the past year, the How-to-Support manual program underwent several significant developments. At the April meeting at Ben Harrison, TRADOC, LOGC, the Administrative Center, and Academy of Health Sciences representatives agreed to limit the How-to-Support program to a small number of basic combat service support manuals: FM 63-1, FM 63-2, FM 63-3, and FM 100-10. They decided to hold up development of the manuals pending development of a series of functional concept papers covering combat service support. Development of three films covering combat service support in the division continued through this year. Final scripts for the three levels described (division, brigade, and company/battalion levels) were completed and forwarded to TRADOC for final approval. The films were scheduled to be shot next spring. ³⁷

Logistics Terms, Abbreviations, and Acronyms (List A). The Army staff completed the review of the 199 terms, abbreviations, and acronyms that were initiated by the LOGC and forwarded to the Adjutant General through TRADOC and DCSLOG. Most of the items were accepted. DA proposed 17 additional terms and abbreviations which were distributed for review and comment to the LOGC associated schools and the directorates within the LOGC. ³⁸

FM 29-20, Maintenance Management in the Theater of Operations. FM 29-20 was suspended in the first stages of the preliminary draft, and no action was anticipated until an action officer was made available to work on it. ³⁹

FM 31-82, Base Development. On 13 July, the coordinating draft of FM 31-82 was forwarded to Army headquarters and major commands for Army-wide review. Comments received from the Commander-in-Chief, US Army Europe, and from the US Army Engineer Studies Center indicated that a major rewrite of the coordinating draft of the manual was required to comply with the recently approved Joint Contingency Construction Requirements Study, Phase II (JCCRS II). ⁴⁰

Change 2, FM 54-2, The Division Support Command and Separate Brigade Support Battalion. This change included new and updated information on Nuclear, Biological, and Chemical warfare policy, the Forward Area Support Team and Forward Area Support Company, movement control officer, continuity of operations, communications, class III supply, class V supply (including the DAO and ammunition transfer point), health services, the Division Materiel Management Center, and the support battalion and squadron for the separate brigade and regiment. The LOGC Directorate prepared and reviewed the preliminary draft, and the resulting coordinating draft was completed and distributed worldwide to selected headquarters and organizations. The change was scheduled for completion during FY 80-2. ⁴¹

FM 54-6, Theater Army Area Command. The coordinating draft of FM 54-6 was completed and distributed for review within the LOGC. Further action on the review was canceled, and the draft copies were withdrawn because of the C&D involvement with the Phase II Study. Personnel involved with the study

recommended that work on the field manual be suspended pending receipt of approved⁴² doctrine resulting from the study which should be included in the manual.

Change 1, FM 54-7, Theater Army Logistics. In June, a revised final draft Change 1 to FM 54-7 was forwarded to DA DCSLOG and HQ TRADOC for review and approval. The approval for publication was received from these agencies in August. Work was begun to complete the comprehensive dummy and camera-ready mechanicals⁴³ for transmittal to the US Army Training Support Center in FY 80-1.

FM 54-8, The Division Materiel Management Center. The outline was completed and research for the preliminary draft⁴⁴ was initiated. This new manual was given a completion date of FY 80-4.

Change 2, FM 54-9, Corps Support Command. This change updated information and guidance in FM 54-9, pending publication of FM 63-3, Combat Service Support Operations--Corps, the "How-to-Support" manual which will supersede FM 54-9. The change entered the preliminary draft phase of development and should be completed during FY 80-3.⁴⁵

FM 54-23 (Test), Materiel Management Center, Corps Support Command. FM 54-23 (Test) was originally published in May 1976 to provide interim guidance on the organization and operation of materiel management centers in corps support commands. The preliminary draft phase was initiated, with completion scheduled for FY 81-2.⁴⁶

FM 100-16, Echelons Above Corps. On 1 November 1978, DA DCSOPS sent out FM 100-16 for review. TRADOC requested that all review comments be forwarded to the Combined Arms Center. Comments received from LOGC associated schools were incorporated, as appropriate, into LOGC comments to provide a coordinated logistics position relevant to the development of this manual. On 8 February 1979, the LOGC sent its comments to the Combined Arms Center. This review concluded current LOGC involvement with FM 100-16.⁴⁷

TC 100-10, Combat Service Support in Battle. On 5 October 1978, a revised coordination draft of TC 100-10 was sent to DA DCSLOG, USAREUR, DARCOM, and TRADOC Training Documents Office for review and comment. DARCOM, USAREUR, and DA provided comments; however, in December 1978, the TRADOC TDO advised the LOGC to send them comments received indicating those agreed and those disagreed with. These comments, in conjunction with detailed guidance from General Starry, were to be used by the TRADOC Documents Office to prepare another draft of the training circular.⁴⁸

Combat Service Support Chapters, Draft FM 100-15, Corps Operations. During August and September, the Concepts and Doctrine Directorate reviewed an advance copy of draft FM 100-15, Corps Operations, and prepared a rewrite of Chapter 7, Combat Service Support Operations. This action was in response to tasking from the Commanding General, TRADOC. The primary objective of this action was to set Chapter 7 in context with the rest of FM 100-15. The

rewritten combat service support chapter represented a joint Administrative Center, Academy of Health Sciences and LOGC effort. HQ TRADOC received the chapter in October and began rewriting the remainder of draft FM 100-15, which should be published during FY 80-4.

Change 1, TC 1-60, Forward Area Refueling Rearming Point (FARRP) Operations. In June, the coordinating draft of change 1 to TC 1-60 was submitted for Army-wide review. A letter received from the US Army Training Support Center, 8 August, indicated that the ongoing revision of FM 17-50, Attack Helicopter Operations, being prepared by the US Army Armor School will contain information found in TC 1-60. Therefore, publication of the change was disapproved by HQ TRADOC to eliminate duplications in Army-wide training literature.⁵⁰

WARPAC FMs. The status of WARPAC FMs for which the Concepts and Doctrine Directorate had responsibility was as follows:

Published and Distributed on the Dates Indicated:

FM 42-9-8, Tank, Combat, FT: 152mm gun, M60A2, 30 Nov 78.
Nov 78. FM 42-11-12, Central Operations Teletypewriters: AN/MGC-19, 30
FM 42-11-13, Radio Teletypewriters: AN/GRC-122, 18 Sep 78.
FM 42-11-14, Teletypewriter: TT-76/GGC and TT-98/FG, 18 Sep 78.
FM 42-55-4, Helicopter Heavy Lift: CH-54B, 18 Jan 79.
FM 42-55-5, Helicopter, Observation: OH-58A, 18 Jan 79.

Canceled:

FM 42-9-24, Guided Missile System; Intercept, Aerial (Improved Hawk).
FM 42-9-22, Gun, Air Defense Artillery: SP, 20mm, M163 (Vulcan).
51 FM 42-9-25, Guided Missile and Launcher, Surface Attack: M222 (Dragon).

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1. Meyer, White Paper, p. 17.
2. Meyer's Address to AUSA, p. 5.
3. Ibid.
4. TRADOC letter ATZL-CA-CIC, 28 Mar 79, subject: Fixed Brigade Division Study (FBDS).
5. DeHaven letter to Starry, p. 12, 23.
6. Ibid., p. 13.
7. Ibid., p. 13, 14.
8. Ibid., p. 14.
9. Cdr, LOGC Letter, 5 Jan 1979, subject: Removal of Retention Levels (SAILS, DS4, NCR-500).
10. DA, DCSLOG Letter, 22 Jan 79, SAB.
11. Letter from General George Blanchard, 20 Feb 79, to TRADOC, subject: Weapon Systems Replacement Operations.
12. TRADOC Message 201730Z Jul 79, subject: COMSEC LOA Review Decision Briefing.
13. Concepts and Doctrine, Semi-Annual Historical Feeder Report, FY 1979. (Hereafter referred to as C&DSAHFR.)
14. Ibid.
15. Ibid., MFR, ATCL-CFT, Undated, subject: Forward Arming and Refueling Point Conference, Thomas R. Millen, Major.
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20. C&D, SAHFR.

21. Ibid. See also LOGC Message 111940Z Jan 79, subject: NICAD Battery Charging Concept; LOGC Message 221630Z May 79, subject: Recommended Distribution Plan of PP-7286 to Support Sealed NICAD Batteries in the Field.

22. Ibid., ATCL-CFM, Minutes of BRE Study Advisory Group, 21 Nov 78, dtd 14 Dec 78. subject: TRADOC Study, BRC, ACN 26381; ATCD-S-L, 2d Ind, 27 Feb 79, subject: Impact Statement.

23. C&D, SAHFR.

24. Ibid., ATCL-CFM letter, undated, subject: Variable Class IX ASL Add/Retain Criteria. ATCL-CFM letter, 11 Sep 79, subject: Variable Class IX Authorized Stockage List (ASL) Add/Retain Policy for Division Support Commands (DISCOM).

25. C&D, SAHFR.

26. Ibid.

27. Ibid.

28. ATCL-CFM letter, MG Smith to MG Louis Rachmeler, 17 May 79, subject: PCBR.

29. C&D, SAHFR.

30. Smith letter to Rachmeler.

31. Ibid.

32. C&D, SAHFR.

33. Ibid.

34. Ibid.

35. Ibid. See also DeHaven letter to Starry, p. 15.

36. C&D, SAHFR; DeHaven letter to Starry, p. 15. See also Cdr, Ord Cml Cen Sch Message 201755Z Nov 78, subject: FRG/US Maintenance Studies Working Meeting; ATCL-CFS letter to Cdr, USALEA, 6 Mar 79, subject: QWG/LOG Concept Paper on ABCA Armies Movement and Transportation in Support of Operations, 1986; ATCL-CFS letter to TRADOC, 17 Jul 79, subject: GE/US Logistics Initiatives; LOGC Message 201630Z Aug 79, subject: Final Agenda for the Fifth Meeting Quadripartite Working Group on Logistics; ATCL-CTZ letter to Cdr, USACAC, 5 Sep 79, subject: Review of Quadripartite Working Group/Logistics Concept Paper; ATCL-CF letter to TRADOC, 12 Sep 79, subject: UK/US Army Staff Talks-Tasking for PREP Conference (17 Sep 79), and Staff Talks (8-11 Oct 79).

37. DeHaven letter to Starry, p. 14; C&D, SAHFR; LOGC Weekly Staff Meetings, 7 May 79, p. 8.
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43. Ibid., ATCL-CL letter to Commandant, Quartermaster School, 13 Jun 79, subject: Draft Change 1, FM 54-7, Theater Army Logistics; ATCL letter to Cdr, USA Training Support Center, 27 Jun 79, subject: Revised Final Draft, Change 1, FM 54-7, Theater Army Logistics.
44. C&D, SAHFR.
45. Ibid.
46. Ibid.
47. Ibid.
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49. Ibid.
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CHAPTER 5

AUTOMATED SYSTEMS

To support the new weapons and weapons systems that evolved during the last decade, the Army fashioned a number of very impressive and highly sophisticated automated systems. During the twelve months of fiscal year 1979, the Logistics Center maintained its involvement with automation of logistics management and information systems, and in the words of its commander, was "enjoying considerable success."¹ Stressing quality and user involvement, the Center developed methods that were within the context of an integrated battlefield architecture encompassing communications.

Standard Army Intermediate Level Supply Subsystem (SAILS)

As the major Army intermediate supply system, the Standard Army Intermediate Level Supply Subsystem occupied a large proportion of the Center's time and effort during this period. It divided into three separate but distinct interconnected parts:

SAILS ABX. A Field Validation Test for the Disk Operating System-Extended (DOS-E) version of Systems Change Packages 05 and 06 was conducted during 14-15 May 1979 at Fort Carson, Colorado. The participants (Department of the Army, major commands, Logistics Center, and Computer Systems Command) concluded that the extended version of SAILS ABX was functionally sound and that the technical operation of the system was adequate to permit further extension. A SAILS ABX System Change Review Committee Meeting and a SAILS ABX extension meeting were conducted at the Center during 18-29 June 1979. Six hundred and four system change requests were reviewed for future system change package broadcasts. The remaining intermediate level supply sites, not operating under SAILS ABX, were scheduled for SAILS ABX extension.²

The Assistant Secretary of the Army for Installations, Logistics, and Financial Management informally approved the SAILS ABX DOS-E version and extension to the remaining intermediate level supply sites. During June, these supply sites were scheduled for conversion to SAILS ABX and the Center was scheduled to convert Fort Lee during November. SAILS ABX System Change Package 07 underwent final testing and was expected to be broadcast to users during the first quarter of calendar year 1980.³ An Army assistance team composed of representatives from the Finance and Accounting Center, Office of the Surgeon General, Computer Systems Command, Logistics Center, and the Western Command, visited US Army, Japan, and 8th US Army SAILS ABX sites.⁴

SAILS AB. SAILS AB Systems Change Package 21 was broadcast to all users on 2 July 1979 and SAILS AB package 22 was in the final stages of testing. Customer assistance visits were performed at Forts Richardson, Amador, Bliss, Sam Houston, Hood, Meade, Ritchie, Detrick, McClellan, Rucker, McPherson, Gordon, Stewart, Benning, Eustis, Leonard Wood, Knox, Polk, Riley, Leavenworth, McCoy, Sill, Dix, Devens, and Huachuca, as well as the Military District of Washington and Fort Indiantown Gap Military Reservation.⁵

SAILS A(-).

The Standard Army Intermediate Level Supply Subsystem, Theater/Command Level (SAILS A(-)) was upgraded and installed at the Theater Army Materiel Management Center, 200th, in November 1978. This was the first installation of the system since its inactivation in 1974 when the US Army Reserve, Pacific, was disbanded.

Since installation, two significant changes were implemented. Reportable Item Control Code one, two, and eight were deleted as criteria for adding and retaining items on the availability balance file. This action greatly reduced the size of the file and also reduced cycle processing time. Additionally, the system was changed to implement Selected Item Code "V." This new code allowed SAILS A(-) item managers to have visibility of assets and levels for selected items without getting involved with routine issue decisions. SAILS A(-) System Change Package 07 underwent testing during this period.

Materiel Returns Program (MRP). The Department of the Army implemented the worldwide Department of Defense Materiel Returns Program prescribed by Chapter 7, AR725-50 vice AR 755-1. This required major systems redesign in the excess reporting, utilization, disposition, and redistribution programs due to the new status codes and document identifier codes. The SAILS ABX System Change Package 06 and the SAILS AB System Change Package 20 (Materiel Returns Program) were broadcast during FY 79-1.

Materiel Category Code.

During December 1978, the LOGC and the major commands participated in meetings with DARCOM, at the latter's request, to present a combined position on reclamation to DARCOM's proposal to merge two materiel category codes "B" and "H" under one code, "N". This was caused by the merger of two of DARCOM's major commands, the US Army Troop Support Command and the Aviation Command, now known as TSARCOM.

The merging of these categories, which involved two unrelated types of materiel (ground forces support and aircraft) presented two major problems for SAILS which were materiel category oriented. More importantly, the high visibility and intense management of aircraft items within the Army supply system would have been jeopardized since they could no longer be quickly identified by the materiel categories. Major redesigns within the SAILS systems would have been required to control these items via another data element. Due to the LOGC and the major commands presentations of the significant impacts, DARCOM reversed its proposal and continued to manage these items under the two separate categories.

Asset Control System (ACS). The Asset Control System changed from a data collecting, gathering, and management information system to only a management information system at the major command level instead of taking an Army Equipment Status Reporting System (AESRS) feeder report from subordinate units and forwarding information to the US Army Depot System Command's Continuing

Balance System, for management information purposes. This change occurred in CONUS effective 15 June 1979 and should be accomplished overseas in the near future. The Asset Control System was installed in the Western Command, Fort Shafter, Hawaii, during July 1979. The System Change Package 12 field Validation Test was successfully conducted during 14-28 September at the US Army Forces Command and was expected to be broadcast to the field in early October. Sixty-one system change packages were prioritized for implementation in future system change packages during 24-28 September. Package L13-13-00 was scheduled for the fourth quarter FY 80 time frame at TAMMC (200th), Zweibruecken, Germany.

The Direct Support Unit Standard Supply System (DS4).

The Direct Support Unit Standard Supply System is a retail level supply management information system that provides many capabilities not available in present systems. The system incorporates much of the latest in automatic data processing technology and will provide total asset visibility. At the division level, it will replace the class IX subsystem of the Division Logistics System. In nondivisional units, it will replace the Direct Support Unit/General Support Unit, or NCR 500 system in conjunction with implementation of DAS3-Decentralized Automated Service Support System. The Direct Support Unit Standard Supply System will automate the routine supply and stock control procedures of the division materiel management center and the nondivisional direct support unit for class II--general supplies, class III--packaged petroleum, class IV--construction materiel, and class IX--repair parts.

It possesses many advantages over the present systems. Of significant importance is the added capability to interchange and substitute items. By automating this process, many requests that would otherwise be passed to a higher supply source will be filled at division. This capability also reduces excess stockage and duplication. With many new items of equipment being introduced, the ability to automate use of manufacturer's parts numbers is another important capability. Stock control and accounting procedures, which are now being performed manually, will also be automated.

A significant advantage is its lateral issue capability. Division commanders can designate some or all of their units to have access to the stock of any direct support unit in the division. The capability to fill requisitions from within the division when they would, under current systems, have been backordered or passed to a higher supply source, should improve readiness. Also, the processing of followup requests will be automated. This will decrease the workload of supply personnel and increase the speed and accuracy of information.

The attachment and detachment of units from one division to another within the existing direct support unit structure will also be easier to accomplish under this system. This is done by providing an easy method of transferring data into the data base of the direct support unit that will support them in their new location. This capability minimizes the turmoil in logistics support that normally accompanies the shifting of units.

For nondivisional units, the Direct Support Unit Standard Supply System on Decentralized Automated Service Support System minicomputer hardware will provide a tremendous increase in capabilities. Critical customer requirements can be entered into the new system and action taken either to issue or backorder the needed items within a few seconds. Current systems often take days to accomplish these same transactions.

This Standard Supply System will achieve standardized supply procedures for all direct support units throughout the Army. Consequently, this will require only one common training base. There will be greater assignment potential for supply personnel and greater flexibility in their utilization. Fielding in the divisional version is targeted to begin during direct quarter FY 81. The schedule for nondivisional application is projected to begin in second quarter FY 81. When implemented, it will provide a retail level supply capability that will significantly improve the efficiency of supply stock control procedures, system maintenance requirements and training requirements.

"DS4 will become the major USALOGC supply system for the divisional and nondivisional units in the near future," observed the LOGC Commander to TRADOC. Between May and September, the Center conducted a system field validation test at Fort Campbell. A limited number of LOGC personnel remained onsite in a customer assistance and advisory role. Long run tests plagued the test, especially in the early stages. "Through perseverance of USALOGC and USACAC personnel," MG DeHaven noted, "the runtime of an average daily cycle was reduced by approximately 50 percent."

The system required several functional changes prior to fielding. The Center refined guidance for these changes before testing and validating. The first systems change package was installed during April 1980. The Center continued working on the initial planning actions for achieving operation on the DAS3 automatic data processing equipment for nondivisional application. The left of baseline guidance for conversion of NCR 500 to DS4 was provided the Computer Systems Command and an ongoing review of conversion requirements continued.

Transportation Operational Personal Property Standard System (TOPS).

Due to insufficient DA funding and other higher priority projects, the Center reduced active Army Transportation Operational Personal Property Standard System developmental efforts; it did, however, monitor and participate in the other services' ongoing developmental effort. An initial review of the Navy transportation system specifications indicated that this system satisfies much of the Army's functional requirements. In light of this, the Center studied DA ODCSLOG staff actions to determine its responsibility and resources for the remainder of this year.

Department of the Army Standard Port System (DASPS).

Currently in Phase III (Systems Installation, Operation and Maintenance of the AMIS life cycle), five Data Processing Installations participated in this system: Bremerhaven, Germany; Naha, Japan; Pusan, Korea; Rotterdam, Netherlands; and Yokohama, Japan. A sixth installation, Fort Eustis, ceased participation with the transfer of support automatic data processing equipment to US Army Computer Systems Command Support Group Lee 14 September 1979. The Military Traffic Management Command controlled the corresponding port operations, with the exception of Pusan (under the 19th Support Command, Taegu) and the 7th Transportation Group at Fort Eustis (under FORSCOM) with no fixed port.¹²

Department of the Army Standard Port System-Enhanced (DASPS-E).

The need to develop a replacement system for the current Standard Port System was recognized due to deficiencies in that system: Automatic data processing equipment obsolescence, lack of wartime and backup capability, operational inefficiency, and inability to support contingency requirements of the 7th Transportation Group. During this past year, the Center conducted onsite collection visits to Europe and the Far East, and scheduled a Standard Port System-Enhanced Users' Conference for March 1980, to secure endorsements of the functional descriptions of the enhanced system. The Army staff targeted DAS3 equipment for the Enhanced System upgrade.¹³

Standard Army Maintenance System (SAMS).

TRADOC approved the Part 1 and Part 2 (Provisional) Detailed Functional System Requirement (DFSR) and Organization and Personnel Plan (OPP) on 2 May 1979 and forwarded them to HQDA for approval. During the month of May, the Standard Army Maintenance System detailed functional system requirement was changed based upon suggestions from several staff and field activities. The most significant change was the alteration of the work order number, which was changed in order to accommodate the high volume of maintenance work accomplished in large maintenance activities. During May, the LOGC provided detailed guidance to the Fort Lee Computer Systems Command and structured design of the functional requirement began. Members of the systems development team attended structured analysis and specification workshops presented by YOURDON, Inc., in order to learn new techniques in structured design. The intent of these efforts was to restructure the functional requirement into a format which could be readily applied to the Standard Army Maintenance System programing.¹⁴

As the restructuring continued, the Center and the Computer Systems Command conducted joint reviews to insure that the structured design was being developed in a manner consistent with the requirement. Data flow graphs for Standard Army Maintenance System-1 wartime processes were completed and reviewed in early August 1979. Preliminary actions for its programing commenced at that time.

Throughout the summer months the maintenance system development continued to expand as more detailed plans regarding the System Training Management Plan and User Procedures Manuals were applied. Coordination within the LOGC increased as specific requirements for training were identified and as preparations began for the contracting of user procedures development. The request for a proposal document, a preliminary action to the contracting of System User Procedures, was reviewed by the Staff Judge Advocate and was found to be legally sufficient. It was subsequently reviewed and approved by the Chief of Staff and was forwarded to the Post Procurement Office on 28 August 1979. A draft of the Standard Army Maintenance System Training Management Plan was completed in September 1979 and was forwarded for worldwide staffing with comments due back in December 1979.¹⁵

Maintenance management requirements for the total package, Part 2, were identified during May and June 1979 when analysts from the Logistics Center visited corps and division elements. These requirements were translated into 17 additional outputs which were validated in August 1979 during a visit to Fort Hood and in September 1979 with elements in Europe. The validated Level 2 outputs and associated functional specifications will be incorporated in the Maintenance System-Draft system requirement and will be staffed worldwide in March-April 1980.

In September, the Office of the Deputy Chief of Staff, Logistics, tasked the Logistics Center to address questions raised by the Office of the Deputy Chief of Staff, Personnel, during their review of the system's Organization and Personnel Plan. Through a series of coordinations, it was determined that additional information from maintenance activities was required in order to substantiate the organization and personnel plan. A program to capture this data was scheduled to be initiated in early October 1979 to accumulate updated data for inclusion in the proposed June 1980 Standard Army Maintenance System-2 organization and personnel plan.¹⁶

The Army Maintenance Management System (TAMMS)

On 1 February 1979, HQDA directed the Center to update TM 38-750 with a change 3. The Center completed it on 1 May and was expected to publish and distribute it on 30 November. On 15 June, HQDA tasked the Center to rewrite TM 38-750 TAMMS. Publication and distribution is scheduled for 15 December 1980. As structured, the rewrite included separate chapters for aviation, materiel, materiel condition status reporting, preparation of equipment improvement reports, and submission of warranty claims actions. The Army Maintenance Management System Customer Service received and answered a total of 502 written requests for clarification and recorded changes to TM 38-750 and TM 38-750-1 during the period 1 January 1979 through 31 October 1979.¹⁷

Combat Service Support System (CS3) Maintenance Reporting and Management (MRM)

System Change Package L09-14 was validated at the 82d Airborne Division, Fort Bragg, NC, and broadcast to all system users on 1 January 1979. A major change provided for an interaction with the Division Logistics System. In conjunction with this broadcast, the system user manual was validated and distributed to all system users.¹⁸ System Change Package L09-15-00 was validated at the 24th Infantry Division, Hunter Army Airfield, GA, and broadcast to all system users on 20 September 1979. A major change provided for an interim interplay with the Direct Support Unit Standard Supply System. In conjunction with this broadcast,¹⁹ the system User Manual was validated and distributed to all system users.

The Office of the Deputy Chief of Staff, Logistics, approved a DARCOM recommendation to assign the Maintenance Control System to the Wholesale Army Maintenance System. This bridge will be a part of System Change Package 16 and will provide DARCOM with maintenance engineering data during the 3 1/3-year gap between implementation of the Wholesale Army Maintenance System and the extension of the wartime portion of the retail system. A system change request was developed that provided for a totally automated intermix with the Direct Support Unit Standard Supply System. When implemented, the requirement to manually prepare inputs to the Maintenance Control System module of Maintenance Reporting and Management for each repair part requested from the supporting supply activity will be eliminated. Additionally, by using the Standard Supply System files current status of outstanding parts requests will be automatically posted to maintenance control system files. Interrelating the two systems will result in a reduction of 500 manually prepared cards daily in each maintenance activity.

Standard Army Ammunition System (SAAS)-Level 1

The Standard Army Ammunition System Level 1 System Change 12 was installed in Europe at Zweibruecken, Germany, in October 1978. Functional training and other selected areas of the system were conducted at the 60th Ordnance Group in conjunction with the system change package installation.

The Standard Army Ammunition System Level 1 System Change 13 was installed at Ft Shafter, Hawaii, in August 1979 and at Zweibruecken, Germany, September 1979. Functional training was conducted in conjunction with the package installation. L06-R038-110 was deferred until System Change Package 14. Two additional system change requests, L06-R038-148 and L06-R038-149, were initiated. These requests provided the capability to compute requirements and assets in terms of complete rounds and were to be included in package 14.²⁰

Standard Army Ammunition System (SAAS) Level 3

During the first half of FY 79, the primary emphasis on Army Ammunition System was to expedite the completion of the requirements for the Level 3 system. Level 3 is the proposed management information system to be used by

the Corps Support Command, Materiel Management Center and other Class V stock control activities. In October 1978, the draft detailed functional system requirement for Level 3 was distributed worldwide for review and comment. The requirement provided each potential user with copies of the system's proposed reports, input formats, and functional processing logic. In November 1978, the draft organization and personnel plan for Level 3 was distributed worldwide for comment. The plan was developed to provide information on the number and types of people necessary to process the system. Based on this data, the major commands and applicable schools made changes to tables of organization and equipment and distribution and allowances documents and military occupational specialty training programs. The draft requirement and personnel plan were revised to incorporate user comments and the finalized versions of these documents were forwarded on 9 March 1979 to TRADOC for approval.

On 26 September 1979, the Office of the Assistant Secretary of the Army for Installations, Logistics, and Financial Management approved the detailed functional requirements for Level 3 and authorized the continued development of the system. Approval was granted for the tactical units to utilize dedicated data processing equipment, but the other units were to operate on existing equipment in a time sharing mode. Level 3 concentrated on the development of wartime essential functions for tactical units as the initial step and subsequently the development of the peacetime functions to be added later as stand alone modules.²¹

For the Army Ammunition System-3 to function effectively it must receive accurate and timely information on the ammunition received and issued by Class V storage locations (ammunition supply points). In order to provide standard procedures and formats for Class V storage locations, a Level 4 system was developed. During January 1979, the LOGC tasked the US Army Missile and Munitions Center and School to develop the Level 4 system and to have this system available for installation at the same time as the Level 3 system. This action is necessary since 3 and 4 are interdependent for inputs and outputs.²²

The Logistics Center developed a Logistics Information System Overview, Standard Army Ammunition System in March 1979. This overview replaced fact sheets and other handouts to be used during orientation sessions and introductory training. Identified as TM 38-L06-10, this overview was completed and distributed in May. The Computer Systems Command was assigned responsibility to develop the Project Master Plan with appropriate input from the major commands and the LOGC.²³

DA Movements Management System (DAMMS)

Cargo Module. Development on the import cargo phase of the Cargo Module of the Movements Management System continued in Europe. The Visibility of Intransit Cargo System, which formed the baseline for the Cargo Module, received full support for continued development effort in FY 80. The cargo prototype evaluation test report, updated economic analysis, and the detailed

functional system requirement for visibility of intransit cargo Phase I were submitted to the Assistant Secretary of the Army and approved as a Standard Army Multicommand Management Information System. Approved as a standard system on 11 September 1979, the visibility of intransit cargo system was redesignated the Cargo Module of the DA Movements Management System.²⁴

Actions are being finalized for the transfer of Phase I development from the European theater to the Ft Lee community during the next 6-month period. Originally projected for September 1979 and postponed to December 1979, the transfer is now scheduled for late second quarter, FY 80. The Field Validation Test of System Change Package 01 was held at Oberursel, Germany, in May 1979. The System Change Package 02 Field Validation Test was scheduled for 1 December 1979. Meanwhile, an Army in-process review will be conducted in Heidleberg,²⁵ Germany on 8 November 1979. The Center was scheduled to attend both actions.

Movements Planning Module. The August 1979 draft of the functional description was completed and forwarded to US Army, Europe, for their review and approval. This draft incorporated identifiable movement requirements associated with contingency and exercise planning. Submission to HQDA is projected for 4th Qtr FY 80.

Mode Management Module, Performance Module, and Passenger Movement Module. Development work on these major modules was not initiated during FY 79 due to lack of developmental resources attributable to the lack of sufficient priority for development at HQDA.

Division Level Data Entry Device (DLDED)

An interim standard multicommand system, the Division Level Data Entry Device supports supply, maintenance and administration in the division and reduces the use of division card punch machines supply, maintenance and administration operations. It prompts, edits, formats, manipulates, and stores data as it is reduced directly from source documents to functional work files maintained on small magnetic storage devices. The stored data will be transmitted over the standard communications system or by courier.

The Basis of Issue Plan, the Quantitative Qualitative, Personnel Requirements Information, the Economic Analysis, the Life Cycle Cost Assessment, and a Requirement Operational Capability were completed and forwarded by TRADOC to the Army Staff for final staffing and approval. The Army staff approved it on 30 August 1979. The Data Entry Device annex (draft) to the Direct Support Standard Supply System detailed functional system requirement contract for hardware and software was expected to be awarded to the Small Business Administration during September-October 1980. Initial operating capability for the system application was scheduled for December 1981.²⁶

Division Logistics System (DLOGS)

DLOGS Class IX Subsystem (IBM 360) (ADS L22). A System Change Package (L22-06-00) was scheduled to be broadcast during the third quarter FY 80. The functional changes expanded the edit in the monthly cycle and incorporated the Recommended Authorized Stockage List Additions Management System in the update process.

DLOGS Property Book Subsystem (UNIVAC 1005) (ADS L11). The 38th Infantry Division, Indiana National Guard was converted to DLOGS Property Book, during this period. The 47th Infantry Division, Minnesota National Guard, received a preconversion survey for conversion to the DLOGS Property Book System. Six extensions were planned within CONUS during FY 80.²⁷ However, due to the hardware problems, this has been reduced to three.

Project DLOGS Property Book. Two active Army Separate Brigades were scheduled for conversion from the UNIVAC 1005 to IBM 360 system during FY 80. During calendar year 1980, two National Guard Divisions and four National Guard Separate Brigades were scheduled to convert from manual operations to the Division Logistics System Property Book system. This will completely extend Property Book to all scheduled units with the exception of one US Army Reserve Separate Brigade which remains to be scheduled.

Project Mechanized Stock Control Direct Support/General Support Unit (NCR 500 Magnetic Ledger System). The Direct and General Support Unit NCR 500 system was scheduled to be replaced by the Direct Support Standard Supply nondivisional system operating in a Decentralized Automated Service Support System environment on a minicomputer. Fielding of the new system is tentatively planned for the 3d Qtr FY 80.²⁸

Army Battlefield Interface Concept (ABIC). In October 1978, the LOGC provided input to the Army Battlefield Interface Concept 78 document prior to its submission to HQDA for approval. The document described interactions involving systems at Corps and below and was approved by HQDA. The LOGC's Army Battlefield Interface Concept '79 effort was launched in March 1979 with the submission of system descriptions for three Echelon Above Corps systems, DA Standard Port System-Enhanced DA Movements Management System, and Asset Control System. The '79 concept will add Echelon Above Corps, joint, allied, and NATO systems to the 48 Battlefield Automated Systems (Corps and below) that were included in the '78 concept.

In May 1979, the Logistics Center provided the Combined Arms Center with updated information on the exchanges described in the '78 concept document. This served as part of the feeder information for Concept '79, which also added Echelons Above Corps joint, allied, and NATO systems. LOGC participated in the June 1979 In-Process Review and provided comments on the draft '79 document prior to its finalization and submission to DA for approval. In August 1979, LOGC reviewed and provided comments upon the format for the Technical Interface Requirement document, a new Battlefield Interface Concept

initiative designed to specify the details of each concept intermingling down to the data element level. Several²⁹ of the technical interface requirements documents will be prepared by LOGC.

Battlefield Automation Management Plan (BAMP)

The Combined Arms Center published the battlefield automation management plan in August 1977 spelling out proponent responsibilities for burden assessments. The plan was revised in July 1978 to assign the USALOGC responsibility for logistics systems assessments. The Logistics Center registered disagreement with the new change emphasizing its position as favoring burden assessment being a responsibility of the system proponents. The Center, however, agreed to perform samples of burden assessment on three nonlogistics systems: the Tactical Fire Control System, the Standoff Target Acquisition System, and the Position Location Reporting System. Currently, burden assessments for these systems are in the final stages of completion. Additionally, the LOGC provided burden assessments for four Category II systems for which it is the proponent.

Representatives from the USALOGC attended the Army Interface Battlefield Concept Conference hosted by the Combined Arms Center on 22 March 1979. Additionally, they received a Battlefield Automation Management Plan update briefing and were brought up-to-date on the latest Battlefield Automation Appraisal IV developments. Problems involving personnel allocations and LOGC proponent involvement in burden assessment and required operational capabilities for Battlefield Automated Systems were discussed at length.³⁰

Post Deployment Software Support (Battlefield Automation Management Program - II BAMP). The DARCOM Post Deployment Software Support Management Plan for Battlefield Automated Management Systems was initiated in July 1978 when DARCOM directed the Communications Research and Development Command to develop an Army-wide plan for Post Deployment Software Support with support from other Army commands. The Communications Command activated a task force which surveyed automation within the Army and came up with the startling realization that some 250 different systems were in use, and that at least 59 different types of computers from 29 individual manufacturers had been purchased. In addition, 10 high order languages (those that do not reflect the structure of any given computer) and at least 32 machine-oriented languages are currently being utilized. DARCOM published a draft of its software support management plan in March 1979.

TRADOC nonconcurred due to the failure to support the combat development process and the Army in the field during wartime as the plan was not set up along lines of battlefield functional areas. The three options for the plan were:

- a. Combined Facilities--Centralized software support analytic facilities.
- b. Independent Facilities--A separate analytical facility of each combat developer/trainer's geographical location.

c. Collocation--Support for each battlefield functional area studied at a software development support facility of geographical location.

In June 1979, the Combined Arms Combat Developments Activity engaged a contractor to define combat developer and trainer requirements for modeling, simulation, war gaming and associated automation support necessary to perform the combat developer and trainer mission. The contractor representatives visited the action centers and were briefed. The Center accomplished a review and comments on the Software Support Statement of Work and the June 1979 Study Plan in conjunction with Combat Developments Activity support of the Communications Command contractual efforts in developing requirements. The planned 1 October 1979 start date for the study was not met due to lack of funding.³¹

TRADOC Data Element Standardization Program (TDESP)

TRADOC established the Data Element Standardization Program on 1 September 1978 as the program for processing and standardizing data elements for Battlefield Automated Systems. US Army Combined Arms Center was given responsibility for operating the program. This gave LOGC a new route through the Arms Center for processing its battlefield data elements into the HQDA Data Element Standardization Program. As per MG Smith's desire and the Arms Center's agreement, data elements for LOGC Echelon Above Corps systems will also be incorporated into the TRADOC Data Element Standardization Program.

Prior to 1 September 1978, the LOGC data elements had been processed through DARCOM, which operated the Army's Logistics Data Elements and Codes Standardization Program. This program used the Navy-developed Record Association System/ Standard Data Element System at its automated data elements data base management system. Through a hierarchical structure of systems and subsystems, files, input data records, outputs and reports, and data elements, the Navy system enabled the users to obtain "tailored" printouts of data elements by system, file, input data record, and other means. In addition, keyword retrievals were available. The program contained a file of Defense and Army standard data elements against which newly submitted elements were automatically screened for matches and near-matches as part of the review process prior to worldwide staffing and further processing as proposed DA standards.

The first LOGC submission into the program was made in March 1978. The submission consisted of 27 system and subsystem descriptions, which established the foundation for the LOGC data base segment. Submissions included 191 file descriptions, 425 input data record descriptions, 288 report descriptions, and 196 data elements and data use identifiers and data chains, bringing the total LOGC submissions to date to 1127. While this represented only a small portion of the total LOGC submission workload, it was a significant start toward the establishment of an automated LOGC Data Element Dictionary as one of the program modules. The data elements were³² staffed worldwide prior to being forwarded as proposed Army standards.

Distribution Management

Initial distribution was made on eight manual changes and one complete manual. The distribution lists for Direct Support Standard Supply System customers and training users was prepared in advance of system extension. Requests from the field for user manuals numbered 198. Nine printing requests for publications were made for a total of 18,000 copies of manuals or changes. The first Divisional Logistics System Bulletin was distributed to systems users and staff providing distribution management information and opportunity for updating requirements.

Memorandum of Agreement (MOA) on Retail Logistics Systems Priorities FY 79/80/81. During September 1978, HQDA (ODCSLOG) advised the LOGC, the Computer Systems Command, and the Troop Support Agency of plans to update the Memorandum of Agreement on Retail Logistics Development and Support, 1 May 1978. This action established logistics systems priorities and provided for an appropriate balance of resources to accommodate timely development of these systems.

In subsequent correspondence, the Office of the Deputy Chief of Staff, Logistics, provided guidance pertaining to systems priorities, encouraged preconference working sessions, established 28-30 November 1978 as the conference dates, and requested the LOGC prepare an agenda and host the conference at Fort Lee, VA.

On 20 November 1978, ODCSLOG announced a postponement of the conference. Realizing the need for continued development of the agreement memorandum, the LOGC arranged a series of meetings and correspondence with appropriate commands, agencies, and groups. This coordination resulted in the development of a final draft of the agreement, 1 March 1979. The draft was coordinated with ODCSLOG for review and comment, 7 March 1979. On 20 March 1979, the agreement was finalized. During the period 26 March 1979 through 19 April 1979, it was coordinated with and authenticated by the three interested commands. The agreement was³⁴ hand carried to ODCSLOG 23 April 1979 for approval and implementation.

SUMMARY

The Logistics Center's myriad activities in the management information systems field during this fiscal period contributed immeasurably to making General Meyer's Army of the Future a reality. SAILS, DS4, TOPS, DASPS, SAMS, TAMMS, SAAS, DAMMS, DLDED, DLOGS, BAMP, TDESP, and Distribution Management reflected the Center's growing concern for and importance in achieving a strong and viable defense posture.

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CHAPTER 6

FORCE STRUCTURE AND TEST

"The challenge that confronts the Army is to bring the force structure into harmony in terms of its manning, equipment, and training--all keyed to missions," observed the Army Chief of Staff in his 1980 White Paper. "The basic tasks for the Active and Reserve Components are relatively clear," he continued. "The active forces maintain our overseas commitments, respond on short notice to non-NATO contingencies, and provide the initial surge forces until the reserve forces can be mobilized and deployed." General Meyer pointed out that, "the mix of heavy and light forces, the appropriate support structure, and the degree of modernization are areas where difficult trade-offs must be made." The central issue for the Army, Meyer argued, is to find a proper response to these diverse demands. "Our capabilities to project combat power world-wide," he argued, "must be improved."¹

The Logistics Center's Force Structure and Test Directorate played a major role in fashioning the Army's FY 79 response to these challenges, and towards improving the Army's ability "to project combat power world-wide."

FORCE STRUCTURE ASSESSMENT

LOGC Regulation 11-1. LOGC Regulation 11-1, Logistics Force Structuring and Manpower Analysis in the Combat Development Process, was published in final form. As a supplement to TRADOC Regulation 11-1, it assigned responsibilities and established formats for Logistical Force Structuring Assessments (LFSA). These assessments addressed the manpower impacts of new organizations and equipment on the Total Army.²

V Corps Combat Service Support. A preliminary draft of the V Corps Combat Service Support Evaluation was completed. This study estimated V Corps' wartime requirements³, and assessed V Corps' logistics capabilities in light of these requirements.

Army Force Planning Data and Assumptions (AFPDA). Initial proposals for update of the Army Force Planning Data and Assumptions were presented to the Command Group on 11 April, and transmitted to TRADOC on 12 April. The assumptions consisted of planning factors used in the Total Army Analysis Process. LOGC associated schools were tasked to review and comment on those portions of the document that fell within their areas of proponency.⁴

Total Army Analysis (TAA). In October, 1979, the Center completed its first year as a participant in the cyclic Army Force Planning Data and Assumptions Total Army Analysis force development process. "Although this year was largely a learning process," MG DeHaven pointed out to TRADOC that, "we provided significant contributions toward documenting reasonably well-balanced logistical force requirements."⁵ Unfortunately, the requirements did not result in a corresponding adjustment--particularly in support of a transition

to war phase. An August 1979 Army Program Decision Memorandum did not help this situation. It directed active component combat service support reductions. "With the experience we have gained this year," DeHaven acknowledged, "we will strive to achieve a logistical force program balance within the resource constraints imposed, but changes must be made to the TAA process if this is to occur."⁶

Manpower Analysis Papers (MAP)/Logistical Force Structure Assessments (LFSA). Besides participation in the Total Army Analysis process, the Center completed several Manpower Analysis Papers and Logistical Force Structure Assessments in support of the TRADOC System Managers. These assessments provided comprehensive estimates of manpower impacts concerning fielding of new organizations or weapons systems: The General Support Rocket System, Armored Cavalry Regiment Support Squadron, and the Infantry Fighting Vehicle and Cavalry Fighting Vehicle. They also provided a basis for appropriate changes to logistical force modeling within the Total Army Analysis process.

Theater Nuclear Force/Survivability (TNF/S). The BDM Corporation completed their application of the LOGATAK model to the Theater Level Scenario in February 1979. It was briefed to the LOGC Commander in March. The results of this effort combined with BDM's previous work with a corps level scenario indicated clearly that, with careful planning, the LOGATAK model could successfully be applied to typical TRADOC Scenarios.

The BDM Corporation also was awarded the contract for Task 3 of the Theater Nuclear Force/Survivability Program, "Development of a Division Level Maintenance Model." This consisted in developing and using a division level maintenance model. The contractors study plan and work schedule, submitted to the LOGC on 10 May, represented the first deliverable product under the terms of the contract. The task was funded and scheduled for completion by April 1980. However, in a September 1979 congressional action, funds for the program FY 80 and FY 81 were zeroed out. Consequently, the Program was formally terminated by TRADOC message on 10 October 1979.

Scenario Oriented Recurring Evaluation System (SCORES)

Division Restructuring Evaluation (DRE). In the early part of the 1st Quarter, FY 79, the Division War gaming at Fort Leavenworth, Kansas, for four planned division restructuring evaluation games was completed. Output data was forwarded to the LOGC as it was produced; however, requirements to review some reports after errors and problems with transmission equipment were found, slowed the receipt and dissemination of the data. These problems reduced the time available for the analysis by the LOGC and associated schools. Final output from the Combined Arms Combat Developments Activity division war gaming was provided to the LOGC on 29 January. The associated schools provided input analysis to the LOGC in March. A Center tentative analysis was provided to Developments Activity on 12 March, and the final Supportability Analysis with annexes from the LOGC, Academy of Health Sciences, and the Administration Center was mailed to the activity on 30 March 1979. This completed all action on the evaluation.

Division 86. The Division 86 study was the latest in a line of studies, e.g., the Division Restructuring Study and Division Restructuring Evaluation, designed to assist in the development of the new division organization. Specifically, the study was designed to develop the most combat effective organization for the Army's heavy divisions in 1986 in order to facilitate integration of new and advanced material systems, operational concepts, and human resources into the Army. The Scenario Oriented Recurring Evaluation System-type analysis using the division wargaming represented just one portion of the overall study involving SCORES Division and the LOGC associated schools. The analysis focused on a comparison of the present division updated for 1986 equipment (C series) and the objective and Division 86 (S series) organizations based primarily on wargaming results. Because the war gaming results were limited in the area of logistics, however, other data sources and military judgment were necessary to fill the voids.

Gaming of the C-series base case began originally in February 1979; the game was completed in July with data being received at the LOGC and disseminated to the schools in August. However, an error was discovered in a calculation made by the model that was considered significant enough to require regaming of the C series. In addition, the alternative level 2 game which began in late July 1979 was scrapped as a result of the error along with plans for offensive games. Regaming was scheduled to begin in late September with the objective division (incorporating the Brigade Support Battalion) to follow.¹⁰

Threat Analysis. Serving as the single point of contact for all threat-related matters, the threat office studied and retained current intelligence material and distributed it on a need-to-know basis. Evaluation of the threat portrayal of Army Training and Evaluation Programs and TRADOC Standard Scenarios continued on an ongoing basis. In the past 6 months, the threat manager actively supported the intelligence team working on threat portrayal for LOGEX. Other activities of substance included numerous trips to the Special Security Office, Fort Monroe, VA and attendance at a threat instructor's conference at Fort Leavenworth. Of particular significance was a threat manager's conference held at this Center for the associated schools. Emphasis centered on airing mutual problems as well as laying the foundation for a comprehensive combat service support threat to be developed in FY 80 by the LOGC Threat Manager.¹¹

Europe III Standard TRADOC Scenario. As the first scenario portraying two US Corps, Europe III attracted wide attention and visibility during this period. Using equipment and doctrine in the mid-1980 time frame, the Combined Arms Combat Developments Activity conducted several workshops. At the same time, the Logistics Center developed a logistics scenario which ran concurrently with the tactical Jiffy war gaming. On 13-14 February, the Center also hosted a working conference in which the associated schools participated in the beginning phases of the logistics scenario. "We determined that at the end of each gaming day we would receive the war game narratives and printout results," MG DeHaven noted in his CY 80 annual letter to General Starry.¹² These were forwarded to the associated schools so that the logistics story could continue.

The Combined Arms Center began the war gaming of Europe III in late March. During this period, the corps support command operations plans and overlays were written and forwarded to the Combined Arms Combat Developments Activity and other interested schools and centers. The Developments Activity held two more workshops in April and May. In addition, the Logistics Center visited the activity to coordinate gaming results, battle narratives, computer printouts, and to stress the needs of LOGC requirements to obtain these results in a timely manner. "We need these results to develop the logistics scenario for each day of gaming," the LOGC commander acknowledged, "and to lay the basis for the SCORES Phase I evaluation."¹³

The Logistics Center's SCORES Division hosted a workshop on 30-31 May to provide "D-Day" gaming results to the associated schools. In late June, LOGC personnel traveled to Europe to obtain background information, updated troop lists, operations procedures, and facts on the two corps Europe III scenario. Sequence I (unconstrained firepower) war gaming ended in July and the Developments Activity provided D+1 and D+2 results in August. On 12-13 September, the Center sponsored a workshop to disseminate the D+1 and D+2 data, coordinate efforts between associated schools, provide the required interaction between functional responsibilities, and continue efforts on the logistics scenario. The Activity began the Jiffy war gaming of Sequence 2 (degraded/weapons systems) in August. The LOGC obtained initial computer data for D+1 and furnished certain extracted data to the associated schools during the September workshop. Based on verbal guidance from the Combat Developments Activity, the LOGC was able to examine how best to provide logistics constraints to the war games.¹⁴

Europe IV, Standard TRADOC Scenario. The Europe IV Scenario portrayed a US corps in the Northern Army Group (NORTHAG), and used the same assumptions and constraints as those listed in Europe III. A mid-July workshop discussed tentative plans for the corps. The 26-27 September Fort Leavenworth workshop provided additional guidance for tasking LOGC associated schools. During this period, LOGC SCORES Division action officers began the task of identifying combat service support units which would support the tactical plan.

The Center established contact and coordination with the 310th Theater Army Area Command at Fort Belvoir, the 13th Combat Support Command, Fort Hood, and the Forces Command for input to the combat service support troop list development. Members of the SCORES Division visited US Army Europe in June to discuss logistics support concepts and requirements with the staff. In addition, on 12-13 September, the Center hosted an action officer workshop for the associated schools, one purpose of which was to identify logistics objectives for Europe IV. These objectives are currently being finalized and will be forwarded to the Combined Arms Combat Developments Activity upon LOGC approval.¹⁵

TEST AND EVALUATION

Small Unit Support Vehicle (SUSV). This mobile, transportable, track vehicle was designed to carry selected items of existence equipment in all weather conditions in cold weather, northern and mountainous regions, especially Alaska. The US Army Test and Evaluation Command conducted a test, and forwarded its results to the Combined Arms Combat Developments Activity. At the Activity's insistence, on 6 March the Center provided input data for RAM and logistics support tests issues for inclusion in the independent - evaluation report. ¹⁶

High Altitude Airdrop Resupply (HAARS) System. This system underwent development and operational tests to determine the operational effectiveness of a high altitude airdrop resupply system that permitted the delivery of supplies and equipment from the ramp of US Air Force cargo aircraft from altitudes between 2,000 and 25,000 feet above ground level. As proponent for conducting this independent evaluation, the Quartermaster School provided its initial report which was coordinated within the Logistics Center. Substantial comments and revisions were rendered prior to forwarding the report to HQ TRADOC on 14 March 1979. ¹⁷

Combat Electronic Warfare and Intelligence (CEWI). During 18-19 January 1979, a fourth concept assistance team meeting for the combat electronic warfare and intelligence group was held at Fort Leavenworth where the feasibility of conducting a force development test and experimentation for the Combat Electronic Warfare and Intelligence group in September was discussed. Shortfalls surfaced in terms of materiel, personnel, and concepts caused team members to recommend that the test and experimentation be cancelled. It was further recommended that a TRADOC task force be organized to refine operational and organizational concepts, review tables of organization and equipment, and that a general officer in-process review be postponed because of briefings scheduled at the developments activity to discuss alternate proposals. ¹⁸

M113A1 Product Improvement Program (PIP), Deputy Test Director, Logistics. HQ TRADOC was designated in outline test plan 79-OT-589 to provide an on-site Deputy Test Director, Logistics, for the M113A1 PIP test at Fort Carson. TRADOC delegated this task to the LOGC. Personnel were required on site from January-June, 1979. ¹⁹

Wrecker Unit Fifth Wheel. This action involved the Armor and Engineer Board conducting a concept evaluation program user test to evaluate the feasibility of commercial hoist equipment in towing and evacuation of commercial heavy equipment wheel transport entering the Army inventory. The test was completed on 12 February, and the final test report was provided the Ordnance Center and School on 16 April.

As the test proponent, the Ordnance Center and School was required to conduct a proponent evaluation of the concept evaluation program test results.

Upon completion, the Ordnance Center forwarded the evaluation to the Logistics Center for review. The Center sent the results to TRADOC on 7 June, and recommended that as an interim solution to the requirement for developmental or commercial non-developmental recovery vehicle, a commercially developed fifth wheel wrecker unit should be utilized.²⁰

Variable Authorized Stockage List Policy for Division Support Commands. During FY 79-1, HQ TRADOC and HQ US Army Operational Test and Evaluation Agency approved the outline test plan for testing. The Forces Command concurred in the 1st Infantry Division as the test unit for this test. HQ TRADOC Combined Arms Test Activity was designated the test organization, and coordination meetings were conducted during this period in development of the test design plan. This test examined the suitability of proposed variable authorized stockage list add and retain criteria. A LOGC effort developed the variable add and retain criteria. Although this test was approved, HQ TRADOC could not provide the funds to support the test. An alternative position proposed that the action continue not as a test but as a study, with the Center providing the "in-house" evaluation of the results. The alternative²¹ position was implemented, and the test plan withdrawn from test programming.

Reverse Osmosis Water Purification Unit (ROWPU). Operational test IIA to evaluate the overall effectiveness of the 600 GPH reverse osmosis water purification unit under typical operational conditions began 2 October 1978 at Fort Bragg, NC, under control of the Armor and Engineer Board. Test units were air transported to Eglin AFB, Florida in support of exercise GALLANT EAGLE 79 on 21 October, and returned to Fort Bragg on 10 November. The test was completed 17 November, and the subsequent test report distributed 12 February.²²

Ribbon Bridge Erection Boat (RBEB). The Operational Test II of the ribbon bridge erection boat was conducted by the Armor and Engineer Board during the period 14 August - 23 October 1978. The test provided data to the in-process review on the operational suitability of two candidate modified commercial bridge erection boats as well as a comparative assessment of these boats with the current standard ribbon bridge erection boat. Based on the test report which was distributed in January 1979, the LOGC performed a RAM analysis of the candidate boats as well as the standard erection boat. This assessment, which indicated that the standard boat was superior to candidate boats, was incorporated into the independent evaluation report forwarded to TRADOC in April 1979.²³

New Army Main Battle Tank, XM1. Phase II and III testing was conducted at Fort Bliss, TX, during this period. Phase II testing included two nonfiring maneuver exercises and individual tank precision firing exercises. In phase III, more platoon nonfiring maneuver exercises as well as platoon combat live-fire exercises were conducted. 8th Co, 2d Squadron provided organizational maintenance, and 513th Maintenance Company provided direct support maintenance during both phases. An Ordnance School officer represented the LOGC as on-site Deputy Test Director, Logistics. On 2 February 1979, the SM1 OT II was completed. The Ordnance officer briefed

this Center in April, discussed his duties as the D10-Log, and provided recommendations applicable to future tests with logistics objectives. Because of division personnel losses in September and October, the Materiel Systems Directorate accomplished most SMI actions. Further, it is unknown when the LOGC's Force Structure and Test Directorate will be able to become active on XM1 again. A replacement RAM engineer anticipated in February to support the XM1 requirement has not been received,²⁴ and that space has subsequently been designated as a "no fill" position.

UH-60A Black Hawk. To coordinate the 4 June initial operation of capability force development test and experimentation, two test integration working group meetings were held during 1st and 2d Quarters FY 79. The LOGC furnished input for the Independent Evaluation Plan on 23 February, and the draft Test Design Plan, 28 February. The LOGC provided the RAM advisor for the Test and Experimentation and the Transportation School furnished the Deputy Test Director for Logistics. The testing resolved many issues. On 20-21 March, the LOGC attended a meeting at Fort Rucker to discuss type classification of the UH-60A Mission Flexibility Kits. It was decided that Army Intelligence School would act as lead proponent for this action, and that any unresolved issues after the UH-60A field development test and evaluation would be answered through additional independent testing.²⁵

Decentralized Automated Service Support System (DAS3). Efforts from 1 October 1978 to 31 March 1979 included coordinating and finalizing the independent evaluation plan providing two coordinated inputs to the revision of the test design plan, participation in a failure definition and scoring criteria conference at the project manager, Tactical Management Information System with follow-on input efforts to finalize the revision of the failure definition and scoring criteria, and developing a decision coordinating paper,²⁶ regarding the testing of the decentralized automated service support system.

DAS3 Technical Feasibility Test (TFT). The Center was represented at the test coordination meeting held at Fort Huachuca, 11-12 September, to assist the project manager, Tactical Management Information System and DARCOM elements in establishing the system test baseline. This was the final pretest coordination meeting to resolve testing details for the system scheduled to begin on 17 September. Since the operational test was waived, the feasibility test addressed operational test II (waiver proposal) issues contained in LOGC's approved Independent Evaluation Plan. Of primary concern was the adequacy of the test to assess the issues associated with training and logistics support. In each of these areas, the support packages and documentation were prepared and provided by the General Electric Contractor, and addressed in subtests during each of the three test phases at Fort Huachuca, White Sands Missile Range, and Aberdeen Proving Ground. Following the testing, the LOGC evaluated the training materiel, training, logistics support provisions, and actual support provided during the testing.²⁷

Surface Launched Unit Fuel Air Explosive (SLUFAE). A mine neutralization system consisting primarily of a rocket launcher mounted on an M548 track vehicle, the Surface Launched Unit Fuel Air Explosive completed Operational

Test II in May 1979, with numerous problems being experienced with employment, training and hardware reliability. A test integration working group meeting was held at Fort Belvoir in August to determine the time frame for conducting Operational Test IIA. In conjunction with the US Army Engineer School, the US Army Mobility Equipment Research and Development Command conducted additional testing in September to correct some of the employment and training problems prior to Operational Test IIIA which is scheduled to be conducted spring/summer of 1980. In conjunction with the Engineer School, The Logistics Center²⁸ prepared the RAM and logistics annexes to the independent evaluation Plan.

10KW Gas Turbine Engine Driven Generator. The 10KW Generator was designed to be a lightweight and easily maintainable generator, and to replace the power generators currently providing 5KW and 10KW power to field units. The 10KW gas turbine engine driven completed Operational Test IIA in June. During the test, the system experienced numerous failures due to fuel contamination, and met less than 10 percent of its minimum required reliability requirement. The Logistics Center prepared the RAM annex to the independent evaluation report completed prior to the November in-process review.²⁹

5-Ton Truck Product Improvement Program 5-Ton (PIP). Phase III testing of Development Test II was completed in June 1979. A working group meeting was held at the Transportation School in August to finalize the School's Letter Report and Evaluation of Phase III testing as well as preparing a summary of all testing conducted on the 5-ton truck. The LOGC also prepared its position on the in-process review which was held in September 1979 to type classify the vehicle.³⁰

Ground Emplaced Mine Scattering System (GEMSS). The Ground Emplaced Mine Scattering System is a member of the Family of Scatterable Mine Systems being developed for fielding in the 1980 time frame. The mine scattering system completed Operational Test II in August 1979, and the Test Report will be forwarded in November 1979. The LOGC was tasked to prepare the RAM and logistics input for the independent evaluation plan in conjunction with the Engineer School. The in-process review was scheduled for March 1980.³¹

Modular Pack Mine System (MOPMS). The Modular Pack Mine System is a mine system being developed for fielding in the 1980 time frame. The Logistics Center reviewed the test support package and the test design plan in August. Numerous comments were made to these documents to expand the scope of the force development test and experimentation to provide a more detailed coverage of logistics elements since no Operational Test³² was conducted. The experimentation is scheduled for October 1979.

Container Related Materials Handling Equipment in GS Supply and Ammunition Force Development Testing and Experimentation (FDTE).

The Army Staff requested that HQ TRADOC initiate action to develop a test plan and conduct a force development test and experimentation user test of the above. TRADOC designated the LOGC as lead proponent for implementation of

instructions. The Force Structure and Test Directorate conducted pretest planning and, as a result of this action, provided HQDA through HQ TRADOC a suggested time frame and type units to be tested based primarily upon equipment and unit availability (e.g., 50K Rough Terrain Container Handler 4K Rough Terrain Forklift Truck and mobile ramp; TOE 29-118, 29-119 and 9-74). TRADOC concurred with the LOGC assessment, and the Army Staff agreed with the following modifications:

a. TOE 29-118 General Supply Company (GS) was designated as test table of organization and equipment for the continental US phase of testing with start date of 4th Qtr FY 81.

b. TOE 9-74 Ordnance Company Ammunition Conventional (GS) was embodied in the Munitions Support Structure study but the Army staff rejected its design. Therefore, reliance on TOE 9-74 as test unit for the USAREUR phase was considered premature.

c. If TOE 9-74 is not finalized in sufficient time to field as test TOE and follow-on to completion of CONUS test, then conduct test with current TOE 9-38 Conventional Ammunition Company (general support/direct support) breaking out these functions.

Upon receipt of HQDA guidance, the LOGC developed an independent evaluation plan. The plan was the test proponent's (LOGC) master plan for conducting the test, and served as the base document for the test organization (TCATA) to develop the outline test plan and formally enter the subject test in the Army Five-Year Test Program. The test provided data to evaluate organizational suitability of selected general support units to operate effectively in a container oriented distribution system equipped with selected container handling equipment. The test involved two phases: Phase I testing of TOE 29-118 in a CONUS environment commencing in 4th Qtr FY 81, and upon the conclusion of Phase I, initiation of Phase II testing of TOE 9-74 or 9-38 in USAREUR. The Center completed the draft independent evaluation phase, and dispatched it to appropriate commands for comments and review on 17 August, with comments due back by 1 October.³³

Operational Suitability Study Panel.

On 20 March, the Office of the Secretary of Defense initiated a study of the weapon system test and evaluation process related to operational suitability. The overall objective of the study was to develop policies and procedures which would aid in early formulation of operational suitability requirements, planning of comprehensive and effective test programs, and accurate assessment of system operational suitability characteristics. The study focused on obtaining the best possible assessment of operational suitability characteristics at each acquisition milestone and during early field experience.

This study was conducted in two phases by a panel consisting of representatives from each service's development, logistics and test agencies,

Defense, and a supporting contractor. As a panel member, LOGC participated in the initial phase which consisted of a review of procedures used to define and evaluate operational suitability parameters on both current operational systems and programs now in the defense systems acquisition review council cycle. The report on Phase I scheduled for November³⁴ will define the study efforts to be accomplished in Phase II of the study.

Other Activities. In addition to the above actions during this period, the Center reviewed and commented on 11 independent evaluation plans; 8 test design plans; 6 independent evaluation reports; 3 test support packages; 3 outline test plans; and 13 other user test documents.

ORGANIZATION

Manpower Authorization Criteria (MACRIT). The milestone chart (Figure 10) shows the status of Improved Maintenance MACRIT process and projects early into the 1980s. The first five milestones have already been accomplished.

The first delta represented the results of a MACRIT Working Group Meeting at Fort Eustis (14-15 September). The LOGC agreed to undertake the pilot project for the M60A1 tank provided additional funds and resources were made available. However, the development of the project directive and project plan were accomplished using present resources. Upon approval of the project plan, additional resources (manpower and dollars) were provided before undertaking the pilot project.

The second delta presented the draft study directive which was approved with certain modifications - the most important modification being a change to the resource statement. On 5 February, the LOGC rebutted the Deputy Chief of Staff, Personnel, draft changes in wording and recommended, in so many words, that TRADOC ensure that the LOGC get the resources to conduct the pilot project, or some nine of TRADOC's high priority projects will have to be assessed.

Delta 3 was achieved when TRADOC indicated that the Deputy Chief of Staff for Personnel was scheduled to put money in the personnel, operations, maintenance (POM). On 16 March, Personnel approved the project directive and requested that the draft project plan be submitted by 10 May. "The Improved Manpower - Authorization Criteria (MACRIT) Restructuring Initiative imposed additional personnel constraints on the Center which greatly affected our operation," the LOGC Commander wrote TRADOC. However, he added, "we rose to the occasion and in March, DA DCSPER approved the project directive; in July, the HQDA MACRIT Restructuring Initiative was funded for FY 81 thru FY 85."³⁵ This was Delta 4.

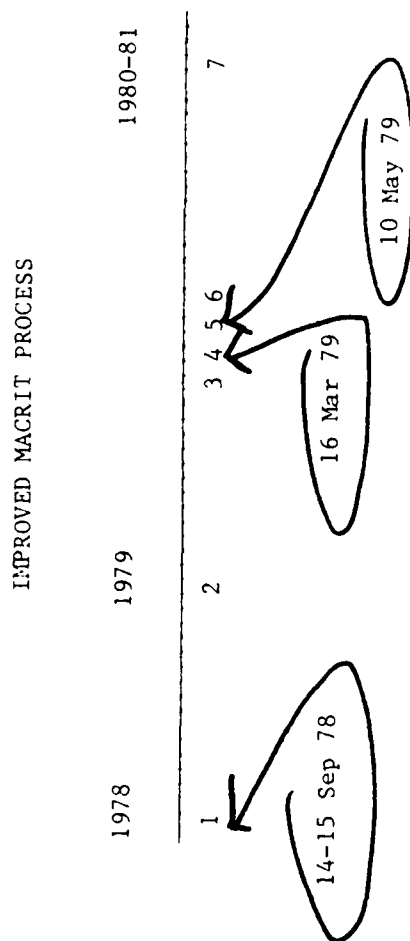


Figure 10. Improved MACRIT Process

Delta 5 showed the Center submission of the draft proposal plan within 6 weeks after formal approval of the project directive. The sixth delta represented the LOGC implementing the Pilot M60A1 project evaluation. The last delta, 7, was the projected completion of the project, 2 1/2 years after the start date of Delta 6.³⁶

The LOGC hosted a meeting of the MACRIT Working Group on 13 September. Discussions were directed toward resolving coordination comments provided by those agencies who reviewed the Draft Project Plan, "Evaluation and Enhancement of a Proposed Concept for Determining Maintenance Manpower Requirements." The comments to the plan were addressed and resolved with the exception of the Academy of Health Sciences' comment concerning resources expended, time elapsed and tangible benefits of the project. This comment will be reevaluated at the next working group meeting. The draft project plan, with revisions, was approved and will be presented to the DA GA MACRIT Steering Committee on 29 October 1979. An updated briefing for the Deputy Commander, LOGC, was scheduled for 22 October 1979. Additionally, two civilian spaces and \$43,000.00 were appropriated for salaries as initial resources to implement the project in early FY 80.³⁷

As reported last year, the Center took the lead in developing the methodology embodied in the approved plan covering a "pilot study" with the M60 tank serving as the candidate system. "The potential impact of the new approach on TOE development and force structuring," MG DeHaven announced, "will be profound."³⁸

Armored Division Maintenance Battalion (TOE 29-35H). A revision of this Maintenance Battalion TOE was submitted to TRADOC HQ in FY 79-4. When approved the authorized strength of the battalion will increase from 1,054 to 1342. The revision will provide improved technical supply, vehicles approved by the Authorized Stockage List Mobility Study, and a Platoon of 69 people to maintain the division's operational readiness float. Comparable revisions of the Infantry and Infantry (Mechanized)³⁹ Division Maintenance Battalions have been approved within the last year.

Supply and Transport Battalion, AIM Division (TOE 29-5/29-65/29-115). The battalion TOE were revised and submitted to TRADOC HQ in FY 79-4. The Supply and Service Company (TOE 10-7H) was restructured to provide three Forward Supply Platoons and to add three Ammunition Transfer Points. Each transfer point was designed to handle and issue 500 short/tons per day in each brigade support area. In the main supply platoon, bulk fuel storage capabilities were increased by 60,000 gallons.⁴⁰

The Transportation Motor Transport Companies (TOE 55-84H/55-87H/55-88H). These TOEs were revised to replace the 2 1/2-Ton Cargo Trucks in the three Light-Truck Platoons with 5-Ton Cargo Dropside Trucks. Fuel servicing vehicles (5-Ton Tractors and 5,000 Gal Semitrailers) were increased to provide more fuel distribution capabilities for aviation fuels that are needed because of the increase in the numbers of aircraft that are now authorized in the AIM divisions. This revision of the Supply and Transportation Battalions will

improve the divisions' capability for arming and fueling their weapons systems and equipment.⁴¹

SUMMARY

During this fiscal period, the Logistics Center played a major role in projecting the Army's combat power world-wide and in bringing the force structure into harmony in terms of its manning, equipment, and training. By meeting General Meyer's challenges for the Eighties, the Center proved once again its value as an integrating center and logistics think-tank for the Army in the field.

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CHAPTER 7

OPERATIONS ANALYSIS SUPPORT

Throughout the past fiscal year, the Logistics Center continued to provide TRADOC and the Army community broad operations research and systems analysis support. Concurrently, as General DeHaven observed, the Center expanded its efforts, "to progressively enhance analytical and computer capabilities in the 1980s, the latter stressing improved data bases and hardware facilities."¹

MAJOR OPERATIONS AND SYSTEMS ANALYSIS STUDIES

Development of Corps Logistics Analysis Methodology (DCSLAM). In a letter, dated 10 January 1979, the TRADOC Commander responded to earlier correspondence from the LOGC Commander on days of supply as a logistics planning factor. General Starry expressed concern about the demands on the supply system during the first critical days of battle and surge rates to be expected when opposing second echelon forces join the attack.² On 15 January, a special study group was established within the Operations Analysis Directorate to address the problems posed by General Starry to bracket support requirements for successive battles following initiation of a European conflict by opposing forces. On 15 February 1979, the LOGC Commander notified the TRADOC Commander by letter that a special study group had been formed to examine the support problems. The letter also noted coordination with the Administrative Center, Fgrr Benjamin Harrison, and advised that a concept paper would be prepared.³ On 22 March, the LOGC Commander was briefed on a three-phase concept to bracket the support problems for selected classes of supply and medical evacuation requirements. The first phase, addressing near-term requirements (prior to 1984), was scheduled so that results could be available for the Administrative/Logistics Systems Program Review in February 1980. MG Smith⁴ approved the basic approach and submitted a concept paper to General Starry.

On 30 April, the LOGC briefed the TRADOC Commander on the study concept and overall methodology. The methodology included a detailed analysis of the USAREUR V & VII Corps capabilities as related to supply classes III, V, and VII and medical evacuation and personnel replacement issues. Furthermore, the methodology included use of the LOGATAK computer simulation for modeling the flow of supplies through USAREUR.⁵ In correspondence dated 4 June and 29 August 1979, the TRADOC Commander provided comments and further guidance regarding the corps' methodology approach. The second letter stressed the need for the overall methodology to "accommodate the full spectrum of combat service support."⁶

On 13 June the LOGC sent a letter to Fort Ben Harrison requesting their analyses of V and VII Corps' capabilities in the personnel replacement (wartime casualties) and medical evacuation areas. The backdrop for determining mobilization and wartime requirements was a set of contrasting scenarios, i.e., TRADOC's Europe Short Warning and Concepts Analysis Agency's OMNIBUS. The Administrative Center subsequently tasked the Academy of Health

Sciences (AHS) to perform the medical evacuation analysis. Several coordination meetings with Harrison and Academy representatives transpired, the personnel replacement portion being submitted to the LOGC on 7 September. The Academy planned submission to the LOGC during FY 80-1.

While selected associated schools supported the analytical effort, it was apparent that a trip by project personnel to Europe was necessary to gather data concerning contingency plans and locations of various supply centers. However, HQ Europe indicated that the proposed trip could not be accommodated during the August time frame due to conflicts with other programmed visits to the theater. This action caused a severe setback in the fact-finding effort, resulting in study milestones being delayed several months. A second attempt in September was successful, with the trip planned for early October.

During August, in an effort to ascertain both equipment and personnel asset data for V and VII Corps, the LOGC reviewed selected data files maintained by DARCOM and the Military Personnel Center. On 30 August, the LOGC formally requested HQ TRADOC assistance in acquiring access to those files. Plans existed to develop computer programs for the merger of the files and the extraction of selected information to facilitate generation of production functions based on the personnel and equipment actually available to selected combat service support units. The production functions were designed to permit an analysis of the current support capabilities of V and VII Corps and to serve as input to the LOGATAK model. Initial applications of the LOGATAK model focused on the movement of conventional ammunition in the European theater.

Concurrently with the survey of selected V and VII Corps combat service support capabilities, the LOGC initiated a major study of the WARSAW Pact Second Echelon Army. This portion of the project continued into FY 80. Surge effects of the Second Echelon Army on the logistics requirements of both V and VII Corps and methods for meeting anticipated wartime voids were to be examined.

On 25 September, the Center conducted a workshop to discuss the overall methodology, and specifically the LOGATAK Modeling of conventional ammunition flow and usage in V and VII Corps. HQ TRADOC, LOGC, Missile and Munitions and Transportation Schools personnel attended.

Maintenance Manpower Requirements Study. In support of the HQDA Manpower Authorization Criteria (MACRIT) restructuring effort, the Logistics Center developed a draft project plan for evaluating a proposed improved MACRIT process. That plan, "Evaluation and Enhancement of a Proposed Concept for Determining Maintenance Manpower Requirement," was concurred in by HQ TRADOC and forwarded on 1 June 1979 to HQDA for approval. It was noted, as indicated in the approved project directive, that additional resources would be required to implement the project upon approval of the draft plan. In July 1979, the HQDA MACRIT restructuring effort was funded by HQDA for FY 81 through FY 85, with personnel allocations and funds approved for the TRADOC community. Resources were also authorized by HQDA for FY 80 in support of the MACRIT

draft evaluation plan. At a meeting convened on 13 September 1979 at the Logistics Center, the draft project plan with revisions was approved by the MACRIT Working Group (chaired by DA ODCSLOG), and is scheduled for presegation to the DA General Officer MACRIT Steering Committee on 29 October 1979.

Planning Factors Management

During the past year, the Center finished a study to analyze the scope and magnitude of the LOGC's logistics planning factors mission. The study developed and evaluated several alternative data base and organizational concepts, each of which allowed successful execution of the planning factors mission. This study recommended adoption of state-of-the-art data base management technology as well as a significant increase in personnel for the Planning Factors Management Division. Next year, the Center hoped to send TRADOC a detailed functional system requirements document, with its supporting economic analysis, providing facts and supporting rationale for proposed software development and hardware acquisition. As a consequence, the LOGC worked closely with TRADOC and DA, Office of the Deputy Chief of Staff, Logistics, to identify resources for both the required contractual software development effort and the additional personnel allocations. "The need for a responsive, flexible and valid planning factors data base is becoming more evident throughout the Army community," noted MG DeHaven in his February 1980 letter to General Starry.¹⁰

The study concluded this fiscal year predicted that the planning factors workload would increase five to tenfold by 1985. It attributed this rise to an ever-increasing demand for more precise data in support of simulations, studies and plans as well as an increasing awareness throughout the Army community of the LOGC's ability and expertise in development of logistics planning factors. Although DA Pam 700-13 documents the Center's role of centralized management of logistics planning factors, a new regulation was staffed which significantly increased the awareness of, as well as underscored, the Center's responsibilities.¹¹

The Planning Factors Management Division was heavily involved in providing planning data for Division '86, Corps '86, and Light Division studies. The resulting supporting force structures of the Army of the future derived directly from workloads developed using logistics planning factors. Annually, the Center provided the Army's logistics planning factors for the Joint Strategic Capabilities Plan Logistics Factors File. In just two years, the number of type units for which factors were required doubled. This year the LOGC provided factors for 13 subclasses of supply for each of 548 company and battalion units, eight separate brigades and five divisions. It also provided logistics planning factors annually for the Army Force Planning Data and Assumptions effort and the Total Logistics Readiness/Sustainability program. Additionally, it responded to requests from FORSCOM elements for assistance in their contingency planning efforts. This past year the Center supported III Corps, XVIII Airborne Corps, and the 4th Infantry Division (Mech), often on short notice. It even provided logistics requirements for a corps contingency force to the Air Force's Military Airlift Command on a 2-hour's notice.¹²

The Center's workload and its very limited Planning Factors Management Division staffing, warned MG DeHaven, "precludes adequate time for maintenance of our data base files (updating data, elimination of erroneous entries, researching new/improved data sources, etc.), and averts essential efforts to capture simulation, test and exercise data for purposes of validating the accuracy of our planning factors and for more accurately defining the parameters relative to specific planning factors." Furthermore, "many of the planning factors we provide are based on historic data of questionable value or factors that remain untested." Concluding, the LOGC Commander noted that, "Increased staffing is essential to permit development of improved methodologies for planning factors development."¹³

Cost-Benefit Analyses

"The conduct of economic analyses and burden assessments in support of the development of US Army standard logistics systems" wrote MG Smith to General Starry in February 1979, "is a continuing major mission requirement." General Smith did, however, point out that because of personnel shortfalls and the prospect of continued personnel problems, these analyses suffered accordingly. He hoped that, "continued growth in regulatory and special DA requirements for economic analyses in the foreseeable future would appear to justify additional authorizations through your headquarters."¹⁴

Economic Analysis (EA) for the Division Level Data Entry Device (DLDED). The economic analysis was prepared in lieu of a Cost and Operational Effectiveness Analysis to support the Required Operational Capability document. An In-Process Review was hosted by the Office of the Program Manager, Tactical Management Information Systems on 16 November 1978. At the review, representatives of the Communications Research and Development Command stated that validated life cycle costs would be delayed. A new suspense of 26 January was provided for the economic analysis. On 30 January, LOGC was informed that four (4) Division Level Data Entry Devices per division were to be eliminated from the Supply and Support Company. This change required major recomputation of costs; therefore, an extension of the suspense to 15 February was granted.¹⁵ The analysis was completed and submitted to HQ TRADOC on 26 February.

Management Information System Economic Analysis (MISEA) for the Standard Army Maintenance System (SAMS) Part 1 Detailed Functional System Requirements (DFSIR). All of the input data requested were received by January. Because the inputs were delayed and required substantial clarification, the suspense was extended from 1 February to 15 March. The draft was prepared and staffed internally at LOGC, and at the end of FY 79-2, the draft was under informal review at HQ TRADOC. The Standard Army Maintenance System, Part 1, Management Information Systems Economic Analysis was submitted to TRADOC on 11 April. HQ TRADOC staffing encompassed the period 11 April through 25 May, resulting in minor modifications. On 25 May, it was forwarded by TRADOC to the Army staff for consideration in the decision whether to approve the requirements and continue with development of the Standard Army Maintenance System, Part 2.

On 30-31 July, a meeting was held at HQDA to resolve all comments on the requirements analysis, and Organization and Personnel Plan for SAMS 1. Comments were resolved and the analysis approved without change.¹⁶

Management Information System Economic Analysis (MISEA) for the Standard Army Ammunition System Level 3 (SAAS-3) Detailed Functional System Requirement (DFSIR). On 10 January 1979, LOGC received new guidance reducing the number of sites for which dedicated hardware had been proposed. The new guidance required extensive revision of the tables and text. A preliminary draft was distributed at the Standard Army Ammunition System Development Conference held at LOGC on 27 February. On the basis of comments received from both informal review and other agencies, a revised draft was prepared and briefed on 12 March to the Center Chief of Staff. A need for further revision and some extension of scope was indicated as a result of additional Logistics Center review following the 12 March briefing.

The Army Ammunition System, Level 3, Management Information System Economic Analysis, was officially submitted to TRADOC on 10 April. TRADOC staffing encompassed the period 10 April to 10 May. The analysis was then forwarded to HQDA DCSLOG for consideration in the decision to continue development of this system and to approve the Detailed Functional System Requirement. The requirement and accompanying analysis were approved 26 September by the Office, Assistant Secretary of the Army (Installations, Logistics, and Financial Management).¹⁷

Standard Army Ammunition System, Level 4 (SAAS-4) Management Information System Economic Analysis (MISEA). The planning effort for preparation of the Management Information System Economic Analysis for Standard Army Ammunition System, Level 4, was begun during FY 79-4. The Missile and Munitions Center and School, Redstone Arsenal, Alabama, was designated as the proponent for the Functional Description document. However, USALOGC was tasked to prepare the economic analysis to accompany the functional description. LOGC's Operations Analysis Directorate analysts visited the Missile School from 5-7 September to coordinate efforts between LOGC and the school for the preparation of the functional description and the economic analysis. During this visit, information was obtained regarding the data-gathering requirements, proposed alternatives, study milestones, and concept of operations. The analysis was scheduled for completion in FY 80-3.¹⁸

Direct Support Unit Standard Supply System (DS4) Divisional Application Management Information System Economic Analysis (MISEA). Visits to the following locations to gather data regarding benefits and costs to be included in the Management Information Systems Economic Analysis were made during the period 29 August - 30 September 1979:

Transportation School, Fort Eustis, Virginia
Missile and Munitions Center and School, Redstone Arsenal, Alabama
USAREUR, Germany
V Corps, Germany
VII Corps, Germany
Theater Army Materiel Management Center, Zweibruecken, Germany
TRADOC Data Processing Field Office, Fort Leavenworth, Kansas

The DS4 (Divisional) Field Validation Test analysis was completed in draft. The draft documents projected costs and potential benefits. The potential benefits were to be validated onsite during the test at Fort Campbell, KY, during June. In early June, however, problems developed in the test. These problems were technical in nature, principally excessive computer run time. Computer Systems Command attempted corrective action but was not successful in reducing run time to an acceptable level.

Operations Analysis Directorate analysts visited the test site frequently during June, July, and August. The validation test was officially concluded at the end of August. Normal production cycles were never attained, and it was concluded that without further testing, the potential benefits of Direct Support Standard Supply System-Divisional application could not be verified. Further guidance is required from HQDA regarding plans for continued testing and/or direction regarding the finalization of the analysis.

Department of the Army Standard Port System Expanded (DASPS-E) Management Information System Economic Analysis (MISEA). This analysis was prepared to support the Functional Description for Standard Port System-Expanded. Planning for the analysis was initiated early in FY 79-4. Background information on the current Standard Port System and the proposed expanded version was obtained and analyzed. During the period 16-30 September 1979, a trip was made to the Transportation Terminal Group, Europe, and to the three major European terminals (Benelux Terminal in Rotterdam, Netherlands; Bremerhaven Terminal in Bremerhaven, Federal Republic of Germany; and the United Kingdom Terminal in Felixstone, UK) to collect cost data on the current system, and to verify potential benefits of the expanded system.

Department of the Army Movements Management System (DAMMS), Movements Planning Module (MPM) Functional Description (FD) Management Information System Economic Analysis (MISEA). Efforts towards development of the Movements Management System, Movements Planning Module Economic Analysis were begun in May 1979. During the period 2-16 May, data were collected regarding costs of the baseline system and expected benefits from implementing the module. A study plan was written and staffed with TRADOC, USAREUR, and HQDA during June 1979. Cost tasking letters were sent to Computer Systems Command,

Communications Command, and the LOGC design group on 27 June 1979. All organizations that received taskings responded, and the primary data analysis and documentation was concluded. A draft final report was submitted on 17 September to the 4th Transportation Brigade for comment. The economic analysis is scheduled to be completed in FY 80-1.²¹

Planning Factors Data Base (PFDB) Management Information Systems Economic Analysis (MISEA). Preparation of an analysis for the Planning Factors Data Base system was begun during FY 79-3. The analysis accompanied a combined general functional system requirement and detailed functional system requirement which was scheduled for submission to TRADOC by 31 January 1980. The requirement was prepared by the Operations Analysis Directorate, Planning Factors Management Division to support a redesigned and expanded data base which improves the Army's capability for collecting, developing, and disseminating logistics planning factors. A study plan outlining the approach to be followed in preparing the analysis was completed on 28 September.

Agreement was reached on 29 July to limit the number of alternatives to be included in the economic analysis to the following: Alternative 1, baseline or current logistics data base system; Alternative 2, a partially distributed data processing capability comprised of a remote site mainframe and a minicomputer at PFMD supporting a redesigned data base; and Alternative 3, a partially distributed data processor with direct user access capability. The third alternative was comprised of a remote site mainframe, a minicomputer at the data base, and input and output terminal devices with telecommunications access²² at the base and the common-user-site which supports a redesigned data base.

Logistics Burden Assessments

Sample Logistics Burden Assessments for Nonproponent Battlefield Automation Systems (BAS). As directed by the LOGC Commander, a study was initiated in November 1978 to clarify the role of LOGC in the preparation of logistics burden assessments of battlefield automation systems for which the Center was not proponent. A representative sample of three such systems was selected for analysis. The systems evaluated were the Position Location Reporting System, the Standoff Target Acquisition System, and the Tactical Fire Control System.

Lessons learned in developing these sample analyses were transmitted on 27 April to the Combined Arms Combat Development Activity with the recommendation that future logistics burden assessments be accomplished by the battlefield automation system proponent. On 2 July, the Combat Developments Activity acknowledged that proponents had the data required to accomplish logistics burden assessments on their respective systems. Although still contending that the LOGC has a responsibility as an integrating center to be aware of the logistics burden of all automation systems, they agreed that the solution to the problem was for the proponent to accomplish the total battlefield automation system. This solution will be given serious consideration in the next revision of the Battlefield Automation Management Plan (BAMP). MG DeHaven noted that this special project, "an in-depth analysis of data sources and

procedures for addressing the logistics aspects of burden assessments for which other centers and schools have proponentcy, appears to have resolved a controversy between CACDA and LOGC regarding the most effective procedure for accomplishing that portion of a burden assessment."23

Other Analyses

General Support (GS)--Automatic Test Equipment (ATE) Cost and Operational Effectiveness Analysis (COEA).

As a result of numerous meetings between personnel of the LOGC Operations Analysis Directorate and the TRADOC Combat Service Support and Analysis Directorates, a draft HQ TRADOC General Support/Automatic Test Equipment Cost and Operational Effectiveness Analysis study directive was prepared and sent to the LOGC on 3 October 1978 for staffing and comments. As a result, a final study directive was issued by HQ TRADOC (ATCD-AN-S) on 17 November.

On 30 November, Operations Analysis Directorate representatives visited the TRADOC Systems Analysis Activity (TRASANA), White Sands, NM, for assistance. As a result, White Sands indicated they would review the study plan and would assist in the preparation of an overall management plan for the supporting Cost and Training Effectiveness Analysis. On 13 December, in response to the 17 November study directive, the LOGC submitted a revised and updated draft study plan to HQ TRADOC. This plan estimated the analysis completion date as March 1980.

In a message dated 19 January, HQ TRADOC notified the Logistics Center that the Army staff would be returning the equipment required operational capability to TRADOC for preparation and submission of a Mission Area Analysis (MAA) and a Mission Element Need Statement (MENS). The LOGC was charged with responsibility for the area analysis and need statement, as well as for the economic analysis data collection effort. Data collection had, in fact, been in progress during FY 79-1 and 79-2 primarily through visits to the Letterkenny and Tobyhanna Army Depots, PA on 7 November and 14 December 1978, respectively. The HQ TRADOC message stated that further analysis guidance would be forthcoming upon receipt of DA instructions accompanying the return of the required operational capability (ROC). HQDA returned the capability to HQ TRADOC on 18 January; however, HQ TRADOC, in its transmission to this Center, failed to provide substantive guidance. Subsequently, the LOGC broadened the area analysis and need statement to cover test, measurement and diagnostic systems in general, and DA ODCSOPS requested TRADOC to prepare an operational capability and analysis and cost for the AN/USM-410 which would have been a major consideration in a general support/automatic test equipment and operational effectiveness analysis. These developments raised serious questions concerning the need for such an analysis in the near term.24

A meeting was held on 9 April at HQ TRADOC to discuss the status of the mission needs statement, DA ODCSOPS requirements for operational capabilities and effectiveness analysis for the AN/USM-410 and the automatic test equipment missiles. As a result, the senior HQ TRADOC representative decided that an

analysis for the automatic test equipment was no longer required. This was later confirmed in a message from HQ TRADOC indicating that when the need statement and supporting Mission Area Analysis were completed, a cost analysis would again be initiated.²⁵

In his annual letter to TRADOC, the LOGC Commander observed that during FY 1979, "we reported considerable frustration in a 2-year effort attempting to perform a COEA for General Support (GS) Automatic Test Equipment (ATE)." He commented that "lack of necessary DARCOM input was the difficulty." In April, he continued, "HQ TRADOC cancelled the requirements, but a price of approximately 5 man-years of ORSA effort was paid for the ineffective coordination in this area." As a result, the General concluded, "we are closely monitoring those continuing aspects of the joint TRADOC/DARCOM programs involving ORSA support to avoid repetition of the GS/ATE COEA situation."²⁶

Armored Combat Logistics Support Vehicle Family (ACLSVF).

On 7 November, the results of the Tank Automotive Research and Development Command-Logistics Center analysis comparing candidates for the roles of the Armored Combat Logistics Support Vehicle Family (ACLSVF) were briefed to the TRADOC Deputy Chief of Staff, Combat Development, MG James H. Merryman. The briefing recommended the general support rocket system chassis be included in the vehicle family and that a cost and operational effectiveness analysis (COEA) be performed to determine the preferred candidate. These recommendations were accepted by MG Merryman, as well as the proposal to include the Field Artillery Ammunition Support Vehicle in the analysis. The results and recommendations were forwarded by MG Merryman to General Starry, who approved the proposed course of action on 20 November. Subsequently, a draft analysis study directive was prepared by HQ TRADOC and forwarded to DA for staffing. Preliminary coordination was effected with TRADOC Systems Analysis Activity, which agreed to be the supporting analytic activity for the analysis upon receipt of a formal directive. DA staff and HQ TRADOC actions on the directive were being awaited at the close of FY 79-2.

Computer Support Operations

As noted in MG Smith's letter to TRADOC, LOGC local automatic data processing equipment support capabilities were an area of continuing concern.²⁷ Although this remained a significant issue, the Center made some progress during 1979. The LOGC IBM 7094/1401 configuration was discontinued in May and the computer site was occupied by the Computer Systems Command Support Group, Fort Lee (CSC-SGL). Under terms of a memorandum of understanding signed by MG Homer Smith and MG Clay Buckingham, the Fort Lee Support Group provided specified data processing support for LOGC local unique applications, and beginning in 1980, was to furnish support for LOGEX. "Considering total availability of CSC hardware, the various modes of systems software, and the basic problems of using CSC tested ADPE to run the cycle production applications for the LOGC," wrote General DeHaven, "this arrangement is, at best, an interim measure."²⁸

For the Center's data base, model and simulation systems, it depended on the Data Processing Field Office, Fort Leavenworth computers and this represented the bulk of its overall automatic data processing equipment support requirements. "We believe that even with the forthcoming upgrade of the DPFO hardware, our long-range needs in this area can only be satisfied by installation of some in-house LOGC hardware," argued DeHaven. "When we consider the future ADPE implications of the improved MACRIT project, force structuring, Pre-Command Course (PCC), Tactical Wheeled Vehicle Requirement Management Office (TWVRMO), planning factors management, and the Model Improvement Program," he continued, "we face a staggering increase in computer support requirements."²⁹

The Center undertook a contractual requirements study which TRADOC funded and which surveyed its future data processing needs. Additionally, the Center made some significant improvement during the past year in acquiring or enhancing existing peripheral-type equipment, including the installation of an Interactive Graphics Terminal and a government-owned Remote Job Entry Terminal. This Remote Job Entry Terminal provided another link with the field office and complemented the Center's main remote job entry Mohawk Terminal which was upgraded with more reliable and faster peripherals. In December, DA was scheduled to approve a request for a VAX 11/780 minicomputer. This provided considerable capabilities to do in-house model and simulation analysis. The Center's Commander told TRADOC that, "we managed to keep our head above water in ADPE support and appreciate the efforts of your staff in coordination and support of our endeavors to provide some interim solutions to our rapidly expanding requirements for computer support."³⁰

Air Movement Planning System (AMPS).

A computer program designed to load Air Force C-130, C-141, and C5A aircraft with Army cargo and personnel, the Air Movement Planning System was configured for US Army FORSCOM and tested on the IBM 360 computer at 1st Corps Support Command (Fort Bragg) in January-February 1978. The system operated on the TRADOC CDC 6400/6500 computer system.

During this reporting period, the Air Movement Planning System was documented as a study tool for combat developers. The documentation included an executive summary, a functional user's manual, and a system and programmer's guide. Copies of these documents were sent to the Defense Documentation Center and the Defense Logistics Studies Information Exchange. Document distribution was also made to the Army and Air Force commands with an interest in the system and to Army agencies and units which had requested copies. The system project was completed in December 1978; document distribution was completed the following March.³¹

Computer Assisted Interactive Training Program (CAITP).

To support phase IV of the Combat Service Support Pre-Command Course, the Operations Analysis Directorate planned to develop, via contract, a Computer Assisted Interactive Training Program. The response to the request for

proposals, however, indicated that a contractor-developed program on the scale originally planned was not economically viable. Consequently, the scope of the plan was reduced and changed to an in-house effort. Further, immediate emphasis was focused on the development of a "mini-game" for use with the Phase II portion of the Division Support Command command selectees' pre-command course.³²

Model Improvement Program

Under the Model Improvement Program, the US Army Logistics Center prepared a model management and development plan which had as its major objective the identification and upgrading (in terms of efficiency, capability, and documentation) of many models for which the LOGC has responsibility.

In compliance with this requirement, the Operations Analysis Directorate conducted a study of the logistics models inventory. This inventory contained some software which had become obsolete, either by new generations of computer equipment or by wholesale modification without appropriate documentation. In a few instances, these same models and software were ones for which there currently existed requirements; hence, an effort to revitalize them was imperative.

As a part of the upgrade and revitalization process, LOGC imposed an additional requirement where applicable models would be redesigned with emphasis on model exportability. Model use was decentralized to combat developers in LOGC associated schools and functional users. Like other government agencies, the Logistics Center found itself in an environment of increasing workloads and decreasing resources. If the Center was to provide adequate operations research support, and, hopefully, improve its support to the logistics community, model exportability was essential. Owing to this environment and what was termed the "Modeler's Dilemma" (it is impossible for modelers to make major model improvements while models are continuously being used to support studies) the decision was made to have the necessary work performed by contractor personnel. The LOGC entered into a contractual agreement with the General Services Administration (GSA) on 20 September 1978 to perform the necessary work. Initially, seven software products received attention with more to be added as funds become available.³³

Three simulation models, Stockage Criteria Model, Prescribed Load Optimization Model, and SIGMAMLOG Ammo Resupply Model were scheduled to be completed during the next quarter. The Stockage Criteria Model and the Prescribed Load Optimization Model were test cases for advanced documentation techniques, the former having existed as the LOGC's first attempt at fielding a conversational interactive simulation model with a "teach" capability. Real applications for these products surfaced attesting to the wisdom in upgrading these models.³⁴

In the Reliability, Availability, and Maintainability area, work on the Combat Vehicle RAM Simulation was held in abeyance until questions of direction and anticipated use of the model were resolved. The Electronic

Reliability, Availability, Maintainability Models were to be handled under this contract as soon as the functional proponent provided information concerning the functional nature of the model.³⁵

The Army Master Data File utility effort was estimated at a cost which could not be accommodated under the existing monetary constraints. Depending on what funds can be made available, and when, work will begin later in this area.³⁶

The Automated Input Data System evolved into the Maintenance Task Demand File Phase III, which had been approved by LOGC and was to begin in October 1979. The Demand File was previously designed and developed under the Study Program to provide LOGC with a data base to support maintenance oriented modeling and simulation analysis. Phases I and II of the demand project primarily developed a capability and demonstrated its usefulness to the analytical community. Phases I and II were executed with great success. The objectives of this Phase III effort were the extension of the data base and simultaneous integration with relevant maintenance related analytical processes. Once fielded, this capability represented a significant step toward compressing the time factor in a maintenance oriented modeling effort.³⁷

During this period, several significant enhancements to the LOGATAK simulation model were prepared. These changes were developed specifically to support an analysis of the conventional ammunition delivery system for the Development of a Corps Logistics Analytical Methodology study. These enhancements were modular, standard and universal in nature in accordance with the logistics modeling language, "Models of the Worldwide Logistics System" or MAWLOGS. Since these enhancements were added to the MAWLOGS module library, they can be readily used in any MAWLOGS derivative model.³⁸

The first change to LOGATAK involved the expansion of the supply networks from a three to four echelon system. This additional level permitted the simulation of a full theater, with good resolution of supply activities from the brigade to the depot. The second enhancement involved the creation of a new MAWLOGS simulation verb which permitted the requesting of supplies from multiple sources. This verb was successfully assembled with the LOGATAK model so that supply consumption at the unit, which was the trigger to the "pull" supply system in LOGATAK, could be split up to four ways. This effectively simulated the ammo delivery system because units pick-up part of their ammunition from the Ammunition Supply Point,³⁹ while the balance was throughput directly to and from the corps storage area.

The model for the Evaluation of Maintenance Support Concepts was last operated at the LOGC during the Spring, 1978 with its application to the restructured general support concept. Since that application, it was intended to use the concepts in the division restructuring evaluation conducted during the Fall, 1978. This attempt was aborted, however, because of the difficulty of obtaining the appropriate input data from the division war game which was being used to analyze the combat implications of the division restructuring

evaluation. No solution to the difficulty was developed and consequently, the plans to use the concepts in the Division '86 investigations, which involve division war games, were in abeyance. In May 1979, the Center contracted with the General Services Administration to revive the model software and completely document the Maintenance Support Concepts Model. The model represented a major portion of the LOGC's capability for modeling the maintenance function. Based on the current projection, it should be added to the LOGC inventory in February 1980. 40

In March 1979, the Force Analysis Simulation of Theater Administrative and Logistics Support (FASTALS) model became operational as an analytical tool at the Logistics Center. This followed a 6-month conversion process by Operations Analysis Directorate analysts who transferred a copy of the model from the UNIVAC computer at Concepts Analysis Agency to the Control Data Corporation computers at the TRADOC Data Processing Field Office at Fort Leavenworth, KS. The LOGC Force Analysis model operated in parallel with the Concepts Analysis Agency model for Center study efforts involving the Armored Cavalry Requirement support squadron, Munitions System Support Structure and the General Support Rocket System. Independent excursions were made for analyst interest as to sensitivity of input variables. The major problem area with the Center Force Analysis model was the capability of the Fort Leavenworth Data Processing Field Office (DPFO) to support the model in a timely manner. Turnaround for model runs varied from 1 day to 1 week due to the extremely large central memory requirements of the model and the computer workload at the office. It was anticipated that future development of the model will be facilitated by the acquisition of an independent minicomputer possessing extremely large memory capabilities. At the present time, the GSA contractor, the Computer Sciences Corporation, has a task to improve, if possible, the efficiency (memory and functional) of the model and to provide full documentation. The results of this contract are expected in March. 41

In summary, work on the original seven product areas was successful. Modeling tools for which there already existed requirements were added to the LOGC model inventory. State-of-the-art techniques were utilized both in software development and subsequent documentation. Testimony to the health of the effort is that several tasks were completed at or under projected cost. In these inflationary times, this was noteworthy. With the addition of the Maintenance Support Concepts Model and Maintenance Task Demand File Phase III efforts, this contract represented a major LOGC program both in scope and commitment which provided to the scientific and engineering community of the Center and the associated school a significantly enhanced modeling and simulation capability.

Division 86

Investigation continued on using the LOGATAK and PETRONET models to provide support to the Battle Support and Reconstitution Task Forces. Briefings were given at two Division '86 Analysis subgroup meetings during the quarter. Initial discussions regarding logistics participation in the Force Structuring Trade-Off Analysis (logistics functions) at the Combined Arms

Combat Developments Agency were initiated and showed promise. Initial efforts were initiated to use the FASTALS model to conduct a total Army analysis type of evaluation for the new Div '86 type units. Support was provided to the new Deputy Chief of Staff, Doctrine, organization at TRADOC HQ. ⁴²

Division Maintenance Model

Of continuing and increasing concern to the US was the vulnerability of its forces stationed in Europe. Particularly worrisome was the question of how much of its nuclear weapon delivery capability would survive a Soviet-bloc first strike. A multiyear, multimillion dollar, DOD-wide study called the Theater Nuclear Force Survivability Study (TNF/S) investigated the problem and analyzed possible solutions. The Army was vitally involved, contributing studies in a number of areas for which the Army has prime mission responsibility. Combat service support of the theater nuclear delivery forces became one of these Army missions being examined and, as a subelement of combat service support, the operation of the division-level maintenance system elicited a particular study. This study examined the vulnerability of the maintenance system to various intensities and types, namely, nuclear, chemical and conventional, of enemy attack. To assist the analysis, a computer simulation of the division level maintenance system was developed. A \$225,000 1-year contract was let to the BDM Corporation of McLean, VA, to develop the required simulation which currently is being called the Division Maintenance Model. The Simulations Division, Operations Analysis Directorate, had responsibility for monitoring the contract. During the period, the contractor's work plan was approved for the design, development, and demonstration of the model to be completed by 31 January 1981. The name of the model was changed to Maintenance Capabilities Attack Model (MACATAK) to identify it by word association as a companion model to the Logistics System Attack (LOGATAK) models which were also developed under the Theater Nuclear Force/Survivability program by the BDM Corporation. Like the LOGATAK models, MACATAK will be designed using the Models of the Army Worldwide Logistics System standardized logistics modeling system for which the LOGC was proponent. Model design was approximately 60 percent complete at years end. A major problem which was recognized from the beginning but for which there is no real answer threatened to inhibit the demonstration of the model by the contractor. The problem remained the unavailability of data pertaining to the repair of combat-damaged equipment. ⁴³

Munitions System Support Structure - Extended (MS3-X) Study (ACN 29596).

This task consisted of the following operations research and modeling support to the Missile and Munitions Center and School: determine simulation modeling requirements; select, adapt, or develop an appropriate model; prepare model inputs; make model runs; analyze and interpret simulation results. Work performed was concentrated on preparing a test case for the Simulator for Transportation Analysis and Planning to determine whether it could be used to analyze the various system alternatives. Model inputs for the test case were completed. ⁴⁴ Model runs were being attempted at the end of the reporting period.

Force Structuring Support - DISCOM Trade-Off Analysis Model (DTAM)
(ACN 36601).

An interactive DISCOM Trade-Off Analysis Model was developed which provided Division '86 logistics planners the capability to analyze force structure based on constraint variations such as personnel strengths, resource priorities, productive capabilities, and organizational requirements. Initial programming in the BASIC computer language led to various memory and unacceptable execution time problems. Subsequent changes to the program logic with reprogramming in the FORTRAN computer language have surmounted the earlier problems and offered the analyst a responsive and interpretable simulation tool. Programmer intervention was required only when the MACRO DISCOM skeleton was altered.

FASTALS analysis variation runs were made to support the General Support Rocket System. Initial programmer changes to update the LOGC FORTRAN Program to be compatible with Cost Analysis Agency's Total Army Analysis-86 were accomplished. The TRADOC computer carried 86 Design Case MASTOV and scenario files.

Analysis and Simulation of Resource Management Policies (ACN 58610).

PIC 861 - Variable Class IX Add/Retain Criteria for DISCOMs:

The monthly processing and simulation for all divisions was completed during this reporting period. An analysis and review of the variable class IX simulation results was prepared in report form and forwarded to the LOGC's Concepts and Doctrine Directorate as input to the formal evaluation report being prepared for publication by that Directorate. As a follow-on effort, a 6-month field evaluation was conducted by the 1st Infantry Division. The tracking effort consisted of continuing the simulation process for another 6 months for only the 1st Infantry Division. The 1st Infantry Division authorized stockage list and demand history files have been received for the period ending 30 June 1979. Monthly processing began on 15 July and continued as planned.

On 9 August 1979, LOGC representatives visited 1st Infantry Division to present simulated authorized stockage lists developed by the LOGC and to compare the size and demand accommodation of the demand supported segment of the field validation list with the simulated list maintained by the Center. The variable stockage criteria field validation proceeded according to schedule. The performance statistics of the 1st Infantry Division stockage list and LOGC lists closely corresponded in all areas. Both sets of statistics confirmed that the figures predicted by earlier computer modeling were valid.

PIC 860 - Retail Inventory Management and Stockage Policy (RIMSTOP):

On 6 April 1979, HQDA approved a modified version of the Retail Inventory Management and Stockage Policy evaluation plan. These modifications

eliminated the requirement for a comparative analysis of AR 710-2 policies and two policy alternatives. The direction of the evaluation effort was now to determine the exact form of the equations to be used in field implementation.

Subsequent guidance from HQDA included a set of equations and two safety level equations. The only difference between the two retail policy alternatives was the formula used for the safety level calculation. The evaluation will result in the selection of a safety level formula based on supply performance. The safety level equations utilized (1) the 1973 Army Retail Materiel Management Models study and (2) development work by Presutti and Trepp. Model development and data base preparation required for the comparative evaluation began during this reporting period. Completion of the evaluation was scheduled for 15 November 1979. ⁴⁶

Retail Stockage Policy (Class III Supply).

This contractually supported effort developed, tested, and evaluated a pilot simulation model to provide the Army with an in-house capability of performing objective evaluations of bulk supply distribution and stockage policies. The pilot model was designed for a bulk Petroleum, Oil, and Lubricant (POL) fuel distribution system from the port (tanker scheduling and discharge) through high pressure pipeline systems (with barge and rail alternates) forward to terminals where final distribution was by truck or hose line.

Designated PETRONET, the pilot model was planned to provide the Army with a prototype model of the US high pressure POL fuel pipeline systems in Western Europe, with portions of the NATO Central European Pipeline System. The model examined and quantified the vulnerability and survivability of the system and the responsiveness (POL throughput) of the system under attack and the efficiency of alternative damage control policies and procedures.

During the reporting period, the classroom training provided under the contract was completed. Problems associated with converting the PETRONET Model and MAWLOGS related software to the TRADOC Data Processing Field Office computers delayed completion of the contractual effort. The Study Advisory Group, holding its fourth meeting on 26 February 1979, recommended granting a 30-day extension of the contract at no additional cost to the Government. The contractor delivered a PETRONET User's Guide, a MAWLOGS Model Description Report, and an addition to the MAWLOGS Module Catalog describing the newly developed distribution and interdiction modules. ⁴⁷

Retail Stockage Policy Evaluation (RSPE) Phase I.

The final draft report for Retail Stockage Policy Evaluation, Phase I, Part 1, was forwarded to DA ODCSLOG on 3 October. Approval of the final report was transmitted on 20 October and was accompanied by a tasking directive for Phase I, Part 2. This tasking required that two Retail Inventory Management and Stockage Policy sets of equations be compared to the three AR 710-2 stockage policies. The comparison was performed using the baseline models developed as a result of the evaluation, Phase I, Part 1.

On 8 February, the retail evaluation, Phase I, Part 2, Study Plan was forwarded to TRADOC. Subsequent to this submission, questions arose concerning the relationship of Part 2 to the overall retail policy implementation plan. Resolution of these questions and approval of the Part 2 Study Plan were still pending at the end of the reporting period.

Task Force Support to Force Structure and Test Directorate.

The Operations Analysis Directorate formed a task force to provide technical support to the Force Structure Directorate in developing a force structure trade-off analysis capability. This effort acquired Force Analysis Simulation of Theater Administrative and Logistics Support run capability "compatible" with Concepts Analysis Agency; obtained a Force Accounting System file and developed the capability to produce reports utilizing this file; attained an interactive computer graphics capability; and developed routines to employ interactive graphics terminal using Battlefield Visualization Graphics, Logistics Data Base, Division War Game, Scenario Oriented Recurring Evaluation System Data Sets, FASTALS Master File and Time Phased Force Deployment lists. The task force was organized in January 1979, and the FASTALS conversion to the TRADOC computer was completed for the main program. Initial projects which were supported using the model included the Armored Cavalry requirement support squadron project and LOGEX 79. An interactive graphics terminal was ordered and a site for the terminal selected in the Force Structure and Test Directorate. Arrangements were made during this time to obtain some of the required data files from other organizations. The task force started with a full-time computer programmer in January, and by March, reached its full-strength of three full-time professionals, two Operations Research and Systems analysts, and one programmer.

Variable Authorized Stockage List Add/Retain Policy for DISCOMs.

During this reporting period, the study plan for the evaluation of the variable Authorized Stockage List add and retain policy was approved by the 25 October in-process review. The approved methodology consisted of comparing the supply performance of the current stockage criteria to that of an alternate set of criteria. The alternate set of criteria, produced by the Stockage Criteria Model, was selected based on predicted list size, demand accommodation, and turbulence statistics. The model produced criteria were stratified by materiel category (common, aircraft, missile) and essentiality (essential, safety/legal, nonessential) whereas the current criteria considered only material category.

The procedure for comparison consisted of establishing a baseline stockage list from the current criteria and a proposed list from the alternate criteria. Using these lists as the start point, six monthly updates were simulated producing list size, demand accommodation, and turbulence statistics for comparison purposes.

Review of the first monthly update statistics at the 18 January review resulted in the following guidance: group the safety/legal lines with

essential line due to the small number of safety/legal items; Change standards by which the alternate criteria are selected from the Stockage Criteria Model output; Base materiel category classification on the Army Master Data File "Supply Categories of Materiel Code" instead of direct support unit letter designation. This guidance required significant alterations to the processing software which delayed any further processing until late February. Supply performance statistics resulting from the new guidance were prepared for a 25 April review.⁵⁰

Specialized Supporting Methodological Efforts

Sustainability Prediction for Army Spare Component Requirements for Combat (SPARC).

During the latter part of 1978, LOGC representatives completed a data matrix which described TRADOC Sustainability Prediction for Army Spare Component Requirements for Combat requirements for the pilot applications. This matrix was transmitted to the US Army Materiel Systems Analysis Activity on 4 January 1979. On 27 February 1979, the US Army Ordnance and Chemical Center and School sent a letter to the Army Material Systems Analysis Activity noting several anomalies in the data provided to the Ordnance Center and School for the Improved Tow Vehicle. Because of these anomalies, the Systems Analysis Activity reevaluated the vehicle. This delayed completion of the pilot applications. In late March, the Logistics Center analysts completed a Shotline Methodology analysis for use in developing a detailed procedure for using the SPARC data in TRADOC combat simulations and war games.⁵¹

Combat Damage Assessment Procedures (CDAP).

In FY 79-3, HQ TRADOC tasked the LOGC to develop a long-term methodology that would be responsive to future Cost and Operational Effectiveness Analysis of new weapon systems and at the same time highlight the force reconstitution requirements of these new systems. This methodology included combat damage assessments as well as a mechanism for examining reliability failures. A front-end analysis focused on the existing state-of-the-art. Specifically, vulnerability assessment methodologies were examined together with the manner in which the resultant information was incorporated into combat models. Also, logistics models that examined both combat losses and reliability failures were reviewed. This research was necessary in order to identify voids and deficiencies. A general approach was formulated for assessing the impact of combat damage and reliability failures on logistics support requirements for new weapons systems with emphasis on maintenance and supply demands. A plan for implementing the approach will be submitted to HQ TRADOC in FY 80-1.⁵²

SUMMARY

Fiscal Year 1979 saw renewed LOGC efforts to enhance operations research and systems analysis support for the army in the field.

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CHAPTER 8

THE YEAR IN RETROSPECT

This period marked completion of the US Army Logistics Center's sixth year of responsibility for improving combat and combat service support for the Army in the field. Coinciding with this anniversary was the second change of command. On 31 July 1979, Major General Homer D. Smith, Jr., retired from the Army, and Major General Oren E. DeHaven assumed his offices.

Among the more important training developments at the LOGC was the creation, within the Training and Doctrine Directorate, of a Pre-Command Course Branch tasked with the management of the Combat Service Support Pre-Command program. This branch investigated several possible simulations, long-range and short-range, and provided the logistical results to the Combined Arms Center's Phase IV of the same course. The Logistics Center also evaluated the logistical content of all five combat arms school's course Phase II instructions as well as the program of instruction for the five combat service schools now underway.

Another mission given the Center's Training and Education Directorate was that of serving as an integrating center for the LOGC's associated schools in the development and execution of the officer and warrant officer job and task analysis. "Lessons learned from these pilot programs, as well as the arrival of the authorized personnel in the schools and LOGC," wrote MG DeHaven, "led to several iterations of task, duty, and job statements."¹ Work began on the development of common field grade task statements. "It is expected," argued the LOGC Commander,² "that because of the experience factor, a better product will be provided."

During this year, the Center served as the integrating center for the associated schools in the development and execution of the officer and warrant officer job and task analysis. In March, the Center submitted the final draft of the Systems Mechanic (formerly Master Mechanic) concept through TRADOC to the Military Personnel Center for staffing.

Concerning unit training, the annual Joint Chiefs of Staff scheduled, Army Deputy Chief of Staff, Logistics sponsored LOGEX continued its contribution to a balanced training of Active and Reserve Component combat, combat support, and combat service support personnel. LOGEX 79 presented for the second year the Northern Army Group scenario with a US Corps and a Marine Amphibious Force. The 3,382 participants included, besides the Army, service representatives from Tactical Air Command, Military Airlift Command, Military Sealift Command, US Marine Corps, and the North Atlantic Treaty Organization.

The Army Training and Evaluation Program continued to make significant advancements in the logistics community. The first generation program is almost complete; development of the second generation program is in full swing with revisions of 24 programs currently in draft status. Training Extension Course development proceeded on schedule. The Center fielded 290 lessons and was developing 256 additional lessons.

The Logistics Center continued its active participation in materiel developments, achieving success in some areas and experiencing disappointment and frustration in others. Pursuing its active involvement in the XM 1 Tank Development Program, the Center concentrated on test design planning for the Development and Operational III testing and evaluation phase, including logistics supportability and reliability, availability, maintainability (RAM) issues.

In the wheeled vehicle arena, one major accomplishment was the type classification and release for fielding of the M915-920 series of vehicles. As executive agents for this program, the Center and its associated schools proposed various design and performance changes to be incorporated in the vehicles. These changes allowed the LOGC to concur in release of the vehicles to the field.

Of major importance during this period was the creation of the Tactical Wheeled Vehicle Requirements Management Office. In addition, the Center played a large role in formulating the TRADOC independent program review position for the Family of Military Engineer Construction Equipment program. The Center assisted the Engineer School with the Logistics Support Analysis, and it participated with them in the evaluation and scoring of the Development & Operational Test II Equipment performance reports and in the review of Integrated Logistics Support actions within the program. Utilizing the Cost & Operational Effectiveness Analysis, Development & Operational II test reports, and the US Army Operational Test & Evaluation Agency and US Army Materiel Systems Analysis Activity independent evaluations, the LOGC prepared an in-depth analysis of the RAM audit trail.

Two significant events transpired in the Army watercraft program last year: the type classification and award of the production contract for the LACV-30 and the Army Watercraft Requirements Master Plan. The LOGC and the Transportation School developed the LACV-30 TRADOC-type classification position which the Army staff accepted. At the suggestion of the TRADOC Commander, the Center contributed to a final draft of a requirements plan for Army watercraft; the Transportation School and the Project Manager, Army Watercraft also played a part in this development. Generals Starry, Guthrie, and Shoemaker were briefed.

Starting in December, the Center undertook management of all aspects of test measurement diagnostic equipment within the command and it provided guidance to all TRADOC elements pertaining to the acquisition, employment, and life cycle management of this equipment.

The first group of TRADOC RAM interns began classroom instruction at the Army Management Engineering Training Activity on 9 July. Four engineering graduates were recruited and reported to the Training Activity to satisfy Phase I (6 months) of the 3-year TRADOC RAM Intern Program. In an all-out effort to provide the combat developer proponents with the detailed guidance apparently needed for properly developing acceptable RAM Rationale Annexes, the LOGC developed an extensive RAM Rationale Annex Handbook. Though still in

draft form, this handbook received wide distribution. The TRADOC RAM Course was conducted twice; once at Fort Gordon and once at Fort Lee. In addition, the Center hosted a TRADOC RAM Conference on 27-28 November, attended by 58 people from 23 organizations.

At the beginning of 1979, the Logistics Center initiated a TRADOC RAM Data Evaluation System Study, which required that alternatives be investigated for a responsive, near real time, RAM data system for TRADOC. A contract procurement package was prepared and forwarded to HQ, TRADOC for competitive contract services. Additionally, in response to the Center being designated the final approval authority in the technical RAM content of all materiel acquisition documents, the Center established a RAM Quality Assurance review system. But, as MG DeHaven noted, "problems arose due to the increased workload and the inability to obtain qualified RAM personnel at authorized grade levels."³

In the past three years, the Center made significant strides in the RAM policy and methodology area; its progress in the actual conduct and evaluation of the user test of materiel systems, however, was less gratifying. The outlook for the future appeared bleak. MG DeHaven stated it bluntly when he told General Starry that, "due to manpower limitations, we delegated the bulk of the work to our schools, while we work directly on only the most involved systems, and merely review the school's inputs on the others." The struggle to remain abreast of the test and evaluation process remained constant, and, "we continue to incur risks that we are buying and fielding systems which may not be logistically supportable or meet the operational RAM requirements of the user."⁴

In October, 1979, the Center completed its first year as a participant in the cyclic Army Force Planning Data and Assumptions/Total Army Analysis force development process. The Center also provided significant contributions towards documenting reasonably well-balanced logistical force requirements. Besides this participation, the Center completed several Manpower Analysis Papers and Logistical Force Structure Assessments in support of the TRADOC System Managers. These assessments provided not only manpower estimates for new organization and weapons systems, but also a basis for appropriate changes to logistical force modeling within the total Army analysis process.

Concerning Europe III, the Center developed a logistics scenario which ran concurrently with the tactical Jiffy war gaming, and it hosted a 13-14 February conference in which the associated schools participated. The SCORES Division, Force Structure and Test Directorate, hosted a 30-31 May workshop to provide "D-Day" gaming results to the schools. On 12-13 September, the Center again hosted a workshop to disseminate the D+1 and D+2 data, coordinate efforts between associated schools, provide the required interface between functional responsibilities, and continue efforts on the logistics scenario. The Center obtained initial computer data for D+1 and furnished certain extracted data to the associated schools during this September workshop.

The Improved Manpower Authorization Criteria Restructuring Initiative imposed additional personnel constraints on the Center which greatly affected its operation. Nonetheless, the Deputy Chief of Staff for Personnel approved the project directive; in July, the HQDA MACRIT Restructuring Initiative was funded for FY 81 thru FY 85.

This year's most important project, Division '86 saw the development of an objective armored division for the mid-1980s. In Corps '86, TRADOC assigned the Center the task of developing the combat service support organization to provide the logistical support to the corps. The Center provided logistical planning factors for all corps units minus the divisions. The SCORES-type analysis used during Division War Gaming represented yet another portion of the overall Division '86 Study involving the Center and its associated schools. Based primarily on Division War Gaming results, the analysis focused on a comparison of the present division (C-series) updated with 1986 equipment and the objective/DIV 86 (S-series) organizations. Gaming of the C-series base case began originally in February and ended in July; the Objective Division S-series defense (incorporating the Brigade Support Battalion) game was scheduled to begin 30 November 1979.

The Center received the army staff tasking letter for the Development of the Communications Zone in May. After receiving and coordinating input from interested commands, the Center forwarded the management plan and milestone schedule to TRADOC on 24 September.

During the past fiscal year, the How-To-Support manual program underwent several significant changes. In April, it was agreed to limit the How-To-Support program to a small number of basic combat service support manuals and to hold up development of the manuals pending development of a series of functional concept papers covering combat service support. In addition, final film scripts for the three levels of support described (division, brigade, company/battalion) were completed and forwarded to TRADOC for final approval.

On 13 June, the Center presented the Munitions System Support Structure study to the Army staff. The Center concluded that the study offered the potential for improved ammunition handling capability in the Army.

As part of the effort to address the reality of fighting a war in the transition period with limited available assets, the Logistics Center developed alternative operational concepts: major item supply, maintenance, recovery and evacuation, graves registration, transportation movement management, resupply of bulk petroleum, and ammunition supply.

On 26 April, the Army staff approved the "Special Analysis of Standard Tactical Wheeled Vehicle Requirements (TACV) Study" that the Transportation School conducted. The final report was published last July. At the same time, HQDA approved the "Special Analysis of Standard Tactical Wheeled Vehicle Requirements Expansion (TACV-EX) Study" and the LOGC published it in May.

In the international arena, the Center participated as a member of the US delegation to the Quadripartite Working Group for Logistics American, British, Canadian and Australian cooperative effort. In the German/US Army Staff talks, the logistics interoperability handbook differences still needed to be worked out. The Center proposed to the British their inclusion in this handbook.

During the last twelve months, the LOGC maintained its involvement with automation of logistics management and information systems, enjoying considerable success. "Stressing quality and user involvement," MG DeHaven observed that the Center, "developed methods that were 'within the context of an integrated battlefield architecture encompassing communications.'"⁹

As the Center's major intermediate supply system, the Standard Army Intermediate Level Supply Subsystem underwent System Change Packages 05 and 06 during May at Fort Carson. As a result, the field validation test participants concluded that the DOS-E version was functionally sound and the technical operation of the system adequate to permit further extension. Formal approval was given to extend the DOS-E version of SAILS ABX to the remaining intermediate level supply sites.

In September, the Army staff tasked the Center to conduct a study to analyze the SAILS system applications in a USAREUR wartime environment and to provide recommended changes as applicable. During the past year, the LOGC forwarded a final draft of the Wartime Workload Analysis (Vol I) to the study advisory group members for approval. Volume II was distributed for staffing and comments. The Group concluded that SAILS ABX, as currently designed, was not able to accommodate Phase II doctrine and the wartime volume of a mature corps.

The Asset Control System was installed in the Western Command during July, and System Change Packages 11 and 12 were broadcast to the system users.

Due to insufficient Army funding and other higher priority projects, the LOGC reduced active Army Transportation Operational Personal Property Standard System developmental efforts; instead, it monitored and participated in the other services ongoing developmental efforts.

The current DA Standard Port System continued to operate with only occasional regulation and engineering changes while the development of the new Standard Port System-Enhanced system progressed. The Center conducted several on-site collection visits to Europe and the Far East. Additionally, DA approved the Visibility of Intransit Cargo System as a standard system on 11 September and redesignated it the Cargo Module of the DA Movements Management System. Development on the Cargo Module continued in Europe with Center assistance.

The Standard Army Maintenance System, Detailed Functional Requirements (wartime application), and Organizational and Personnel Plan were completed and staffed worldwide in late 1978 and early 1979. Outputs for the System II

Maintenance Program Operation Management level were developed and validated with selected CONUS and USAREUR units and activities.

The Center updated TM 38-750 TAMMS on 1 May; publication and distribution were expected in November 1979.

Throughout the year, the LOGC continued to provide broad operations research and systems analysis and computer support. Concurrently, it expanded its efforts to progressively enhance analytical and computer capabilities in the 1980s, the latter stressing improved data bases and hardware facilities.

As a result of TRADOC guidance, the Center launched the Development of a Corps Logistics Analysis Methodology study, forwarded a concept paper to TRADOC on 2 April, and briefed it on 30 April. Focusing on the current force structure for two scenarios approximating lower and upper bounds on combat intensity, the Center's methodology accommodated all classes of supply. The Center also examined medical evacuation and personnel replacement. It also effected coordination with USAREUR in conjunction with the Army fact-finding team for Project Positive Challenge. Having bound the requirement in terms of intensity, the LOGC turned to the more complex problem of assessing current USAREUR capabilities concentrating initially on the supply network for conventional ammunition.

Another major development in the Center's operations research and systems analysis study program was the approval of the LOGC study plan for development of an improved procedure to determine maintenance manpower requirements. As reported by MG DeHaven in his annual letter to TRADOC, the Center "took the lead in developing the methodology embodied in the approved plan covering a 'pilot study' with the M60 tank serving as the candidate system." Its impact, concluded DeHaven, "will be profound."

During this fiscal year, the LOGC finished the design and development of a Planning Factors Data Base, a study to analyze the scope and magnitude of its logistics planning factors mission. The study developed and evaluated several alternative data base and organizational concepts, each of which allowed successful execution of the planning factors mission. As the Center's Commander expressed it, "the need for a responsive, flexible and valid planning factors data base is becoming more evident throughout the Army community."

The Planning Factors Management Division of the Center was heavily involved in providing planning data for Division '86, Corps '86, and Light Division studies. This past fiscal year, the Center provided factors for 13 subcultures of supply for each of 548 company and battalion units, 8 separate brigades and 5 divisions. It also provided logistics planning factors annually for the Army Force Planning Data and Assumptions effort and the Total Logistics Readiness/Sustainability program. Additionally, it responded to requests from Forces Command elements for assistance in their contingency planning. It even provided logistics requirements for a corps contingency force to the Air Force's Military Airlift Command on a 2-hour notice.

In the area of economic analyses, Fiscal Year 1979 was a banner year for both extensive and intensive demands in support of the development of US standard logistics systems. During this period, the Center completed four major economic analyses, burden assessments for two automated logistics systems with LOGC proponentcy, and a special project on three "nonproponent" burden assessments.

As reported by both MGs Smith and DeHaven in their letters to General Starry, local ADPE support capabilities remained an area of continuing concern. While there were some improvements made, they represented, at best, only interim measures. "In summary," wrote DeHaven, "we managed to keep our head above water in ADPE support," thanks largely to TRADOC's, "coordination and support of our endeavors to provide some interim solutions to our rapidly expanding requirements for computer support."⁸

In March, 1979, the Force Analysis Simulation of Theater Administrative and Logistics Support model became operational as an analytical tool at the Logistics Center. This followed a 6-month conversion process by Operations Analysis Directorate analysts who transferred a copy of the model from the UNIVAC computer at the Concepts Analysis Agency to the Control Data Corporation computers at the TRADOC Data Processing Field Office at Fort Leavenworth. The LOGC model operated in concert with the Concepts Analysis Agency model for LOGC study efforts involving the Munitions Systems Support Structure, the Armored Cavalry Regiment support squadron, and the General Support Rocket System. At the present time, the Computer Sciences Corporation has a contract to improve, if possible, the efficiency (memory and functional) of the model and to provide full documentation.

During this one year period, the Center was involved with a multitude of projects, all vital to the readiness and strength of today's Army, and all dedicated to creating, in the words of General Meyer, "a framework for molding the Army of the 1980s into a disciplined, well-trained fighting force."⁹

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LIST OF ACRONYMS AND ABBREVIATIONS

AAA	Army Audit Agency
AAH	Advanced Attack Helicopter
ABCA	America, Britain, Canada, and Australia
ABF	Asset Balance File
ABIC	Army Battlefield Interface Concept
ACLSVF	Armored Combat Logistics Support Vehicle Family
AC2MP	Army Command and Control Master Plan
ACR	Armored Cavalry Regiment
ACS	Asset Control System
ACSS	Augmented Contact Shop Set
ADAM	Artillery Delivered Anti-Personnel Mine
ADMINCEN	US Army Administration Center
ADPE	Automatic Data Processing Equipment
AESRS	Army Equipment Status Reporting System
AFARV	Armored Forward Ammunition Resupply Vehicle
AFAP	Atomic Fired Artillery Projectile
A&FC	Airworthiness and Flight Characteristics
AFPCA	Army Force Planning Data and Assumption
AHAMS	Advanced Heavy Antiarmor Missile System
AHWS	Advanced Heavy Antiarmor Weapon System
AHC	Ammunition Handling Cranes
AHS	Attack Helicopter Support
AIM	Armored, Infantry, Mechanized

AIT	Advance Individual Training
ALMC	US Army Logistics Management Center
ALOC	Air-Line of Communication
ALPC	Army Logistics Planning Council
ALSC	Army Logistics Specialty Committee
A/LSPR	Administrative/Logistics System Program Review
AMFD	Army Master Data File
AMIS	Army Management Information System
AMME	Automated Multi-Media Exchange
AMPS	Air Movement Planning System
AMSAA	US Army Materiel Systems Analysis Activity
ADAP	Army Oil Analysis Program
APG	Aberdeen Proving Ground
APOE	Aerial Port of Embarkation
ARCSA	Aviation Requirements for the Combat Structure of the Army
ARI	Automatic Return Item
ARMS	Aircraft Reliability and Maintainability Simulation
ARRCOM	Armaments Readiness Command
ARTADS	Army Tactical Data Systems
ARTEP	Army Training and Evaluation Program
ASI	Additional Skills Identifier
ASL	Authorized Stockage List
ASP	Ammunition Supply Point
ATB	US Army Training Board
ATDL	Army Tactical Data Link

ATE	Automatic Test Equipment
ATEM	Automatic Test Equipment Missile
ATLP	Armywide Training Literature Program
ATP	Ammunition Transfer Point
ATP	Army Training Program
ATP	Allied Tactical Publication
ATSC	Army Training Support Center
ATSS	Automated Test Support System
ATT	Army Training Test
ARNG	Army National Guard
ARR	Army Readiness Regions
AWFSR	Automation of Wartime Functional Supply Requirements
BA	Blasting Agent
BAMD	Battlefield Automation Division
BAMO	Battlefield Automation Management Office
BAMP	Battlefield Automation Management Program
BAS	Battlefield Automated System
BASOPS	Base Operating System
BCS	Battery Computer System
BDP	Battlefield Development Plan
BIT	Battlefield Interoperability Terminal
BOIP	Basis of Issue Plan
BRE	Battlefield Recovery and Evaluation
CAA	Concepts Analysis Agency
CAC	US Army Combined Arms Center

CAITP	Computer Assisted Interactive Training Program
CAPS	Consolidated Aerial Port System
CAR	Corps Automation Requirements
CARBIT	Corps Automation Requirements Baseline Identification Test
CATB	Combat Arms Training Board
CATRADA	Combined Arms Training Development Activity
CCSS	Commodity Command Standard System
CD	Combat Development
CDAP	Combat Damage Assessment Procedures
C&D	Concepts and Doctrine Directorate
CBS	Capability Design Specifications
CDS	Container Distribution System
CELOGS	Combat Effectiveness with Logistics Support
CEP	Concept Evaluation Program
CEPS	Central European Pipeline System
CEWI	Combat Electronic Warfare and Intelligence
CFP	Concept Formulation Package
CFV	Cavalry Fighting Vehicle
CIBE	Command Operating Budget Estimates
CIC	Criminal Investigation Command
CMA	Container Management Application
CMF	Career Management Field
COEA	Cost and Operational Effectiveness Analysis
COGS	Combat Oriented General Support
COI	Courses of Instruction

COILS	CONUS Installation Logistics Support
COMMZ	Communications Zone
COMSECLOG	Communications Security Logistics
COMSR	Communications Support Requirements
CONUS	Continental United States
CONUSA	Continental United States Armies
COSCOM	Corps Support Command
COSCOM MMC	Corps Support Command Materiel Management Center
COSRRIB	Combat System Rearm/Refuel in Battalions
COSSA	Containerized Shipment and Storage of Ammunition
COVERS	Combat Vehicle RAM Simulation
CPE	Collective Protective Equipment
CPX	Command Post Exercise
CSA	Corps Storage Area
CSA	Chief of Staff Army
CSC	Computer Systems Command
CSCSG	US Army Computer Systems Command Support Group
CSCSGE	US Army Computer Systems Command Support Center, Europe
CSS	Contact Support Set
CSS	Combat Service Support
CS3	Combat Support Service System
CTEA	Cost and Training Effect Analysis
	COMSR Technical Operations Element
	Department of the Army
	Direct Annual Maintenance Man-Hours

DAMMS	DA Movements Management System
DAR	(Air) Defense Acquisition Radar
DARCOM	US Army Materiel Development and Readiness Command
DASPS	Department of the Army Standard Port System
DASPS-E	Department of the Army Standard Port System-Enhancement
DAS3	Decentralized Automated Service Support System
DA TMDE PIL	Department of the Army Test, Measurement, and Diagnostic Equipment Preferred Items List
DCP	Development Concept Center
DCSLAM	Development of a Corps Logistics Analysis Methodology
DCSLOG	DA Deputy Chief of Staff for Logistics
DCSRDA	Deputy Chief of Staff, Research, Development, and Acquisition
DESCOM	US Army Depot System Command
DEVA IPR	Development Acceptance In-Process Review
DFSR	Detailed Functional System Requirements
DIO	Director of Industrial Operations
DISCOM	Division Support Command
DIVAD	Division Air Defense Gun
DIVLOG	Division Logistics
DIVS	DOD Intransit Item Visibility System
DIVWAG	Division War Games
DLA	Defense Logistics Agency
DLDED	Division Level Data Entry Device
DLOGS	Division Logistics System
DLOS	Division Logistics Organization Structure

DMMC	Division Materiel Management Center
DMTI	Digital Moving Target Indicator
DNA	Defense Nuclear Agency
DODAAC	DOD Activity Address Code
DOS	Days of Supply
DPFO	Data Processing Field Office
DPI	Data Processing Installation
DPLOA	Draft Proposed Letter of Agreement
DPROC	Draft Proposed Required Operational Capability
DRE	Division Restructuring Evaluation
DRS	Division Restructuring Study
DSA	Defense Supply Agency
DSAMTS	Direct Support Ammunition Maintenance Tool Set
DSARC	Defense System Acquisition Review Council
DS/GS	Direct Support/General Support
DSS	Direct Support System
DS4	Direct Support Unit Standard Supply System
DSU	Direct Support Unit
DX-X	Expanded Direct Exchange
EA	Economic Analysis
EAD	Echelons Above Division
EEA	Essential Elements of Analysis
EEAA	Enticement and Encirclement Anti-Armor
EIP	Economic Inventory Policy
EMTT	Expanded Mobility Tactical Wheeled Vehicle

ENS	US Army Engineer School
EOD	Explosive Ordnance Disposal
EOP	Economic Order Quantity
EPMS	Enlisted Personnel Management System
ETA	Evasive Target Simulator
E&T	Evaluation and Test Directorate
EUSA	Eighth US Army
FAA	Federal Aviation Administration
FAASV	Field Artillery Ammunition Support Vehicle
FAC	US Army Finance and Accounting Center
FACC	Ford Aerospace Communications Corporation
FADALA	Failure Detection and Location Analysis
FAMECE	Family of Military Engineer Construction Equipment
FARP	Forward Arming and Refueling Point
FARRP	Forward Area Refueling/Rearming Point
FASCAM	Family of Scatterable Mines
FASCO	Forward Area Support Coordinators
FASTALS	Force Analysis Simulation of Theater Administration and Logistics Support
FD	Functional Description
FDE	Force Development and Experimentation
FDTE	Force Development Test and Experimentation
FEBA	Forward Edge of the Battle Area
FIST	Fire Support
FMEA	Failure Mode and Effects Analysis

FMS	Foreign Military Sales
FMTS	Field Maintenance Test
FOE	Follow-On Evaluation
FORSCOM	US Army Forces Command
FORSTAT	Force Status
FQQPRI	Final Qualitative and Quantitative Personnel Requirements Information
FS&T	Force Structure and Test Directorate
FVS	Fighting Vehicle System
FVT	Field Validation Test
FYPP	Five-Year Program Plan
GEADGE	German Air Defense Ground Environment
GEMSS	Ground Emplaced Mine Scattering System
GFE	Government Furnished Equipment
GFSR	General Functional System Requirement
GLDD	Ground Locator Laser Designator
GS	General Support
GSA	General Services Administration
GSRS	General Support Rocket System
GSSB	General Support Supply Base
HAAPS	High Altitude Airdrop Resupply System
HCPE	Hybrid Collective Protection Equipment
HET	Heavy Equipment Transporter
HEMTT	Heavy Expanded Mobility Tactical Truck
HMWC	High Mobility Weapons Carrier

HTS	How-To-Support
IAV	Intransit Asset Visibility
ICF	Intransit Cargo Files
ICTP	Individual-Collective Training Plan
IEP	Independent Exchange Plan
IERC	Independent Evaluation Review Committee
IFV	Infantry Fighting Vehicle
ILS	Integrated Logistics Support
ILSMT	Integrated Logistics Support Management Team
INTACS	Integrated Tactical Communications Study
IOC	Initial Operational Capability
IPD	Issue Priority Designator
IPR	In-Process Review
IPTF	Indirect Productive Time Factors
IRSI	International Rationalization, Standardization, and Interoperability
IRSI0	International Rationalization, Standardization, and Interoperability Office
IST	Incremental Systems Test
ISU	Integrated Sight Unit
ITDT	Integrated Technical Documentation and Training
ITV	Improved TOW Vehicle
JCCRS	Joint Contingency Construction Requirements Study
JCS	Joint Chiefs of Staff
JDT	Joint Development Team

J-LOTS	Joint Logistics Over-The-Shore
JLS	Joint Logistics Subcommittee
JLWG	Joint Logistics Work Group
JRCC	Joint ROLAND Control Committee
JRX	Joint Readiness Exercise
JWG	Joint Working Group
JSCP	Joint Strategic Capabilities Plan
JTR	Joint Training Package
LAAT	Logistics Assessment and Assistance Team
LCSS	Land Combat Support System
LCSMM	Life Cycle System Management Model
LEA	US Army Logistics Evaluation Agency
LFF	Logistics Factors File
LFSA	Logistics Force Structuring Assessments
LIF	Logistics Intelligence File
LOA	Letter of Agreement
LOC	Line of Communication
LOCAM	Logistics Cost Analysis Model
LOGATAK	Logistics Attack Model
LOGC	US Army Logistics Center
LOGCAB	Logistics Center Advisory Board
LOGMOD	Logistics Modules
LOGS	Logistics Supportability
LOGSACS	Logistics Structure and Composition System
LOTS	Logistics Over the Shore

LP	Limited Procurement
LR	Letter Requirement
LSS	Launch Signature Simulator
LTB	Logistics Training Board
MAA	Mission Area Analysis
MAC	Military Airlift Command
MACATAK	Maintenance Capabilities Attack Model
MACOM	Major Command
MACRIT	Manpower Authorization Criteria
MAME	Missile and Munitions Evaluation
MAMS	Medium Antiarmor Missile System
MAP	Manpower Analysis Papers
MASC	Maintenance Supports Concepts Model
MATE	Modular Autodin Terminal Equipment
MAV	Minimum Acceptable Value
MAV	Maintenance Assistance Vehicle
MAWLOGS	US Army Worldwide Logistics System
MCC	Movements Control Center
MCP	Military Careers Program
MCS	Maintenance Control System
MCTNS	Manportable Common Thermal Night Sights
ME	Middle East
MEMS	Manually-Emplaceable Mine System
MENS	Mission-Element-Needs Statement
MEP	Maintenance Enhancement Program

MEV	Medical Evacuation Vehicle
MHE	Materials Handling Equipment
MICLIC	Mine Clearing Line Charges
MICOM	Missile Command
MICV	Mechanized Infantry Combat Vehicle
MILSTAMP	Military Standard Transportation and Movement
MILSTRIP	Military Requisitioning and Issue Procedures
MIRCOM	US Army Missile Materiel Readiness Command
MISEA	Management Information Systems Economic Analysis
MLSRS	Multiple Rocket Launcher System
MMC	Materiel Management Center
MMCS	US Army Missile and Munitions Center and School
MN	Materiel Need
MOA	Memorandum of Agreement
MOBDES	Mobilization Designee
MODLOGS	Modernization of Logistics
MOE	Measure of Effectiveness
MOM	Maintenance Operations Management
MOPMS	Modular Pack Mine Systems
MOS	Military Occupational Specialities
MOU	Memorandum of Understanding
MPM	Maintenance Program Management
MPG	Major Program Objective
MRG	Movements Requirements Generator
MRM	Maintenance Reporting and Management

MRP	Materiel Returns Program
MRR	Materiel Readiness Reporting
MRSA	Materiel Readiness Support Activity
MS3	Munitions System Support Structure Study
MSD	Materiel Systems Directorate
MSRS	Materiel Systems Requirements Specifications
MSSG	MICV Special Study Group
MST	Munitions Systems Support Structure
MTBF	Meantime Between Failures
MTD	Maintenance Task Demand
MTEL	Manning Table and Equipment List
MTMC	Military Traffic Management Command
NATO	North Atlantic Treaty Organization
NCOLP	Noncommissioned Officers Logistics Program
NET	New Equipment Training
NICAD	Nickel-Cadmium
NMP	National Maintenance Point
NODLR	Night Observation Device Long Range
NORTHAG	Northern Army Group (Germany)
NOW	No Warning
OAD	Operations Analysis Directorate
OC&S	US Army Ordnance Center and School
OCR	Optical Character Reading
ODCSLOGS	Deputy Chief of Staff for Logistics
ODP	Outline Development Plan

OFT	Observed Fire Trainer
OJT	On-The-Job Training
O&O	Organization and Operations
OPMS	Officer Personnel Management System
OPP	Organization and Personnel Plan
OPS/ADMIN	Operations and Administration Directorate
OPTE	Operational Proficiency Training Equipment
ORG	Organization Directorate
ORSA	Operations Research and Systems Analysis
ORT	Operational Readiness Test
OS	Operation System
OT&E	Operational Test and Evaluation
OTEA	US Army Operational Test and Evaluation Agency
PAR	Pulse Acquisition Radar
PCB	Printed Circuit Board
PCBR	Printed Circuit Board Repair
PCC	Pre-Command Course
PE	Proponent's Evaluation
PET	Prototype Evaluation Test
PFDB	Planning Factors Data Base
PFM	Planning Factors Management
PFMD	Planning Factors Management Division
PFMO	Planning Factors Management Office
PIP	Product Improvement Program
PLL	Prescribed Load List

PM	Project Manager
PMCS	Preventive Maintenance Checks and Services
PMDR	Provisioning Master Data Record
PME	Professional Military Education
PMP	Project Master Plan
PNVS	Pilot Night Vision System
POI	Programs of Instruction
POL	Petroleum, Oil, and Lubrication
POM	Program Objective Memorandum
POMINS	Portable Mine Neutralization System
PPSO	Army Personal Property Shipping Office
PQT	Performance Qualification Test
PQT-G	Prototype Qualification Test-Government
PWRMS	Prepositioned War Reserve Materiel Stock
QMR	Qualitative Materiel Requirements
QMS	US Army Quartermaster School
QQPR1	Quantitative and Qualitative Personnel Requirements Information
QWG-LOG	Quadripartite Working Group-Logistics
RAAMS	Remote Anti-Armor Assault System
RACO	Rear Area Combat Operations
RAG	Review Advisory Group
RAM	Reliability, Availability, and Maintainability
RAOC	Rear Area Operations Center
RAP	Rear Area Protection
RAS	Rear Area Security

RBEB	Ribbon Bridge Erection Boat
RC	Reserve Component
RCAG	Reserve Component Advisory Group
RCMS	Reliability Centered Maintenance Strategy
RDAC	Research and Development Advisory Council
RDOM	Restructured Division Operations Manual
RETO	Review of Education and Training of Officers
RFP	Request for Proposal
RGs	Restructured General Support
RIMSTOP	Retail Inventory Management Stockage Policy
ROC	Required Operational Capability
ROWPU	Reverse Osmosis Water Purification Unit
RPF	Remote Print Facility
RPV	Remotely Piloted Vehicles
RSC	Reason for Stockage Codes
RSI	Rationalization, Standardization, and Interoperability
RSPE	Retail Stockage Policy Evaluation
RTCH	Rough Terrain Container Handler
SAAS	Standard Army Ammunition System
SAG	Study Advisory Group
SAILS	Standard Army Intermediate Level System
SAMS	Standard Army Maintenance System
SAW	Squad Automatic Weapon
SCH	US Army Support Command - Hawaii
SCP	Systems Change Package

SCR	Systems Change Request
SCORES	Scenario-Oriented Recurring Agency
SDD	Systems Design Directorate
SDG	Systems Development Group
SELCOM	Select Committee
SHAD-CCP	Sharp Army Depot Container Consolidation Point
SHORAD	Short Range Air Defense
SIGCEN	Signal Center
SIGINT/EW	Signal Intelligence and Electronic Warfare
SIGS	US Army Signal School
SIMS-X	Selected Items Management System-Expanded
SIT	Situation Integration Test
SKO	Sets, Kits, and Outfits
SLAC	Support List Allowance Card
SLEEP	Family of Silent Lightweight Electronic Energy Plans
SLUFAE	Surface Launched Unit, Fuel Air Explosive
SOLE	Society of Logistics Engineers
SOM	Storage Operation Module
SOP	Standard Operating Procedures
SPA	Skill Performance Aids
SPARC	Spare Parts Provisioning for Combat
SPBS	Standard Army Property Book System
SPC	Staff Planners Course
SQT	Skill Qualification Test
S&S	Supply and Services

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S&T	Supply and Transport
STE/ICE PM	Simplified Test Equipment for Internal Combustion Engine Powered Material
STF	Special Task Force
STMP	Systems Training Management Plan
SUSV	Small Unit Support Vehicle
SW	Short Warning
TA	Theater Level
TAACOM	Theater Army Area Command
TAA 85	Total Army Analysis 85
TACFIRE	Tactical Fire Direction System
TACV	Tactical Wheeled Vehicle
TADS	Target Acquisition and the Designation System
TAMC	Tripler Army Medical Center
TAMMC	Theater Army Materiel Management Center
TAMMS	Army Maintenance Management System
TARADCOM	US Army Tank-Automotive Research and Development Command
TAS	Tracking Adjunct System
TASCOM-5	Theater Army Support Command
TAS3	Transportation Aircraft Supply Support System
TC	Type Classification
TCATA	TRADOC Combined Arms Test Activity
TCR	Test Condition Requirements
TD	Training Development
TDESP	TRADOC Data Element Standardization Program

TDR	Training Device Requirements
T&E	Training and Education Directorate
TEA	Training Effectiveness Analysis
TEC	Training Extension Course
TECOM	US Army Test and Evaluation Command
TEMMS	Test and Evaluation Milestone Management System
TEMPS	Test and Evaluation Master Plans
TFT	Technical Feasibility Testing
TFTS	Tow Field Test Set
TIWGS	Test Integration Work Groups
TLR/S	Total Logistics Readiness/Sustainability
TMAF	Tank Main Armament Evaluation
TMDE	Test Measurement Diagnostic Equipment
TNFS	Theater Nuclear Force Survivability
TOE	Tables of Organization and Equipment
TOPS	Transportation Operational Property System
TPFDL	Time Phased Field Deployment List
TOS	Tactical Operations System
TR-1	Theater Reserves
TRADES	TRADOC Data Evaluation Study
TRADOC	US Army Training and Doctrine Command
TRASANA	TRADOC Systems Analysis Activity
TROTTS	Theater Realignment of Lines-Haul Highway
TSARC	Test Schedule and Review Committee
TSARCOM	US Army Troop Support and Aviation Materiel Readiness Command

TSCH	US Army Transportation Center and School
TSM	TRADOC System Manager
TSP	Test Support Range
TT	Turret Trainer
TTC	US Army Tropic Test Center
TTS	Tank Thermal Sight
UET	Universal Engineer Tractor
USATCFE	US Army Transportation Center
USAARMC	US Army Armor Center
USAARENB	US Army Armor and Engineer Board
USAARRCOM	US Army Armament Readiness Command
USACERCOM	US Army Communications-Electronics Materiel Readiness Command
USACGSC	US Army Command and General Staff College
USAEARA	US Army Equipment Authorization Review Activity
USAES	US Army Engineer School
USAFAS	US Army Field Artillery School
US/FRG	United States/Federal Republic of Germany
USAICS	US Army Intelligence Center and School
USAMMCS	US Army Missile and Munitions Center and School
USAMPS	US Army Military Police School
USAOCS	US Army Ordnance Center and School
USAQMS	US Army Quartermaster School
USAREUR	US Army Europe
USARJ	US Army Japan
USARPAC	US Army Pacific

USASCH	US Army Support Command, Hawaii
USATARCOM	US Army Tank-Automotive Readiness Command
USATB	US Army Training Board
USATCFE	US Army Transportation Center
USATSA	US Army Troop Support Agency
USATSC	US Army Training Support Center
USATSCH	US Army Transportation School
USMA	United States Military Academy
UTD	Unit Training Directorate
UTTAS	Utility Tactical Transport Aircraft System
UWAVM	Underwater Anti-Vehicle Mine
VADS	VULCAN Air Defense System
VCSA	Vice Chief of Staff Army
VIC	Visibility of Intransit Cargo
WARPAC	Wartime Repair Part Consumption Planning Code
WESTPAC	Western Pacific
WSMR	White Sands Missile Range
WSRO	Weapon System Replacement Operations
WMCCS	Worldwide Military Command and Control System
YPG	Yuma Proving Ground

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