U.S ARMY FIELD ARTILLERY CENTER AND FORT SILL

ANNUAL COMMAND HISTORY

(RCS CHIS-6 [R3])

1 JANUARY 2000 THROUGH 31 DECEMBER 2000

BY

COMMAND HISTORIAN'S OFFICE

JUNE 2001

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COMMANDER'S INTRODUCTION

This Annual Command History captures the major events at Fort Sill during 2000. We are confident that our many important initiatives will have an impact on the Field Artillery and Total Army for years.

In 2000 Fort Sill made great progress in doctrine, training, force design, equipment, and leader development in support of Army Transformation. Key efforts included the Interim Brigade Combat Team Organization and Operation Plan, the Interim Division design, the Objective Force Organization and Operation Plan, and the improvements in the Field Artillery Officer Basic Course and the Captains Career Course. A few of the key issues that influenced overall installation operations were budget reductions and Fort Sill's continuing commitment to a community of excellence to ensure a high quality of life for the installation's soldiers, Marines, civilians, and family members.

Fort Sill continues to serve as the Center for Fire Support for the United States Army and Marine Corps. The Field Artillery also continues in its proud tradition of excellence in the service to our nation and our allies through leadership and combat developments.

TONEY STRICKLIN
Major General, USA
Commanding

PREFACE

The 2000 Annual Command History for the U.S. Army Field Artillery Center and Fort Sill follows the decision-making process as closely as possible. Through messages, staff reports, fact sheets, correspondence, briefings, and other documentation, the Command Historian's Office has recreated as closely as possible how the Center and Training Command made key decisions concerning training, leader development, doctrine, force design, equipment requirements, and mission support.

Because the Center and Training Command were involved in many diverse activities during the year, the Command Historian's Office under the direction of the Commanding General selected only those activities deemed to be the most historically significant to include in the History.

Preserving historical documents forms a vital part of the historian's work. After they are collected from the various Center and Training Command organizations during the process of researching, they are filed in the records and documents collection in the Command Historian's Office. All documents are available for use by Center and Training Command staff, other U.S. governmental agencies, and private individuals upon request.

Because new documents are often found after research and writing are completed, this contemporary history is subject to revision. As new documents are discovered, interpretations and conclusions will change. Comments and suggested changes should be directed to the Command Historian's Office.

In the process of researching and writing the History, the historian becomes indebted to many people for their advice and assistance. The Command Historian's Office would like to thank the people who provided their technical expertise. Without their help writing the history would have been far more difficult.

BOYD L. DASTRUP, Ph.D.
Command Historian
U.S. Army Field Artillery Center
and School

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MISSION

Influenced by new field artillery technology introduced after the Spanish-American War of 1898, the development of indirect fire, and inadequately trained Field Artillerymen, the War Department opened the School of Fire for Field Artillery at Fort Sill, Oklahoma, in 1911. War Department General Orders No. 72, dated 3 June 1911, directed the school to furnish practical and theoretical field artillery training to lieutenants, captains, field grade officers, militia officers, and noncommissioned officers.[1]

[1]War Department, General Order No. 72, 3 Jun 1911, Doc I-1, 1997 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH); Wilbur S. Nye Carbine and Lance: The Story of Old Fort Sill (Norman, OK: University of Oklahoma Press, reprinted

Composed of the U.S. Army Field Artillery School (USAFAS), the U.S. Army Field Artillery Training Center (USAFATC), and the Noncommissioned Officers Academy (NCOA), Fort Sill's Training Command continued the tradition established by the School of Fire by preparing leaders, soldiers, and U.S. Marines to be the best in providing fire support during 2000. Using resident and nonresident courses, Training Command trained Army and Marine Corps officers and enlisted personnel in the tactics, techniques, and procedures to employ fire support systems in support of the maneuver arms. Training Command also developed and refined doctrine, designed units for fighting on future battlefields, and participated in the Transformation of the Army that was a major project during the year to make the Army more strategically deployable.[2]

ORGANIZATION

Transformation of Fort Sill's Training Command

1974), pp. 320-29.

[2]"Silhouettes of Steel," Field Artillery, Nov-Dec 00, p. 32, Doc I-1.

On 12 October 1999 the Chief of Staff of the Army, General Eric K. Shinseki, announced his intention to transform the Army into a more strategically responsive force over a period years. Besides revamping the Army's combat forces to make them more deployable, he planned to man all units at one hundred percent of their authorizations to ensure readiness by proceeding in a "deliberate, measured fashion to improve manning in . . . key warfighting formations initially while maintaining the capability of all units and organizations."[3] With this in mind, he released a message on 8 November 1999 that outlined his manning blueprint. He intended to fill the ten active divisions and armored cavalry regiments at one hundred percent of their authorizations in Fiscal Year (FY) 2000, to fill early deploying units above division level at one hundred percent of their authorizations in FY 2001, to fill the remaining operational units to one hundred percent of their authorizations in FY 2002, and to fill institutional units at one hundred percent of their authorizations in FY 2003. As was evident, this plan came at a cost. It involved shifting personnel from the institutional army, which included the U.S. Army Training and Doctrine Command (TRADOC) and Fort Sill's Training Command, to the operational army; and this action reduced manning in the institutional army. Acknowledging this, General Shinseki directed the Commanding General of TRADOC, General John N. Abrams, late in 1999 to redesign his command to absorb the reductions in personnel.[4]

With this tasking General Abrams initiated action early in 2000 to cut infrastructure to free soldiers for the operational army by revamping TRADOC. To accomplish this he envisioned consolidating training throughout TRADOC in the near future into four centers: a maneuver center at a site to be determined; a maneuver support center at Fort Leonard Wood, Missouri; a maneuver sustainment center at Fort Lee, Virginia; and a maneuver command and control center at Fort Leavenworth, Kansas. As a part of this endeavor, he wanted to restructure TRADOC's service schools

[3]Department of the Army (DA), Unit Manning Campaign Plan, 8 Nov 99, Doc I-2.

[4]Email msg with atch, subj: Transformation of Training Command, 9 Feb 01, Doc I-3; DA, Unit Manning Campaign Plan, 8 Nov 99.

by creating an interim model and subsequently replacing it with the objective model. Consolidating training and restructuring individual service schools would eliminate redundancies throughout TRADOC, would reestablish a standard organizational framework for service schools, would reduce the span of control for school commandants, and would free soldiers for duty in operational commands, among other benefits.[5]

[5]Briefing, subj: Ft. Sill Reorganization, 5 Jan 01, Doc I-4; Interview, Dastrup with COL Theodore J. Janosko, Deputy Assistant Commandant for Training Organization and Doctrine, Training Command, 17 Jan 01, Doc I-5; Email msg with atch, subj: Transformation of Training Command, 9 Feb 01.

For Fort Sill, General Abram's interim school model meant significantly redesigning Training Command that included the Field Artillery Training Center (FATC), the Noncommissioned Officer Academy (NCOA), the Field Artillery School, and the 30th Field Artillery Regiment into a totally new organization and involved significant challenges and changes. General Abram's interim school model provided for a school commandant, a quality assurance office, a personal staff for the commandant, a chief of staff; a proponency office; a Futures Development and Integration Center (FDIC) for research, development, and other similar activities; a Branch Technical/Tactical Training Directorate, also called a Branch School, for basic branch instruction; and a Leader Training Center for advanced branch instruction. Upon implementation the interim school model would eliminate many Fort Sill training organizations as they existed in 2000, including Training Command, the Gunnery Department, the Fire Support and Combined Arms Department (FSCAOD), the Noncommissioned Officer Academy (NCOA), the Field Artillery Training Center (FATC), the Warfighting Integration and Development Directorate (WIDD), the Directorate of Combat Developments (DCD), the Depth and Simultaneous Attack Battle Laboratory, and other critical Training Command organizations by merging them into the FDIC, the Branch School, or the Leader Training Center.[6]

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[6]Email msg with atch, subj: Transformation of Training Command, 9 Feb 01; Memorandum for Record, subj: Field Artillery Training Command, 10 Jan 01, Doc I-6;

Briefing, subj: Ft. Sill Reorganization, 5 Jan 01; Email msg, subj: Branch School and Branch Technical/Tactical Training Directorate, 17 Jan 01, Doc I-7.

Upon receiving the task to reorganize, Fort Sill outlined its plan of action during the latter months of 2000. Although it expected to meet TRADOC's intent, Fort Sill with Training Command taking the lead contemplated crucial deviations from the interim school model. It intended to retain the Gunnery Department and FSCAOD, to maintain the regiment with its battalions, to integrate the Noncommissioned Officer Academy into the battalions, and execute the reorganization with the minimal amount of disruption. Equally important, Fort Sill envisioned consolidating Training Command's staff with the garrison staff to save overhead. At the end of 2000, Fort Sill's interim model included a school commandant with a personal staff, a quality assurance office, a chief of staff, a proponency office, and a deputy commanding general for training that oversaw the FDIC, the branch school, and the leader training center.[7]

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[7]Briefing, subj: Ft. Sill Reorganization, 5 Jan 01; Email msg with atch, subj: Transformation of Training Command, 9 Feb 01.

To meet its own unique situation, Fort Sill devised its own proposals for the FDIC, the Branch School (Branch Technical/Tactical Training Directorate), and the Leader Training Center. As delineated late in 2000 and early 2001, the TRADOC FDIC model would have ten major divisions and perform fifteen major functions. In contrast, Fort Sill's proposed FDIC would perform the same basic functions but would have fifteen divisions. This meant retaining some organizations that the TRADOC model did not support, such as Task Force 2000 that would be renamed Task Force XXI and that would continue working with future concepts and the Depth and Simultaneous Attack Battle Laboratory. The FDIC would also focus its attention on combat developments, equipment design, training developments, doctrinal development, and force structure. In the meantime, the TRADOC Branch School model provided a support brigade, an initial entry training brigade, and a school brigade for basic professional military education and functional military education. Although Fort Sill's proposed branch school model would have the same basic functions, it outlined a slightly different organization. It planned to retain FATC for initial entry training and the 30th Field Artillery Regiment for basic professional and functional military education and placed support functions under the FATC and 30th Field Artillery Regiment. As of 5 January 2001, Fort Sill's proposed Leader Training Center included the 2-2nd Field Artillery for support; the 1-30th Field Artillery/Gunnery Department for basic training for officers, warrant officers, and noncommissioned officers; the 3-30th Field Artillery/FSCAOD for advanced training for officers, warrant officers, and noncommissioned officers; and a Headquarters and Headquarters Battery, 30th Field Artillery Regiment for administrative support. Eventually, the 1-30th Field Artillery would handle all basic training for officers, warrant officers, and noncommissioned officers, while the 3-30th Field Artillery would handle advanced training for officers, warrant officers, and noncommissioned officers. For example, the Primary Leadership Development Course and Basic Noncommissioned Officer Course would be in the 1-30th Field Artillery, and the Advanced Noncommissioned Officer Course would be in the 3-30th Field Artillery. As the Deputy Assistant Commandant for Training and Organization, Colonel Theodore J. Janosko explained, this organization was subject to change.[8]

MISSION SUPPORT

Officer Distribution Plan and Enlisted Distribution Target Model

After becoming the Chief of Staff of the Army, General Eric K. Shinseki, announced his intention to improve the Army's personnel readiness as part of creating a strategically responsive force. Among other things, he outlined fully staffing the Army's key warfighting units and organizations so that they would have the ability to accomplish their missions. As he explained in November 1999, this involved filling the ten active component divisions' authorizations at one hundred percent in Fiscal Year (FY) 2000, filling the early deploying units' authorizations at one hundred percent in FY 2001, filling the remaining Table of Organization and Equipment (TOE) units' authorizations at one hundred percent in FY 2002, and filling the Table of Distribution and Allowances (TDA) units to one hundred percent of their authorizations by FY 2003. To achieve this restructuring, General Shinseki started shifting personnel from the institutional army,

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[8]Email msg with atch, subj: Revision of Transformation of Training Command, 20 Feb 01, Doc I-8; Email msg with atch, subj: Transformation of Training Command, 9 Feb 01; Briefing, subj: Ft. Sill Reorganization, 5 Jan 01; Email msg, subj: Branch School and Branch Technical/Tactical Training Directorate, 17 Jan 01; Interview, Dastrup with Janosko, 10 Jan 01.

often called the TDA army, to the operational army, often called the TOE army, to ensure the latter's readiness. Filling the authorized positions in operational units and other critical units in 2000 left the institutional army with the ability to fill about forty percent of its authorized positions in FY 2001.[9]

[9]"Army to Beef Up Divisions," ArmyLink News, 8 Nov 99, Doc I-9; "Army Begins Manning Initiatives," U.S. Army News Release, 8 Nov 99, Doc I-10; Department of the Army (DA), Unit Manning Campaign Plan, 8 Nov 99, Doc I-11; Memorandum for See Distribution, subj: FY 2001 ODP, 2 Jun 00, Doc I-12.

For Fort Sill's Training Command, which was part of the institutional army, shifting personnel from the institutional army to the operational army created serious problems in 2000-2001 just as General Shinseki projected.[10] In a lengthy message to the Chief of Staff of Fort Sill, Colonel David C. Ralston, on 10 May 2000, the Director of Resource Management, Colonel Robert L. Hanson, wrote, "The proposal represents a 24% reduction of our current ODP [Officer Distribution Plan] and will leave us at 49% of authorized officers. If this materializes[,] we will lose a tremendous level of experience and expertise."[11] For example, as of mid-2000, Training Command anticipated losing ten lieutenants, twenty-six captains, seventeen majors, four lieutenant colonels, and three colonels in FY 2001. To meet the ODP Training Command envisioned downgrading its department directors from colonel to lieutenant colonel, stopping small group instruction in the Field Artillery Captains Career Course, and losing expertise to conduct research and develop doctrine. Training Command would also lose ability to support the Army Experimentation Campaign Plan activities, the Transformation of the Army, and the development of future concepts and would lose critical noncommissioned officers. Already, the U.S. Army Field Artillery Training Center's drill sergeants and instructors did double duty to cover unfilled maintenance, supply, and other responsibilities instead of maintaining their focus on initial entry training because of shortages.[12] According to the Commander of the U.S. Army Field Artillery Training Center, Colonel Thomas J. O'Donnell, losing more first sergeants would further challenge the center to provide "the proper level of leadership in our IET [initial entry training] batteries."[13] As Training Command viewed FY 2001, the ODP

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[10]DA, Unit Manning Campaign Plan, 8 Nov 99.

[11]Email msg, subj: ODP Cuts, 11 May 00, Doc I-13.

[12]Ibid.; Interview with atch, Dastrup with CPT Frank A. Socha, G-1, Training Command, 31 Jan 01, Doc I-14; Interview, Dastrup with SGM R.L. Hatcher, 30th Field Artillery Regiment, 6 Feb 01, Doc I-15.

[13]Memorandum for Deputy Commanding General, subj: Proposed FY01 Officer Distribution Plan Cuts, 18 Jul 00, Doc I-16.

for officers and the Enlisted Distribution Target Model (EDTM) for enlisted personnel would fail to furnish the resources to support Training Command's mission in the coming fiscal year. The Deputy Commanding General for Training, Brigadier General William F. Engel, wrote the Commanding General of Fort Sill, Major General Toney Stricklin, that the overall loss of leadership caused by the cuts would push Training Command to a limit of becoming non-mission capable.[14]

Given the perceived scenario, the Chief of Staff for Fort Sill, Colonel Ralston, at the direction of General Stricklin appealed to the U.S. Army Training and Doctrine Command (TRADOC) for relief. On 28 July 2000 he composed, "The cumulative effects of reductions in FY01 of $5.1 dollars, 60 officers, and 306 enlisted manning prevents me from accomplishing the volume of work in training and training development, combat development, leadership development, and Army transformation initiatives."[15] Discussing the impact of the cuts on the core and essential missions, Colonel Ralston added, "Training Command will continue to 'train the load' but at increased risk due to the loss of five FATC battery commanders, all but one combined arms instructor, a greatly reduced number of Depth and Simultaneous Attack Battle Lab (BLAB) projects, and a 40 percent cut in essential live-fire support capability."[16] He concluded, "Unless some relief, or funds, are made available to support some operations with contract or civilian hire[,] the impact from these personnel reductions will significantly impact our Core Training/Essential Support missions and continue to reduce the standard of training provided."[17] Because the cuts of enlisted

[14]Memorandum for Commanding General, subj: TRADOC FY01 ODP, undated, Doc I-17; Email msg, subj: ODP Cuts, 11 May 00; Interview with atchs, Dastrup with Socha, 31 Jan 01.

[15]Memorandum for Commander, U.S. Army Training and Doctrine Command, subj: Commander's Statement - TRADOC Resource Review Annex 3 Narrative Showstoppers, 28 Jul 00, Doc I-18.

[16]<u>Ibid</u>.

[17]<u>Ibid</u>.

personnel and officers were so severe, TRADOC had to reexamine them in light of the negative impact on training the current force and on designing and developing the force of the future.[18]

[18] Ibid.

In view of Fort Sill's persistence and requirements, TRADOC modified the cuts. For example, rather than receiving a reduction of sixteen Field Artillery lieutenants, TRADOC cut the installation only seven. In some instances, the adjustments actually increased the number of officers in a particular grade. Rather than receiving a reduction of seven branch qualified Field Artillery captains in FY 2001, Fort Sill would gain ten in FY 2001 over FY 2000.[19]

The Budget

During 2000, Fort Sill prepared the budget for Fiscal Year (FY) 2001 and concurrently executed FY 2000 budget actions. As in past years, Fort Sill faced another budget reduction in FY 2001. Based upon U.S. Army Training and Doctrine Command (TRADOC) guidance, the post's budget for FY 2001 would be cut by about $5.1 million from FY 2000. Basically, this meant working with budget of approximately $97 million that was a decrease of over fifty-five percent in constant dollars since 1987. The funding reduction would again force major decrements to the installation and quality of life support and would seriously impact Fort Sill's ability to accomplish its training mission.[20]

In the commander's statement to the FY 2001 command operating budget submitted to TRADOC, the Commanding General of Fort Sill, Major General Toney Stricklin, outlined the impact of the budget cut. In compelling language General Stricklin explained, "The cumulative effects of projected reductions in FY01 TBG [TRADOC Budget

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[19]Email msg, subj: ODP-EDTM Portion of Annual Command History, 12 Feb 01, Doc I-19; Interview, Dastrup with Socha, 31 Jan 01.

[20]FY 2000 Resource Contract, U.S. Army Field Artillery Center and Fort Sill (USAFACFS), p. 3, Doc I-20; USAFACFS, FY 2001-07 Mission, Vision, and Installation Priorities, 12 Jun 00, pp. 1-104, Doc I-21; Memorandum for See Distribution, subj: FY 01 Command Operating Budget - OMA TRADOC Budget Guidance (TBG)/FY01 Zero-Based Budget Plan, 15 Jun 00, Doc I-22; Briefing, subj: FY01 Budget Guidance, Commanding General, 14 Jul 00, Doc I-23; Briefing, subj: TRADOC Command Plan, FY01-07, 12 Jun 00, Doc I-24; Memorandum for Record, subj: DRM Director's comments on budget section of 2000 Annual Command History, 6 Jun 01, Doc I-24A.

Guidance] of $5.1M dollars, 60 officers, and 306 enlisted personnel are significant given the previous five straight years of steady decline."[21] Continuing, he added:

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[21]Memorandum for Cdr, TRADOC, subj: Commander's Statement - FY01 Command Operating Budget, 21 Aug 00, Doc I-25.

> Our institutional training base is at the break point. The FY01 Budget, ODP [Officer Distribution Plan], and EDTM [Enlisted Distribution Target Model] allow me to only partially resource my core mission of train the load in IET [Initial Entry Training] and it will be at the expense of another component of training the load - OES [Officer Education System].[22]

As the General clarified, the repeated budget cuts of past years and other resource cuts had a deleterious impact on Fort Sill's ability to perform its mission and forced shifting funds from one category to another and facing chronic shortages. In the conclusion to his commander's statement, General Stricklin pointed out:

> In summary, the cumulative impact of the FY01 budget, with the recent ODP and EDTM reductions are devastating to an already crippled . . . training center. If FY01 reductions are not corrected, train the load, GIT [Gender-Integrated Training], force protection, and combat developments will assume risk that the Army and TRADOC should not accept.[23]

From the General's perspective, Fort Sill faced a challenging future, given the budget.[24]

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[22] Ibid.

[23] Ibid.

[24] Ibid.

Meanwhile, Fort Sill implemented its FY 2000 budget and warned its various agencies to anticipate "little new funding this fiscal year unless it is transformation or recruiting specific."[25] Using the TRADOC review and analysis methodology during FY 2000, the post identified many tasks being accomplished within the allotted funding, some being partly accomplished within the allotted budget, and some tasks that were high risks and required additional funding to be accomplished. For example, Fort Sill needed additional money for the Army Experimental Campaign Plan that was crucial for future concepts and initiatives development, adequate force protection, funeral honors support, maintenance of range areas, direct support/general support maintenance support, tuition assistance, utility costs, life cycle replacement of computers, Circular A-76 contracting out studies, and borrowed military manpower. The post also lacked sufficient money, approximately $214 million, to repair its aging infrastructure, bridges, dams, railroads, among others. Also, Fort Sill required additional funds for dining facilities for initial entry training soldiers. With existing funds the installation could only operate three dining facilities but required four to meet the training load for initial entry training. Operating three facilities created crowded conditions and increased the time to feed soldiers, which cut into training time. Fortunately, TRADOC supplied the additional funds at the end of FY 2000 to open the additional dining facility. In the meantime, the post required more money and personnel to operate its three automated small arms ranges and had to divert ten instructors and two instructor support personnel from normal duties to operate them in FY 2000. This severely impacted student-instructor ratios, the U.S. Army Field Artillery Training Center's ability to furnish adequate basic combat training instruction, and Fort Sill's capability to serve as a power projection platform for mobilizing the deploying units.[26]

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[25]Memorandum for See Distribution, subj: FY00 Appropriation TRADOC Budget Guidance (TBG), 18 Feb 00, Doc I-26; Memorandum for See Distribution, subj: FY00 Appropriation TRADOC Budget Guidance (TBG), 8 Feb 00, Doc I-27.

[26]Memorandum for See Distribution, subj: TRADOC Command Program Management System Phase III - Review and Analysis, 1 Mar 00, Doc I-28; Email msg with atch, subj:

FY00 Cannot Do Converted to Schedule 50 Format, undated, Doc I-29; Information Paper, subj: Operation of Automated Small Arms Ranges and OCIE Stock Conditions at CIF at Fort Sill, 22 Mar 00, Doc I-30; Information Paper, subj: Operation of Small Arms Ranges, OCIE Stock Conditions, and ITAM for Ft. Sill, 12 Oct 00, Doc I-31; Information Paper, subj: BASOPS Dining Facilities and Laundry Support to Training and Utilities for Fort Sill, 22 Mar 00, Doc I-32; Information, subj: BASOPS Dining Facilities and Laundry Support to Training, 12 Oct 00, Doc I-33; Point Paper, subj: Infrastructure Inspections/Repairs and MAR Projects for Fort Sill, 22 Mar 00, Doc I-34; Point Paper, subj: Integration for Army Experimental Campaign Plan Exercises and Experiments for Fort Sill, 22 Mar 00, Doc I-35; Memorandum for Record, subj: DRM Director's comments on budget section of 2000 Annual Command History, 6 Jun 01.

As might be expected, the reality of the successive budget cuts hit. On 29 August 2000 year Rowan Scarborough wrote in the Washington Times that more than one half of the Army's combat and support training centers plunged to the lowest possible readiness levels with some commanding generals warning that they risked being unable to turn out qualified soldiers.[27] Reflecting upon this overall trend, General Stricklin reported in October and November 2000 that the shortages of personnel and resource constraints hampered training. "Insufficient dollars and the proposed ODP/EDTM [Officer Distribution Plan/Enlisted Distribution Target Model] cuts reduces my mission flexibility and forces me to accept additional risk in my primary mission to train the load," General Stricklin pointed out in October 2000.[28] The following month, he added that the shortage of current funding ($3.7 million) in the school's infrastructure budget would not allow upgrading sixteen classrooms to support the fielding of the Advanced Field Artillery Tactical Data System and Military Occupational Speciality 13D, Automated Fire Support Specialist, training in FY03. Combat development remained C-3 due to personnel shortages, and a lack of threat assessment capability severely degraded the school's analytical capability.[29]

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[27]Interview with atch, Dastrup with Fort Sill Chief of Staff, COL David C. Ralston, 6 Dec 00, p. 1, Doc I-36.

[28]TRADOC Monthly Status Report (MSR), 15 Oct 00, Doc I-37.

[29]TRADOC MSR, 15 Nov 00, Doc I-38; Memorandum for

Additionally, $2.5 million would be required in FY 2002 to complete life safety, handicapped access, and other upgrades. The warnings and fears about the adverse impact of budget reductions of the past several years took place in 2000 and hindered quality training.[30]

Base Realignment and Closure 1995 and Fort Chaffee, Arkansas

Record, subj: DRM Director's comments on budget section of 2000 Annual Command History, 6 Jun 01. The U.S. Army rates unit readiness from C-1 to C-4 with C-1 being the highest and C-4 being the lowest.

[30]Ibid.

Although Base Realignment and Closure (BRAC) was new to Fort Sill in the mid-1990s, the process had its origins in the 1960s. Understanding that the Department of Defense (DOD) had to reduce its base structure that had been created during World War II and the Korean War, President John F. Kennedy directed Secretary of Defense Robert S. McNamara to develop and implement an extensive base realignment and closure program to adjust to the realities of the 1960s. The Office of the Secretary of Defense (OSD) subsequently established the criteria to govern the selection of bases without consulting Congress or the military. Under McNamara's guidance DOD closed sixty bases early in the 1960s without Congress or other government agencies being involved. In view of the political and economic ramifications of the closures, Congress decided that it had to be involved in the process and passed legislation in 1965 that required DOD to report any base closure programs to it. However, President Lyndon B. Johnson vetoed the bill. This permitted DOD to continue realigning and closing bases without congressional oversight throughout the rest of the 1960s.[31]

Economic and political pressures eventually forced Congress to intervene in the process of realigning and closing bases and to end DOD's independence on the matter. On 1 August 1977 President Jimmy Carter approved Public Law 95-82. It required DOD to notify Congress when a base was a candidate for reduction or closure; to prepare studies on the strategic, environmental, and local economic consequences of such action; and to wait sixty days for a congressional response. Codified as Section 2687, Title 10, United States Code, the legislation along with the requirements of the National Environmental Policy Act (NEPA) permitted Congress to thwart any DOD proposals to initiate base realignment and closure studies unilaterally by refusing to approve them and gave it an integral role in the process.[32]

As economic pressures mounted, the drive to realign and close military installations intensified. In 1983 the President's Private Sector Survey on Cost Control (the Grace Commission) concluded in its report that economies

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[31] 1995 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), pp. 17-18.

[32] Ibid., p. 18.

could be made in base structure and simultaneously recommended the creation of a nonpartisan, independent commission to study base realignment and closure. Although nothing came of this recommendation, the defense budget that had been declining since 1985 and that was predicted to continue to decrease in coming years prompted the Secretary of Defense to take decisive action. In 1988 the Secretary of Defense recognized the requirement to close excess bases to save money and therefore chartered the Commission on Base Realignment and Closure in 1988 to recommend military bases within the United States for realignment and closure.[33]

[33] Ibid., pp. 18-19.

In the meantime, Congress passed Public Law 100-526. It provided the statutory basis for a one-time base realignment and closure and furnished partial relief from certain statutory impediments. Public Law 100-526 waived a portion of NEPA requirements, delegated property disposal authority to DOD, and expedited congressional review of BRAC recommendations. Passage of this law constituted a recognition that realigning and closing bases could save money without harming national security and that Congress would support such measures.[34]

The BRAC commission of 1988 issued its report in December 1988. It proposed closing eighty-six military installations and realigning thirteen others. In addition, the commission designated forty-six installations for increases in mission because units and activities would be relocated to them as a result of the closures and realignments. Approved by the Secretary of Defense and Congress, the commission's recommendations led to the realignment and closure of fourteen major installations by February 1995 with other two to be realigned or closed by 2000, while seventy-seven of the eighty-six bases were closed by mid-1998 with the remaining to be closed early in the twenty-first century.[35]

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[34] Ibid., p. 19.

[35] Ibid., pp. 19-20; Information Paper, subj: Army BRAC Status, 13 May 98, Doc I-42, 1998 USAFACFS ACH.

The waning of the Cold War early in the 1990s reduced international tensions and the threat of war and concurrently led DOD to conclude that its budget would continue to decline even more precipitously, and this further magnified the need for realigning and closing bases. Because the base closure and environmental impact studies required under Section 2687 would take one to two years to complete, DOD developed a list of candidates for closure and realignment in January 1990. Before any real action on the studies could begin, Congress passed legislation in November 1990, and the President signed it as Public Law 101-510. The law required DOD to review its base structure without regard to the January 1990 list. Working from the BRAC experience of 1988, the new law authorized independent Presidential BRAC commissions in 1991, 1993, and 1995 to review the Secretary of Defense's recommendations for base realignment and closure in those years. Through the end of 1995, the BRAC commissions, including the 1988 one, closed ninety-eight bases in the United States and over six hundred overseas bases and produced an annual savings of almost $1 billion. As of 1999, the Army completed the closures and realignments authorized under the first three BRACs (1988, 1991, and 1993) and completed twenty-five of the twenty-nine BRAC 1995 closure actions. One year later in February 2000, only two 1995 BRAC closures remained to be completed. At their conclusion, the four BRACs of 1988, 1991, 1993, and 1995 would have closed or realigned 139 bases.[36]

Outside of moving the Joint Readiness Training Center (JRTC) from Fort Chaffee, Arkansas, to Fort Polk, Louisiana, as a result of the BRAC of 1991, the BRAC process had little influence upon Fort Sill over the years. The BRAC of 1995, however, made a significant impact. In July 1995 the BRAC commission advised closing Fort Chaffee, Arkansas, a sub-installation of Fort Sill, Oklahoma, as an active component (AC) facility. Upon approval on 15 July

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[36]1995 USAFACFS ACH, p. 20; U.S. Army Posture Statement Fiscal Year 1999, p. 64, Doc I-42A, 1998 USAFACFS ACH; U.S. Army Posture Statement Fiscal Year 2001 (Extract), Feb 00, pp. 37-38, Doc I-25A, 1999 USAFACFS ACH; DOD BRAC 1995, FY 2001 Budget Estimate (Extract), Feb 00, p. 11, Doc I-39; U.S. Army BRAC Office, Fact Sheet with atchs, subj: The BRACO Mission, 25 Jan 01, Doc I-40.

1995 by President William J. Clinton, the 1995 BRAC recommendations became Public Law 101-510 on 28 September 1995. Based upon the law, the Commanding General of Fort Sill had to close Fort Chaffee except for the minimum essential ranges, facilities, and training areas required for a reserve component (RC) training enclave for individual and annual training and had to dispose of excess properties to the private sector. This involved creating a RC training enclave that would license the Arkansas Army National Guard (ARARNG) to operate it with U.S. Army Reserve (USAR) activities being tenants and realigning current tenants from Fort Chaffee. Fort Sill also had to transfer Fort Chaffee area support responsibilities to Fort Sill, establish an Arkansas Army National Guard garrison at Fort Chaffee, and cancel the installation's designation as a U.S. Army Forces Command (FORSCOM) mobilization station and contingency mission site. In addition, Fort Sill had to ensure that the property would be declared excess and would be turned over to the private sector environmentally clean.[37]

[37]1995 USAFACFS ACH, pp. 20-21; 1996 USAFACFS ACH, p. 16; DOD BRAC 1995 FY 2001 Budget Estimate (Extract), Feb 00, p. 46.

Embarking upon what the Army described to be the most powerful tool for reshaping and eliminating excess infrastructure, Fort Sill published a plan in September 1996 to execute the public law and to assure an orderly closure of Fort Chaffee. According to Public Law 101-510, Fort Chaffee would be closed as an AC military installation effective 30 September 1997 with the mission of maintaining the RC enclave passing to the Arkansas Army National Guard on 1 October 1997. Subsequent to that date, a federal government transition team would coordinate the disposal of all remaining excess equipment, material, and real property in coordination with the United States Property and Fiscal Office. A completion date of Fiscal Year (FY) 2001 for the disposal was established.[38]

Fort Sill's closure plan, which was a working document subject to revisions as needed, envisioned a three-phase approach to the transfer. During phase one (the planning phase), plans for the draw down would be written. This involved writing a detailed plan of RC enclave and Fort Chaffee residual dimensions, ownership, and base operations support; producing a comprehensive plan for administering annual training for 1997; and transferring annual training for 1998 to the RC. In phase two (the transition phase) the transfer from an active Army installation to the Arkansas Army National Guard operated enclave would transpire. Tenant activities could move, if necessary, to new facilities or locations. The designation of Fort Chaffee as a U.S. Army Forces Command (FORSCOM) mobilization station and contingency mission site would be canceled, while administration of 1997 annual training funding would be continued by Fort Sill/Fort Chaffee. At the same time U.S. Army Garrison (USAG) support activities would turn in equipment, close buildings, prepare real property for turn in, and reduce support functions. The U.S. Army Garrison, however, would continue post support

[38]1996 USAFACFS ACH, pp. 16-17; U.S. Army Posture Statement (Extract), FY 2001, pp. 37-38.

through FY 1997.[39]

[39] 1996 USAFACFS ACH, p. 17.

As planned in 1995-1996, phase three (the caretaker phase) would last from 1 October 1997 to disposal in FY 2001. During those years, a Fort Sill transition team of sixty personnel, which would be reduced in numbers over the next four years, would prepare Fort Chaffee's excess property for final closure, perform real property maintenance in the excess area as required, dispose of personal property, and secure government property until properly disposed. Base operations support, in the meantime, would be assumed by the Arkansas Army National Guard for the RC enclave. Upon the completion of all required environmental cleanup of the excess property and the transfers, the third phase would conclude. The separation of the transition team would mark the end of U.S. Army Garrison presence on Fort Chaffee.[40]

On 27 September 1997 a change of command ceremony closed an era at Fort Chaffee. That day, official command and control of the installation passed from the U.S. Army to the Arkansas Army National Guard when the U.S. Army Garrison was inactivated. The installation officially became known as the Fort Chaffee Maneuver Training Center.[41]

Nevertheless, Fort Sill still had vital role in Fort Chaffee operations after 1 October 1997, the official transition date. Although Fort Sill furnished many critical services in 1997-1998, its most significant mission centered on writing a new disposal plan to transfer excess property to the Fort Chaffee Redevelopment Authority, a state chartered public trust that was composed of local community leaders, organized in 1995, and established as a planning group to determine the use of Fort Chaffee.[42]

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[40]Ibid., p. 18.

[41]1997 USAFACFS ACH, p. 10; DOD BRAC 1995, FY 2001 Budget Estimate (Extract), Feb 00, p. 6.

[42]1997 USAFACFS ACH, p. 10; Memorandum for Record, subj: Ft. Chaffee Annual Command History, 24 Jan 01, Doc I-41; DOD BRAC 1995, FY 2001 Budget Estimate (Extract), Feb 00, p. 6; Interview, Dastrup with Barbara Jordan, DRM, 8 Jan 98, Doc I-42; "Army Transfers Fort Chaffee Parcel to Local Reuse Authority," U.S. Army News Release, 21 Nov 00, Doc I-43; Information Paper, subj: Army Transfers Fort Chaffee Parcel to Local Reuse Authority, Nov 00, Doc I-44; Email msg, subj: Fort Chaffee Local

Redevelopment Authority and Fort Chaffee Public Trust, 25 Jan 01, Doc I-45; "Fort Chaffee Deed Transferred," Southwest Times Record, 17 Nov 00, Doc I-46.

Besides completing the disposal plan and the transfer documents on over seven hundred buildings and structures and sixty-five thousand acres to the Arkansas Army National Guard, Fort Sill continued helping the realignment process during 1998. For example, the Directorate of Logistics (DOL) closed its transportation office, assisted in the development of caretaker table of distribution and allowance for equipment, and helped screen excess personal property. The Directorate of Environment Quality (DEQ) maintained oversight of the environmental clean up process and advised the commander of Fort Sill on all environmental issues, while the Directorate of Resource Management (DRM) closed outstanding budget accounts and provided training to Fort Sill staff members on the BRAC process, among other things. Meanwhile, the Directorate of Civilian Personnel (DCP) expedited the staffing needs of the transition team, furnished placement services for Department of the Army civilians, and personnel services for the transition team.[43]

During 1999, Fort Sill remained actively involved with the Fort Chaffee Maneuver Training Center. Although it was reduced by eighteen people, the Base Transition Team focused its attention on transferring property to the Fort Chaffee Redevelopment Authority that had become, in the meantime, the Fort Chaffee Public Trust in 1997 to implement the Authority's plans. The team assisted in the preparation of the Economic Development Conveyance application for the Fort Chaffee Public Trust, while the Fort Sill garrison provided assistance with several ongoing projects, such as environmental site remediation, coordinating daily facility use, and processing Base Disposal Support Packages, to name a few.[44]

The base transition team continued working on the Fort Chaffee BRAC in 2000. During the year, the team transferred 3,700 acres of clean property to the Fort Chaffee Public Trust, consigned the negotiated sale of the

[43]Memorandum for Command Historian, subj: USAFACFS Annual Command History for CY 1998, 9 Feb 99, Doc I-43, 1998 USAFACFS ACH.

[44]Memorandum for Command Historian, subj: USAFACFS Annual Command History for CY 1999, 20 Jan 00, Doc I-26, 1999 USAFACFS ACH; Email msg, subj: Fort Chaffee Local Redevelopment Authority and Fort Chaffee Public Trust, 25 Jan 01.

Natural Gas System to the local natural gas provider, the Arkansas-Oklahoma Gas Corporation, prepared Base Disposal Support Packages on the remaining property, and sent them to the Little Rock District Corps of Engineers, Real Estate Division for deed preparation. Ongoing projects included maintaining retained property until transfer, coordinating transfer activities, completing environmental cleanup documentation, and continuing quarterly in-process reviews at Fort Chaffee.[45]

[45]Memorandum for Command Historian, subj: USAFACFS Annual Command History, 31 Jan 01, Doc I-47; Memorandum for Record, subj: Fort Chaffee Annual Command History, 24 Jan 01.

Although some projects were still being worked, Fort Chaffee BRAC passed a significant milestone in 2000. Through 2000 federal law required DOD to sell the excess property from closed bases for less than fair market value. Because of this requirement, communities were forced to spend considerable time negotiating an acceptable price with the federal government. In addition, DOD had to expend time, personnel, and resources negotiating the sale while maintaining responsibility for the costs of operating the base. Arkansas Congressman, Asa Hutchinson, challenged the wisdom of this practice. Addressing the Fort Chaffee situation specifically, he pointed out that if the property was transferred at current market value, the purchase price would exceed the expected revenues generated from redevelopment. Given this, there would be little incentive to pursue a redevelopment plan because the Fort Chaffee Public Trust would be unable to recoup the costs of purchasing the property. To facilitate transferring the property, Congressman Hutchinson urged Congress to attach an amendment to DOD Authorization Bill for FY 2000 that would permit DOD to turn over closed military bases to local communities at no charge so that citizens could benefit from base closures.[46]

Working with colleagues in Congress, Congressman Hutchinson included language in the FY 2000 DOD authorization bill that allowed DOD to turn over closed facilities to local communities at no cost but directed them to use the property to generate economic development. This permitted the rapid transfer of Fort Chaffee to the Fort Chaffee Public Trust, saved the U.S. Army money, and accelerated community reuse plans. As a result of the transfer, the Fort Chaffee Public Trust received 3,793 acres in November 2000 at no cost and ultimately would obtain 5,235 acres and 770 buildings from the U.S. Army upon completion of any required environmental remediation.[47]

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[46]Information Paper, subj: Discussion, 10 Jun 99, Doc I-48; Information Paper, subj: Congressman Asa Hutchinson Announces Pentagon Approval of Fort Chaffee Land Transfer, 6 Sep 00, Doc I-49; Memorandum for Record, subj: Fort Chaffee Annual Command History, 24 Jan 01; Information Paper, subj: Congressman Asa Hutchinson Asks for Hearings on Closed Military Facilities, Including Fort Chaffee Redevelopment, 10 Jun 99, I-50.

[47]Memorandum for Command Historian, subj: USAFACFS

Annual Command History, 31 Jan 01; Memorandum for Record, subj: Fort Chaffee Annual Command History, 24 Jan 01; Information Paper, subj: Congressman Asa Hutchinson Announces Pentagon Approval of Fort Chaffee Land Transfer, 6 Sep 00; "Army Transfers Fort Chaffee Parcel to Local Reuse Authority," U.S. Army News Release, 21 Nov 00; Asa Hutchinson's News Letter, 20 Nov 00, Doc I-51; Information Paper, subj: Army Transfers Fort Chaffee Parcel to Local Reuse Authority, ca Nov 00.

Circular A-76 Studies and Contracting Out

Examining governmental activities to determine whether they should be contracted out or not had their origins in the 1950s. Early in 1955, the Bureau of the Budget, the forerunner of the Office of Management and Budget (OMB), formulated the policy of increasing reliance on the private sector for certain goods and services. It explained at the same time that exceptions existed. Governmental agencies could be used if their functions were considered to be inherently governmental in nature, if satisfactory commercial sources were unavailable, if national defense were at stake, or if a cost-comparison study revealed that the government could furnish the service less expensively than private enterprise could. Although the 1955 pronouncement and subsequent ones focused more attention on studying commercial activities than previously, the government turned over only a few functions to private enterprise. Through 1963 the government depended upon its installations and their staffs rather than private companies, especially when commercial activities were more costly. As such, cost had become the deciding factor during the years after 1955.[48]

[48]1990 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), pp. 11-12.

Influenced by the drive for cost efficiency, the Bureau of the Budget issued Circular A-76 in 1966. This circular and revisions of 1967, 1979, 1983, and 1996 directed the government to solicit proposals to compare in-house and contractor costs and outlined the proper procedures for seeking offers from contractors. Equally important, A-76 reaffirmed that the government desired to rely upon private business for goods and services, that some functions had to be performed by the government because they were governmental in nature, and that relative costs would determine whether a function would be done by government employees or commercial sources. Although the performance of the tasks might be transferred from the government to a commercial source if it proved to be less expensive, the Army still retained ownership of the activity.[49]

In keeping with the drive over the years to be more cost efficient and after a lull in contracting out for several years, budgetary pressures and the need to free up funds to modernize encouraged the Department of Defense and the Department of the Army to make contracting out a priority once again. In 1998 the Department of the Army directed that commercial activities cost competition studies be conducted to determine the more efficient provider with the goal of reviewing forty-eight thousand civilian and eight thousand military positions for Fiscal Year (FY) 1999 through FY 2003. In compliance with the Army's directive, the U.S. Army Training and Doctrine Command (TRADOC) announced in November 1998 that command-wide A-76 studies of the Directorates of Information Management (DOIM) and Training Services Centers (TSC) would begin in FY 1999. Subsequently in December 1998, TRADOC said that Adjutant General/Military Personnel Offices (AG/MPO) would also undergo A-76 studies beginning FY 1999. The results of the DOIM, TSC, and AG/MPO studies and the ongoing study of the Directorate of Public Works (DPW) that

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[49]General Accounting Office (GAO) Report, Base Operations, Mar 97, pp. 2, Doc I-52; OMB Circular A-76 (Extract), 1999, pp. 1-10, Doc I-53; 1989 USAFACFS Annual Historical Review, p. 14; Memorandum for Command Historian with Encls, subj: USAFACFS Annual Command History for CY 1998, 9 Feb 99, Doc I-44, 1998 USAFACFS ACH; Memorandum for Command Historian, subj: Coordination of 1999 USAFACFS Annual Command History, 31 Mar 00, Doc I-26A, 1999 USAFACFS ACH.

had begun in May 1997 at Fort Sill and that was being done by a contractor, Management Analysis, Inc., would determine the most cost-effective way of doing those jobs by permitting government and private enterprise to put their most cost-efficient proposals and organizations forward for consideration.[50]

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[50]GAO Report, Base Operations, p. 5; "DOIM, TSC to undergo Cost Competition Study," Fort Sill Cannoneer, 3 Dec 98, pp. 1a, 5b, Doc I-45, 1998 USAFACFS ACH; "AG Next Target for Cost-Competition Study," Fort Sill Cannoneer, 10 Dec 98, p. 6a, Doc I-46, 1998 USAFACFS ACH; "Base Ops Studied at TRADOC Posts," Fort Sill Cannoneer, 3 Apr 97, pp. 1a, 2a, Doc I-47, 1998 USAFACFS ACH; Msg with Atch (Extract), subj: CY 98 Command History, 21 Jan 99, Doc I-48, 1998 USAFACFS ACH; Memorandum for Command Historian

with Atch (Extract), subj: Annual Command History, 13 Jan 98, Doc I-49, 1998 USAFACFS ACH; Memorandum for Command Historian with Encls, subj: USAFACFS Annual Command History for CY 1998, 9 Feb 99.

Unlike in the past when installation Directorate of Resource Management (DRM) carried out the studies without outside assistance, TRADOC decided to hire contractors to help conduct the DOIM, TSC, and AG/MPO studies. TRADOC selected this alternative because the studies were command-wide and not limited to a certain post and because local DRMs had been reduced in size in response to budget cuts of recent years and lacked sufficient personnel to conduct the studies. Notwithstanding this fundamental change, the study concept remained constant with those of past years. Fort Sill would develop its most efficient DPW, DOIM, TSC, and AG/MPO organizations to compete with a potential contractor. The more cost-effective bid would then perform the function. Even though Fort Sill would receive contractor support on the studies, it would have to take a full and active part in the commercial activities study process, would have to take ownership of the outcome, and would have to live with the results of the studies. In view of this, Fort Sill established three installation study teams in FY 1999 to work with each of the command-wide contractors in order to coordinate, review, and change, as appropriate, study documents completed by the contractor.[51]

[51]"AG Next Target for Cost-Competition Study," p. 6a; "DOIM, TSC to undergo Cost Competition Study," pp. 1a, 5b; Memorandum for Command Historian with Encls, subj: USAFACFS Annual Command History for CY 1998, 9 Feb 99; Interview, Dastrup with Wynona Morris, DRM, 7 Jan 00, Doc I-27, 1999 USAFACFS ACH; Email msg with atch, subj: Studies, 22 Feb 00, Doc I-28, 1999 USAFACFS ACH.

During 1999, the Directorate of Resource Management continued working on contracting out. It placed a notice of intent to solicit contractor bids for the Facilities Maintenance Division in DPW on Fort Sill's Internet website in November 1999 and planned to complete the study in 2001. In the meantime, TRADOC received funding for command-wide studies of the AG/MPO, DOIM, and TSC functions with start dates in FY 2000.[52]

[52]Interview, Dastrup with Morris, 7 Jan 00; Email msg with atch, subj: A76 Studies and Contracting Out, 9 Feb 00, Doc I-29, 1999 USAFACFS ACH; Memorandum for Command Historian, subj: Coordination of 1999 USAFACFS Annual Command History, 31 Mar 00.

Out of the four studies, TRADOC and Fort Sill completed the one for the Facilities Maintenance Division in DPW first. On 9 August 2000 TRADOC announced a tentative decision to contract out the division, which represented about seventy percent of DPW's work force, to Baker Support Services, Inc., of Dallas, Texas, and set in motion a series of actions. Under federal law, unsuccessful bidders, affected employees, and unions could review the contract and the government's most efficient organization documentation and could appeal the decision to contract out to the administrative appeals board. Convened at Headquarters, U.S. Army Training and Doctrine Command, Fort Monroe, Virginia, the board reviewed three appeals in October 2000, determined that insufficient grounds existed to alter the results of the cost comparison process, and did not overturn the decision to convert DPW operations to contract. Given this decision, Fort Sill projected beginning the contract on 1 July 2001.[53]

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[53]Memorandum for Command Historian, subj: USAFACFS Annual Command History, 31 Jan 01, Doc I-54; Email msg with atch, subj: A76 Studies, 2 Feb 01, Doc I-55; Interview with atch, Dastrup with Winona Morris, DRM, 1 Feb 01, Doc I-56; Information for Members of Congress, in DPW Final Decision Report, 29 Jan 01, Doc I-57; "Tentative Decision Announced for DPW Contract," Fort Sill Cannoneer, 10 Aug 00, pp. 1a, 3a, Doc I-58; "Leaders Discuss Facilities Maintenance Contract Award," Fort Sill

Fort Sill and Power Projection

Cannoneer, 17 Aug 00, pp. 1a, 3a, Doc I-59; Fact Sheet, subj: DPW A-76 Study Milestone Schedule, 9 Aug 00, Doc I-60; Fact Sheet, subj: MP/AG A76 Milestone Schedule, 24 Jan 01, Doc I-61; Fact Sheet, subj: TSC A76 Study Milestone Schedule, 24 Jan 01, Doc I-62; Fact Sheet, subj: DOIM A76 Study Milestone Schedule, 24 Jan 01, Doc I-63.

The end of the Cold War at the beginning of the 1990s caused the United States to restructure its national military strategy. Rather than depending upon forward deployed military forces in Europe as it had done for over forty years, the new strategy focused on deploying military forces from the continental United States (CONUS). Equally important, the new military strategy embraced the principles of deterrence, forward presence, crisis response, and reconstitution and required Army installations, such as Fort Sill, Oklahoma, to have the ability of responding rapidly to regional crises throughout the world. To help Fort Sill fulfill its force projection requirements Congress approved an Army Strategic Mobility Program railhead in 1998 and funded it in the Fiscal Year (FY) 2000 budget. Besides upgrading fifteen installations, fourteen airfields, seventeen strategic seaports, and eleven ammunition depots and plants throughout the United States, the Army Strategic Mobility Program outlined upgrading Fort Sill's railway system to provide an improved capability to move the heavy field artillery pieces of the III Armored Corps Artillery to their deployment ports and to help the installation serve as a springboard for the rapid deployment of Army forces throughout the world.[54]

Fort Sill launched construction of the new railhead facility in 2000 to make the installation capable of major shipments in short periods of time. As of 2000, Fort Sill had the ability to load and ship a little more than one hundred railcars in a day. Upon completion, the new railhead facility would triple that capacity and afford a

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[54]1994 USAFACFS ACH, pp. 18-19; Statement Posture of the U.S. Army (Extract), Fiscal Year 2001, Feb 00, pp. 9-10, Doc I-64; Statement Posture of the U.S. Army (Extract), Fiscal Year 2000, Feb 99, p. 25, Doc I-30, 1999 USAFACFS ACH; Msg, subj: Annual Command History 1998, Power Projection, 1 Mar 99, Doc I-50, 1998 USAFACFS ACH; U.S. Army Posture Statement (Extract), Fiscal Year 1999, pp. 14-15, Doc I-42A, 1998 USAFACFS ACH. Following Desert Storm of 1991, the Department of Defense conducted the Mobility Requirements Study (MRS) that initiated the Army Strategic Mobility Program (ASMP). Designed to implement MRS mobility recommendations, ASMP identified and prioritized infrastructure improvements at key installations and ports. See U.S. Army Posture Statement (Extract), Fiscal Year 1999, pp. 14-15.

secure marshaling area where equipment waiting for shipping could be stored. Also, the new railhead would provide modern scaling capability and container storage and handling capability and would permit loading an entire battalion without switching railcar operations, while loading and staging could be done without closing roads.[55]

[55]"I've Been Working on the . . . ," Fort Sill Cannoneer, 26 Oct 00, p. 9b, Doc I-65.

During 2000, Fort Sill also deployed individual soldiers and units throughout the world in response to the national interests of the United States. The installation furnished individual soldiers to the 8th rotation of Operation Joint Guard that was supplying security and stability in Croatia, Bosnia/Herzogovina, and Montenegro. The 1st Platoon, B Company, 62nd Engineers deployed 23 soldiers to Bosnia from September 1999 to February 2000 to construct roads for United Nation base camps in Bosnia, while A Battery, 2nd Battalion, 4th Field Artillery sent 137 soldiers to Kuwait Operation Desert Spring between August 2000 and February 2001. In addition, the Emergency Operations Center in the Directorate of Plans, Training, and Mobilization deployed ten individual soldiers in support of humanitarian and peace keeping operations to Central America, Bosnia, Croatia, and Saudi Arabia.[56]

82nd Medical Evacuation Company Maintenance Contract

After years of administering a rotary-wing maintenance contract to the 82nd Medical Evacuation (Medevac) Company at Fort Riley, Kansas, which provided medical evacuation services to Fort Sill, the Directorate of Logistics had to revamp the contract in 1999 for several reasons. Although the contractor did good work, the transition from the aging UH-1 helicopter to the UH-60 helicopter at Fort Sill created a problem. The contractor, the RTW Company, lacked the equipment and training to maintain the UH-60 helicopters, and the cost of purchasing new maintenance tools and equipment to support the UH-60 helicopter was too high to make continuing the contract feasible. Also, the downsizing of the 1990s with its attending budget cuts reduced Fort Sill's ability to continue administering the contract. Given such circumstances, the Directorate of Logistics decided to terminate the contract effective 1 October 1999 when the new helicopter would be fielded. This caused the 82nd Medevac Company to search for a new contract.[57]

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[56]Email msg, subj: Fort Sill Annual Historical Review, 22 Mar 01, Doc I-66; Email msg, subj: Fort Sill Annual Historical Review (2000), 23 Mar 01, Doc I-67.

[57]Interview, Dastrup with Randy C. Palmer, Airfield Operations Officer, Directorate of Plans, Training, and Mobilization (DPTM), 7 Jan 00, Doc I-38, 1999 USAFACFS ACH; Email msg, subj: 82nd Medevac Company/Fort Sill Maintenance Contract, 9 Sep 99, Doc I-39, 1999 USAFACFS

ACH; Email msg, subj: 82nd Medevac Maintenance Information, 10 Jan 00, Doc I-40, 1999 USAFACFS ACH; Email msg, subj: 82nd Medevac Company Maintenance Contract, 7 Feb 00, Doc I-41, 1999 USAFACFS ACH; Memorandum for Command Historian, USAFACFS, subj: DPTM Annual History, 10 Feb 00, Doc I-42, 1999 USAFACFS ACH.

As the Airfield Operations Officer, Randy C. Palmer explained, the 82nd Medevac Company had three maintenance contract options in 1999. The company could rely solely on a contractor at Fort Riley where it was based to provide the maintenance. It could sign a support agreement with the Oklahoma Army National Guard for the maintenance. It could provide the maintenance itself, but it lacked the personnel for the option. Knowing that the medical evacuation mission would be jeopardized without a maintenance contract, however, Fort Riley participated in the search for one. After serious discussions Fort Riley obtained a written agreement with the Oklahoma Army National Guard of Lexington, near Oklahoma City, Oklahoma, to provide the maintenance service, effective 1 October 1999. At the same time, the Directorate of Logistics entered into a new contract with a new provider for airfield refueling services that were formerly included in the helicopter maintenance contract.[58]

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[58]Memorandum for Directorate of Contracting, subj: DABT 39-98-C-4018 Aircraft Maintenance, 27 Jul 99, Doc I-43, 1999 USAFACFS ACH; Interview, Dastrup with Palmer, 7 Jan 00; Email msg, subj: 82nd Medevac Company/Ft Sill Maintenance Contract, 9 Sep 99; Email msg with atch, subj: 82nd Medevac Company Maintenance Contract, 7 Feb 00; Memorandum for Command Historian, USAFACFS, subj: DPTM Annual History, 10 Feb 00; Memorandum for Command Historian, subj: Coordination of 1999 Annual Command History, 17 Mar 00, Doc I-43A, 1999 USAFACFS ACH.

Although the Oklahoma Army National Guard provided high quality maintenance, the arrangement with the unit caused logistical challenges. To repair the helicopter the 82nd Medevac company had to fly it to Lexington, or the guard unit had to send people to Fort Sill. This proved to be cumbersome in 2000 and encouraged Fort Riley to look for an onsite solution. Fort Riley wanted to expand the contract with the company that furnished aircraft maintenance at Fort Riley by having it locate a team at Fort Sill that would be funded by Fort Sill. Because this solution was unfavorable, Fort Riley continued to look for a means of onsite maintenance at the end of 2000.[59]

Project Millennium

[59]Email msg with atch, subj: Medevac, 5 Feb 01, Doc I-68; Interview, Dastrup with Randy C. Palmer, Henry Post Air Field Operations Officer, 16 Jan 01, Doc I-69.

During 1997-2000, the Fort Sill Museum devoted considerable attention on planning and implementing Project Millennium, an initiative of the Commanding General of the U.S. Army Field Artillery Center and Fort Sill, Major General Leo J. Baxter, to capitalize on Fort Sill's vast collection of national historic treasure, rare documents, and culturally significant art work to enhance public education, cultural awareness, scholarly work, and tourism in Southwest Oklahoma. The project included major restorations of historic buildings, such as the cavalry barracks and the guardhouse, which were underway in 1999-2000. The $25 million program also involved constructing a world-class, 100,000 square foot museum complex on Army-owned land adjacent to the National Historic Landmark Area, developing state-of-the-art interpretive and educational exhibits, and incorporating a high-technology research center for academic researchers, authors, independent scholars, genealogists, and television and movie producers worldwide.[60]

In 1999 the civilian aide to the Secretary of the Army, Dr. Gilbert C. Gibson, General Baxter, and his successor, Major General Toney Stricklin, reemphasized the potential of the Fort Sill museum as a "National Army Museum of the Southwest" and as a major tourist attraction.[61] In the meantime, State Senator Ron Kirby sponsored legislation in the Oklahoma State Legislature in 1999 to fund museum construction and to turn the museum over to Fort Sill to

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[60]Memorandum for Command Historian, subj: Annual Historical Review, 11 Feb 99, Doc I-58, 1998 USAFACFS ACH; Memorandum for Record, subj: Annual Command History Input from Garrison Commander, 19 Jan 99, Doc I-59, 1998 USAFACFS ACH; Interview, Dastrup with Mitch Pinion, Dep Dir, DPTM, 7 Jan 00, Doc I-44, 1999 USAFACFS ACH; Memorandum for Command Historian, USAFACFS, subj: DPTM Annual History, 10 Feb 00, Doc I-45, 1999 USAFACFS ACH; Email msg with atch, subj: Project Millennium, 23 Feb 00, Doc I-46, 1999 USAFACFS ACH; Fact Sheet, subj: Project Millennium, 12 Feb 01, Doc I-70.

[61]Email msg with atch, subj: Project Millennium, 23 Feb 00; Memorandum for Command Historian, subj: Coordination of 1999 Annual Command History, 17 Mar 00, Doc I-46A, 1999 USAFACFS ACH; Fact Sheet, subj: Project Millennium, 12 Feb 01.

operate upon completion.[62]

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[62]Interview, Dastrup with Pinion, 7 Jan 00; Fact Sheet, subj: Army Museum of the Southwest, undated, Doc I-47, 1999 USAFACFS ACH; Email msg with atch, subj: Project Millennium, 23 Feb 00.

Although the funding issue was not totally resolved in 2000, Fort Sill took positive steps. During the year, the Oklahoma Centennial Commission received $3.7 million of state bond issue money, including $2 million allocated by state lawmakers and $1.7 allocated by Governor Frank Keating, on behalf of the Project Millennium. Also, the Lawton City Council allotted $250,000.[63]

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[63]Tom Jackson, "Supporters Lobby at Capitol for Sill Museum," Lawton Constitution, 8 Mar 01, p. 5a, Doc I-71; Memorandum for Command Historian, subj: Coordination of 2000 USAFACFS Annual Command History, 3 Apr 01, Doc I-72.

CHAPTER TWO
LEADER DEVELOPMENT:
TRAINING AND EDUCATION

INTRODUCTION

As in past years, Training Command continued its training mission in 2000. During the year, Training Command certified The Army School System field artillery battalions to use products generated by the U.S. Army Field Artillery School; employed distance learning to train active and reserve component officers and soldiers, refined the Field Artillery Officer Basic Course, the Field Artillery Captains Career Course, and the Precommand Course; developed doctrine and training for the Initial/Interim Brigade Combat Team as part of the Transformation of the Army; and conducted conversion training for Army National Guard units receiving the Multiple Launch Rocket System or the M109A6 155-mm. Self-propelled Howitzer (Paladin) and for active component units receiving the Bradley Fighting Vehicle.

DISTANCE LEARNING

When distance learning facilities became available at Fort Sill, U.S. Army Reserve, and U.S. Army National Guard sites, the Warighting Integration and Development Directorate (WIDD) in the Field Artillery School started using them to train all components effectively and efficiently to a single Total Army standard. During 1999, the School taught seventeen distance learning classes to over one hundred students and conducted approximately fifty-five briefings, workshops, in-process reviews, video tele-conferences, audio tele-conferences, and provided Multiple-Launch Rocket System (MLRS) 3X6 conversion training to the 5-113th Field Artillery of the North Carolina Army National Guard and the 2-147th Field Artillery of the South Dakota Army National Guard.[1] The

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[1]Interview, Dastrup with Bill Lodes, WIDD, 26 Jan 00, Doc II-37, 1999 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH); Memorandum

following year, WIDD furnished MLRS distance learning conversion training to the 2-142nd Field Artillery of the Arkansas Army National Guard and 2-131st Field Artillery of the Texas Army National Guard. Distance Learning conversion training in 1999-2000 proved to be successful and encouraged the Field Artillery School to consider employing it for High Mobility Artillery Rocket System conversion training that was scheduled to begin in 2004.[2]

During 2000, WIDD also employed distance learning to provide other types of training. It taught the Field Artillery Captains Career Course-Distance Learning pilot course; Military Occupational Specialty (MOS) 13R10, Field Artillery Firefinder Radar Operator; MOS 13B30, Cannon Section Chief; MOS 13B40, Field Artillery Platoon Sergeant; and MOS 13F30, Fire Support Sergeant. WIDD also provided staff and faculty courses through distance learning. During the year, for example, WIDD's Training Management Division taught the Manager's Interactive Management Course, the Total Army Instructor Training Course, the Video Tele-training Instructor Training Course, the Systems Approach to Training Basic Course, and the MOS 13F10 Reclassification Course, among others, and used the distance learning facilities to receive the First Sergeant Course and Battle Staff Course from Fort Bliss, Texas. Basically, WIDD's distance learning program in 2000 included MOS qualification courses, additional skill identifier and skill qualification courses, reclassification courses, officer functional area and branch qualification courses, professional military education courses for officers, and functional/educational courses that could be delivered via distance learning. Based upon a message from the Department of the Army early

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for Record, subj: USAFAS Distance Learning Classrooms, 26 Jan 00, Doc II-38, 1999 USAFACFS ACH; Briefing, subj: Gunnery Department, 20 Jul 99, Doc II-39, 1999 USAFACFS ACH; Memorandum for Assistant Commandant, USAFAS, subj: SIGACTS, 9 Jul 99, Doc II-40, 1999 USAFACFS ACH; Memorandum for Assistant Commandant, USAFAS, subj: SIGACTS, 26 Mar 99, Doc II-41, 1999 USAFACFS ACH.

[2]Interview with atch, Dastrup with Bill Lodes, WIDD, 15 Feb 01, Doc II-1; Interview, Dastrup with CPT Charles H. Akins, MLRS-NET, Gunnery Department, 12 Feb 01, Doc II-2.

in 2001, the Field Artillery School anticipated expanding the number of distance learning courses in the near future to meet the growing demands for training officers, noncommissioned officers, and soldiers.[3]

THE TOTAL ARMY SCHOOL SYSTEM/THE ARMY SCHOOL SYSTEM

[3]Distance Learning Homepage, Distance Learning, 6 Feb 01, Doc II-3; Training Management Division, WIDD, Homepage, 15 Feb 01, Doc II-4; Msg, subj: Implementation of the Army Distance Learning Program, Feb 01, Doc II-5; Interview, Dastrup with Lodes, 15 Feb 01.

In 2000 the Total Army School System (TASS), renamed The Army School System (TASS) in 1999, continued to be a major Army Training XXI initiative as it had been since the mid-1990s.[4] In response to the tasking from the Chief of Staff of the U.S. Army, General Gordon R. Sullivan, to develop a Total Army School System for the twenty-first century, the U.S. Army Training and Doctrine Command (TRADOC) organized Task Force Future Army Schools Twenty-One (FAST) under the Deputy Chief of Staff for Training early in 1992. Directed by the Commanding General of TRADOC, General Frederick M. Franks, Jr., Task Force FAST had the mission of establishing an effective and efficient Total Army School System of fully accredited and integrated active component (AC) and reserve component (RC) schools that would furnish standardized individual training and education for the Total Army that would be taught to a single standard.[5] Looking to the future and expounding upon his guidance, General Franks explained, "America's Army needs a cohesive institutional training system that leverages available resources and investments currently in the Total Army School System. We need a Post Cold War Total Army School System across components. As we reduce the size of the components, we must also reduce our institutional training investments."[6]

TRADOC considered such a school system to be a major break with the past. Over the years, the AC, the Army National Guard (ARNG), and the U.S. Army Reserve (USAR) developed independent school systems with separate standards. The downsizing of the Army with its attending

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[4]Email msg, subj: TASS, 2 Feb 01, Doc II-6; "One School System Will Serve All Soldiers," Fort Sill Cannoneer, 9 Sep 99, p. 6c, Doc II-30, 1999 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH). This is an interesting article about the Total Army School System as of September 1999. See the 1998 USAFACFS ACH, pp. 28-30, for information on the early years of TASS.

[5]1996 USAFACFS ACH, pp. 35-36.

[6]1995 USAFACFS ACH, p. 46. See Army Training XXI in 1997 USAFACFS ACH, pp. 17-19, for background information on Army Training XXI and its relationship to the Total Army School System.

budget reductions and the Gulf War of 1990-1991 that highlighted training differences between the active component and the reserve components with latter emphasizing collective training to the detriment of individual skills made the three separate school systems uneconomical, inefficient, and anachronistic. By creating a single system and standard Task Force FAST would abolish the existing system, create a coalition of schools, and simultaneously save money.[7]

[7] 1996 USAFACFS ACH, p. 36; 1994 TRADOC Annual Command History (Extract), pp. 46-48.

In 1992-1993 Task Force FAST organized TASS under the regional schools concept. The task force divided the continental United States (CONUS) into seven geographical regions. Each region had six colleges (brigades) to oversee instruction in leadership, officer education, health services, combat arms, combat support, and combat service support. Below the college-level the task force placed departments (school battalions). Each school battalion was aligned with an active component school and was responsible for providing instruction in a particular career management field. For example, the U.S. Army Field Artillery School (USAFAS) was aligned with field artillery school battalions in each region.[8]

Beginning in January 1993 and continuing into 1995, Task Force FAST organized a prototype school system in Region C to test the TASS concept and phased in the remainder of the regional schools by 1997. Composed of the states of North Carolina, South Carolina, Georgia, and Florida, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands, Region C had a regional coordinating element, renamed TRADOC Integration Element in 1999. The regional coordinating element established brigades and proponent-aligned battalions, utilizing the existing resources within the region, worked to see that the region's school battalions were properly accredited, and provided technical and administrative assistance to the battalions.[9]

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[8]1996 USAFACFS ACH, pp. 36-37.

[9]1996 USAFACFS ACH, pp. 37-38; 1998 USAFACFS ACH, p. 29; Interview, Dastrup with Sharon Dorrell, WIDD, 8 Feb 00, Doc II-7.

As TRADOC organized school systems for each of the seven regions, USAFAS began accrediting field artillery school battalions. Between 1996 and 1998, USAFAS accredited Region C, Region E, and USAFAS field artillery school battalions to teach field artillery subjects. In the meantime, USAFAS made accreditation visits in 1997 and 1998 to school battalions in Region F and Region G and determined that additional work was required before they could be accredited. In 1999 the field artillery school battalions in Regions A, B, C, D, F, and G received accreditation from USAFAS to make all seven field artillery school battalions accredited. The following year, USAFAS accredited Region E. Accreditation, which was required every three years, permitted field artillery school battalions and training sites to teach USAFAS courses and use USAFAS-approved software.[10]

WARFIGHTING INTEGRATION AND DEVELOPMENT DIRECTORATE AND THE INITIAL BRIGADE COMBAT TEAM

On 12 October 1999 the Chief of Staff of the Army, General Eric K. Shinseki, announced plans to transform the Army into a more responsive, deployable, agile, versatile, lethal, survivable, sustainable, and dominant force along every point of the spectrum of operations through a multi-phase process. During the first phase, the U.S. Army outlined forming two initial brigade combat teams at Fort Lewis, Washington, in 2000, using surrogate vehicles. Upon being organized, the brigades would have the capability of

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[10]1996 USAFACFS ACH, pp. 37-38; Interview, Dastrup with Sharon Dorrell, WIDD, 19 Jan 99, Doc II-14, 1998 USAFACFS ACH; TRADOC Regulation 351-18 (Extract), Appendix C, Doc II-15, 1998 USAFACFS ACH; Interview, Dastrup with Sharon Dorrell, WIDD, 8 Feb 00, Doc II-31, 1999 USAFACFS ACH; Memorandum for See Distribution, subj: FY99 TASS Information Memorandum #2, 26 May 99, Doc II-32, 1999 USAFACFS ACH; Memorandum for Record, subj: TRADOC Integration Elements, 8 Feb 00, Doc II-33, 1999 USAFACFS ACH; Email msg, subj: Total Army School System, 9 Feb 00, Doc II-34, 1999 USAFACFS ACH; Interview, Dastrup with Sharon Dorrell, WIDD, 30 Jan 01, Doc II-8; Memorandum for Record, subj: TRADOC Integration Elements, 8 Feb 00, Doc II-9; Fact Sheet, subj: TASS Readiness Report, 30 Jan 01, Doc II-10; "TASS Offers Top Quality Training at Reduced Costs for Army," TRADOC News Service, undated, Doc II-11.

deploying anywhere in the world within ninety-six hours, would be optimized for small-scale contingencies, and would be capable of conducting full-spectrum operations with augmentation. During the second phase, the Army planned to organize interim brigade combat teams and to equip them with the Interim Armored Vehicle. The objective force would be created during phase three, would be equipped with the Future Combat System, and would be dominant at every point along the spectrum of conflict.[11]

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[11]Email msg with atch, subj: WIDD and IBCT, 12 Feb 01, Doc II-12; Email msg with atch, subj: Fielding of Objective Force, 1 Aug 00, Doc II-13; Briefing, subj: Status of Brigade Combat Team Development at Fort Lewis and the Planned Performance Demonstration at Fort Knox, 16 Dec 99, Doc II-14; "Army Announces Vision of the Future," U.S. Army News Release, 12 Oct 99, Doc II-15; LTC William A. Raymond, Jr., "Leadership Development for the IBCT," Field Artillery, Sep-Oct 00, pp. 10-14, Doc II-15A.

As might be expected, the Warfighting Integration and Development Directorate (WIDD) in the U.S. Army Field Artillery School (USAFAS) played an integral part in transforming the Army by developing doctrine, training, and leader development products. During 2000, WIDD completed a draft of Brigade Special Text 6-20-40, Tactics, Techniques, and Procedures (TTP) for Fires and Effects for the Brigade Combat Team; completed the Experimental Force Special Text 6-20-10, TTP for the Digitized Targeting Process, that was initially designed for the digitized 4th Infantry Division but was suitable for any digitized unit; finished an initial draft of an Army Training and Evaluation Program (ARTEP) Mission Training Plan that included Fire Effects Coordination Center and IBCT Field Artillery battalion tasks; and continued work on the Field Artillery Battalion Centralized Training Task List. Meanwhile, WIDD planned and executed a New Organization Training Team (NOTT) assistance visit in support of the Advanced Field Artillery Tactical Data System (AFATDS) New Equipment Team command post exercise in September 2000, completed the initial drafts of Combined Arms Training Strategies for the IBCT Field Artillery Battalion, developed draft ammunition requirements for the field artillery battalion, and worked with Cubic Corporation and Fort Leavenworth, Kansas, to develop field artillery battalion staff training support packages.[12]

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[12]Email msg with atch, subj: WIDD and IBCT, 12 Feb 01; Email msg, subj: WIDD and the Transformation of the Army, 6 Feb 01, Doc II-16; Fact Sheet, subj: WIDD Support to the IBCT in the past 6 months, 5 Feb 01, Doc II-17.

Equally important, WIDD supported the training strategy for leader development to prepare Initial/Interim Brigade Combat Team leaders for full-spectrum operations, dispersed and decentralized operations, and precision Internetted (digital tactical Internet) combined arms fighting. The strategy focused on one-time leader conversion training and sustainment training. One-time leader training consisted of the Tactical Leaders Course and the Senior Leaders Course. Conducted in August 2000 for the field artillery battalion, the Tactical Leaders Course trained leaders (platoon sergeants to battalion commanders), in two phases of instruction at the battery and battalion levels on how the Initial/Interim Brigade Combat Team would fight. While phase one focused on common core subjects, such as intelligence preparation of the battlefield and situational awareness, IBCT organization and capabilities, and after action reviews, phase two involved a command post exercise that trained field artillery specific tasks. The Senior Leaders Course taught brigade and battalion leaders about the unique capabilities of the brigade combat team at Fort Lewis, Washington, and finished with a one-week digital capstone exercise at Fort Leavenworth, Kansas. Between these major activities, the senior leaders spent one week at Fort Lee, Virginia; Fort Huachuca, Arizona; Fort Knox, Kentucky; and Fort Benning, Georgia. At each post they received hands-on proponent training on combat service support, military intelligence, and reconnaissance, surveillance, and target acquisition (RSTA) squadron operations.[13]

WIDD also assisted in the development of twenty-nine (out of what would eventually be eighty) leader training vignettes for sustainment training. As planned in 2000, sustainment training would cover individual and special skills and low-density military occupational speciality training.[14]

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[13]Email msg with atch, subj: WIDD and IBCT, 12 Feb 01; Raymond, "Leadership Development for the IBCT," pp. 10-14; Briefing, subj: Fires and Effects and Field Artillery Training Strategy, 2 May 00, Doc II-18; Fact Sheet, subj: WIDD Support to the IBCT in the past 6 months, 5 Feb 01.

[14]Email msg with atch, subj: WIDD and IBCT, 12 Feb 01; Raymond, "Leadership Development for the IBCT," pp. 10-14; Fact Sheet, subj: WIDD Support to the IBCT in the

MILITARY OCCUPATIONAL SPECIALTY 13D, FIELD ARTILLERY TACTICAL DATA SYSTEMS SPECIALIST

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past 6 months, 5 Feb 01; Interview, Dastrup with LTC Peter Zielinski, Division Chief, Training and Doctrine Development Division, WIDD, 5 Feb 01, Doc II-19.

With the development of sophisticated command, control, and communication systems in the 1990s, the Field Artillery encountered the pressing need for soldiers to operate them, especially the Advanced Field Artillery Tactical Data System (AFATDS) that was being fielded to the active component and the reserve components and was replacing the Tactical Fire Direction System and the Battery Computer System. In response to the advent of new technology, the Field Artillery School created Military Occupational Specialty (MOS) 13D, Field Artillery Automated Tactical Data Systems Specialist. Initially, the School considered merging MOS 13C, Tactical Automated Fire Control Systems Specialist, and 13P, Multiple-Launch Rocket System Operations/Fire Direction Specialist, to create MOS 13D. This merger would involve moving young soldiers between cannon and rocket units and would be difficult for them because cannon and rocket artillery had differing tactics, techniques, and procedures. With this in mind, the School subsequently chose in June 1999 to combine 13C and 13E, Cannon Fire Direction Specialist, to maintain a cannon track and to design the appropriate training.[15]

Until MOS 13D was formed, field artillerymen had two different options to receive AFATDS training. One way utilized the AFATDS new equipment training team during initial fielding or during delta training that was provided with a new software release. Another way permitted the soldier to attend the Additional Skill Identifier (ASI) Y1/F9-AFATDS Course or the AFATDS Command and Staff Course. While initial entry 13C, 13E, and 13P soldiers, who were going to AFATDS units, were held over after the advanced individual training to attend the AFATDS Operators Course and to receive the ASI Y1, the Field Artillery School designed the ASI F9 for MOS 13F, Fire Support Specialists, skill levels 10/20/30/40, and MOS 13R, Field Artillery Firefinder Radar Operator, skill level 40, who also needed to be AFATDS qualified. Both options trained soldiers on the basic operations of AFATDS, but neither focused specifically on a single MOS or soldier as an AFATDS or

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[15]SFC William S. Cluck and Thomas D. Bradford, "13D FATDS Specialist," Field Artillery, Mar-Apr 00, pp. 37-39, Doc II-20; Interview, Dastrup with Mike Valentine, Warfighting Integration and Development Directorate (WIDD), 26 Jan 01, Doc II-21.

primary Field Artillery Data System operator.[16]

[16]Email msg with atch, subj: 13D, 8 Feb 01, Doc II-22; Gluck and Bradford, "13D FATDS Specialist," pp. 37-39; Interview, Dastrup with Valentine, WIDD, 26 Jan 01.

Although these options would remain available through 2007 and although advanced individual training for MOSs 13E and 13P would exist for several years, the School with the Warfighting Integration and Development Directorate (WIDD) assuming the lead developed training in 2000 for MOS 13D soldiers that were being recruited. As outlined, the MOS 13D advanced individual training course would last seven weeks and one day and would begin training soldiers in the first quarter of Fiscal Year (FY) 2001 in manual gunnery techniques and terminology, AFATDS setup and operations, doctrinal procedures, and automated technical fire direction using AFATDS. Additionally, WIDD was developing training support packages for individual tasks at the 10-, 30-, and 40-skill levels and planned to expand the ASI Y1/F9 AFATDS Operators Course to seven weeks beginning in FY 2002 for soldiers changing duty stations, who had not had manual gunnery training or technical fire direction training using an AFATDS device.[17]

FIELD ARTILLERY OFFICER BASIC COURSE

As in the past, the Field Artillery Officer Basic Course (FAOBC) continued its mission in 2000 of turning newly commissioned second lieutenants into Field Artillery leaders in nineteen weeks and four days. To do this, the Field Artillery School conducted a three-phase FAOBC that had been implemented several years earlier under the leadership of the Gunnery Department. Phase one (Foundation) lasted the first seven weeks, focused on platoon leader skills, such as reconnaissance, selection, and occupation of a position; communications; observed fire; maintenance; and mounted and dismounted land navigation, to name just a few, and had one field training exercise. In phase two (Pillars) that took place during the eighth through thirteenth week, the school taught manual and automated gunnery and basic fire support and conducted one field training exercise. During phase three (Capstone) that began the fifteenth week of the course, the second lieutenants learned more automated gunnery techniques and received combined arms training along with other critical fire support instruction. The other instruction included joint operations along with a JANUS computer exercise and a dismounted fire support officer exercise, commonly called the Light Fire Support Officer

[17]Email msg with atch, subj: 13D, 8 Feb 01; Gluck and Bradford, "13D FATDS Specialist," pp. 37-39.

Lane that had been introduced in recent years. During the last two weeks of the course, the school divided the student officers into one of three specialized instructional courses or "tracks" based upon the weapon system in their first units of assignment to give more hands on experience. Students in the cannon tracks (heavy or light) capped FAOBC with the Redleg War that pulled together everything that they had learned during the course. During the war, they served as a member of a fire direction center and a howitzer crew, worked as a company fire support officer, and learned the capabilities of close air support.[18]

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[18]Email msg, subj: OBC, 2 Feb 01, Doc II-23; Briefing, subj: Officer Basic Course Overview, 2 Feb 00, Doc II-24; Interview, Dastrup with COL Thomas G. Waller, Dir, Gunnery Department, 22 Jan 01, Doc II-25; Briefing, subj: Field Artillery Officer Basic Course, 1999, Doc II-47, 1999 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH); "Silhouettes of Steel," Field Artillery, Nov-Dec 99, p. 32, Doc II-48,

1999 USAFACFS ACH; CPT Ferdinand Burns III, "OBC: Training the New Lieutenant," Field Artillery, Mar-Apr 99, p. 35, Doc II-49, 1999 USAFACFS ACH; Fact Sheet, subj: OBC Fire Support Training: A Synopsis, Apr 99, Doc II-50, 1999 USAFACFS ACH; Memorandum for Record, subj: FAOBC, 17 Mar 00, Doc II-51, 1999 USAFACFS ACH; Memo from Mr. Rowzee, Gunnery Department Operations, to Dr, Dastrup, Command Historian, subj: Coordination of 1999 USAFACFS Annual Command History, 3 Apr 00, Doc II-52, 1999 USAFACFS ACH. See LTC Britt E. Bray and MAJ William M. Raymond, Jr., "Redleg Mentor Program: Sharpening the Sword, Nurturing the Spirit," Field Artillery, Mar-Apr 99, pp. 10-11, Doc II-52A, 1999 USAFACFS ACH, for a good discussion on mentoring, which was an essential aspect of the Field Artillery Officer Basic Course.

As the Director of the Gunnery Department, Colonel Thomas G. Waller, Jr., explained, modular instruction and testing formed the heart of FAOBC in 2000. The department divided FAOBC into four modules: the common core module of mandatory U.S. Army Training and Doctrine Command subjects, leadership, training management, and ethics; the platoon leader module with foundational subjects on the aiming circle and maintenance; the fire direction module; and the fire support module. Each module had a series of practical exercises and culminated with a final examination. The School required the student to achieve a passing module grade, while striving to pass every graded examination. From the director's perspective the old system of test/fail/retrain/retest set the conditions for the students to fail because they could not keep up once they had failed a particular examination. Under the new system, which had the same standards as the previous, the failure rate dropped from three percent in Fiscal Year 1994 to less than one percent in Fiscal Year 1998.[19]

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[19]Interview, Dastrup with Waller, 22 Jan 01; Briefing, subj: Field Artillery Officer Basic Course, 1999; Memorandum for Record, subj: FAOBC, 17 Mar 00; Memo, Rowzee to Dastrup, subj: Coordination of 1999 USAFACFS Annual Command History, 3 Apr 00.

Always concerned about improving the quality of instruction and the second lieutenant, the Field Artillery School with the Gunnery Department taking the lead made critical enhancements to FAOBC during 2000. At the direction of the Commandant of the Field Artillery School, Major General Toney Stricklin, they made the course more rigorous by adding more field training exercises and hands-on training. One such improvement focused on developing a firebase exercise during the Redleg War. The idea for a firebase originated when General Stricklin visited the 2nd Battalion, 2nd Field Artillery at Firing Point 240 during a Redleg War. At that time he charged the unit, which provided the School with indirect fires and logistical support, to make training more realistic for FAOBC students. Working with the Gunnery Department, which had proponency for FAOBC, during the latter months of 2000, the unit developed several different courses of action, including the idea of a firebase for a light unit, and presented them to General Stricklin. After hearing the briefing on the various options, the General decided that the firebase would be an effective method of instruction. It would permit effective training on tactical considerations for battery defense, firebase construction, and firebase operations and would allow the lessons from Vietnam and light force rotations at the Joint Readiness

Training Center to be applied. Subsequently, he directed the School to build a firebase.[20]

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[20]Email msg with atch, subj: FAOBC/Firebase, 11 Feb 01, Doc II-26; "Engineers, Soldiers Construct Firebase," Fort Sill Cannoneer, 18 Jan 01, p. 12a, Doc II-26A; Interview, Dastrup with Waller, 22 Jan 01; Email msg with atch, subj: FP241N, 19 Jan 01, Doc II-27; Email msg with atch, subj: FP241 Decision Paper, 19 Jan 01, Doc II-28; Email msg with atch, subj: FP241 Decision Paper, 19 Jan 01, Doc II-29.

With this tasking the 2nd Battalion, 2nd Field Artillery gained approval from the General for a two-phase approach to constructing the firebase. During phase one, the unit built a temporary firebase at Firing Point 240 East on 8-11 January 2001 with major support coming from B Company, 62nd Engineers and technical and tactical guidance from operational control personnel from the Joint Readiness Training Center at Fort Polk, Louisiana, to meet the General's guidance of having it operational by FAOBC 6-00's Redleg War of 16-19 January 2001. As planned, the temporary firebase would last only six to nine months without major engineer repairs because of weather conditions. By using innovative materials and some funding assistance, the engineers were able to make the temporary phase one firebase more permanent. Understanding temporary nature of the firebase, 2nd Battalion, 2nd Field Artillery envisioned constructing a permanent firebase there with engineering assistance during phase two when funds were made available. Upon completion sometime in 2001, it would have a life expectancy of five to seven years and would require minimal upkeep and no reoccurring engineer support.[21]

In keeping with General Stricklin's guidance to make FAOBC more rigorous, the Gunnery Department, meanwhile, developed a two-day occupation exercise to evaluate tasks learned in the platoon leader's module of instruction in a field environment. During a rigorous thirty-hour exercise that focused on occupation procedures with towed howitzers, second lieutenants performed duties in a howitzer section on a rotating basis with the emphasis placed on key leadership positions. The exercise also reinforced skills taught in the classroom, such as mounted land navigation, use of the aiming circle, alternate methods of laying, measuring, and reporting, supervising the emplacement and preparation of a firing unit, and conducting hasty survey

[21]Email msg with atch, subj: FP241N, 19 Jan 01; Email msg with atch, subj: FP241 Decision Paper, 19 Jan 01; "Engineers, Soldiers Construct Firebase," p. 12a; Email msg with atch, subj: FP241 Engineer Slides, 19 Jan 01, Doc II-30; Email msg with atch, subj: EXUM - 2/2VTC with JRTC, 19 Jan 01, Doc II-31; "OBC Students Training During Redleg War," Fort Sill Cannoneer, 25 Jan 01, p. 10A, Doc II-32; Email msg with atch, subj: FAOBC/Firebase, 11 Feb 01.

techniques.[22]

[22]Interview, Dastrup with COL Thomas G. Waller, Dir, Gunnery Department, 22 Jan 01; Interview with atch, Dastrup with LTC Robert M. Pyne, Chief, Cannon Division, Gunnery Department, 25 Jan 01, Doc II-33; Operation Order RSOP Field Training Exercise, 8 Nov 00, Doc II-34.

The Gunnery Department also developed and incorporated a class on the platoon operations center for heavy and light cannon artillery to help second lieutenants learn how to operate automated fire control systems. Beginning in 1992 and continuing throughout the rest of the decade, the U.S. Army fielded its first fully automated howitzer, the M109A6 Paladin 155-mm. Self-propelled Howitzer, to the active component and reserve component. Equipped with the automated fire control system (an onboard computer), the Paladin performed its own technical fire direction and did not have to rely on the fire direction center to perform that function and concurrently precipitated new technical fire direction doctrine. As a result, the Field Artillery School dramatically changed the role of the platoon fire direction center and renamed it the platoon operations center. Although it could still compute technical fire direction, the platoon operations center shifted its attention to operational functions more than it had in the past. The automated fire control system received the fire mission from the Battery Computer System and then computed technical fire direction. With the fielding of the new Lightweight 155-mm. Towed Howitzer with its own onboard computer patterned after the automated fire control system in the near future, training on the automated fire control system in classroom instruction and practical exercises in an upgraded command post exercise facility became paramount.[23] In 2000 the Field Artillery School interjected other significant changes in FAOBC. At the direction of General Stricklin, the School incorporated approximately four hours of training on the Advanced Field Artillery Tactical Data System (AFATDS) that focused on the capabilities and limitations of the system. The AFATDS instruction was purely additive and did not cause other instruction to be deleted. Also, the School planned to integrate 144 hours of Digital AFATDS instruction in FAOBC in FY 2002. To accomplish this, the School planned converting the Multiple-Launch Rocket System (MLRS), self-propelled howitzer, and towed cannon tracks that were contained in FAOBC in FY 2001 to stand-alone functional

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[23]Interview with atch, Dastrup with Pyne, 25 Jan 01; Lesson Plan, POC Database Construction, Sep 00, Doc II-35; Lesson Plan, Fire Mission Processing for the M109A6 Howitzer, Oct 00, Doc II-36; Lesson Plan, Move Order/Request Data/Communications, Sep 00, Doc II-37.

courses. After graduating from FAOBC, for example, second lieutenants would then attend a particular functional course depending upon the first unit of assignment.[24]

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[24]Email msg with atch, subj: FAOBC-Proposed Changes, 8 Feb 01, Doc II-38; Memorandum for Record, subj: FAOBC and OBCT Concept, 26 Jan 01, Doc II-39; Email msg, subj: OBC Track and Functional Courses, 29 Jan 01, Doc II-40; Memorandum for Record, subj: Untitled, 26 Jan 01, Doc II-41.

In the meantime, the Commanding General of the U.S. Army Training and Doctrine Command, General John N. Abrams, directed additional changes to be made to FAOBC. In June 2000 he tasked TRADOC to create a one-site common core phase for Officer Basic Course Training (OBCT) that would immediately follow commissioning. With this format newly commissioned second lieutenants would attend six weeks of OBCT at Fort Benning, Georgia, where they would receive common-core training in topics, such as ethics and leadership. Afterwards, they would attend a branch school for branch-specific training for thirteen weeks and four days. Field Artillery second lieutenants, for example, would go through six weeks of OBCT, through thirteen weeks and four days of FAOBC, and through one of the three functional courses of varying lengths.[25]

FIELD ARTILLERY CAPTAINS CAREER COURSE

In 2000 the U.S. Army Field Artillery School (USAFAS) conducted a two-phase Field Artillery Captains Career Course (FACCC). Over a period of several years beginning in the mid-1990s, TRADOC slowly transitioned from its two-course Captain Professional Military Education (CPT PME)

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[25]Briefing (Extract), subj: One-Site Officer Basic Combat Training, 5 Jun 00, Doc II-42; Memorandum for Record, subj: Untitled, 26 Jan 01; Interview, Dastrup with Mel Hunt, WIDD, 26 Jan 01, Doc II-43; Memorandum for Record, subj: FAOBC and OBCT Concept, 26 Jan 01; Email msg, subj: FAOBC, 29 Jan 01, Doc II-44; Email msg with atch, subj: FAOBC-Proposed Changes, 8 Feb 01.

that consisted of the Officer Advance Course (OAC) at various service schools, such as the Field Artillery School, and the Combined Arms Services Staff School (CAS3) at Fort Leavenworth, Kansas, for a single course. TRADOC shortened CAS3 from nine to six weeks in 1996, directed the synchronization of OAC completion dates with CAS3 start dates in 1997, reduced the OAC from twenty to eighteen weeks in 1998, and renamed it the Captains Career Course (CCC) the same year.[26]

[26]MAJ David W. Cavitt and Melvin R. Hunt, "Captains Professional Military Education: New Technology for the New Millennium," Field Artillery, Nov-Dec 99, pp. 11-13, Doc II-53, 1999 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH); Briefing, subj: FA CCC, 12 Nov 99, Doc II-54, 1999 USAFACFS ACH.

Specifically, Field Artillery captains and senior first lieutenants went through an eighteen-week FACCC course that afforded them the last field artillery specific training before attending CAS3 and the U.S. Army Command and General Staff College at Fort Leavenworth, Kansas. The officers made a permanent change of station (PCS) move to the Field Artillery School where they received the equivalent of two-weeks of TRADOC common core instruction and sixteen weeks of branch tactical, technical, and warfighting instruction. After seven weeks of large-group instruction, the students moved into a six-block small group instruction portion for eleven weeks of tactical instruction led by a small group leader from the U.S. Army, the U.S. Marine Corps, or an allied officer from Great Britain, Australia, or Canada. After completing the eighteen weeks at Fort Sill, the officers moved in a temporary duty (TDY) status to Fort Leavenworth for staff process (CAS3) instruction and returned to Fort Sill for graduation.[27]

As it restructured the Captains Career Course for active component officers, TRADOC started revamping Reserve Component (RC) CPT PME to ensure currency. As of 1998-1999, most reserve component officers attended the FAOAC-RC via Army correspondence courses and one two-week active duty for training (ADT) followed by CAS3 via correspondence courses, eight inactive duty for training (IDT) periods, and one two-week active duty training period. FAOAC-RC, as a result, had serious limitations. It consisted of seventeen Army Correspondence Course Program (ACCP) courses (about two weeks of instruction) and active duty training. Officers worked through the correspondence courses on their own and then reported to the Field Artillery School for active duty training. However, the correspondence

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[27]Cavitt and Hunt, "Captains Professional Military Education," p. 11; Interview, Dastrup with Mel Hunt, WIDD, 26 Jan 00, Doc II-55, 1999 USAFACFS ACH; Fact Sheet, subj: FACCC, Apr 99, Doc II-56, 1999 USAFACFS ACH; "Silhouettes of Steel," Field Artillery, Nov-Dec 99, p. 32, Doc II-57, 1999 USAFACFS ACH; USAFAS Schedule of Classes for FY99 (Extract), 25 Sep 98, p. 3, Doc II-58, 1999 USAFACFS ACH; Email msg with atch, subj: Funding for CAS3 and other ARNG Things, 3 Dec 99, Doc II-59, 1999 USAFACFS ACH; Briefing, subj: FACCC, 12 Nov 99; Memorandum for Record, subj: FSCAOD Input, 6 Apr 01, Doc II-44A.

program, developed years ago, was obsolete and provided limited training value because the students arrived at the School unprepared and therefore required a significant amount of refresher training. Essentially, this turned the two-week active duty training period into a two-week "fire hose" course to disseminate information.[28]

[28]Cavitt and Hunt, "Captains Professional Military Education," pp. 11-13; Email msg with atch, subj: FACCC, 9 Feb 00, Doc II-60, 1999 USAFACFS ACH.

To avoid these striking deficiencies reserve component and Army National Guard (ARNG) captains could attend the resident course. Unfortunately, too many RC and ARNG captains could not attend the resident Field Artillery Captains Career Course or its predecessor, Field Artillery Officer Advance Course, because their employers would not release them from their civilian jobs for eighteen weeks.[29]

Given the restrictions of FAOAC-RC and the inability of RC and ARNG officers to attend resident instruction at Fort Sill, the Field Artillery School redesigned the course in 1998-1999 to eliminate the deficiencies and to support TRADOC's three-phase RC CPT PME effort. Phase one would be nonresident instruction that would be the approximate equivalent of sixteen weeks of the resident Captains Career Course. Phase two would be two-week ADT followed by unit annual training. Finally, staff process training would be covered in phase three.[30]

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[29]Cavitt and Hunt, "Captains Professional Military Education," pp. 11-13; Email msg with atch, subj: FACCC, 9 Feb 00; Memorandum for Record, subj: FSCAOD Input, 6 Apr 01.

[30]Cavitt and Hunt, "Captains Professional Military Education," pp. 11-13; Memorandum for Record, subj: FSCAOD Input, 6 Apr 01.

To facilitate better instruction and learning and to support TRADOC's RC CPT PME, the School initiated work on a FACCC Distance Learning (DL) course in 1998-1999 and searched for the best way to integrate automation. After months of work that received endorsements from TRADOC and National Guard Bureau officials, the School produced a strategy for FACCC-DL that would take the student two years to complete as directed by a TRADOC memorandum on Interim Policy for Total Army Training System Course Redesign, Development, and Management, dated 6 March 1998. As outlined in a draft plan, the course would be divided into three phases and would consist of "asynchronous," "synchronous," and resident training. Asynchronous instruction (Phase IA) would employ communications technologies, such as email, multimedia data bases, and virtual libraries, would consist of common core and branch specific subjects, would be performed at the officer's own pace and location, and would be completed during the first Total Army Training System (TATS) year. Phase IB would consist of both asynchronous and synchronous instruction and would employ communications technologies, such as desktop video teleconferencing, to enable live, real-time interaction between instructors and students and would be completed during the first six months of the second TATS year. Both methods would use web-based, Internet-delivered methodologies and would employ a Field Artillery small group leader to monitor student progress, provide assistance, and answer questions. Phase II would be done during the second six months of the second TATS year with multiple ADTs being conducted based upon the number of students, who successfully completed Phase I. The two-week ADT would focus on application-driven exercises and would culminate with the CAPSTONE JANUS exercise. Phase III would be CAS3 that would consist of eight IDTs and a two-week ADT. As outlined in 1999, this three-phase FACCC-DL format would better prepare reserve component officers for duties as fire support officers at maneuver battalion and brigade level and as staff officers at field artillery battalion, division artillery, and field artillery brigade levels, and battery command.[31] Upon full implementation of

[31]Email msg with atch, subj: FACCC-Proposed Changes, 8 Feb 01, Doc II-45; Memorandum for Record, subj; FSCAOD Input, 6 Apr 01; Cavitt and Hunt, "Captains Professional Military Education," pp. 11-13; Draft FACCC-DL Plan, 26 Jan 00, Doc II-61, 1999 USAFACFS ACH; Email msg, subj:

Phase IA in FY 2002, FACCC-DL would replace FAOAC-RC, would improve training, would be more intensive and challenging than FAOAC-RC, and would produce a more tactically and technically competent officer.[32]

Funding for CAS3 and other ARNG Things, 3 Dec 99; Interview, Dastrup with Melvin R. Hunt, WIDD, 26 Jan 00; Email msg with atch, subj: FACCC, 9 Feb 00.

[32]Email msg with atch, subj: FACC-Proposed Changes, 8 Feb 01; Cavitt and Hunt, "Captains Professional Military Education," pp. 11-13; Memorandum for Director, WIDD, subj: Coordination of 1999 USAFACFS Annual Command History, 22 Mar 00, Doc II-61A, 1999 USAFACFS ACH; Memorandum for Record, subj: FACCC, 26 Jan 01, Doc II-46.

On the heels of the creation of FACCC-DL, the Commanding General of TRADOC, General John N. Abrams, announced further changes to CCC. At a Senior Leader Institutional Transformation Conference on 1 November 2000, he emphasized that training had to be restructured to stay abreast of the transformation of the Army that was underway and outlined the requirement to integrate training across battlefield functionality and to organize the training structure around for major components of command (maneuver, maneuver support, maneuver sustainment, and battle command).[33] Although some service school commandants were reluctant to relinquish any of their current branch responsibilities to one of the four proposed centers where select functions would be consolidated, the TRADOC Chief of Staff, Major General John B. Sylvester, warned, "If these functions do not migrate to Centers, the branches will not transform to a future construct that better underpins The Army Transformation."[34]

Although the details about assimilating training under the four centers were still vague in 2000, General Abrams indicated that integrating the Interactive Multimedia Instruction Distance Learning (IMI-DL) version of CAS3 into the Captains Career Course would be critical and that it had to be accomplished without lengthening the course. Based on a telephone conversation with a U.S. Army Command and General Staff College representative in January 2001, the School learned that IMI-DL would last four weeks and would be beamed from Fort Leavenworth, Kansas, to all branch schools in FY 2004. Given the course-length constraints, the School would have to reduce FACCC by four weeks by cutting some technical/tactical instruction. This would force the elimination of some practical exercises associated with General Stricklin's drive to make training more rigorous and other instruction, would tax existing School distance learning classrooms, and complicate scheduling them, among other things. Equally as important,

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[33]Memorandum for Commandants, TRADOC Service Schools, subj: Senior Leader Institutional Transformation Conference II (SLITC II) After Action Report, 7 Dec 00, Doc II-47.

[34]Memorandum for Commandants, TRADOC Service Schools, subj: Senior Leader Institutional Transformation Conference II (SLITC II) After Action Report, 7 Dec 00.

scheduling IMI-DL CAS3 would have to accommodate all branch schools, would be based upon when the CAS3 could be delivered via distance learning from Fort Leavenworth, and could seriously impact the School's hierarchy of learning.[35]

FIELD ARTILLERY PRECOMMAND COURSE

[35]Email msg with atch, subj: FACCC-Proposed Changes, 8 Feb 01; Point Paper, subj: SLITC II, 17 Jan 01, Doc II-48; Memorandum for Record, subj: FACCC, 26 Jan 01; Point Paper, subj: SLITC II, 19 Jan 01, Doc II-49; Memorandum for Commandants, TRADOC Service Schools, subj: SLITC II After Action Report, 7 Dec 00; Msg, FSCAOD to Command Historian, subj: Annual Command History, 16 Apr 01, Doc II-49A.

In 1999-2000 the Precommand Course (PCC) for incoming commanders of battalions and brigades went through critical changes. Although the Commandants of the Field Artillery School, Major General Leo J. Baxter (7 June 1997-ll August 1999) and Major General Toney Stricklin (11 August 1999-present), expressed a satisfaction with the basic format of PCC in 1999, they recognized the need for some modifications to keep it current. Early in 1999, General Baxter noted that approximately seventy percent of the field artillery was in the reserve components, that PCC needed to take that into consideration, and that PCC should serve its customers better. In view of this, he decided to make some minor modifications and committed funding to hire a contractor to examine the course and to make recommendations for improvements. Subsequently in November 1999, General Stricklin upon looking at the emerging results of the contractor's study wanted to make the course more combat and tactics oriented. Colonels and lieutenants colonels, who were scheduled to take command of brigades and battalions respectively, should go through a fire planning exercise, conducted by III Armored Corps Artillery.[36] To meet one of his objectives, General Baxter changed the shadow program to a battalion commander's panel. In 1999 and 2000 at the initiative of the Director of the Fire Support and Combined Arms Operations Department, Colonel L.G. Swartz, the School brought in former battalion commanders and currently serving battalion commanders to match the demographics of the PCC and discuss lieutenant colonel issues with the students. Colonel Swartz also expanded the block of instruction on tactical fire support by combining it with the block of instruction on the field artillery commander and fire planning process block in response to the article, "Is the FA Walking Away from the Close Fight," written by Major General Carl F. Ernst of the U.S. Army Infantry School at Fort Benning, Georgia, in the September-October 1999 issue of Field

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[36]Interview, Dastrup with LTC Michael T. Dooley, Dep Dir, FSCAOD, 18 Jan 00, Doc II-62, 1999 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH); Briefing, subj: PCC Contract POI Review, 13 Jan 00, Doc II-63, 1999 USAFACFS ACH; Email msg with atch, subj: Precommand Course, 8 Feb 00, Doc II-64, 1999 USAFACFS ACH; Memorandum for Record, subj: FSCAOD Input, 6 Apr 01, Doc II-49A

Artillery.[37]

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[37]Interview, Dastrup with SFC Michael Ray, PCC Branch, FSCAOD, 1 Feb 01, Doc II-50; MG Carl F. Ernst, "Is the FA Walking Away from the Close Fight?" Field Artillery, Sep-Oct 99, pp. 8-11, Doc II-51; Email msg with atch, subj: PCC, 8 Feb 01, Doc II-52; Interview, Dastrup with Dooley, 18 Jan 00; Email msg with atch, subj: Precommand Course, 8 Feb 00.

In the meantime, the contractor completed its study of the program of instruction and made its recommendations in January 2000. Like the Commandants of the Field Artillery School, the contractor recommended tailoring PCC to meet coursed demographics, adding more fire support training, deleting redundant instruction, matching tasks to the audience, and providing simulation training, to name a few. Additionally, tracks should be distinct for reserve component, Artillery Training Center, Acquisition Corps, and U.S. Marine Corps commanders; and electives should be available for cannon, Paladin, and Multiple-Launch Rocket System/High Mobility Artillery Rocket System commanders. Upon being implemented during 1999-2000, the contractor's recommendations and the Commandants' changes created a significantly different PCC. Unlike in the past where instruction and training were general in nature, the reformed PCC provided updated instruction that was tailored to meet the demographic needs of the students and more tactically oriented than in the past.[38]

MANUAL GUNNERY

[38]Final Draft (Extract), Field Artillery Pre-Command Course Program of Instruction Review, 24 Jan 00, pp. 1, 2, 6, 8, 9, 10, 15, 16, 17, 18, 19, Doc II-53; Email msg with atch, subj: PCC, 8 Feb 01; Interview, Dastrup with Dooley, 18 Jan 00; Briefing, subj: PCC Contract POI Review, 13 Jan 00.

In 2000-2001 the U.S. Army Field Artillery School (USAFAS) explored the relevancy of manual gunnery in the age of automation. At a briefing to the Commandant of the Field Artillery School, Major General Toney Stricklin, in December 2000, the Gunnery Department outlined the number of hours of manual and automated fire direction instruction in the program of instruction for officer and enlisted students. Interestingly, manual gunnery met two critical needs. First, from the department's and some field artillery commanders' perspectives manual gunnery provided a foundation for understanding automated gunnery, was a proven method for understanding ballistics, and was a means to trouble shoot errors. Second, 134 of the 164 field artillery battalions in the force structure required manual gunnery skills to provide secondary checks and to back up automated technical fire direction (the Advanced Field Artillery Tactical Data System or the Initial Fire Support Automated System) because the Field Artillery lacked an automated backup system when the Backup Computer System became obsolete early in the 1990s. In view of present circumstances and future requirements, the Gunnery Department visualized a need for manual gunnery skills being taught. However, the department insisted that the dependency on manual gunnery should be seriously reduced by developing a reliable automated backup system in the near future.[39]

General Stricklin approached manual gunnery from a different perspective. In January 2001 he tasked the Gunnery Department to write a white paper that clarified the School's position on manual and automated gunnery for backup computation, checking computed data, understanding ballistics, and computing safety data. Ultimately, he wanted to eliminate dependence upon manual gunnery as a backup system for checking computed fire control data and providing safety and directed the Field Artillery School to cooperate with industry to develop programs of instruction that taught ballistics and troubleshooting without relying upon manual gunnery.[40] Besides wanting to move the Field

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[39]Briefing, subj: Manual Gunnery, 27 Dec 00, Doc II-54; Email msg, subj: Automated Technical Fire Control Integrated Process Team, 12 Jan 01, Doc II-55; Interview, Dastrup with COL Thomas G. Waller, Dir, Gunnery Department, 23 Jan 01, Doc II-56.

[40]Ibid.; Email msg, subj: Automated Technical Fire

Artillery more fully into the automated age and ending the dependence on manual gunnery, General Stricklin had another reason in mind. In January 2001 he wrote, "As high tech minded kids come to USAFAS and get into manual gunnery[,] they immediately get turned off and pick up a phone and call buddies about their ancient branch."[41] Over the past several years, teaching manual gunnery hindered recruiting young people into the Field Artillery because they judged the branch as being outdated. Until an automated backup system could be developed and fielded, however, the Field Artillery would have to utilize manual gunnery, but the School had to find a way to teach ballistic theory and gunnery using high technology, such as virtual reality of

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Control Integrated Process Team, 12 Jan 01; Interview, Dastrup with LTC Robert M. Pyne, Chief, Cannon Division, Gunnery Department, 25 Jan 01, Doc II-57.

[41]Email msg, subj: Manual Gunnery, 25 Jan 01, Doc II-58.

some kind.[42]

DEVELOPING FIELD ARTILLERY MANUALS

[42]Email msg, subj: Manual Gunnery, 25 Jan 01; Email msg, subj: Automated Technical Fire Control Integrated Process Team, 12 Jan 01; Interview, Dastrup with Pyne, 25 Jan 01; Interview, Dastrup with Waller, 23 Jan 01

In 1998-2000 the Warfighter Integration and Development Directorate (WIDD) in the U.S. Army Field Artillery School continued publishing manuals to meet the needs of the Field Artillery. Knowing that getting the completed manuals to field was critical, WIDD obtained end-of-year money in 1998 to hire contractors to write Field Manual (FM) 6-70

(Tactics, Techniques, and Procedures [TTP] for M109A6 Paladin Howitzer Operations)that was completed in 2000.[43]

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[43]Interview, Dastrup with B. Bielinski, Doctrine Branch, WIDD, 20 Jan 99, Doc II-107, 1998 USAFACFS ACH; Memorandum for Record, subj: Doctrinal Manual Update, 20 Jan 99, Doc II-108, 1998 USAFACFS ACH; Memorandum for Commandant, USAFAS, subj: Development of Doctrinal

Publications, 8 Dec 98, Doc II-109, 1998 USAFACFS ACH; Memorandum for Cmdt, USAFAS, subj: Renaming the Command and Attack Battalion, 20 Oct 98, Doc II-110, 1998 USAFACFS ACH; Memorandum for Director, WIDD, subj: Coordination of 1998 USAFACFS Annual Command History, 15 Mar 99; Interview, Dastrup with B. Bielinski, Doctrine Branch, WIDD, 1 Feb 00, Doc II-65, 1999 USAFACFS ACH; Fact Sheet, subj: Field Manual Update, Apr 99, Doc II-66, 1999 USAFACFS ACH; Briefing, subj: Field Artillery Doctrine, 17-18 May 99, Doc II-67, 1999 USAFACFS ACH; Interview with atch, Dastrup with B. Bielinski, Doctrine Branch, WIDD, 6 Feb 01, Doc II-59.

During those same years, the Doctrine Branch in WIDD also wrote or revised other field manuals and experimental force special texts to support digital operations. As in the past, the branch faced the challenge of publishing doctrine because of the lack of funding. Fortunately, the Commandant of the Field Artillery School, Major General Leo J. Baxter (June 1997-August 1999), provided end-of-year money of approximately $825,000 in 1998 to publish doctrinal manuals, as did his successor, Major General Toney Stricklin (August 1999-present). In 1999 General Stricklin furnished funds for publishing XST 6-20-10 (TTP for Targeting for the First Digital Division) that was completed in 2000, XST 6-70 (TTP for Paladin Operations in the First Digital Division) that was completed in 2000 for the 4th Infantry Division, which was being digitized, and Special Text (ST) 6-3-1 (TTP for the Advanced Field Artillery Tactical Data System A98) that was staffed for review and comments in 2000 for the same division. Other field manuals under development included FM 6-20-1 (The Field Artillery Battalion), FM 6-20-2 (Corps Artillery, Division Artillery and Field Artillery Brigade Operations), and XST 6-20-10 (TTP for Targeting) for the 4th Infantry Division. One being staffed for review and comments was FM 6-71 (Fire Support for the Combined Arms Commander), while those just beginning development were FM 6-20-60 (Fire Support for Corps Operations) and FM 6-121 (TTP for Target Acquisition).[44] Of the field manuals, completing FM 6-20 (Fire Support in Combined Arms Operations), which was last published in May 1988, proved to be the most challenging. In 1996-1997 Joint Publication 3-09 (Doctrine for Joint Fire Support) generated inter-service debates over definitions and other critical issues. In the meantime, the U.S. Army Command and General Staff College at Fort Leavenworth, Kansas, rewrote FM 100-5 (Operations) and introduced new ideas and terms in the manual. Together, Joint Publication 3-09 and the Command and General Staff College effort with FM 100-5 caused work on FM 6-20 to stop in 1997. Writers in WIDD had to wait for the other publications to be completed before continuing with FM 6-20 because the field artillery manual had to be in line with

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[44] Fact Sheet, subj: Field Manual Update, Apr 99; Interview, Dastrup with B. Bielinski, Doctrine Branch, WIDD, 1 Feb 00; Interview with atch, Dastrup with B. Bielinski, Doctrine Branch, WIDD, 6 Feb 01.

the thinking of the other two.[45]

Efforts writing FM 6-20 met with mixed results in 1998-2000. In May 1998 the Joint Chiefs of Staff officially approved JCS Publication 3-09. Meanwhile, a final draft of FM 100-5 was completed in August 1997. Yet, debates over terms and content of FM 100-5 continued into 1999 to prevent Department of the Army approval of FM 100-5 and forced another major rewrite of the field manual to be done in 1999. Because FM 6-20 was dependent upon FM 100-5, the Field Artillery School had to wait for further writing until the latter would be completed in 2000. In 2000 the Field Artillery School started writing on FM 6-20 because it could not wait any longer for 100-5.[46]

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[45]Memorandum for Cmdt, USAFAS, subj: Renaming the Command and Attack Battalion, 20 Oct 98.

[46]Interview, Dastrup with B. Bielinski, Doctrine Branch, WIDD, 20 Jan 99; Interview, Dastrup with B. Bielinski, Doctrine Branch, WIDD, 1 Feb 00; Email msg with Atch, subj: Trip Report from Semi-Annual Army Doctrine Conference, 26 May 99, Doc II-68, 1999 USAFACFS ACH; Interview with atch, Dastrup with B. Bielinski,

NEW EQUIPMENT TRAINING

Multiple-Launch Rocket System (MLRS) Training

Doctrine Branch, WIDD, 6 Feb 01.

As early as 1991, the Army's worldwide contingency strategy mandated deploying, fighting, and winning even though the active component (AC) force structure was shrinking as part of the reduction of military forces after the Cold War. This placed a greater reliance upon the reserve components (RC) -- U.S. Army Reserve (USAR) and U.S. Army National Guard (ARNG) -- to augment the active component more than ever before. In view of this situation, the combat success of 1- 158th Field Artillery (MLRS) of the Oklahoma Army National Guard in Operation Desert Storm in Southwest Asia in 1991, and the need to remove the obsolete 8-inch self-propelled howitzer from the inventory, the Army developed a MLRS transition program. It involved converting Army National Guard field artillery units from the 8-inch self-propelled howitzer to the MLRS.[47]

To support this transition the Gunnery Department in the U.S. Army Field Artillery School (USAFAS) designed a four-phase MLRS training strategy early in the 1990s to move an Army National Guard battery from individual qualification through battery certification over a period of three years. The strategy permitted sufficient latitude within each phase to tailor the training to the specific requirements of the unit. During phase one, Army National Guard soldiers underwent common task skill training in communications, map reading, and drivers training at their home station during inactive duty (IDT) weekend drills. Phase one established the foundation for all future training, had to be completed before the soldiers went to Fort Sill for military occupational skill (MOS) hands-on training conducted by New Equipment Training Detachment (NETD) instructors in the Gunnery Department, and used Fort Sill's Televised Network Training (TNET) to conduct a portion of the training via distance learning at home station. During phase two, soldiers attended MOS 13M (MLRS Crewman) and MOS 13P (MLRS Fire Direction Specialist) course training, while leaders attended a two-week MLRS cadre course. The Gunnery Department designed phase two to be conducted at Fort Sill or the home station by NETD instructors during the unit's two-week annual active duty training (ADT) time with the exception of MOS 13P, which lasted three weeks. Normally, phase two was conducted during the first summer that a unit converted to MLRS. Upon completion of the courses, the soldiers received their

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[47]1994 USAFACFS ACH, p. 57; 1995 USAFACFS ACH, p. 69.

new MOSs.[48]

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[48]1997 USAFACFS ACH, pp. 35-36; Memorandum for AC, USAFAS, subj: MLRS New Equipment Training Overview, Summer 98, 21 Sep 98, Doc II-64, 1998 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH); Briefing, subj: MLRS 3x6 New Equipment Training Concept, Nov 98, Doc II-65, 1998 USAFACFS ACH; "Ft. Sill Soldiers Train Guard," MLRS Dispatch, 3rd Quarter 1998, p. 3, Doc II-66, 1998 USAFACFS ACH; CPT Lawrence T. Hall, Jr., and CPT Michael A. Sharp, "MLRS NET for the ARNG," Field Artillery, Mar-Apr 96, pp. 44-45, Doc II-67, 1998 USAFACFS ACH; Memorandum for Record, subj: SME Comments on MLRS NET, 24 Feb 99, Doc II-68, 1998 USAFACFS ACH.

The next two phases entailed collective training. Phase three consisted of section- and platoon-level training during monthly drills and annual training at a local training area or a nearby army post during the second annual training period after the conversion. Held during the third annual training period after the conversion, phase four or the final phase provided battery-level training and certification.[49]

Using the four-phase transition program, the Gunnery Department trained five Army National Guard battalions. Unlike other NETDs that had trained battalions from Oklahoma, Michigan, Tennessee, and Kentucky earlier in the 1990s and were composed of entirely AC personnel, the one that trained the 3-116th Field Artillery of the Florida Army National Guard in 1997 and 1998 consisted of AC and four Army National Guard personnel with the express purpose of getting the latter qualified to be instructors in MLRS courses.[50] The 3-116th Field Artillery completed phase-

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[49]1996 USAFACFS ACH, p. 62; 1997 USAFACFS ACH, p. 36; Memorandum for AC, USAFAS, subj: MLRS New Equipment Training Overview, Summer 98, 21 Sep 98.

[50]Unfortunately, of the four National Guard personnel employed to help train the Florida unit, a captain moved onto a new position, while a sergeant became a state recruiter. See Memorandum for Record, subj: SME Comments on MLRS NET, 24 Feb 99.

four training in the summer of 1998 with battery-level certification conducted by the 1st Battalion (MLRS), 4th Cavalry Brigade of Fort Stewart, Georgia.[51]

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[51] 1997 USAFACFS ACH, pp. 36-37; Briefing (Extract), subj: Standards Start Here, 20 Jul 99, Doc II-69, 1999 USAFACFS ACH; Briefing, subj: Standards Start Here, 1999, Doc II-70, 1999 USAFACFS ACH; Memorandum for AC, USAFAS, subj: MLRS New Equipment Training Overview, Summer 98, 21 Sep 98. ??

Meanwhile, in cooperation with the Gunnery Department, the 1-142nd Field Artillery of the Arkansas Army National Guard conducted an alternative NET plan to expedite training because of an accelerated fielding schedule that would have the unit's launchers fielded by 1997. Although the Gunnery Department dispatched NETD instructors on temporary duty to Fort Chaffee, Arkansas, on weekends and during annual training periods to train 1-142nd Field Artillery instructors during phase three in 1997, the department did not provide a dedicated NETD to the Arkansas unit. The Florida new equipment training detachment supported the conversion training during annual training in 1998. Even though the Gunnery Department had to rely upon internal personnel resources because budget restraints prevented TRADOC from providing them as it had done in the past, the alternative plan accomplished its goal. At the end of Fiscal Year (FY) 1998, the Arkansas unit was on the same training schedule as the units from Kansas and South Carolina and had received eighteen launchers. All three National Guard units were scheduled to complete training and certification in FY 1999.[52]

[52] 1997 USAFACFS ACH, pp. 36-37; Memorandum for AC, USAFAS, subj: MLRS New Equipment Training Overview, Summer 98, 21 Sep 98, 1998 USAFACFS ACH; Briefing, subj: MLRS 3x6 New Equipment Training Concept, Nov 98.

Looking into the near future, the Gunnery Department knew that declining equipment and funding resources would require revamping MLRS conversion training. At the direction of the Assistant Commandant of the Field Artillery School, Brigadier General Lawrence R. Adair, the department outlined a three-phase conversion training plan of two years in November 1998. Phases one and two focused on individual training of soldiers to make the transition to MLRS, while phase three developed the unit's ability to fight with the new system. More specifically, as directed by the Chief of Staff of the Army, General Dennis J. Reimer, in a memorandum of 8 June 1998 and supported by General Adair, phase one would be conducted by NETD instructors via distance learning using computers, CD ROM, video teletraining, the Internet, or other emerging technologies to save money and time. The phase would take place over a period of one year during weekend drills to produce MOS-qualified soldiers. Phase two would be taught by NETD instructors at Fort Sill or at the unit's home station during the first summer (annual training) after the unit had converted to MLRS using the equipment, while phase three would be conducted during monthly drills and annual training during the second year after the conversion and would provide platoon training employing NETD instructors. Once phase three had been completed, the NETD team would be reassigned or disbanded. At this point the unit would assume responsibility for battery/battalion training and certification that would be completed during the third summer (annual training) after the conversion and during weekend drills. Although the unit had the primary responsibility for training and certification, other Army National Guard units, U.S. Army Forces Command training support battalions, and mobile training teams from the Gunnery Department could provide assistance as available.[53]

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[53]Interview with atch, Dastrup with CPT Charles H. Akin, New Equipment Division, Gunnery Department, 17 Feb 00, Doc II-71, 1999 USAFACFS ACH; Memorandum for Deputy Director of Combat Developments, subj: MLRS New Equipment Transition and Certification Support, 25 Feb 99, Doc II-72, 1999 USAFACFS ACH; Briefing, subj: MLRS 3x6 New Equipment Training Concept, Nov 98; Memorandum for Deputy Assistant Commandant-ARNG, subj: MLRS NET Overview, Fall 1999, 7 Dec 99, Doc II-73, 1999 USAFACFS ACH; Memorandum for Record, subj: MOS and Collective Training, 17 Feb 00, Doc II-74, 1999 USAFACFS ACH;

Position Paper, subj: MLRS NET, 4 Feb 00, Doc II-75, 1999 USAFACFS ACH; Briefing (Extract), subj: Standards Start Here, 20 Jul 99; Briefing, subj: Standards Start Here, 1999.

To satisfy the new three-phase training plan that would be employed to train National Guard units in South Dakota and North Carolina in 1999, the Gunnery Department outlined two options late in 1998.[54] The first option basically preserved the status quo and depended upon three eight-person, all-military teams to conduct the training during phases two and three. While the second option retained the eight-person team for phases two and three, it provided a significant departure from the past. It recommended using two noncommissioned officers and six contract instructors, whereas previous teams had consisted solely of military personnel. Although the costs for each option were basically the same over the six-year fielding period of FYs 1999-2005, the second would free up military personnel and would reduce personnel turbulence in MLRS units. In a briefing to the Deputy Chief of Staff for Operations for the Army in November 1998, the Chief of the Fire Support Division in the Gunnery Department advised selecting option two because it would save personnel and reduce personnel turbulence. In view of this, the Deputy Chief of Staff for Operations approved option two for implementation in 1999 because the Army could not afford to continue taking eight to ten soldiers from a unit when unit manning was in trouble. Funding contractors was a small price to pay for unit stability.[55]

In 1999-2000 the Gunnery Department employed NETD teams composed of six civilian contract instructors and two noncommissioned officers to conduct the three-phase training program designed in 1998. Headquartered in Sioux Falls, South Dakota, the 1-147th Field Artillery began conversion training in 1998 and completed it in 2000. In

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[54]Memorandum for Record, subj: MOS and Collective Training, 17 Feb 00; Position Paper, subj: MLRS NET 4 Feb 00; Memorandum for Deputy Assistant Commandant-ARNG, subj: MLRS NET Overview, Fall 1999, 7 Dec 99; Briefing, subj: MLRS 3x6 NET Concept, Nov 98.

[55]Briefing, subj: MLRS 3x6 New Equipment Training Concept, Nov 98; Msg, MAJ Hugo Fischer, GD, to Dr. Boyd L. Dastrup, Command Historian, subj: 98 Historical Info Request, 15 Jan 99, Doc II-69, 1998 USAFACFS ACH; Memorandum for Deputy Assistant Commandant-ARNG, subj: MLRS NET Overview, Fall 1999, 7 Dec 99; Memorandum for Record, subj: MOS and Collective Training, 17 Feb 00.

the meantime, the 2-147th Field Artillery of Watertown, South Dakota, went through phase one via distance learning and completed phase two in June 1999; and the 5-113th Field Artillery of Lewisburg, North Carolina, completed phase one via distance learning and phase two through hands-on training at Fort Sill.[56]

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[56]Memorandum for Assistant Commandant, USAFAS, subj: SIGACTS, 15 Jan 99, Doc II-76, 1999 USAFACFS ACH; Memorandum for Record, subj: MOS and Collective Training, 17 Feb 00; Memorandum for Deputy Assistant Commandant-ARNG, subj: MLRS NET Overview, Fall 1999, 7

Dec 99, 1999 USAFACFS; Memorandum for Assistant Commandant, USAFAS, subj: SIGACTS, 12 Oct 99, Doc II-77, 1999 USAFACFS ACH; Memorandum for Director of Combat Developments, subj: Distance Learning and New Equipment Training to Support MLRS New Equipment Transition and Certification, Phase III North Carolina and South Dakota and Phase I Texas and Arkansas, 11 Jan 00, Doc II-78, 1999 USAFACFS ACH; Memorandum for Assistant Commandant, USAFAS, subj: SIGACTS, 12 Jan 00, Doc II-79, 1999 USAFACFS ACH.

Once again, budgetary considerations encouraged the Gunnery Department to revamp new equipment training. Under the existing system, the Department sent NETD soldiers on a permanent change of station (PCS) move to the state for two years for phase-two and phase-three training and trained the unit down to the battery level. This format, as a result, was expensive. To reduce costs and personnel turbulence the Gunnery Department started sending civilian contractors and soldiers as a team to the state on a temporary duty (TDY) basis in 2000 and only trained the unit to the platoon level. By training to this level of command, the Gunnery Department reduced training time to eighteen months and saved money.[57]

In the fall of 1999 after going through distance learning during phase one, Captain Robert F. Markovetz, Jr., of the 2-147th Field Artillery reflected upon the effectiveness of distance learning. Traditionally, a soldier signed up for a correspondence course, waited several weeks for the course material to show up, completed the course, returned it for grading, and then waited for the grade. Rather than spending several weeks on correspondence courses, phase one training with its focus on distance learning through video training and CD ROM permitted the soldier to go through the training without the long waits. The CD ROM instruction provided a multimedia presentation to the soldiers and allowed them to score the practical exercises as they worked, while the video training permitted the soldiers to ask a MOS-qualified instructor questions on the material covered in the CD ROMs. Although weaknesses existed that required correcting, distance learning functioned well and was the wave of the future because it saved money, time, and travel and enabled a large number of soldiers to train for a moderate expense.[58]

Upon reflecting on distance learning accomplishments in 2000, the Gunnery Department arrived at the same conclusion

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[57]Interview, Dastrup with CPT Charles H. Akin, MLRS NET, GD, 12 Feb 01, Doc II-60; Email msg with atch, subj: Review MLRS, 16 Feb 01, Doc II-61.

[58]CPT Robert F. Markovetz, Jr., "Distance Learning: MLRS 3x6 Conversion for the Army National Guard," Field Artillery, Sep-Oct 99, pp. 42-43, Doc II-80, 1999 USAFACFS ACH.

as Captain Markovetz and projected using even more in the future. Given distance learning's success, the department envisioned employing it to train units receiving the High Mobility Artillery Rocket System beginning in 2004.[59]

Paladin M109A6 Self-propelled 155-mm. Howitzer New Equipment Training

[59]Interview, Dastrup with Akin, 12 Feb 01.

Beginning in 1993, the Paladin Division, Gunnery Department, U.S. Army Field Artillery School (USAFAS) initiated new equipment training (NET) for the Paladin that was being introduced into the inventory to replace the M109A2/A3/A5 155-mm. self-propelled howitzer. To conduct training a new equipment training team had fifty-four people for maintenance and operator training, trained the entire battalion during a period of four weeks, and had the ability to field a battalion of twenty-four howitzers at a time. After arriving on site, the team, led by a lieutenant colonel, divided into three battery teams, one maintenance team, and one headquarters team to train individual and unit skills.[60] Although this training strategy worked well in 1993 and 1994, the drawdown and the budget cuts of 1995 led to serious modifications of new equipment training. Working together, they forced the team's size to be reduced from fifty-four to twenty-six people, and this changed the instructor-student ratio from one to three to one to six and caused the Gunnery Department to revamp its training plan by devising a six-week training schedule. Rather than training an entire battalion at one time, the team conducted organizational and direct support maintenance training for the mechanics during the first two weeks using contractors. In the third week the team provided operator training for the leaders; and in the fourth week they trained the operators. During the last two weeks of training, the NET team conducted collective training and concluded it with intensive battery field exercises and battery and battalion dry- and live-fire exercises. This new training strategy essentially provided a two-phase new equipment training program for the Paladin by the end of 1995. While the contractor furnished two weeks of maintenance new equipment training, the Gunnery Department supplied four weeks of operator new equipment training. Judged by the Chief of the Paladin New Equipment Training team, the new arrangement worked well

[60]"New Equipment Training for Paladin--The Future Is Now!" Field Artillery, Feb 93, pp. 51-53, Doc II-70, 1998 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH); LTC Sidney E. Riley, "Paladin NET Lessons for Those Who Follow," Field Artillery, Apr 94, pp. 15-17, Doc II-71, 1998 USAFACFS ACH; Staff Directory (Extract), 15 Jun 93, p. 5, Doc II-72, 1998 USAFACFS ACH.

and provided solid maintenance and operator training.[61]

[61]1996 USAFACFS ACH, pp. 64-65; Msg, subj: Paladin NET-Reply, 27 Jan 99, Doc II-73, 1998 USAFACFS ACH; Fact Sheet, subj: Paladin Fieldings, 29 May 98, Doc II-74, 1998 USAFACFS ACH; Interview, Dastrup with MAJ Jeffrey A. Taylor, Chief, Paladin Division, GD, 16 Feb 96, Doc II-75, 1998 USAFACFS ACH; Memorandum for Cdr, 4-42 FA, subj: Final Report on Paladin NET Team Fielding, 10 Jan 96, Doc II-76, 1998 USAFACFS ACH; Interview, Dastrup with MAJ Hall, Paladin Division, GD, 15 Jan 97, Doc II-77, 1998 USAFACFS ACH.

In the midst of training the active component in 1996-1997 with the two-phase program, the Army recognized that training the Army National Guard would be difficult and would require additional personnel and turned to the National Guard Bureau for assistance.[62] To facilitate National Guard Paladin fieldings that would begin in 1997 just as active component unit fieldings were being completed, the National Guard Bureau announced the creation of thirty Title 10 Active Guard Reserve (AGR) positions for the M109A6 Paladin NET team on 15 August 1996. The Bureau wanted three officers and twenty-seven noncommissioned officers to serve as instructor-writers and to become subject matter experts, who could be used by their respective states after their tour on the NET team had been completed. Once on board early in 1997, the National Guard NET team gave the Field Artillery School a second NET team. In keeping with the Total Force concept, the Field Artillery School integrated Army National Guard personnel with active component people beginning on 1 January 1998. By February 1998 two trained Paladin NET teams existed. Both were composed of Army National Guard and active component personnel with no distinction being made between the two.[63]

[62]1997 USAFACFS ACH, p. 38; Fact Sheet, subj: Paladin Fieldings, 29 May 98; Memorandum for Cdr, 2-82nd FA, subj: Paladin NET Final Report, 14 Aug 96, Doc II-78, 1998 USAFACFS ACH.

[63]1997 USAFACFS ACH, pp. 38-39; Memorandum for Operations, GD, subj: Bi-weekly SIGACTS, 11 Feb 98, Doc II-79, 1998 USAFACFS ACH; Memorandum for Operations, GD, subj: Bi-weekly SIGACTS, 2 Dec 97, Doc II-80, 1998

USAFACFS ACH; Email msg with atch, subj: Paladin NET, 6 Mar 00, Doc II-81, 1999 USAFACFS ACH.

Fielding the Army National Guard field artillery battalions with Paladin in 1997-1998, meanwhile, illustrated the challenges the two-phase plan to train such units. Because Army National Guard personnel were not available on a continuous basis as their active component counterparts were, the Gunnery Department revised its two-phase training program of four weeks. In cooperation with the Paladin Program Manager, the Paladin Division in the Gunnery Department designed a three-phase training program in 1997 to train a unit over a period of one year. Concurrent with contractor-furnished maintenance new equipment training, Gunnery Department new equipment training teams furnished operator new equipment training in three phases. During phase one, unit leaders went through an eighty-hour Paladin Cadre Course at Fort Sill. Phase-two training took place during the unit's weekend training drills at its home station and lasted ten months. Conducted by a team of twenty-six NET personnel, phase-three training occurred during a three-week annual training period (two weeks was the norm) and culminated with live-fire exercises to qualify the newly-equipped units with the skills required to employ the Paladin properly.[64]

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[64]Memorandum with Encl for Dir, GD, et al, subj: Paladin New Equipment Training, 14 Dec 98, Doc II-90, 1998 USAFACFS ACH; Briefing, subj: Paladin NET Overview, 1998; Msg, subj: Paladin NET-Reply, 27 Jan 99; Memorandum for Record, subj: Annual History Input, 23 Feb 99, Doc II-91, 1998 USAFACFS ACH; MAJ Kerry J.

Loudenslager, "ARNG Paladin NET: Helping Units Help Themselves," Field Artillery, Sep-Oct 99, pp. 44-45, Doc II-82, 1999 USAFACFS ACH; Memorandum for Record, subj: MFCS Cross Reference to Paladin Fieldings, 25 Feb 00, Doc II-83, 1999 USAFACFS ACH; Interview, Dastrup with LTC Kerry J. Loudenslager, Chief, Paladin Division, GD, 2 Mar 00, Doc II-84, 1999 USAFACFS ACH; Email msg, subj: Paladin NET, 6 Mar 00, Doc II-85, 1999 USAFACFS ACH; Email msg with atch, subj: Paladin NET, 6 Mar 00, 1999.

In the meantime, the Gunnery Department reviewed its new equipment training strategy early in 1998 because the U.S. Army extended Paladin fieldings into Fiscal Year (FY) 2001. This action created a problem. As of March 1998, existing active component personnel dedicated to new equipment training were programmed to continue through FY 2000. Given the personnel programming, extending the fielding of the Paladin would create a personnel shortage and degrade training at the same time because the current new equipment training strategy, based upon two complete teams, provided the minimal required level of training. To furnish the necessary training the Gunnery Department prepared five courses of action and presented them to the Assistant Commandant of the Field Artillery School. Of the five alternatives the Department recommended extending both active component and Active Guard Reserve new equipment teams through FY 2001 because it would preserve the existing fielding strategy and allow for more flexibility than the others did to adapt to potential changes in the fielding schedule, even though it required U.S. Army Training and Doctrine Command (TRADOC) and National Guard Bureau approval. The Assistant Commandant concurred with the recommendation and sent it through the chain of command for approval. TRADOC approval came on 13 July 1998, and the Director of the National Guard Bureau, Major General Roger C. Schultz, approved on 9 November 1998.[65]

Although the Gunnery Department received approval for extending its Paladin NET teams, it faced another hurdle associated with fielding Paladin in 1999. The three-phase training program initiated in 1998 worked well, but it was expensive during an era of declining resources because the Department had to send eight-person teams on temporary duty to Army National Guard units during phase two. To reduce costs during the phase, the Department began exploring the possibility of using distance learning. According to projections, this would cut costs and provide more training time. Equally important, distance learning had the

[65]Interview, Dastrup with Troy, 26 Jan 99; Msg with Encls, subj: Paladin Staff Study, 28 Jan 99, Doc II-92, 1998 USAFACFS ACH; Msg, subj: Paladin NET-Reply, 1 Feb 99, Doc II-93, 1998 USAFACFS ACH; Msg, subj: NGB Approval of Extending NET Resources, 1 Feb 99, Doc II-94, 1998 USAFACFS ACH; Email msg with atch, subj: Paladin NET, 6 Mar 00.

potential of reducing the three-week annual training period presently required to two-weeks and save money for the National Guard Bureau that paid for the additional one week of annual training. One critical obstacle presented the possibility of lessening the impact of distance learning. Many Army National Guard units did not have access to distance learning facilities and would have to travel. Although distance learning offered several key advantages over sending teams on temporary duty, approval to use it did not come until 2000.[66]

In 2000 the Gunnery Department implemented distance learning when it trained the 1-141st Field Artillery of the Louisiana Army National Guard in May. During the training that transpired over a three-day period, the Gunnery Department taught Military Occupational Specialty (MOS)

[66]Interview, Dastrup with Loudenslager, 2 Mar 00; Email msg with atch, subj: Paladin NET, 6 Mar 00.

13B, Cannon Crewmember, and MOS 13E, Cannon Fire Direction Specialist, critical tasks for their respective MOSs. For the most part, distance learning worked well because the 1-141st Field Artillery had appropriate facilities.[67]

Bradley Fire Support Team Vehicle Fielding and Training

[67] Email msg, subj: Paladin NET, 1 Mar 01, Doc II-62; Interview, Dastrup with LTC Kerry Loudenslager, Chief, New Systems Training Division, GD, 7 Feb 01, Doc II-63; Briefing, subj: 1-141 FA, LAARNG "Washington Artillery" 13B Video Tele-Training, 20 May 00, Doc II-64; Briefing, subj: 1-141 FA, LAARNG "Washington Artillery" POC Video Tele-Training, 20 May 00, Doc II-65; Email msg with atch, subj: Louisiana VTT, 7 Feb 01, Doc II-66; Email msg with atch, subj: Paladin Schedules, 7 Feb 01, Doc II-67.

Late in the 1970s, a U.S. Army Training and Doctrine Command (TRADOC) working group, Close Support Study Group II, met to optimize observed fire support for the maneuver forces. Besides reaffirming the necessity of the Fire Support Team (FIST) that had been created in the mid-1970s to integrate fire support with the maneuver arms at the company level, the group recommended fielding a mobile fire support vehicle. Out of this effort, the BFIST M7 and BFIST A3 evolved over a period of years to replace the M113 and M981 with the M7 fieldings beginning in 1999 and the A3, the more sophisticated of the two BFISTs, scheduled to be introduced several years later.[68]

To support the BFIST M7 fieldings, the Army developed two separate but complementary training programs. One involved new equipment training (NET) furnished by a team from Fort Knox, Kentucky, and the contractor. The NET team trained soldiers in the unit at the time of fielding and

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[68]1999 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), pp. 143-48. This section provides a good background on the development of the BFIST M7 and the BFIST A3.

was the primary means of initial training.[69]

[69]Briefing, subj: BFIST CG Update, 13 Feb 01, Doc II-68; Interview, Dastrup with MAJ Terry A. Ivester, Fire Support and Combined Arms Department (FSCAOD), 13 Feb 01, Doc II-69; Briefing, subj: Training Strategy for BFIST/Striker, undated, Doc II-70.

As this training was getting underway, the U.S. Army Field Artillery School (USAFAS) with the Fire Support and Combined Arms Operations Department (FSCAOD) taking the lead developed institutional training as the second training program in support of the fieldings. Approved by a council of colonels in Training Command at Fort Sill early in July 1999 and the Assistant Commandant of USAFAS, Brigadier General Lawrence A. Adair, on 20 July 1999, FSCAOD outlined developing training courses for the BFIST operator and the BFIST commander. Specifically, the BFIST operators' course would begin in October 2001, would train soldiers with Military Occupational Specialty (MOS) 13F (Fire Support Specialist) after advanced individual training and before they reported to a BFIST unit that had already received BFIST NET training, and would provide additional skill identifier certification. The BFIST commanders' course would begin in June 2001, would train sergeants, staff sergeants, and lieutenants, who were not in the BFIST unit at the time of NET, and would furnish additional skill identifier/specialty code certification. Thus, USAFAS planned to take advantage of NET training and would only train those, who missed it.[70]

[70]Briefing, subj: BFIST Training CG Update, 13 Feb 01; Interview, Dastrup with Ivester, 13 Feb 01; Briefing, subj: Training Strategy for BFIST/Striker, undated; Memorandum for Record, subj: FSCAOD, Input, 6 Apr 01, Doc II-44A.

CHAPTER THREE
COMBAT DEVELOPMENTS:
FORCE DESIGN, DOCTRINE, AND EQUIPMENT REQUIREMENTS

INTRODUCTION

During 2000, the U.S. Army Field Artillery School pursued key initiatives to make the Field Artillery more lethal, deployable, and responsive to meet future battlefield requirements. To do this the School participated in the Transformation of the Army effort; developed a fire support modernization plan; developed doctrine, tactics, techniques, and procedures; and made significant progress towards introducing new equipment and weapons.

FORCE DESIGN AND DOCTRINE

Transformation of the Army

Introduction. Early in 1999, the Kosovo deployment in Eastern Europe highlighted several critical shortcomings in the Army. While the heavy forces were too heavy, took too long to deploy, and were too difficult to maneuver in areas of the world where they might have to operate, the light forces were too light and lacked staying power and lethality if they were deployed into an environment where they might face an armored threat. Also, future opponents would not give the American military a long lead time to deploy and would attempt to deny air strips and ports that the United States traditionally depended upon to deploy military forces.[1]

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[1]Email msg with atch, subj: Transformation Activities in Congress, 14 Feb 00, Doc III-1, 1999 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH); Briefing, subj: Transformation Campaign

Plan, 19 Jan 00, Doc III-2, 1999 USAFACFS ACH; The Brigade Combat Team Organizational and Operational Concept, 6 Jan 00, p. 4, Doc III-3, 1999 USAFACFS ACH.

Chief of Staff of the Army Vision. Upon becoming the Chief of Staff of the Army in mid-1999, General Eric K. Shinseki articulated a clear vision for the Army to eliminate the deficiencies underscored by Kosovo and to make the Army more relevant to future warfare. In June 1999 the General explained that the Army aspired to be the most respected army in the world and the most feared ground force to those who would threaten the vital interests of the United States. To do this the Army had to improve its strategic responsiveness, had to develop a clear long-term strategy to improve operational jointness, had to implement the goals of Joint Vision 2010, had to produce leaders for joint warfighting, had to complete the full integration of the active and reserve components, had to staff its warfighting units, and had to provide for the well-being of its soldiers, civilians, and family members.[2]

Although each of the goals was critical, General Shinseki focused his energies on strategic responsiveness in 1999. From the General's vantage point, the world situation demanded a strategically responsive Army that was capable of operating throughout the range of conflict and that was more versatile, lethal, and survivable than ever before. The Army had to provide early entry forces with the ability to operate jointly without access to fixed forward bases and with the power to slug it out and win campaigns decisively. Continuing, the General noted, "At

[2]Intent of the Chief of Staff, Army, 23 Jun 99, Doc III-4, 1999 USAFACFS ACH; Email msg with atch, subj: CSA Expands on Presentation to AUSA in Oct, 1 Feb 00, Doc III-5, 1999 USAFACFS ACH; Email msg, subj: Initial Bde--Historical Reporting, 22 Dec 99, Doc III-6, 1999 USAFACFS ACH; Briefing, subj: Transformation Campaign Plan, 19 Jan 00.

this point in our march through history, our heavy forces are too heavy and our light forces lack staying power. Heavy forces must be more strategically deployable and more agile with a smaller logistical footprint, and light forces must be more lethal, survivable, and tactically mobile."[3]

[3]Intent of the Chief of Staff, Army, 23 Jun 99.

Over the next several months General Shinseki further refined his vision. In August 1999 his Army of the future effort included lighter, more deployable forces and equipment and outlined standing up two initial brigade combat teams (IBCT) at Fort Lewis, Washington, to serve as a test bed for new ideas, force structure, weapons, and equipment. Testing off-the-shelf tracked and wheeled vehicles that appeared to offer the desirable characteristics would compose a major component of the IBCT effort and would give the endeavor a quick start.[4] In a U.S. Army news release of 12 October 1999, the General along with the Secretary of the Army, Louis Caldera, further elucidated his vision. The Army required the capability of deploying a independent combat brigade anywhere in the world within 96 hours, a division within 120 hours, and 5 divisions within 30 days. This meant transforming the Army into a more dominant and strategically responsive force.[5]" To this end," General Shinseki told the attendees of the 45th Annual Meeting of the Association of the United States Army on 12 October 1999, "We will begin immediately to turn the entire Army into a full spectrum force which is strategically responsive and dominant at every point on the spectrum of operations."[6] As the Director of the Transformation Axis at Headquarters, U.S. Army Training and Doctrine Command (TRADOC), Colonel Joseph Rodriguez, and the Director of Battle Laboratory Integration, Technology, and Concepts at TRADOC, Colonel Michael Mahaffey, noted in December 1999,

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[4]Email msg with atch, subj: Information Paper, 6 Jan 00, Doc III-7, 1999 USAFACFS ACH; Briefing, subj: Transforming the World's Best Army into a Full Spectrum Force. . .Strategically Responsive and Dominant, 10-11 Jan 00, p. 3, Doc III-8, 1999 USAFACFS ACH; The Brigade Combat Team Organizational and Operational Concept, 6 Jan 00, p. 6; Briefing, subj: Brigade Combat Team Fire Support, Jan 00, p. 10, Doc III-9, 1999 USAFACFS ACH.

[5]"Army Announces Vision for the Future," U.S. Army News Release, 12 Oct 99, Doc III-10, 1999 USAFACFS ACH.

[6]GEN Eric K. Shinseki, Address to the Eisenhower Luncheon, 45th Annual Meeting of the Association of the United States Army, 12 Oct 99, Doc III-11, 1999 USAFACFS ACH.

General Shinseki wanted to make the heavy forces lighter and the light forces heavier with the objective of erasing the distinction between the two.[7]

From General Shinseki's perspective, the Army had a bifurcated force. It had equipment, such as the M-1 Abrams tank, and divisions that had been designed for the Cold War and could not go everywhere and had light forces that lacked the lethality or survivability to be placed in the middle of a war. In view of recent combat and contingency operations in the 1990s, the Army required a totally new force structure to handle future war with combat systems with the survivability of the M-1 Abrams tank and the Bradley fighting vehicle but with the deployability of the light forces.[8]

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[7]Briefing, subj: Status of Brigade Combat Team Development at Fort Lewis and the Planned Performance Demonstration at Fort Know, 16 Dec 99, p. 1, Doc III-12, 1999 USAFACFS ACH.

[8]Email msg with atch, subj: CSA Expands on Presentation to AUSA in Oct, 1 Feb 00.

Work on Vision and Initial Brigade Combat Team. By the end of 1999, various task forces and study groups throughout TRADOC and the senior Army Planning Group began producing results with the Transformation of the Army. According to a draft working paper of 17 November 1999, the preliminary design for the initial brigade combat team central to General Shinseki's vision created an independent mounted infantry organization that would rely heavily on superb reconnaissance, surveillance, and target acquisition (RSTA) abilities, would provide immediate improvement to the Army's strategic responsiveness, and would furnish the means for institutional changes across all of the domains of doctrine, training, leader development, organizations, materiel, and soldiers. The major sub-elements within the initial brigade combat team would include two motorized, combined arms infantry battalions, each with three combined arms rifle companies and a headquarters company with a reconnaissance platoon and a mortar platoon but excluded organic field artillery, air and missile defense, combat and construction engineers, and military police. As the draft working paper pointed out, embedding these kinds of units in the brigade combat team would be at the expense of responsiveness. If the brigade required such capabilities, they would be mission tailored in augmentation packages. After all, the key requirement focused on strategic and operational deployability; and existing field artillery systems were too heavy to be deployed readily.[9] All

[9]"New Brigade Won't Feature Organic Aviation or Cannon Capabilities," Inside the Army, 29 Nov 99, pp. 1, 8, Doc III-13, 1999 USAFACFS ACH; Briefing, subj:

equipment, including field artillery, had to fit on a C-130 aircraft. "If it doesn't fit in a C-130, it doesn't go into the brigade," Colonel Rodriquez emphasized on 16 December 1999.[10]

Transformation Campaign Plan, 19 Jan 00; Email msg, subj: IBCT, 6 Mar 00, Doc III-14, 1999 USAFACFS ACH; Executive Summary, Initial Brigade Book Volume I (Extract), undated, pp. 4-5, Doc III-15, 1999 USAFACFS ACH.

[10]Briefing, subj: Status of Brigade Combat Team Development at Fort Lewis and Planned Performance Demonstration at Fort Knox, 16 Dec 99, p. 2; Executive Summary, Initial Brigade Book Volume I (Extract), undated, pp. 4-5.

Yet, the working draft of the initial brigade combat team organization and early thinking about the brigade structure reflected some ambivalence concerning fire support. Although field artillery was not included in the working draft of the brigade, the designers conceded the requirement for field artillery and projected procuring a medium assault vehicle-based 155-mm. howitzer sometime in the near future. Until this occurred, the brigade would have to rely upon the High Mobility Artillery Rocket System (HIMARS) for counterfire if needed. At a briefing in the Pentagon in December 1999, TRADOC representatives pointed out that they did not know exactly what type of field artillery would be a part of the brigade in the future. For now, however, the initial brigade combat team would not have field artillery because it was too heavy and would detract from deployability. Yet, this would be risky because of the lack of fire support. Mortars simply could not handle indirect fire support requirements.[11]

As of November and December 1999, the Army envisioned taking a dual path over the next several years to develop a medium-weight force tailored towards small-scale contingency (SSC) operations. The Army planned to hold a demonstration of commercial off-the-shelf technologies in January 2000 with Canada being the primary source of the equipment to stimulate the development of doctrine, organizational design, and leader training and to establish the initial brigades. After this participants in the demonstrations would make equipment recommendations to the Army leadership with procurement hopefully beginning in July 2000 and two medium brigades being fielded in two years. In the meantime, the search for breakthrough technologies would begin as fielding the initial brigade combat team was underway.[12]

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[11]"New Brigade Won't Feature Organic Aviation or Cannon Capabilities," Inside the Army, 29 Nov 99, pp. 1, 8; Briefing, subj: Status of Brigade Combat Team Development at Fort Lewis and the Planned Performance Demonstration at Fort Knox, 16 Dec 99, pp. 3, 11, 13, 15; Email msg, subj: IBCT, 6 Mar 00.

[12]"Tactics, Techniques, and Procedures Work on New Vision to Start Soon," Inside the Army, 29 Nov 99, pp. 8-9, Doc III-13, 1999 USAFACFS ACH; Briefing, subj: Status of Brigade Combat Team Development at Fort Lewis and the Planned Performance Demonstration at Fort Knox, 16 Dec

99, p. 2; Scott R. Gourley, "New Brigade Structure Begins to Emerge," Army, Feb 00, pp. 33-34, Doc III-16, 1999 USAFACFS ACH; Email msg with atch, subj: New Weapon Systems, 10 Jan 00, Doc III-17, 1999 USAFACFS ACH.

At the same time the Army outlined a three-phase development program. The two selected brigades at Fort Lewis would comprise the initial brigades, would be the prototypes for others to follow, would be equipped with off-the-shelf equipment, including vehicles, and equipment that was already in the Army's inventory and that could be adapted to meet existing requirements, and would be fielded between 2000 and 2003.[13] As TRADOC Deputy Chief of Staff for Combat Developments, Major General Dan Zanini explained late in 1999, interim brigades equipped with the medium assault vehicle technology would follow the initial brigades that would be retrofitted with the medium assault vehicle technology and would be fielded between 2003-2010.

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[13]Briefing, subj: Status of Brigade Combat Team Development at Fort Lewis and the Planned Performance Demonstration at Fort Knox, 16 Dec 99, pp. 1-6; Briefing, subj: Brigade Combat Team Fire Support, Jan 00, p. 7; Executive Summary, Initial Brigade Book Volume I, Fall 1999; Army Transformation Campaign Plan (Extract and Draft), Annex, 28 Jun 00, Doc III-1; LTG Larry R. Ellis, "The Transformation Campaign Plan: The Tool to Transform the Army," Army, Oct 00, p. 123, Doc III-2.

Next, the Army would field the objective brigade that would be based upon breakthrough technologies and would be fielded beginning in 2010. According to the Transformation Campaign Plan of 2000, however, the complete conversion of the Army to the objective force would be around 2032.[14]

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[14]"Tactics, Techniques, and Procedures Work on New Vision to Start Soon," Inside the Army, 29 Nov 99, pp. 8-9; Briefing, subj: Status of Brigade Combat Team Development at Fort Lewis and the Planned Performance Demonstration at Fort Knox, 16 Dec 99, pp. 4-5; Briefing, subj: Brigade Combat Team Fire Support, Jan 00, p. 9; Briefing, subj: Brigade Combat Team Fire Support, Jan 00, Doc III-18, 1999 USAFACFS ACH; "Complete Fielding of Army's Objective Force 32 Years Away, TCP Says," Inside the Army, 31 Jul 00, pp. 1, 16, Doc III-3.

This transformation effort would come at a cost. In December 1999 the Army announced a multi-billion dollar plan designed to help transform it from a Cold War force to a lighter, more flexible force. This demanded terminating seven programs in order to find the funds. For the Field Artillery the plan loomed especially critical because the Army considered terminating the Crusader self-propelled 155-mm. howitzer program that had been underway for several years and consisted of a self-propelled howitzer and resupply vehicle with breakthrough technology. The Army deemed the Crusader self-propelled howitzer and resupply vehicle to be too heavy for the medium brigade envisioned by General Shinseki. After careful reconsideration, however, the Army opted to keep them but restructured the program so that the two would be lighter and moved fielding back from 2005 to 2007 to develop the requisite technology. Equally as important, the Army terminated the Army Tactical Missile System Block IIA and the Multiple Launch Rocket System Smart Rocket. By discontinuing seven programs and restructuring Crusader and other modernization programs, the Army freed up billions of dollars to stand up its first medium-size brigade at Fort Lewis, to lease equipment from other countries, and to begin procuring medium armored vehicles as a long-term solution for the new units. As planned, the Army wanted between 380 and 527 medium armored vehicles in as many as 12 variants for each brigade. To reach the first unit equipped date of March 2001, this meant producing two vehicles a day beginning in June 2000.[15]

[15]Email msg with atch, subj: Crusader, 5 Jan 00, Doc III-19, 1999 USAFACFS ACH; Email msg with atch, subj: Article from DA PAO, 10 Jan 00, Doc III-20, 1999 USAFACFS ACH; Email msg with atch, subj: New Weapons System, 10 Jan 00; Email msg with atch, subj: Future of Heavy

Systems, 6 Jan 00, Doc III-21, 1999 USAFACFS ACH; Email msg with atch, subj: Special Report, 4 Jan 00, Doc III-22, 1999 USAFACFS ACH; Email msg with atch, subj: Escalation, 14 Feb 00, Doc III-23, 1999 USAFACFS ACH.

Yet, abolishing some programs and restructuring others failed to satisfy the need for funding from 2001 onwards and forced the Army to scramble for funds. The Army remained well short of its funding goals and faced the possibility of extracting additional cuts. This had the potential, as some senior general officers observed, of reducing the number of Comanche helicopters to be procured, a top priority program that had been untouched by budget negotiations so far between the Army and the Office of the Secretary of Defense.[16] Also, discontinuing or reducing the size of certain programs overlooked the need to upgrade legacy systems, also known as Cold War systems, that would support the interim and objective medium forces. The Bradley Fighting Vehicle, the Paladin Self-propelled 155-mm. Howitzer, and the other armored systems needed to be replaced or upgraded to stay current.[17]

In the meantime, analysis by the Field Artillery School prompted reconsidering the fire support organization in the initial brigade combat team. In December 1999 the School pointed out in stark terms the vulnerability of the initial brigade combat team to counterfire and the unacceptable high casualties that it would take without organic fire support beyond organic mortars. Based upon the School's careful scrutiny, TRADOC revamped fire support in the initial and interim brigade combat team early in January 2000. TRADOC made fire support teams and sections organic to the maneuver force in both of the brigade combat teams, created a fires and effects coordination cell to coordinate fire support, and introduced target acquisition radars to both brigades. For fire support TRADOC included six HIMARS in the initial combat brigade team and eighteen medium armor vehicle-based 155-mm. howitzers in the interim brigade combat system. According to the Field Artillery

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[16]Email msg with atch, subj: Article from DA PAO, 10 Jan 00; Email msg with atch, subj: The Other Half of the Story, 18 Apr 00, Doc III-4; "Army Transformation, LPD-17 Shaping Up as Conference Issues," Defense Daily, 23 May 00, p. 1, Doc III-5; "Army Warns Its Budget is Woefully Inadequate, Readiness is at Risk," Inside the Pentagon, 8 Jun 00, p. 1, Doc III-6; Email msg with atch, subj: Congressional Testimony on Transformation, 16 Mar 00, Doc III-7.

[17]Email msg with atch, subj: Escalation, 14 Feb 00.

School, the outlined fire support organization for the initial and interim brigades would increase the volume of fire, would provide close support and the ability to furnish proactive and reactive counterfire, and would furnish shoot and scoop capabilities without sacrificing strategic and operational mobility.[18]

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[18]Briefing, subj: Transforming the World's Best Army into a Full Spectrum Force. . .Strategically Responsive and Dominant, pp. 8, 15, 18, 24, 31, 10-11 Jan 00;

Briefing, subj: Brigade Combat Team Fire Support, Jan 00, pp. 11-23; Briefing, subj: Brigade Combat Team Fire Support, Jan 00; Email msg, subj: Description of Medium Armored Vehicle Variants for I-BCT, 11 Jan 00, Doc III-24, 1999 USAFACFS ACH; The Brigade Combat Team Organizational and Operational Concept, 6 Jan 00, pp. 23-24, 44-45; Email msg, subj: IBCT, 6 Mar 00; Organizational and Operational Concept, The Brigade Combat Team, 3 Feb 00, pp. 20, 21, 23, Doc III-25, 1999 USAFACFS ACH; MG Toney Stricklin, "Transforming the FA and the Force," Field Artillery, Mar-Apr 00, p. 1, Doc III-25A, 1999 USAFACFS ACH; IBCT Organizational and Operational Concept (Extract), 29 Jan 00, Doc III-8; Briefing (Extract), subj: IBCT Personnel and Equipment, 29 Jan 00, Doc III-9.

Placing HIMARS in the initial brigade combat team, however, assumed considerable risk and led to a crucial decision in March 2000. As of February 2000, the Army had only three prototype HIMARS located at Fort Bragg, North Carolina, and one demonstration HIMARS at the factory in Dallas, Texas, and could expect the first production systems in 2002 at the earliest. This essentially meant that there would not be any fire support in the initial brigade combat team. Faced with this situation, the Field Artillery School proposed substituting the M198 towed 155-mm. howitzer for HIMARS in the initial brigade combat team. At the School's recommendation General Shinseki on 3 March 2000 decided to use the M198 because of the decision to use off-the-shelf equipment and because of the requirement for organic fire support in the initial and interim combat team brigades. As outlined in April 2000, the M198 battalion assigned to the first initial brigade combat team would provide direct support, would deploy within the first ninety-six hours for a small scale contingency (SSC) and also a major theater war (MTW), and would consist of three firing batteries of six howitzers each for a total of eighteen weapons, a headquarters and headquarters battery, a target acquisition platoon of Q-36 and Q-37 radars, and a medical platoon.[19]

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[19] Organizational and Operational Concept, The Brigade Combat Team, 6 Jan 00, pp. 23-24; Briefing, subj: Brigade Combat Team Fire Support, Jan 00, p. 17; Email msg, subj: IBCT, 6 Mar 00; Major General Toney Stricklin, "The Field Artillery in Transformation," Field Artillery, Sep-Oct 00, pp. 1-2, Doc III-10; Email msg with atch, subj: Transformation, 15 May 00, Doc III-11; Email msg with atch, subj: Medium Weight Force Fires and Effects

Coordination Organizational and Operational Concept, 15 May 00, Doc III-12; BCT Organizational and Operational Concept(Extract), 18 Apr 00, Doc III-13.

Subsequently, the Army revised its plans to equip the initial brigade combat team with the M198 with more modern technology. Although it maintained that an interim armored vehicle (IAV) based self-propelled howitzer would be the ideal choice and continued to retain the requirement for such a howitzer in the interim brigade combat team, the Army decided to replace the M198 with the Lightweight 155-mm. towed howitzer (LW 155) under development in a joint program with the U.S. Marine Corps in the initial brigade combat team. Circumstances forced the Army to reverse an earlier decision that had rejected the LW 155 because it lacked the agility of a self-propelled howitzer and because it was not designed to fit on a C-130 with its prime mover. Yet, using the LW 155 would be consistent with the Army's desire to employ off-the-shelf or near off-the-shelf equipment that would be available and would facilitate a transition to the IAV self-propelled howitzer that would be in the interim brigade combat team. The system would possess mobility and survivability equal to the maneuver force and would provide the lethality, precision target acquisition, precision engagement, and extended range to furnish responsive and accurate fires to support the interim brigade combat team through the battle space.[20] To enhance the operational and organizational effectiveness of the field artillery battalion, in the meantime, TRADOC made the fires and effects coordination cell, which was an emerging operational, organizational, and doctrinal concept in the Army and a beefed up fire support element according to the Commandant of the Field Artillery School, Major General Toney Stricklin, central to the direct support role and fashioned a significant break with the existing fire support organization. Historically, field artillerymen planned their fires based upon the availability of organic or assigned indirect fire support systems to support the maneuver force. As such, fire support planning focused

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[20] Stricklin, "Transforming the FA and Force," pp. 1-2; "Army Postpones Plans to Outfit BCTs with Self-propelled Howitzers," Inside the Army, 3 Jul 00, pp. 1, 5, Doc III-14; Email msg with atch, subj: Transformation, 15 May 00, Doc III-15; Interim Brigade Combat Team Organizational and Operational Concept Document (Extract), Chapter 8, Doc III-16; Briefing, subj: IBCT Organizational Concept, 12 Jan 01, Doc III-17; Stricklin, "The Field Artillery in Transformation," pp. 1-2.

more on positioning and allocating weapon systems, munitions, and servicing targets rather than achieving particular effects. The development of precision munitions, better non-lethal capabilities, increased ranges, and advances in communications led to orienting fire support around effects and not the systems that delivered the fires. At the brigade level the fires and effects coordination cell would perform the traditional functions of the fire support element, would obtain guidance from the commander about the desired effects, and then plan, prepare, and direct the execution of the desired effects utilizing organic and non-organic means. Unlike the existing fire support element, the fires and effects coordination cell would provide expanded access to joint assets, would furnish an ability to plan, coordinate, and employ lethal and non-lethal effects, and would perform a counterfire function.[21]

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[21] Organizational and Operational Concept, the Brigade Combat Team, 6 Jan 00, pp. 43-45; Organizational and Operational Concept, the Brigade Combat Team, 3 Feb 00, pp. 42-44; Memorandum for Record, subj: Telephone

Conversation with LTC Jim Lackey, TF2000, on 17 Mar 00, Doc III-26, 1999 USAFACFS ACH; Major General Toney Stricklin, "Transforming the FA and the Force," Field Artillery, Mar-Apr 00, p. 1, Doc III-18; Memorandum for Assistant Commandant, USAFAS, subj: First Quarter FY00 SIGACTS, 18 Jan 00, Doc III-19.

In the meantime, the mission and organization of the initial brigade combat team began crystalizing early in 2000. Besides being a full-spectrum, early-entry combat force, the interim brigade would be a divisional brigade with the mission of being the first-to-deploy brigade, would have the capability of beginning operations upon arrival at the aerial port of debarkation, and would be pre-configured in ready-to-fight combined arms packages. As Colonel Mahaffey of TRADOC explained, the ready-to-fight combined arms packages would be more effective than employing the traditional division-slice approach to deployment. Such a combined arms package organization would enhance unit cohesion and maximize combat effectiveness. Moreover, when it was deployed as part of a light division, the brigade would extend the tactical mobility available to the commander and increase tactical firepower for small scale contingencies or stability and support operations. As part of a heavy division, the brigade would most certainly be the first to be deployed in major theater wars.[22]

[22]COL Michael K. Mehaffey, "Vanguard of the Objective Force," Military Review, Sep-Oct 00, pp. 6-16, Doc III-20; Briefing, subj: Transforming the World's Best Army into a Full Spectrum Force . . . Strategically Reponsive and Dominant, 10 Apr 00, Doc III-21.

In concert with the emerging concept for employing the initial and interim brigade, a tentative field artillery organization for a light division began materializing early in 2000. The division artillery commander would serve as the division's field artillery commander and effects coordinator as outlined by General Stricklin. The commander would have command, control, communications, computers, and intelligence (C4I) nodes; delivery units; and target acquisition assets. Specifically, division artillery would have a division fire support element, brigade fire support elements, and battalion/squadron fire support elements, company fire support teams, combat observation lasing teams, a composite general support field artillery battalion of one HIMARS battery and one M198 battery, two direct support M119 105-mm. towed howitzer battalions each with its own target Q-36 acquisition radar, and an IAV-based 155-mm. self-propelled howitzer direct support battalion with Q-36 radars and Q-47 radars that were underdevelopment. While the composite general support battalion would furnish counterfire with mortars and cannon and rocket artillery and shaping fires against large enemy forces not yet committed during early entry operations and would increase the overall lethality of the division, the direct support battalions and the IAV-based battalion would provide close support and counterfire.[23]

Reflecting the fast-pace effort to transform the Army for twenty-first century operations, considerations for an interim division appeared as work on the initial and interim brigades went forward. As TRADOC outlined in March 2000, the interim division would be rapidly deployable, would be a capable of fighting across the full spectrum of conflict, and would be normally deployed as part of a joint task force within 120 hours. Equally important, the interim division would expand core capabilities and qualities of the IBCT to the division level, would be able

[23]Email msg with atch, subj: Transformation, 15 May 00, Doc III-22.

of operational employment upon arrival in the theater, would have an offensive orientation, and would have overmatching operational and tactical mobility.[24]

[24]Email with atch, subj: Requirements Review Committee, 27 Mar 00, Doc III-23.

Interim Armored Vehicle and Future Combat System. Even as the Army examined a conceptual interim brigade and division organization, it outlined a plan to equip the initial, interim, and objective forces with vehicles. Early in 2000, the Army started equipping the initial brigade combat teams being formed at Fort Lewis, Washington, under Major General James Dubik, with surrogate vehicles by borrowing light armored vehicles from the Canadian army to develop tactics, techniques, and procedures (TTP) and to begin training. Eventually, the IAV would replace the surrogate vehicles in the first initial brigade combat team, which would be operational in December 2001, and would also equip the interim brigade combat team. To acquire the off-the-shelf Interim Armored Vehicle (IAV), the Army hosted platform performance demonstrations in December 1999 and January 2000 at Fort Knox where manufacturers displayed their medium-weight vehicles to give a sense of what was available before formal requirements for the systems wanted were written. The demonstrations also allowed the Army to communicate its requirements to industry, to permit refining requirements, and to explore current vehicles for adapting to platform requirements and potential technology insertion. Nine contractors accepted the challenge and fielded thirty-five different systems. Of these, only three manufacturers submitted tracked systems; and only United Defense, which fielded nine variants of the M113 personnel carrier and the M8 armored guns system, a light tank system that the Army canceled on the eve of production, was an American firm.[25]

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[25]"Army Opens Possibility of Multiple IAV Awards," Defense Daily, 10 Mar 00, p. 1, Doc III-24; MG James Dubik, "ICBT at Fort Lewis," Military Review, Sep-Oct 00, pp. 17-23, Doc III-25; Briefing, subj: Transforming the World's Best Army into a Full Spectrum Force . . . Strategically Responsive and Dominant, 10 Apr 00; Email with atch, subj: Transformation Initiative, 24 Feb 00, Doc III-26; Statement by General Eric K. Shinseki, Chief of Staff, US Army, before the Committee on Armed Services, House of Representatives, Second Session, 106th Congress, 10 Feb 00, p. 12, Doc III-27; Statement by General Eric K. Shinseki, Chief of Staff, US Army, before the Airland Subcommittee, Committee on Armed Services, US Senate, Second Session, 106th Congress, 8 Mar 00, p. 7, Doc III-28; Scott R. Gourley, "Milestones in Army Transformation," Army, Mar 00, pp. 27-32, Doc III-29;

Dennis Steele, "The Army Stages a Kentucky Demo to Define the Art of the Possible," Army, Mar 00, pp. 20-26, Doc III-30; Email with atch, subj: Fort Lewis Vehicles, 24 May 00, Doc III-31; "Fort Knox Field-tests Equipment for New Units," Army News Service, 21 Jan 00, Doc III-32; "Army Testing Lightweight Combat Vehicles at Knox," Army News Service, 3 Jan 00, Doc III-33; Operational Requirements Document for a Family of Interim Armored Vehicles (Extract), 6 Apr 01, p. 1, Doc III-34.

Following up on the December and January demonstrations, the Army's Source Selection Evaluation Board held a thirty-day series of events to grade the performance and endurance of the thirty-five different vehicles. During June 2000, the board operated seven days a week with two ten-hour shifts daily and ran the vehicles through various tests. Lieutenant Colonel Donald F. Shenk, the IAV Program Manager at the Tank and Automotive and Armament Command, Dearborn, Michigan, explained that the Army desired vehicles with cross-country speed, mobility, maneuverability and did not care whether it ran on wheels or tracks. Basically, the Army outlined the object of finding a family of vehicles that was air transportable, was capable of immediate employment upon arrival in the theater of operations, and had the greatest degree of commonality possible. Other desired characteristics included low sustainment costs, fuel economy, and maintainability. As of August 2000, the IAV selection process centered on the infantry carrier vehicle with eight configurations and two variants, the mobile gun system and the 155-mm. self-propelled howitzer, and had a goal of choosing the vehicle or platforms as the Army called them sometime in the summer or fall of 2000.[26]

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[26]Dennis Steele, "The Wheels Start Turning," Army, Feb 00, p. 36, Doc III-35; "New Organization a Big Step in Army Transformation Process," TRADOC News Service, 19 Jun 00, Doc III-36; Email msg with atch, subj: TXN Vehicles, 9 Jun 00, Doc III-37; "Technology Keeps Transformation on Track, Leaders Say," TRADOC News Service, 11 Jul 00, Doc III-38; Email msg with atch, subj: None, 15 Aug 00, Doc III-39; Email msg with atch,

subj: BCT, 26 Apr 00, Doc III-40; "Army Selects GM to Make Interim Armored Vehicle," U.S. Army Public Affairs Office, 20 Nov 00, Doc III-41; DOD News Briefing, 17 Nov 00, Doc III-42.

To be sure, selecting an IAV generated a controversy. As early as October 1999, General Shinseki announced his interest in a wheeled vehicle as a possible solution. This prompted the Army to discard tradition by giving wheeled vehicles more attention than it had done for years and to counter the cultural bias against such vehicles that had caused them to receive little attention. This aggravated the proponents of tracked vehicles because they feared that wheeled vehicles would be favored in IAV competition at Aberdeen Proving Ground. Also, advocates of track vehicles decried the possibility of adopting a wheeled vehicle because the latter had less cross-country capabilities. Proponents of wheeled vehicles, in the meantime, pointed out that wheeled vehicles were simpler to maintain and were more reliable, while the supporters of track vehicles added that such a comparison was unfair because track vehicles were driven on much more difficult terrain and that the Army would be foolish to go with wheeled vehicles for their speed when they were vulnerable to getting stuck in mud, rocks, and other terrain over which tracks would glide. Reflecting a moderate position, Lieutenant Colonel Dana Pittard of the 3rd Brigade, 2nd Infantry Division that was converting to the IBCT organization at Fort Lewis espoused adopting the best vehicle. It did not matter to him whether it ran on wheels or tracks. As the arguments indicated, each type of vehicle had its own merits. For example, initial testing demonstrated the wheeled vehicle's ability to travel faster on the road and the track vehicle's cross-country superiority and failed to determine a clear winner, according to Colonel Schenk. Adopting either one meant tradeoffs. The wheeled vehicle sacrificed cross-country mobility for speed, and the tracked vehicle forewent speed for cross-country mobility.[27]

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[27]Press Conference with Secretary of the Army Louis Caldera and Chief of Staff of the Army General Eric K. Shinseki, 12 Oct 99, Doc III-43; Email msg with atch, subj: Jane's Today, 11 Oct 00, Doc III-44; "IAV Competition Reveals No Hugh Differences Between Wheels, Tracks," Inside the Army, 17 Jul 00, pp. 1, 11, Doc III-45; "Chosen Vehicle Less Important Than New Concept, Observers Say," Inside the Army, 9 Oct 00, pp. 7-9, Doc III-46; "Kern Says Vehicle Award Does Not Settle Debate Over Wheels and Tracks," Inside the Army, 20 Nov 00, p. 6, Doc III-47.

After assessing the various possible IAVs, the Army made its decision. On 17 November 2000 it announced that it had awarded GM General Dynamics Land Systems that built light armored vehicles for the U.S. Marine Corps, the Canadian forces, the Saudi Arabian military, and the Australian army the contract to manufacture the Light Armored Vehicle (LAV III) as the IAV in two variants, the infantry carrier vehicle and mobile gun system. Both would be wheeled. LAV III offered commonality by using a single chassis for all ten configurations, would enable units to take fewer spare parts, and would reduce the logistical burden. Moreover, LAV III could move at sixty miles per hour and travel in convoys at forty miles per hour and provide the brigade combat team with tactical speed on the battlefield. Other benefits included strategic speed via a C-130 and low sustainment costs and quiet operation, which would permit soldiers to move stealthily in battle.[28]

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[28]"Army Selects GM to Make Interim Armored Vehicle," U.S. Army Public Affairs, 27 Nov 00; News Release, Office of Assistant Secretary of Defense, 16 Nov 00, Doc III-48; Email msg with atch, subj: Vehicle Decision, 17 Nov 00,

Doc III-49; Email msg with atch, subj: IAV Contract Award, 17 Nov 00, Doc III-50; Testing of New Interim Vehicle May Upset Army's Fielding Schedule," Inside the Army, 20 Nov 00, pp. 1, 6, Doc III-51; Dennis Steele, "The Interim Armored Vehicle: Commonality and Performance Led to the Choice," Army, Jan 01, p. 29, Doc III-52.

The decision surprised some of the track vehicle manufacturers and caused a response. Believing that they had been overlooked, they countered that their proposals were significantly stronger than the winner on several key points. Specifically, United Defense, the producer of the Mobile Tactical Vehicle Light and the M8 Armored Gun System, observed that its proposal was less expensive, that it met the Army's requirements, and that it could be delivered earlier than the LAV III. Along the same lines, the president and chief executive of Vision Technologies Kinetics that demonstrated a track vehicle insisted that his company's track vehicle performed better than the LAV III in the competition.[29]

Late in November 2000, the Director of the Army's Acquisition Corps, Lieutenant General Paul J. Kern, reflected upon the decision to obtain the LAV III in light of the debate about the choice of vehicles.[30] After acknowledging that "wheels cannot outperform tracks in all situations," he explained, "This is an off-the-shelf procurement today of what we see is the best capability for mobility with wheeled vehicles."[31] The LAV III was a solid choice "if you go very quickly across, not necessarily highways, but improved roads, and [it] gives us a very good

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[29]"Testing of New Interim Vehicle May Upset Army's Fielding Schedule," Inside the Army, 20 Nov 00, pp. 1, 6.

[30]"Army Selects GM to Make Interim Armored Vehicle," U.S. Army Public Affairs, 27 Nov 00.

[31]"Kern Says Vehicle Award Does Not Settle Debate Over Wheels and Tracks," Inside the Army, 20 Nov 00, p. 6.

cross-country mobility as well," according to General Kern.[32]

[32] _Ibid_.

In December 2000 United Defense LP, one of the contractors that had bid for the IAV, filed a formal protest against the contract awarded to GM Defense and General Dynamics Land Systems by insisting that the Army failed to adhere to its published criteria for evaluating the proposed IAV. United Defense contended that the tests emphasized the benefits of wheeled vehicles and downplayed the strengths of track vehicles. In comparison, the request for purchase, the operational and organizational plan, and the operational requirements document provided opportunities for both wheeled and track vehicles. This created a disconnect between the evaluation scenarios and the performance requirement documents. Additionally, United Defense protested that the Army utilized an extended road march to justify its choice and that the road march was never part of the performance criteria. The request for purchase document described a terrain profile for the IAV that featured fifty percent cross-country travel, thirty percent on secondary road, and twenty percent on primary road. Despite these and other test failings and the fact that the protest forced developmental work to stop, the Army expressed confidence with its selection of a wheeled vehicle by GM Defense and General Dynamics Lands Systems. It would hold up under scrutiny.[33]

Meanwhile, work on the Future Combat System (FCS) moved forward. As planned in 1999-2000, the FCS would supplant the IAV as the primary weapon/troop carrying platform for the objective force. The centerpiece of the objective force, FCS would have four primary functions -- indirect fire, direct fire, infantry carrier, and sensor -- and would therefore be a system of battlefield capabilities. Additionally, the FCS would be a replacement for the seventy-ton Abrams tank. It would have the same lethality and crew survivability as the Abrams tank, would be fifty tons lighter, and would be critical to creating the

[33]"Army Will Not Override UDLP Protest of IAV, Stop Work Order Holds," Inside the Army, 11 Dec 00, pp. 1, 6-8, Doc III-53; "Army Pushing to Speed Interim Armored Vehicle Delivery Date," Inside the Army, 11 Dec 00, pp. 8-9, Doc III-53; "UDLP Alleges Bias Against Tracked Vehicles in Army's LAV III Pick," Inside the Army, 18 Dec 00, pp. 1, 5, 6, Doc III-54; "Army Leaders Confident IAV Decision Will Hold Up Under Scrutiny," Inside the Army, 18 Dec 00, p. 6, Doc III-55.

objective force that was expected to be formed in 2008-2012. Ultimately, FCS would make heavy forces lighter, would make lighter forces more lethal, and would reduce the logistical demands. To field the system, however, required overcoming many technological challenges.[34]

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[34]"DARPA and Army Select Contractors for Future Combat Systems Programs," Office of the Assistant Secretary of Defense News Release, 9 May 00, Doc III-56; Email msg with atch, subj: Transformation Interview, 15 Sep 00, Doc III-57; Email msg with atch, subj: Army Programs and Transformation Hearing, 16 Mar 00, p. 2-3, Doc III-58; "The Real Battle Could Be the One for Money on the Hill," Army Times, 28 Feb 00, p. 28, Doc III-59; "The Army Magazine Hooah Guide to Army Transformation," Army, Feb 01, pp. 21-42, Doc III-60.

Transforming the Field Artillery and Fire Support for the 21st Century. The Field Artillery also had to transform itself to meet future requirements envisioned by General Shinseki. In mid-2000 the Field Artillery School explained that the field artillery force had to maintain a credible warfighting capability by modernizing the Counterforce (Legacy) Force while it developed, manned, and equipped the interim force that marked the first steps in reaching the objective force. To make the transition from the current force or the Legacy Force to the objective force, the Field Artillery School analyzed transformation requirements, assessed existing operational capabilities, and identified operational and organizational deficiencies for the Field Artillery and fire support.[35]

As the Field Artillery School looked into the future, it projected a significant transformation because of a noticeably different operational environment. It foresaw resilient and adaptive adversaries, less frequent, large-scale maneuver, dispersion into smaller, combined arms elements than ever before, exploitation of precision strike capabilities and advanced technology, and asymmetric response by threats to United States's advantages, such as the employment of sanctuaries and the use of civilians as protective shields, that would require more sophisticated target acquisition capabilities and precision munitions than available in 2000. For the Field Artillery, the future battlefield meant significant change because

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[35]Briefing, subj: Transforming Field Artillery and Fire Support for the 21st Century, Feb 01, Doc III-61; The Field Artillery Modernization and Transformation Plan (Final Draft), Jan 01, p. 5, Doc III-62; Email msg with atch, subj: Cmd History, 19 Apr 01, Doc III-62A.

existing field artillery capabilities had been created for a Cold War paradigm. During the Cold War and Operation Desert Storm of 1991, the Field Artillery depended upon massed fire against area targets; and this would not be as likely in the future.[36]

[36]Briefing, subj: Transforming Field Artillery and Fire Support for the 21st Century, Feb 01; The Field Artillery Modernization and Transformation Plan, Jan 01, pp. 9-15.

The need to transform the Field Artillery and fire support led to a modernization plan that would reformulate doctrine and introduce new equipment. The plan pointed out that the Field Artillery would remain relevant primarily because of the enduring functions performed by field artillery: providing close support fires for decisive operations, counter precision strike fires, and shaping fires at tactical and operational depth. Close support for decisive operations involved attacking enemy troops, weapons, or positions to destroy in close combat as part of decisive operations and to fix, to suppress, or to enable the freedom of maneuver. Counter precision strike consisted of destroying the enemy's precision strike capabilities before the enemy attacked, while shaping fires at tactical and operational depth comprised attacking the enemy forces beyond the close fight to set the conditions for decisive operations, to isolate the current close fight, to shape the next fight, and to protect the force. To furnish these functions the Field Artillery School envisioned the tenets of effects-based fires, munitions centrality, organizational transformation, dynamic force tailoring, and unmanned operational reach using future munitions, such as the Army Tactical Missile System (ATACMS) and others, as keys to transformation. The School also anticipated replacing the term, "fire support," with the term, "effects coordination and generation," and retaining responsibility for overall effects coordination and generation.[37]

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[37]Briefing, subj: Transforming Field Artillery and Fire Support for the 21st Century, Feb 01; The Field Artillery Modernization and Transformation Plan, Jan 01,

pp. 17-21; Email msg with atch, subj: Cmd History, 19 Apr 01.

Besides writing new doctrine, the Field Artillery School expected new weapons to be developed. As part of the Transformation of the Army, the Field Artillery School proposed to modernize the Legacy Force as the Interim Force was stood up and as the Objective Force was developed. However, the School planned to eliminate the Legacy systems (M102 105-mm. towed howitzer, M109 155-mm. self-propelled howitzer, and the M198 155-mm. towed howitzer) that would not be part of the Objective Force or its complementary systems. Over a period of years, the total number of different fire support platforms would be reduced from ten in the current force structure to three or four in the objective force. By 2032 when the transition was projected to be completed, the field artillery force would consist of the FCS non-line of sight system, the High Mobility Artillery Rocket System, and the Crusader. If the 82nd Airborne Division and 101st Air Assault Division remained unique, the School planned to keep the M119A1 105-mm. towed howitzer or its follow-on in the force. While Crusader would provide reinforcing and complementary close support and shaping fires, the High Mobility Artillery Rocket System would furnish shaping fires in the tactical deep and operational deep. Both systems would provide counter precision strike fires throughout the battlespace. Additionally, the modernization plan stressed the criticality of precision and smart munitions. The School chose Excalibur unitary for cannon artillery because it would provide enhanced capability for precision engagements with limited collateral damage in urban environments and wanted the Multiple-Launch Rocket System Smart Tactical Rocket for rocket artillery and the ATACMS for missile artillery.[38]

Army Experimentation Campaign Plan

At a Pentagon presentation in mid-1998, the Commanding General of the U.S. Army Training and Doctrine Command (TRADOC), General William W. Hartzog, unveiled the blueprint of the future Army. Besides announcing the Army XXI heavy division structure upon which the 4th Infantry Division at Fort Hood, Texas, would be organized, equipped,

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[38]Briefing, subj: Transforming Field Artillery and Fire Support for the 21st Century, Feb 01; The Field Artillery Modernization and Transformation Plan, Jan 01, pp. 29-66; Email msg with atch, subj: Cmd History, 19 Apr 01.

and tested in a few years, General Hartzog said that the Army had developed a three-axis experimental plan to carry it beyond Army XXI to the Army After Next of 2025. The light axis would center on the development of new equipment and force structure for light contingency forces. The strike axis would concentrate on experimentation to develop a highly deployable brigade-size force to bridge the lethality and survivability gap between early entry and campaign forces, and finally the mechanized axis would focus on fielding the first digitized division in 2000 and the first digitized corps in 2004.[39]

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[39]Dennis Steele, "The Army XXI Heavy Division: First Blueprint of the Future Army," Army, Jul 98, pp. 33-35, Doc III-68, 1998 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH); Briefing (Extract), subj: Army Experimentation Campaign Plan, 1998, Doc III-69, 1998 USAFACFS ACH; Annual Report (Extract), subj: Army After Next, 7 Dec 98, p. ii, III-70, 1998 USAFACFS ACH; Memorandum for LTC Charles

Hernandez, TF2000, subj: SME Review of AECP for 1998 Annual Command History, 31 Mar 99, Doc III-70A, 1998 USAFACFS ACH.

Joint Contingency Force Advanced Warfighting Experiment. Understanding that the Division Advanced Warfighting Experiment (DAWE) of 1997 concentrated on the heavy division axis, the Army knew that it had to modernize its light forces for contingency operations given the world situation. In view of this critical need, the Army decided in 1998 to look at its light units with the goal of digitizing them and to conduct a Joint Contingency Force Advanced Warfighting Experiment (JCF AWE) in September 2000 at the Joint Readiness Training Center (JRTC), Fort Polk, Louisiana, with the Air Force and the Marine Corps. The Joint Contingency AWE would examine ways to leverage information technologies, to improve the warfighting capabilities of the light contingency forces, to verify which systems would increase the lethality and survivability of joint contingency forces in an early-entry environment, and to keep the United States forces the dominant military land power. In mid-1998 the Army announced that the XVIII Airborne Corps would provide the experimental forces for this axis.[40]

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[40] Memorandum for LTC Charles Hernandez, TF2000, subj: SME Review of AECP for 1998 Annual Command History, 31 Mar 99; Memorandum for Data Call Message Addresses, subj: Issue and Initiative Submission and Review Process, 12

Feb 99, Doc III-71, 1998 USAFACFS ACH; Msg, subj: Army Experimental Campaign Plan, 29 Sep 98, Doc III-72, 1998 USAFACFS ACH; Msg, Cdr, TRADOC, to HQ DA, subj: Request for Initiatives to Support Identified Issues in Support of JCF AWE, 0471850Z Feb 99, Doc III-73, 1998 USAFACFS ACH; Minutes, subj: Army Experimental Campaign Plan, 27-29 Jan 98, Doc III-74, 1998 USAFACFS ACH; Jason Sherman, "Lighten Up," Armed Forces Journal International, Oct 98, pp. 57-59, Doc III-75, 1998 USAFACFS ACH; Briefing (Extract), subj: Army Experimental Campaign Plan, 1998, Doc III-76, 1998 USAFACFS ACH; Briefing, subj: JCF AWE, Mar 99, Doc III-77, 1998 USAFACFS ACH; Steele, "The Army XXI Heavy Division: First Blueprint of the Future Army," p. 35; Fact Sheet, subj: JCF AWE, Apr 99, Doc III-27, 1999 USAFACFS ACH.

Although TRADOC anticipated that many technologies could transfer easily from the heavy division to the light, it knew that limitations existed. In Force XXI experiments in 1997, the Army equipped every platform from combat service support trucks to attack helicopters with computers that were linked to the tactical Internet, which was a system of computers, radios, and other communications equipment to simplify communications. With the light forces that digital link would be taken down to the individual soldier. During the Joint Contingency Force AWE, the Army and TRADOC planned to investigate technologies that would provide digital capabilities, enhance soldier protection, and furnish night vision, especially in urban terrain, for light force soldiers. At the same time the U.S. Army Field Artillery School intended to continue investigating the High Mobility Artillery Rocket System (HIMARS), the digitized Lightweight 155-mm. howitzer, digitized targeting systems, such as the Lightweight Laser Designator Rangefinder, precision munitions, and other fire support systems to determine their suitability and ability to furnish lethal fires for light forces. Ultimately, the Joint Contingency Force AWE would evaluate technologies, doctrine, and organizations to identify methods of enhancing lethality, survivability, and interoperability of joint contingency forces and to provide situational awareness to light forces that would be comparable to mechanized forces.[41]

In 1999 the Army further refined the purposes of the Joint Contingency Force AWE. Besides incorporating the rationale established in 1998, the Army decided to make the Joint Contingency Force AWE a culminating event for the AWE process. It would incorporate lessons learned from

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[41]Memorandum for Data Call Addresses, subj: Issue and Initiative Submission and Review Process, 12 Feb 99; "HIMARS for Deployable 'Heavyweight' Fires," Field Artillery, May-Jun 98, p. 33, Doc III-78, 1998 USAFACFS ACH; Sherman, "Lighten Up," pp. 57-58; Briefing (Extract), subj: Army Experimentation Campaign Plan, 1998; Briefing, subj: Army Experimentation Campaign Plan, Mar 99, Doc III-79, 1998 USAFACFS ACH. See Rupert Pengelly's "Battling with Tactical Internets," Jane's International Defense Review, Feb 00, pp. 44-50, Doc III-28, 1999 USAFACFS ACH, for a solid discussion of the tactical Internet.

previous advanced warfighting experiments and exploit joint and light lessons learned. As the new purposes for the experiment suggested, the Army expanded the Joint Contingency Force AWE beyond its original intent. With the Chief of Staff's drive to find a more deployable force that began in mid-1999, the Army tied the Joint Contingency Force AWE to the initial brigade combat team effort. It hoped that lessons from the Joint Contingency Force AWE could be examined and perhaps used in the development of the initial brigade combat team that would be created at Fort Lewis, Washington.[42]

[42]Point Paper, subj: Reserve Component Participation in AECP, 18 Apr 00, Doc III-63; Information Paper, subj: AECP, 25 May 00, Doc III-64; Briefing, subj: JCF AWE, 25 Feb 00, Doc III-29, 1999 USAFACFS ACH; Email msg, subj: JCF-AWE, 24 Feb 00, Doc III-30, 1999 USAFACFS ACH.

As a part of the Joint Contingency Forces AWE effort, the Field Artillery School proposed eight initiatives. The School wanted to test the Advanced Fire Support System, also known as rockets in box; a digitized M119 towed 105-mm. howitzer, a composite field artillery battalion composed of a lightweight 155-mm. towed howitzer, the High Mobility Artillery Rocket System (HIMARS), and Q-47 target acquisition radar; the Improved Positioning and Azimuth Determining System; the Profiler Meteorological System; the Situational Awareness Data Link that was an Air Force system designed to prevent fratricide; the Q-36 target acquisition radar to Close Air Support Quickfire Channel; and Naval Gunfire Interface. As the list suggested, the Field Artillery School as with the Army made digitization a key issue in the Joint Contingency Force AWE to enhance lethality and survivability of a light contingency force.[43]

As the date for the JCF AWE grew closer, the Army articulated once again the rationale for the experiment. It wanted the experiment, which would be held at the Joint Readiness Training Center, Fort Polk, Louisiana, to pave the way for more mobile, lethal, survivable, and responsive forces, especially the light forces by examining forty-seven distinct initiatives across the spectrum of light force operations. After the September experiment, the Army planned to determine the lessons learned and the impact of digitization on light forces.[44]

Although it would be some time before the final analysis would be completed, some clear insights emerged in 2000. First, the experiment reaffirmed the power of shared situational awareness on the battlefield. Second, shared

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[43]Briefing, subj: JCF AWE, 25 Feb 00; Information Paper, subj: JCF AWE, 2 Dec 99, Doc III-31, 1999 USAFACFS ACH; Interview, Dastrup with MAJ Michael J. Gould, Task Force 2000, USAFAS, 23 Feb 00, Doc III-32, 1999 USAFACFS ACH.

[44]"JCF AWE to help Army find answers to digitizing light forces," TRADOC News Services, 25 Aug 00, Doc III-65; Information Paper, subj: JCF AWE, undated, Doc III-66; Jim Caldwell, "JCF AWE to Help Army Find Answers to Digitizing Light Forces," TRADOC News Service, 25 Aug 00, Doc III-67; "JCF AWE Explores Empowering Light Forces with Digitization," TRADOC News Service, undated, Doc III-68.

situational awareness was dependent upon well-led and well-trained soldiers. Third, proficiency in digital skills was critical and were no longer an adjunct to other skills. Fourth, the synergy produced by the Army Tactical Command and Control System of which the Advanced Field Artillery Tactical System was a part was powerful.[45]

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[45]TRADOC System Manager, All Source Analysis System, News Letter, Oct 00, Doc III-69; TRADOC System Manager, All Source Analysis System, News Letter, Jan 01, Doc III-70.

Strike Force. Concurrently, there would be strike force experimentation. Strike force development stemmed from the American experience during Operations Desert Shield/Storm of 1990-1991. Studying the deployment of units into Southwest Asia, the U.S. Army learned critical lessons about projecting military power from the United States. As the Chief of Staff of the Army, General Dennis J. Reimer, noted in 1998, Operations Desert Shield/Storm disclosed that the Army had to change. Deploying a heavy brigade to the Persian Gulf took eighteen days in 1990. In the future United States military forces would not have the luxury of taking so long to organize enough combat power in theater to prevent a major conflict. Potential enemies realized that giving the Americans time to build up their military forces and to set the terms of fighting could lead to disaster and defeat. Given this, potential enemies would most likely not permit the Americans to build up their military power at their leisure and then fight on their own terms. With this particular lesson of the Gulf War firmly fixed in the minds of the American military leadership, the U.S. Army, the Defense Science Board, the Army Science Board, and numerous studies conducted during the six years after the war concluded that the American military would have to force its way into the theater of operations against armed opposition in the future.[46]

In view of this scenario, the Army had to explore ways

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[46]Memorandum for LTC Charles Hernandez, TF2000, subj: SME Review of AECP for 1998 Annual Command History, 31 Mar 99; Information Paper, subj: U.S. Army Strike Force, 4 Mar 99, Doc III-80, 1999 USAFACFS ACH; TRADOC News Service, "Army Eyes New Swift Deployment Headquarters," 4 Mar 99, Doc III-81, 1999 USAFACFS ACH.

of making itself more deployable by cutting down the time required to move forces from the United States to overseas hot spots. From the perspective of 1998, future U.S. armed forces would have to possess the ability of applying decisive military power to deter or defeat acts of aggression, and this would require a rapidly deployable active and reserve component force with the capabilities of fighting across the full spectrum of conflict.[47]

[47]Briefing (Extract), subj: Army Experimentation Funding Campaign Plan, 1998; Msg, subj: Army Experimental Campaign Plan, 29 Sep 98.

As of 1998, TRADOC, which had the lead for force design options, noted that either light forces or mechanized forces were available to deter or defeat an aggressor and that each had strengths and weaknesses. Although Army XXI with its enhanced its firepower, command and control, and survivability would have outstanding early entry capabilities and would possess strategic mobility, a light force of the future would still lack sufficient power to defeat a mechanized force. At the same time Army XXI would improve the mechanized force's command and control, strategic mobility, survivability, and lethality, but it still would require prepositioned equipment to enhance strategic mobility further. Thus, as action officers in Task Force 2000 noted, a gap existed between the light forces' and heavy forces' capabilities that influenced the ability to respond rapidly to deter or defeat aggression.[48]

Because of the deficiencies of either force and the requirement for a rapidly, deployable force for contingency operations, TRADOC at the direction of the Chief of Staff of the Army, General Dennis J. Reimer, began developing the Strike Force concept as early as 1996 and subsequently initiated Strike Force experimentation in 1998. Through Strike Force experimentation the Army planned to develop and field an adaptable, rapidly deployable force that would be decisive upon arrival and that could capitalize upon the best of light and mechanized forces. As envisioned early in 1998, the force would be a relatively small force with three thousand to five thousand soldiers and would be equipped and trained to deploy anywhere in the world in four to seven days by air or sea in response to a wide spectrum of threats and contingencies from early entry to peacekeeping operations. Equally important, the force would be able to deploy as rapidly as other early entry forces, would be more survivable, lethal, and maneuverable, and would present a smaller and more sustainable profile than current heavy force designs.[49]

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[48]Briefing (Extract), subj: Army Experimentation Funding Campaign Plan, 1998; Interview, Dastrup with LTC Charles Hernandez, TF 2000, 2 Mar 99, Doc III-82, 1999 USAFACFS ACH; MAJ C. Christopher Mack and MAJ William M. Raymond, Jr., "Strike Force: Fires for the Future," Field Artillery, Nov-Dec 98, pp. 16-17, Doc III-83, 1999 USAFACFS ACH.

[49]Mack and Raymond, "Strike Force: Fires for the

Future," pp. 16-17; Information Paper, subj: U.S. Army Strike Force, 2 Mar 99; "Strike Force Army's 'Future' Test Bed," Fort Sill Cannoneer, 4 Mar 99, p. 2a, Doc III-84, 1999 USAFACFS ACH.

In 1998 the Army examined four options to meet the requirement for a deployable, lethal force that combined the strengths of light and heavy forces in 1998. First, the Army could modernize the 2nd Armored Cavalry Regiment with near-term off-the-shelf technology. Second, the Army could develop a prototype Strike Force by anticipating capabilities and technologies that land forces would require twenty-five to thirty years in the future. Third, the Army could exploit leap-ahead technology to upgrade the 2nd Armored Cavalry Regiment dramatically. Fourth, the Army could design a force with force packaging and tactical tailoring to produce the capability of intervening rapidly and decisively. As TRADOC noted, options one through three spotlighted capabilities that would form a standing organization core group and would have unit cohesion as a primary goal. In comparison, the fourth option centered on creating a highly deployable headquarters that could command and control a tailored force of Army of Excellence or Army XXI capabilities to meet the situation.[50] As the new Commanding General of TRADOC, General John N. Abrams, noted in October 1998, "We're probably going to have a blend of these ideas."[51]

Although the final force structure design for the Strike Force did not exist at the end of 1998, Task Force 2000 and the U.S. Army Field Artillery School (USAFAS) were moving out to develop the Strike Force headquarters effects node that would be an integral part of the Strike Force headquarters combat information center. The node would assemble real time information, process that information, and direct the appropriate effects (lethal and non-lethal) to the required place in the battle space. As the Chief of Task Force 2000, Colonel Jerry C. Hill, explained, the headquarters effects coordination node would have three major areas -- the intelligence and targeting cell, the lethal effects cell, and the non-lethal effects cell. These cells would give the commander the desired effects, such as disrupting an enemy supply line or removing a communications center, without worrying about the source of

[50]Msg, subj: Army Experimental Campaign Plan, 29 Sep 98; Sherman, "Lighten Up," p. 60.

[51]Ibid.; Memorandum for LTC Charles Hernandez, TF2000, subj: SME Review of AECP for 1998 Annual Command History, 31 Mar 99.

the action. It could come from air strikes, field artillery, or any other source.[52]

[52]Ibid.; Msg with Atch, subj: Strike Force Effects Coordination Node, 25 Mar 99, Doc III-85, 1999 USAFACFS ACH; "Schoolhouse Developing 'Effects' Headquarters," Fort Sill Cannoneer, 4 Mar 99, p. 2a, Doc III-86, 1999 USAFACFS ACH; Fact Sheet, subj; Strike Force Headquarters Effects Coordination Node Development: A Depth and Simultaneous Attack Battle Lab and Task Force 2000 Initiative, 24 Mar 99, Doc III-87, 1999 USAFACFS ACH; Issue Submission Form, undated, Doc III-88, 1999 USAFACFS ACH.

Flexibility also influenced field artillery assets for the Strike Force. The Field Artillery School anticipated a composite field artillery battalion of High Mobility Artillery Rocket Systems (HIMARS), the Advanced Technology Light Artillery System (ATLAS), a platoon of AN/TPQ-47 radars, a terminal effects coordination platoon, and an electronic attack platoon. While HIMARS would provide long-range fires, ATLAS, renamed the Future Direct Support Weapon System in 1998, would furnish fires for close operations. Functioning as part of the command post, the effects coordination platoon would have state-of-the-art communications equipment and would plan, coordinate, and synchronize lethal and non-lethal effects from space, sea, air, or ground-based deliver systems throughout the battle space.[53]

Although the Field Artillery School was anticipating which fire support systems would be part of the Strike Force and although considerable thought was going into the composition of the Strike Force, the Army focused its attention on designing the headquarters. Late in 1998 and early 1999, the Army expected to form a Strike Force headquarters from existing resources using the 2nd Armored Cavalry Regiment to test the concept. Yet, the Strike Force effort made little progress. In 1999 the Chief of Staff of the Army, General Eric K. Shinseki, stopped work on the endeavor to spend time and attention on his goal of transforming the Army. He wanted to create an the Initial Brigade Combat Team that could be deployed in ninety-six hours, and interim force, and an objective force to develop a force over a period of years.[54]

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[53]Mack and Raymond, "Strike Force: Fires for the Future," pp. 18-19.

[54]Information Paper, subj: AECP, 25 May 00; Msg with

Atch, subj: Strike Force Effects Coordination Node, 25 Mar 99; TRADOC News Service, "Army Eyes New Swift Deployment Headquarters," 4 Mar 99; Interview, Dastrup with COL Jerry Hill, DAC Futures Director, 22 Feb 00, Doc III-33, 1999 USAFACFS ACH.

Division Capstone Exercise. The mechanized axis centered on the first digitized division and corps -- the 4th Infantry Division and III Corps. Upon the completion of the Division Advanced Warfighting Exercise of November 1997 that tested conceptual digitized enhancements to the heavy division, the Chief of Staff of the Army, Dennis J. Reimer, mandated a proof-of-concept demonstration to be conducted around 2001 to affirm the progress of key enhancements to the division. In response to the Chief of Staff's tasking, the U.S. Army Training and Doctrine Command (TRADOC) established the Division Capstone Exercise to serve as the capstone event for the 4th Infantry Division and not as a demonstration or test to be passed or failed.[55]

As decided by General Reimer in late 1998 and early 1999, the Army with TRADOC taking the lead would conduct a live fight at the National Training Center, Fort Irwin, California, in March 2001 (phase one) and a constructive fight (phase two) in September-October 2001 at Fort Hood, Texas. In these exercises the digitized 4th Infantry Division would demonstrate its warfighting capability under a realistic and demanding scenario, would assess the progress of meeting Force XXI doctrine, training, leadership, organization, materiel, and soldiers requirements (DTLOMS), would conduct the Force XXI Battle Command Brigade and Below (FBCB2) limited users test, and would integrate command, control, communications, computers, and intelligence (C4I) at all command levels.[56]

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[55]Fact Sheet, subj: Division Capstone Exercise, Apr 99, Doc III-33A, 1999 USAFACFS ACH; Study Plan for the Division Capstone Exercise (Extract), Jan 00, pp. 1-2, Doc III-33B, 1999 USAFACFS ACH.

[56]Ibid., p. 1; Memorandum for Record, subj: 1st Quarter Significant Activities for MAJ Raymond, 12 Jan 99, Doc III-33C, 1999 USAFACFS ACH; Memorandum for Record, subj: 1st Quarter FY99 Significant Activities, 19 Jan 99, Doc III-33D, 1999 USAFACFS ACH; Memorandum for Record, subj: 2nd Quarter FY99 Significant Activities, 31 Mar 99, Doc III-33E, 1999 USAFACFS ACH; Memorandum for Assistant Commandant, subj: Third Quarter FY99 Significant Activities, 1 Jul 99, Doc III-33F, 1999 USAFACFS ACH; Interview, Dastrup with LTC Jeff Ewing, TF 2000, 27 Mar 00, Doc III-33G, 1999 USAFACFS ACH; Memorandum for LTC Charles Hernandez, TF2000, subj: SME

Review of AECP for 1998 Annual Command History, 31 Mar 99; Msg, subj: Army Experimental Campaign Plan, 29 Sep 98; Briefing (Extract), subj: Army Experimental Funding Campaign Plan, 1998; Briefing, subj: Division Capstone Exercise, 16 Feb 99, Doc III-89, 1998 USAFACFS ACH; Briefing, subj: Army Experimental Campaign Plan Video Teleconference, 20 Feb 98, Doc III-90, 1998 USAFACFS ACH; Steele, "The Army XXI Heavy Division: First Blueprint of the Future Army," p. 34; Study Plan for the Division Capstone Exercise (Extract), Jan 00, p. 2.

The division capstone exercises would also furnish an opportunity to accomplish various objectives. While the 4th Infantry Division and III Corps would use the exercises to accomplish training objectives, the Army's test and evaluation community planned to test the FCB2. At the same time the division capstone exercise team would assess the progress in meeting Force XXI DTLOMS requirements since the Division Advanced Warfighting Exercise of 1997.[57]

Effects Coordination Cell/Fires Effects Coordination Cell

[57]Study Plan for the Division Capstone Exercise (Extract), Jan 00, p. 5; Point Paper, subj: Status of First Digitized Division and its Progress Toward the DCX, 11 May 00, Doc III-71.

Looking into the future, the U.S. Army Field Artillery School (USAFAS) saw a battlefield that would be characterized by distributed operations with non-linear, non-contiguous, and well-dispersed forces. To win on that battlefield the joint force or combined arms commander would require effective fires but should not have to worry about their origins. The commander should only have to be concerned about the effects of the fires. For the Field Artillery, this meant providing robust fires platforms with the ability to conduct technical fire direction, revolutionizing the methods of distributing fires, tailoring the force to meet the threat, and designing a radically different team approach for streamlining fire support organizations and battle staff processes. Essentially, the Field Artillery had to adjust its existing fire support operations and organizations that had their roots in the first part of the twentieth century to a new paradigm of effects based fires.[58] As one Field Artillery officer pointed out, "Current digital operations are just the old way of executing fire support operations, but now we sometimes plan and execute with computers. . . . We have refined and digitized this process [fire support]; but, at its base, it has changed little since the early 20th century."[59]

Transforming fire support involved integrating and synchronizing fires from one organization. The Field Artillery had to go beyond the sensor-to-shooter links being developed late in the 1990s. Twenty-first century fires would require sensor linkages to a much broader range of on-demand effects through a centralized Effects Coordination Cell (ECC) that would be linked to a multitude

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[58]BG Toney Stricklin, "Fires: The Cutting Edge for the 21st Century," Field Artillery, May-Jun 98, pp. 22-23, Doc III-91, 1998 U.S. Army Field Artillery Center and Fort Sill (USAFACFS)Annual Command History (ACH); Interview, Dastrup with MAJ Gregory A. Palka, TF 2000, 30 Mar 99, Doc III-91A, 1998 USAFACFS ACH; Briefing, subj: The Effects Coordination Cell, 24 Mar 99, Doc III-92, 1998 USAFACFS ACH; Fact Sheet, subj: Futures Fires Command and Control Concept Experimentation Program, 24 Mar 99, Doc III-93, 1998 USAFACFS ACH.

[59]Msg with Atch, subj: ECC Info Requested, 23 Mar 99, Doc III-94, 1998 USAFACFS ACH.

of sensors and effects providers, such as field artillery, naval gun fire, close air support, precision munitions, unmanned aerial vehicles, and even satellites and would demand consolidating existing fire support elements at the various command echelons because they could not adequately leverage all effects deliverers and sensors. As envisioned at the end of 1998, the ECC would be capable of establishing, altering, and terminating direct sensor-to-effects links within seconds without lengthy coordination to meet rapidly changing battlefield requirements, would provide a full spectrum of effects management in decisive, shaping, and sustainment missions, and could be tailored optimally to accomplish the mission. Although the Field Artillery School's vision of the ECC's organization was still in the developmental phase at the close of 1998, it, nevertheless, concluded that the cell would most likely be at the brigade, division, and corps levels and would functionally integrate effects delivery systems and organizations, initiated action in 1998 to develop a prototype ECC by 1999 for the corps, and probably would gain many lessons learned from the effects node being developed for the Strike Force headquarters as part of the Army Experimental Campaign Plan to modernize army organizations.[60]

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[60]Stricklin, "Fires: The Cutting Edge for the 21st Century," pp. 22-24; Briefing, subj: The Effects Coordination Cell, 24 Mar 99; Briefing, subj: Future Fires Command and Control Concept Experimentation Program, 9 Dec 98, Doc III-95, 1998 USAFACFS ACH; Memorandum for MAJ Gregory A. Palka, subj: SME Review of ECC for 1998 Annual Command History, 31 Mar 99, Doc III-

95A, 1998 USAFACFS ACH; Fact Sheet, subj: Future Fires Command and Control Concept Experimentation Program, 24 Mar 99; Msg with Atch, subj: ECC Info Requested, 23 Mar 99; Interview, Dastrup with LTC Peter R. Baker, TF 2000, 23 Mar 00, Doc III-34, 1999 USAFACFS ACH.

In 1999 the new Commandant of the Field Artillery School, Major General Toney Stricklin, generated significant changes with the ECC endeavor. Arriving in August 1999, General Stricklin outlined a vision of focusing on near-term improvements to fire support as well as long-term improvements whereas his predecessor concentrated on long-term enhancements to fire support. Along this line, General Stricklin believed that ECC had to have applicability for today's Army to gain acceptance, that the Field Artillery School was overselling what the ECC could do, and that the ECC lacked critical tools to permit it to function as envisioned. To implement the full vision of the ECC required communications systems with a greater band width and more robustness, firing platforms with the ability to do more technical work than existing systems, and a better understanding of digitization. In view of this, General Stricklin advocated scaling back the ECC's functions and renamed it the Fire Effects Coordination Cell (FECC) to signify an evolution from the fire support element and to gain wider acceptance in the Army. Yet, the General never abdicated the full vision of the ECC, directed his subordinate officers to work towards the vision as initially outlined but told them to implement the Fires Effects Coordination Cell as a near-term solution.[61]

Just as General Stricklin was outlining his vision of the Fire Effects Coordination Cell, General Shinseki announced his Initial Brigade Combat Team concept in October 1999 to make the Army more strategically deployable and lethal. Basically, the Initial Brigade Combat Team endeavor involved fielding a more deployable yet lethal brigade between 2000 and 2003 and provided an excellent opportunity to introduce the Fire Effects Coordination

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[61]Ibid.; "Medium-weight Units to Take Advantage of Effects-Based Operations," Inside the Army, 10 Apr 00, pp. 6-8, Doc III-33H, 1999 USAFACFS ACH.

Cell.[62]

[62] Interview, Dastrup with Baker, 23 Mar 00.

As it existed in 1999, the Fire Effects Coordination Cell represented a significant evolution of the fire support element. Besides providing the same functions as the fire support element, the Cell introduced new functions. It could conduct information operations, furnish deep operations that were formerly done by the Deep Operations Coordination Cell at the corps and close support, and coordinate nonlethal effects using electronic warfare and nonlethal munitions. Each of these functions were formerly beyond the purview of the fire support element at brigade.[63]

In 2000 the Fires Effects Coordination Cell became a reality. The first Initial Brigade Combat Team being organized at Fort Lewis included an FECC that had the capability of integrating lethal and non-lethal effects, making it more capable than the fire support element that it replaced.[64] As Colonel Jerry C. Hill and Major Carl R. Trout explained late in 2000, "The addition of the nonlethal effects cell, with its diverse composition, is the most significant change. It includes information operations, electronic attack psychological operations (PSYOP), civil affairs and legal assistance."[65] Continuing, they pointed out, "It also includes a tactical intelligence officer who is a key contributor to the FECC's ability to perform target value analysis on nonlethal targets. The FECC has links to the common ground station (CGS) and all-source analysis system (ASAS). It is designed to exploit

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[63] Ibid.

[64] COL Jerry C. Hill and MAJ Carl R. Trout, "Effects-Based Fire Support Coordination and Execution," Field Artillery, Nov-Dec 00, pp. 6-7, Doc III-72.

[65] Ibid., p. 7.

sensor technology and leverage organic, joint and national assets."[66]

EQUIPMENT

XM892 Excalibur Extended Range Guided Projectile

[66]Ibid.

In the mid-1990s the U.S. Army explored the need to adopt the XM892 Excalibur Extended Range Guided Projectile in the 1990s. As planned in 1995, Excalibur would be a fire-and-forget projectile with a global positioning system (GPS) receiver and inertial measurement unit guidance package that would permit hitting a target within six meters. Also, the projectile would carry the dual purpose improved conventional munition (DPICM) for large targets, the search-and-destroy armor munition (SADARM) for counterfire, or the unitary munition for precision targets, and would engage deep targets to shape the close battle and enhance survivability. Ultimately, Excalibur would furnish the Field Artillery with improved fire support, would be compatible with all digitized 155-mm. howitzers, such as the Paladin self-propelled howitzer, the Lightweight 155-mm. towed howitzer, and the Crusader self-propelled howitzer, would reduce fratricide, would enhance accuracy, and would be fielded in Fiscal Year (FY) 2006 with DPICM, in FY 2007 with SADARM, and in FY 2010 with unitary.[67]

In 2000 critical issues influenced the Excalibur developmental program. Because of insufficient funding, the Army decided to limit Excalibur's initial development to DPICM. However, the fear of duds, the need for precision, and the Transformation of the Army process, especially the creation of the Initial Brigade Combat Team, also caused a shift in priorities. In December 2000 the Commandant of the U.S. Army Field Artillery School, Major General Toney Stricklin, signed a decision paper to switch Excalibur's initial development to the unitary munition.[68]

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[67]"The XM892 Excalibur Extended Range Guided Projectile," Army, Oct 00, p. 304, Doc III-73; Interview, Dastrup with Doug Brown, Dep Dir, TSM Cannon, 8 Feb 01, Doc III-74; Fact Sheet, subj: Excalibur, 21 Feb 01, Doc III-75; Interview, PEO Ground Combat Support Systems, MG John F. Michitsch, ca. 2000, Doc III-76; Interview with atch, Dastrup with MAJ Danny L. Sprengle, TSM Cannon, 26 Feb 01, Doc III-77; Email msg with atch, subj: Excalibur, 2 Mar 01, Doc III-78; Email msg, subj: Command History Coordination, 6 Apr 01, Doc III-78A.

[68]Interview with atch, Dastrup with Sprengle, 26 Feb 01; Email msg, subj: Command History Coordination, 6 Apr 01; Fact Sheet, subj: Army Contract Boosts Raytheon Excalibur Program, 17 Oct 00, Doc III-79; Email msg with atch, subj: TSMC Input, 13 Apr 01, Doc III-79A; Email

Sense-and-Destroy-Armor-Munition

Early in the 1970s, the Army projected that the Warsaw Pact's future armored forces would be sophisticated. The Pact's combat formations would be composed of mixes of maneuver and armored vehicles, field artillery, logistical units, and command and control elements. Equally important, the Warsaw Pact would have the capability of employing highly technical target acquisition and electronic countermeasure devices.[69]

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msg with atch, subj: Excalibur, 2 Mar 01.

[69]1994 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), pp. 120-21.

To offset the enemy's numerical superiority, the Army reasoned that it had to improve its fire support. The Army could increase the number of weapons, but manpower and monetary constraints discouraged taking this course of action. After further consideration the Army turned to upgrading training and technology as a means of enhancing fire support to exploit current and future resources more efficiently. As a vital part of enhancing fire support that included introducing new weapons, target acquisition systems, command and control systems, support systems, and doctrine, the Army initiated action to develop smart munitions (precision munitions) that could be steered to the target and that would be more deadly and accurate than existing conventional high-explosive fragmentation projectiles.[70]

Besides introducing the Copperhead projectile, which required a laser designator to guide it to the target, the Army started work on the Sense-and-Destroy Armor (SADARM) munition, which was a fire-and-forget precision munition, at the beginning of the 1980s to counter enemy armor. The projectile would be delivered over the target where it would dispense submunitions that would orient, stabilize, and descend by parachute in a controlled spin, searching a circular area with a diameter of approximately 150 meters. When a submunition's infrared, active and passive millimeter wave sensors confirmed a target, the submunition's warhead would fire a self-forging tantalum penetrator to destroy the target upon impact.[71]

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[70] Ibid., p. 121.

[71] Director, Operational Test and Evaluation, FY98 Annual Report (Extract), subj: SADARM, Doc III-75A, 1999 USAFACFS ACH; 1996 USAFACFS ACH, pp. 100-01; 1997 USAFACFS ACH, p. 66; Email msg, subj: SADARM Input to 1999 Annual Command History, 31 Mar 00, Doc III-75B, 1999

After several years of development on the 155-mm. SADARM, the Army conducted technical testing in 1993 to determine if low-rate production could begin during the fourth quarter of Fiscal Year (FY) 1993. Based upon the expected technical performance, the Army established a criteria of twenty-four hits from seventy-two submunitions. If SADARM met the effectiveness criteria, production would begin. However, technical difficulties during the June 1993 performance test led to a high dud rate and an insufficient number of hits (nine hits from seventy-two submunitions). As a consequence, the Army raised serious questions about the munition's reliability. The unexpected poor performance subsequently compelled the Army to halt the test and to cancel the Army System Acquisition Review Council (ASARC) and Defense Acquisition Board (DAB) that would convene to consider further development. In the meantime, the Multiple-Launch Rocket System (MLRS) SADARM experienced expulsion problems and an excessive number of duds.[72]

In view of the technical difficulties, the Army restructured the SADARM program in 1993-1994 and simultaneously encountered confusing guidance from Congress. In September 1993 the Army Acquisition Executive approved a proposal by the SADARM Program Manager to fix the problems and to test the munition again, which meant increasing developmental time. Meanwhile, a joint Senate and House Appropriations Committee appropriated money in FY 1994 to terminate the SADARM program, while a joint Senate and House Authorizations Committee provided money to conduct further analysis for a 155-mm. SADARM only. Based upon legal guidance, the Army directed the SADARM Program Manager to continue work on the munition, although confusion over the direction of the program existed.[73]

Intensive efforts by the SADARM Program Manager and the contractor corrected the technical problems. During the technical tests in April 1994, the munition scored eleven hits and eight near misses from the thirteen projectiles (twenty-six submunitions) fired at targets at a range of approximately fifteen kilometers. This success demonstrated SADARM's technical maturity and reliability as

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[72]1995 USAFACFS ACH, pp. 103-04.

[73]Ibid. pp. 104-05; Director, Operational Test and Evaluation FY98 Annual Report (Extract), subj: SADARM.

it approached the low-rate production decision in the second quarter of FY 1995.[74] The Chief of the Munitions Branch, TRADOC System Manager (TSM) Cannon, Directorate of Combat Developments (DCD), U.S. Army Field Artillery School (USAFAS), explained the importance of the accomplishments of 1994. Early in March 1995, he pointed out that the Program Manager's and the contractor's work brought the 155-mm. SADARM "back from the dead."[75]

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[74]1995 USAFACFS ACH, pp. 104-05.

[75]1995 USAFACFS ACH, p. 105.

Based on the Congressionally-directed Smart Munition Study conducted by the Field Artillery School in 1994, the Army, in the meantime, stopped all work on the MLRS variant of SADARM. Although the study reaffirmed the need for a field artillery smart munition, numerous alternatives existed for the MLRS variant, such as the Brilliant Antiarmor Preplanned Product Improved (BAT P3I) submunition. The final decision to defer work on the MLRS submunition, however, was based on a follow-on study entitled, MLRS Smart Tactical Rocket Study that identified BAT P3I as a viable alternative to a MLRS smart munition and halted work with the munition. The study also concluded that there were not any viable options to the 155-mm. SADARM.[76]

In the October 1994 Field Artillery, the Chief of the Munitions Branch clearly outlined the rationale for SADARM. He pointed out that the munition was a day-night, fire-and-forget, top-attack munition that would add a new dimension to "fighting with fires" and would dramatically enhance the Army's force projection. Years of engineering had produced a munition that was more lethal than high-explosive munitions or dual-purpose improved conventional munitions (DPICM) and that was easier to employ than the Copperhead precision munition. In fact, gun crews could handle SADARM like any other 155-mm. projectile. Thus, at the end of 1994, the SADARM program was poised for approval by Department of Defense to enter low-rate initial production.[77]

Early in 1995, three separate decisions led to low-rate initial production in preparation for the Initial Operational Test and Evaluation in 1998. Based upon the munition's solid performance during the testing of April 1994 and the ASARC review of December 1994, on 13 January 1995 the Army Acquisition Executive, Gilbert F. Decker, approved the SADARM program to proceed to the Defense Acquisition Board (DAB) that had oversight authority. However, he requested that the Program Manager pursue cost-reduction efforts to save the government money. On 30 March 1995 the DAB conducted a low-rate production review of the SADARM program. In view of the ASARC's decision and the Joint Requirement Oversight Council's validation of key

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[76]Ibid., pp. 105-06.

[77]Ibid., p. 106.

performance parameters on 16 February 1995, the DAB approved low-rate initial production. Likewise, the ASARC directed restructuring the program to reduce costs.[78]

[78]Director, Operational Test and Evaluation FY98 Annual Report (Extract), subj: SADARM; 1996 USAFACFS ACH, p. 104; 1997 USAFACFS ACH, p. 68.

Notwithstanding the decision to move into initial low-rate production, the Army and contractor still had one major concern with the performance of SADARM. During testing, the submunitions often collided after being ejected from the carrier projectile. To fix the shortcoming the contractor developed a Belleville spring to separate the submunitions when they were ejected. Although subsystem testing in the summer and fall of 1995 indicated that the spring functioned properly, the Field Artillery School and contractor were waiting official recognition at the end of 1995 that the shortcoming had been fixed.[79]

Tests in 1996 and 1997 validated the improvements to SADARM. In April and May 1996 during Engineering and Verification Tests at Yuma Proving Ground, Arizona, SADARM produced eight hits from nine projectiles. Subsequently, SADARM first-article testing at Yuma Proving Ground in December 1996 delivered five hits from four projectiles (eight submunitions). During Initial Production Tests in the summer and early winter of 1997 at Yuma Proving Ground and the Cold Region Test Center, Alaska, SADARM's performance exceeded the Army's expectations to permit moving into operational testing in mid-1998 and towards the ASARC of December 1998.[80]

Work on SADARM continued into 1998 and 1999 with a focus on improving the reliability of the submunitions. During the Initial Operational Test and Evaluation of August 1998, SADARM performed at a lower reliability level than anticipated and failed to demonstrate its operational effectiveness. Subsequently, the Army reoriented the SADARM program towards enhancing reliability of the submunitions, decided to conduct additional testing in 1999 to evaluate the corrections to major failures, and inserted A Limited User's Test into the basic SADARM program for the third quarter of FY 2000.[81]

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[79]1995 USAFACFS ACH, pp. 106-07.

[80]Director, Operational Test and Evaluation FY98 Annual Report (Extract), subj: SADARM; 1996 USAFACFS ACH, p. 105; 1997 USAFACFS ACH, pp. 68-69; Fact Sheet, subj: SADARM, Apr 98, Doc III-102, 1998 USAFACFS ACH; Fact Sheet, subj: SADARM, Feb 99, Doc III-103, 1998 USAFACFS ACH.

[81]Email msg with atch, subj: SADARM, 2 Mar 01, Doc

III-80; Fact Sheet, subj: XM892 Extended Range Projectile, Feb 99, Doc III-104, 1998 USAFACFS ACH; Fact Sheet, subj: SADARM, Feb 99; Fact Sheet, subj: SADARM, Apr 98; Memorandum for Dick McKean, TSM Cannon, subj: SME Review of SADARM Portion of 1998 Annual Command History, 18 Feb 99, Doc III-105, 1998 USAFACFS ACH; Director, Operational Test and Evaluation Annual Report FY98 (Extract), subj: SADARM; Email msg, subj: SADARM Historical 99, 30 Mar 00, Doc III-75BB, 1999 USAFACFS ACH.

After additional work on the submunition, the Army conducted intensive reliability testing at Yuma Proving Ground during three days of firing on 31 August-2 September 1999. The test firings, which were part of a two-phase program to ensure the effectiveness of SADARM submunitions for the Limited User's Test, demonstrated a significant increase in reliability and lethality. As the U.S. Army SADARM Project Manager, Colonel Bernard E. Ellis, noted, the tests provided the Army with solid evidence that M898 SADARM exceeded its operational requirements and promised a successful Limited User's Test in 2000.[82]

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[82]Email msg with atch, subj: SADARM, 2 Mar 01; "SADARM Successful in U.S. Army Reliability Tests," Journal of Aerospace and Defense Industry News, 11 Feb 00, http://aerotechnews.com/starc/2000/021100/SADARM.html, Doc III-75C, 1999 USAFACFS ACH; "SADARM Smart Munition Achieves 25 Direct Hits," Defense Briefing, 16 Sep 99, http://www.defensebriefing.com/lc-14.htm, Doc III-75D,

1999 USAFACFS ACH; Email msg, subj: SADARM Historical 99, 30 Mar 00; Fact Sheet, subj: SADARM Reliability Assessment Test, 2 Dec 99, Doc III-81.

Subsequently, the Army conducted a Limited User's Test for SADARM. During the test, M109A6 155-mm. self-propelled Howitzers (Paladin) from the 1-17th Field Artillery of Fort Sill, Oklahoma, operated in accordance with doctrine and tactics prescribed by the Field Artillery School. The unit fired four SADARM missions of twenty-four rounds each against sophisticated enemy armored vehicles under tough tactical conditions replicating a Southwest Asia scenario at Yuma Proving Ground from 11 April to 2 May 2000. The fired SADARM submunitions scanned for the target area from one hundred plus meters above the target site, detected targets, and fired explosively formed penetrators at high velocity to hit the tops of the heavily armored vehicles. As explained by participants of the test, SADARM's performance exceeded expectations. SADARM hit fifty-one targets with forty-two projectiles, signifying the munition's capability for killing targets and its ability to exceed the operational requirements document's effectiveness requirement. However, the Army and Congress failed to provide SADARM procurement and product improvement funding for FY 2001. This action terminated SADARM production and jeopardized future production for possible applications in the Excalibur and Multiple-Launch Rocket System Smart Tactical Rocket (MSTAR). Even so, the Field Artillery School continued to seek funding for SADARM fielding.[83]

Crusader Self-Propelled 155-mm. Howitzer

Initially part of an ambitious acquisition program in the mid-1980s aimed at reducing procurement and sustainment costs by introducing a family of armored vehicles mounted

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[83]Email msg with atch, subj: TSMC Input, 13 Apr 01; Office of the Director of Operational Test and Evaluation, FY 2000 Annual Report (Extract), SADARM, Doc III-82; Email msg with atch, subj: SADARM, 2 Mar 01; LTC Michael T. Walker and MAJ John W. Gillette, "SADARM: Deadly Against Armor in Testing," <u>Field Artillery</u>, Jul-Aug 00, pp. 36-39, Doc III-83; Interview, Dastrup with Doug Brown, Dep Dir, TSM Cannon, 8 Feb 01, Doc III-84; "SADARM: An All-Weather, Long Distance Armor-Killer," <u>Field Artillery</u>, Jul-Aug 00, pp. 38-39, Doc III-85; "Army Finds Money for SADARM, But Program's Future Remains Murky," <u>Inside the Army</u>, 10 Jul 00, pp. 1, 7, Doc III-86; Email msg, subj: SADARM Historical 2000, 26 Feb 01, Doc III-87.

on a common chassis, the Crusader, a self-propelled 155-mm. howitzer, and its resupply vehicle promised to revolutionize cannon field artillery and to serve as the next-generation self-propelled howitzer. Even though studies conducted late in the 1970s and early in the 1980s had already recognized the need for Crusader, the U.S. Army Field Artillery School (USAFAS) validated the requirement for the howitzer and its resupply vehicle once again in the 1990s. According to TRADOC System Manager (TSM) Cannon in USAFAS, the system would give the Army a dynamic warfighting capability. The M109A2/A3 self-propelled 155-mm. howitzer and its successor, the M109A6 Paladin self-propelled 155-mm. howitzer, lacked sufficient mobility, survivability, lethality, and effectiveness for combat in the twenty-first century. In all areas of concern, the Crusader significantly exceeded the capabilities of the other two howitzers and promised to be the premier cannon system in the world upon being fielded in 2005 to provide the land force with the ability to win America's wars decisively for the next fifteen to twenty years.[84]

[84]1995 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), pp. 113-14; Report (Extract), subj: Army Heavy Force Modernization Plan, 1998, p. F1, Doc III-106, 1998 USAFACFS ACH; Crusader Slick Book Draft, Crusader Warfighting Rationale, 2000, pp. 1-11, Doc III-88; Briefing, subj: None, 27 Mar 01, Doc III-89. See Paul F. Pearson's and Glenn K. Otis's "Crusader: Linchpin of the Force XXI Army," Army, Nov 96, pp. 45-47, for an interesting discussion about the rationale for Crusader by two retired Army officers.

In 1999-2000 the Crusader program underwent significant changes. After becoming Chief of Staff of the Army in the summer of 1999, General Eric K. Shinseki officially announced on 12 October 1999 his objective to make the Army a more strategically responsive force. To do this he planned to develop a force that would be deployable, agile, versatile, lethal, survivable, sustainable, and dominant at every point along the spectrum of operations and concurrently established the goal of deploying a combat-capable brigade anywhere in the world within 96 hours after liftoff, a division on the ground in 120 hours, and 5 divisions within 30 days.[85]

As might be expected, the drive to create a more strategically deployable force raised critical implications with the existing Crusader program late in 1999. Considered to be too heavy by many officers and civilians within the Army for the medium-weight forces envisioned by General Shinseki, the Army contemplated terminating the Crusader to save money for the new medium brigade and suitable systems. Hard work by the Field Artillery School, in particular TSM Cannon, and negotiations during the last two months of 1999, however, prevented the elimination of the Crusader, although several programs, including the Multiple-Launch Rocket System Smart Rocket and the Army Tactical Missile System Block IIA, were canceled to help fund the medium-weight brigades to be formed and their

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[85]"Army Announces Vision for the Future," U.S. Army News Release, 12 Oct 99, Doc III-82, 1999 USAFACFS ACH; Vision Statement, 23 Jun 99, Doc III-83, 1999 USAFACFS ACH.

equipment and weapon systems.[86]

[86]Email msg with atch, subj: Crusader, 5 Jan 00, Doc III-84, 1999 USAFACFS ACH; Email msg with atch, subj: Special Report, 4 Jan 00, Doc III-85, 1999 USAFACFS ACH; Interview, Dastrup with MAJ Stephen Hitz, TSM Cannon, 7 Mar 00, Doc III-86, 1999 USAFACFS ACH; "Secretary of the Army Says Crusader Still Viable," ArmyLink News, 15 Nov 99, Doc III-87, 1999 USAFACFS ACH.

Because General Shinseki disliked the Crusader's and the resupply vehicle's combined weight of about one hundred tons but liked their capabilities and wanted them to be an integral member of the Army's dominant maneuver force, the Army revamped the Crusader program beginning in November 1999. To make the self-propelled howitzer and its resupply vehicle lighter and more strategically deployable, the Army outlined decreasing the overall weight of the self-propelled howitzer from 55 tons to 38-42 tons and the resupply vehicle from 50 tons to 38-42 tons to permit loading two self-propelled howitzers or two resupply vehicles on a C-5B aircraft and carrying them 3,200 nautical miles while retaining Crusader's key performance parameters. To reach the weight restrictions the Army planned to replace the current vehicle structure and components with lighter weight materials, to utilize modular add-on armor kits to augment the basic hull and turret structure to enhance protection against specific regional threats, to reduce the ammunition and fuel payload, and to utilize a lightweight engine that would be common with the Abrams tank to optimize commonality between the Abrams and Crusader. These modifications would permit reducing the length and width of the vehicles and would create additional weight savings. Also, the Army proposed developing a wheeled version of the resupply vehicle that would increase operational flexibility, slipped fielding from 2005 to 2008 to make the necessary modifications to the program, and planned using Crusader as a technology base for future systems.[87]

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[87]Email msg with atch, subj: Crusader, 1 Mar 00, Doc III-88, 1999 USAFACFS ACH; Email msg with atch, subj: Crusader, 5 Jan 00; Email msg with atch, subj: Special Report, 4 Jan 00; Email msg with atch, subj: Future of Heavy Systems, 6 Jan 00, Doc III-89, 1999 USAFACFS ACH; Interview, Dastrup with Hitz, 7 Mar 00; Director of Operational Test and Evaluation, FY 99 Annual Report (Extract), subj: Crusader; MAJ Donald L. Barnett, "Crusader Target Weight: 38 to 42 Tons," Field Artillery, Mar-Apr 00, pp. 34-36, Doc III-89A, 1999 USAFACFS ACH, Email msg with atch, subj: And We Meet Ourselves Coming Back, 24 Apr 00, Doc III-90; "Alternatives Analysis Shows Revamped Crusader is Army's Best Bet," Inside the Army, 25 Dec 00, pp. 1, 7-8, Doc III-91; Email msg with atch, subj: None, 27 Mar 01; Briefing, subj: Crusader: Decisive Firepower for the Army's Vision, 27 Mar 00, Doc III-92;

Briefing, subj: Crusader: Decisive Firepower for the Army's Vision, 27 Mar 00, Doc III-93; Briefing, subj: Crusader: Decisive Firepower for the Army's Vision, 27 Mar 00, Doc III-94; Briefing, subj: Adjusted Crusader: SPH and RSV-T and RSV-W, 2000, Doc III-95; Email msg with atch, subj: TSMC Input, 6 Apr 01, Doc III-95A.

Because even the reduced weight Crusader would not be suitable for the medium brigades, the Army decided to give it to the counterattack corps (III Armored Corps) that would provide the warfighting umbrella under which the Initial/Interim Brigade Combat Team (IBCT) would function until the Army achieved its objective force equipped with the Future Combat System (FCS). While the IBCT would be a deployable force to deal with contingency and limited warfare operations, the counterattack corps would be required to deter or execute major theater warfare. Without Crusader the corps would lack the required responsiveness, mobility, lethality, and survivability to ensure success. Therefore, the system was critical to the counterattack corps's success. Equally important, the Army planned to field only 480 Crusaders and resupply vehicles to free funding for the Transformation of the Army. This number was down from 1,138 that would have been fielded to the active component and part of the Army National Guard under the old plan.[88]

Subsequently, as the contractor United Defense started with preliminary redesign work and as the Army searched for an engine, the system encountered additional challenges.[89] During appropriations debates for FY 2001, senators and congressmen discussed killing the Crusader program again. In fact, the Senate Appropriations Committee proposed that the Army refocus the system as a technology program to further field artillery evolution within the Future Combat Systems program and reduced funding for the howitzer from $355 million to $200 million in the FY 2001 Defense budget, pending Office of the Secretary of Defense delivery of a "quick-look" analysis of alternatives to Congress by December 2000.[90]

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[88]See footnote 165.

[89]Interview, Dastrup with Doug Brown, Dep Dir, TSM Cannon, 8 Feb 01, Doc III-96; "Honeywell Turbine Engine Picked for Abrams Fleet, Crusader System," Inside the Army, 25 Sep 00, pp. 1, 11, Doc III-97; Office of the Director of Operational Test and Evaluation, FY 2000 Annual Report (Extract), Crusader, Doc III-98; Email msg with atch, subj: None, 27 Mar 01. See Email with atch, subj: The Future of Crusader, 8 Jan 01, Doc III-99, for interesting insights into Crusader's rationale.

[90]Email msg with atch, subj: Update on Crusader, 23

May 00, Doc III-100; Email msg with atch, subj: Crusader, 14 Jun 00, Doc III-101; Email msg with atch, subj: TSMC Input, 6 Apr 01.

Although the Senate Appropriations Committee cut the Crusader by $155 million, the system still enjoyed the support of Congress as whole. Some members of Congress expressed the desire to give the Army more time to make sure that Crusader's restructuring was done properly and endorsed the service's plans to lighten the howitzer.[91]

In December 2000 the Army and the Office of the Secretary of Defense furnished Congress with its report. According to the report, the Crusader program was moving in the right direction. The analysis showed that the system would be more operationally effective and over time less costly than other field artillery systems. Congress accepted the report and restored full funding in February 2001. Meanwhile, Crusader design refinement continued, and the initial Crusader howitzer prototype at Yuma Proving Ground, Arizona, proceeded to demonstrate the critical performance requirements in advance of the next program milestone review in 2003.[92]

Lightweight Towed 155-mm. Howitzer

When the United States shifted its national defense priorities from forward-deployed forces in Europe to force projection from the continental United States (CONUS) early in the 1990s at the end of the Cold War, lightweight weapons attracted the Army's interest more than before. Lightweight weapons were more strategically and tactically deployable than heavier weapons. In view of the new world order and the drive for strategically deployable equipment, the Army wrote an Operational and Organizational Plan in

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[91]Email msg with atch, subj: Crusader, 30 May 00, Doc III-102; "Appropriators Match Crusader Request, but Fence Much of the Money," Inside the Army, 24 Jul 00, pp. 1, 12, 13, Doc III-103; Email msg with atch, subj: Crusader Report to CSA, 14 Nov 00, Doc III-104; John G. Roos, "Rolling Thunder," Armed Forces Journal, Dec 00, pp. 16-22, Doc III-105; MAJ Donald L. Barnett, "Crusader Target Weight: 38 to 42 Tons," Field Artillery, Mar-Apr 00, pp. 34-36, Doc III-106; Email with atch, subj: Crusader, 1 Aug 00, Doc III-107, Email msg with atch, 27 Mar 01, Doc III-107A; Email msg with atch, subj: TSMC Input, 6 Apr 01.

[92]"Alternatives Analysis Shows Revamped Crusader Is Still Army's Best Bet," Inside the Army, 25 Dec 00, pp. 1, 7, 8; Email msg with atch, subj: TSMC Input, 6 Apr 01.

1991 for a lightweight towed 155-mm. howitzer, called the Advanced Towed Cannon System (ATCAS), to replace the aging M198 towed 155-mm. howitzer.[93]

[93] 1995 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), pp. 121-22; See General Accounting Report, subj: Army and Marine Corps M198 Howitzer, Dec 95, Doc III-89B, 1999 USAFACFS ACH, for background information.

To accomplish its mission of conducting expeditionary operations across the entire spectrum of conflict throughout the world, the U.S. Marine Corps, in the meantime, wrote a Joint Service Operational Requirement in 1989 for a lightweight, towed 155-mm. howitzer to provide close and long range fire support to the maneuver forces. At the time the Marine Corps employed the towed M101A1 105-mm. howitzer, which was adopted in 1939 and was 1920s technology, as a contingency weapon for certain missions because the M198 was too heavy. Although the M101A1 did not have the desired lethality and range, it provided the mobility needed by highly maneuverable ground forces in raid or rapid action scenarios. However, the weapon was only marginally supportable because of its age and maintainability. In light of this deficiency and new Department of Defense acquisition regulations, the Marine Corps replaced the Joint Service Operational Requirement of 1989 with an approved Mission Need Statement in May 1993 for a lightweight, towed 155-mm. howitzer to supplant the M198 and M101A1.[94]

Given the common need for a lightweight towed 155-mm. howitzer, the Army and the Marine Corps joined forces. In October 1993 they signed a memorandum of agreement that outlined the system's desired characteristics. They wanted the howitzer to have a maximum weight of nine thousand pounds and a capability of firing rocket-assisted projectiles to a range of thirty kilometers. According to the memorandum, the Army would take the lead in defining the detailed requirements for the howitzer. This would be done through an early user-sponsored study to establish an analytical basis and cost effectiveness of the system, to evaluate the potential of existing lightweight 155-mm. howitzer prototypes that had been built by various contractors, and to explore labor-saving and tactical efficiencies possible through improved technologies. The study ultimately would lead to a refined, detailed statement of the joint requirement to allow the development

[94]1995 USAFACFS ACH, pp. 122-23.

of a Joint Operational Requirements Document.[95]

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[95]Ibid., p. 123; 1997 USAFACFS ACH, p. 78.

Meanwhile, the Field Artillery School wrote a draft Mission Need Statement for the Advanced Towed Cannon System, renamed the Lightweight 155-mm. Towed Howitzer (LW 155) in 1996 and XM777 in 1997, for the Army in 1993-1994. Because the Army did not want a separate Mission Need Statement and because the Marine Corps Mission Need Statement adequately stated the basic requirements for the weight, range, and weapon capabilities that the Army needed, the U.S. Army Training and Doctrine Command (TRADOC) requested the U.S. Army Field Artillery School to explore endorsing the Marine Corps's Mission Need Statement or developing a joint Mission Need Statement with the Marine Corps.[96] Recognizing that the Marine Corps did not want to write a new Mission Need Statement and that the basic requirements for the howitzer were identical for both services, the Field Artillery School recommended in May 1994 that the Army should adopt the Marine Corps's Mission Need Statement to simplify acquiring a new towed howitzer and sent the Statement to TRADOC.[97]

Upon approving the Statement in June 1994 after arriving at the same conclusions that the Field Artillery School had reached, TRADOC forwarded it to the Department of the Army. Based upon TRADOC's recommendation and a review of the Marine Corps's Mission Need Statement, the Department of the Army approved it for use in September 1994 and took the lead in developing the lightweight 155-mm. howitzer operational requirements document with support from the Marine Corps.[98]

Over the next eighteen months, key events with the system occurred. In February 1995 the Assistant Secretary of the Navy for Research, Development, and Acquisition approved moving the lightweight 155-mm. towed howitzer program into the Concept Exploration and Definition Phase and outlined the need for a shoot off between candidate

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[96] 1995 USAFACFS ACH, pp. 123-24; 1997 USAFACFS ACH, pp. 78-79.

[97] 1996 USAFACFS ACH, p. 124. See Memorandum for Cdr, TRADOC, subj: USAFAS Endorsement of the USMC Mission Need Statement for a Lightweight 155-mm Towed Howitzer, 3 May 94, Doc III-114, 1998 USAFACFS ACH, for additional information.

[98] 1996 USAFACFS ACH, pp. 124-25.

155-mm. systems. On 29 September 1995 the Army approved the Joint Operational Requirements Documents that outlined the system's characteristics. Five months later in February 1996, the Assistant Secretary of the Navy for Research, Development, and Acquisition sanctioned moving the program into the Engineering and Manufacturing Development phase (EMD).[99]

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[99]Ibid., p. 125; 1997 USAFACFS ACH, p. 79.

Although a joint program existed to produce a lightweight, towed 155-mm. howitzer for the Army and Marine Corps, one basic difference existed between the two services' objective system. Because the Marine Corps had an immediate requirement for a towed 155-mm. howitzer to replace the M198 and M101, it decided to field a howitzer without digital capabilities. The Army's lightweight 155-mm. towed howitzer, in comparison, would be fully digitized and would be introduced later than the Marine Corps's. However, the Marine Corps planned to digitize their lightweight 155-mm. towed howitzer through product improvement programs subsequent to fielding.[100]

Although the biggest obstacles to digitization were weight restrictions, power requirements, and the need to harden the automated systems to withstand weather and operational conditions, technology solved the problems. In 1996 modern electronics made possible an onboard computer with an integrated radio modem and an onboard power supply. Linked with a single-channel ground and airborne radio system (SINCGARS), the computer would furnish rapid, secure communications to the fire direction center or platoon operations center and directly to target acquisition sources. Ultimately, the computer would improve responsiveness and increase accuracy, lethality, and survivability.[101]

In the meantime, the Joint Program Manager for the weapon system conducted a series of tests in 1996. Four contractors passed the initial screening criteria. They were Vickers Shipbuilding and Engineering Limited (VSEL), Royal Ordnance, Lockheed-Martin Defense Systems, and Lewis Machine and Tool Incorporated. In May 1996 Lewis Machine and Tool Incorporated was disqualified because its prototype had actually been constructed by a government arsenal. Subsequently, Lockheed-Martin Defense Systems dropped out of the tests because its prototype had too many technical difficulties to be competitive. By the time that testing had ended, only Vickers and Royal Ordnance remained in contention. For three months in 1996, B Battery, 3rd Battalion, 321st Field Artillery from Fort Bragg, North Carolina, and L Battery, 3rd Battalion, 11th Marine Regiment from Twenty Nine Palms, California, conducted

[100]1996 USAFACFS ACH, pp. 125-26.

[101]Ibid., p. 121.

operational testing on the contractor howitzers to determine which was preferable.[102]

[102]Ibid., pp. 121-22; Interview, Dastrup with John Yager, LW155 Project Manager, TSM Cannon, 10 Feb 99, Doc III-115, 1998 USAFACFS ACH; "New USMC Towed Howitzer," Field Artillery, Jul-Aug 98, p. 37, Doc III-116, 1998 USAFACFS ACH.

Based upon the test results and the ability to meet development time lines and costs, the U.S. Government awarded the contract to the team of Vickers and Textron Marine and Land Systems in March 1997 with the latter being the prime contractor for engineering, manufacturing, and development to refine Vicker's ultra lightweight field howitzer prototype so that it could be massed produced by industry and be a suitable replacement for the M198 towed 155-mm. howitzer. Funded by the U.S. Marine Corps, the contract stipulated the delivery of eight non-digitized howitzers for operational testing in 1999. If the eight howitzers passed the tests conducted by the Marine Corps to ensure that the design satisfied the joint operational requirements, production of 526 non-digitized howitzers for the Marine Corps would begin with a first unit to be equipped in mid-2002. Retrofitting them with digitized capabilities would come later. Subsequently, the Army would receive 273 digitized howitzers in 2005.[103]

In 1998 funding problems forced a revision of the lightweight 155-mm. towed howitzer contract and set back development a few months. Unable to continue work because it had run out of funding, Textron Marine and Land Systems requested in August 1998 to be relieved of its responsibilities as prime contractor. After lengthy legal discussions with Textron, the U.S. Government agreed in September 1998 to accept the company's request and permitted Vickers to become the prime contractor to finish the remaining engineering and manufacturing development phase work. On 21 December 1998 Vickers officially announced that it had taken over as the prime contractor and was prepared to keep the project going through production.[104]

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[103]1997 USAFACFS ACH, p. 80; Interview, Dastrup with Yager, 10 Feb 99; "New USMC Towed Howitzer," p. 37; "BAE Systems, Royal Ordnance Weapons 155-mm. Ultralightweight Field Howitzer," Jane's Armour and Artillery 2000-2001, pp. 733-35, Doc III-108; John Yager, "New Lightweight 155mm Towed Howitzer Unveiled," Fort Sill Cannoneer, 27 Jul 00, pp. 1a, 2a, Doc III-109.

[104]Interview, Dastrup with Yager, 10 Feb 99; Press Release, U.S. Lightweight Howitzer Program Engineering and Manufacturing Development, 21 Dec 98, Doc III-117, 1998 USAFACFS ACH; Fact Sheet, subj: LW 155-mm. Howitzer, Apr 99, Doc III-89AA, 1999 USAFACFS ACH; Fact Sheet,

subj: LW 155-mm. Howitzer, Mar 00, Doc III-90, 1999 USAFACFS ACH; "Lightweight 155 Program Officials, Manufacturer Agree to Contract Changes," Inside the Army, 4 Dec 00, p. 9, Doc III-110; and John G. Roos, "Rolling Thunder," Armed Forces Journal, Dec 00, pp. 16-23, Doc III-111; "GAO Will Do Another Review of the Joint Lightweight 155mm Program," Inside the Army, 15 Jan 01, pp. 1, 5, Doc III-112; Marconi Land and Naval Systems bought Vickers. Subsequently, British Aerospace merged with Marconi to form BAE Systems. See Interview, Dastrup with John Yager, TSM Cannon, 7 Mar 00, Doc III-91, 1999 USAFACFS ACH; John Weston, "The Engineering Discipline and the National Defence Industrial Base," RUSI Journal, Dec 00, pp. 46-48, Doc III-113.

In the meantime, the Field Artillery School and the XVIII Airborne Corps at Fort Bragg, North Carolina, integrated a battery of towed 155-mm. automated howitzers in the Rapid Force Projection Initiative Advanced Concept Technology Demonstration (RFPI ACTD) at Fort Benning, Georgia, in July-August 1998.[105] They wanted to determine how much more effective and survivable the M198 with a Digital Fire Control System was than the standard M198. During the RFPI ACTD, C Battery, 1-377th Field Artillery, an XVIII Airborne Corps general support asset stationed at Fort Campbell, Kentucky, demonstrated the capabilities of the Digital Fire Control System through field exercises and simulation with encouraging results. Assessing the howitzer's performance, the Commanding General of the XVIII Airborne Corps, Lieutenant General William F. Kernan, wrote in November 1998, "During the conduct of the Rapid Force Projection Initiative Advanced Concept Technology Demonstration Field Experiment, the . . . Automated Howitzer appeared to have great potential."[106] The U.S. Army Operational Test and Evaluation Command shared the general's conclusion in a draft report of November 1998.[107]

Subsequent to the Rapid Force Project Initiative, the

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[105]Memorandum for Record, subj: Input from John Yager, LW155 Automated Howitzer Project Officer, TSM Cannon, 10 Feb 99, Doc III-118, 1998 USAFACFS ACH; Memorandum for Deputy Assistant Secretary of the Army for Research and Development, subj: USAFAS Support for the RFPI ACTD, 5 Jun 95, Doc III-119, 1998 USAFACFS ACH; Memorandum for John Yager, TSM Cannon, subj: SME Review of LW155 Portion of 1998 Annual Command History, 18 Feb 99, Doc III-120, 1998 USAFACFS ACH.

[106]Memorandum for Cdr, U.S. Army Forces Command, subj: Support for High Mobility Artillery Rocket System and Automated 155mm Howitzer Modernization for XVIII Airborne Corps, 9 Nov 98, Doc III-121, 1998 USAFACFS ACH.

[107]Report, subj: Assessment for the 155-mm. Automated Howitzer, RFPI ACTD, 18 Nov 98, pp. 1-1 - 2-1, Doc III-122, 1998 USAFACFS ACH; Interview, Dastrup with Yager, 10 Feb 99; Fact Sheet, subj: 155-mm. Towed Artillery Digitization, Feb 99, Doc III-122A, 1998 USAFACFS ACH.

XM777 went through several key hurdles in 1999. Through 1998 the Army had furnished ambiguous support for the XM777 because of funding limitations and competing requirements for a technologically advanced Future Direct Support Weapon System to replace the M119A1 105-mm. towed howitzer. Determining that the Future Direct Support Weapon System required additional technological work, the Commandant of the Field Artillery School, Major General Leo J. Baxter, rekindled Army interest in the XM777 in February 1999 after consulting with the Deputy Assistant Commandant-Futures in the school. Shortly afterwards, the United State government signed a memorandum of understanding with the United Kingdom and Italy for joint development of the XM777 because the latter were looking for a lighter 155-mm. towed howitzer. This agreement would permit sharing developmental costs and foster commonality among the three countries.[108]

Against this backdrop and the Army's decision to equip the Interim Brigade Combat Team (IBCT) that was part of the Transformation of the Army with the howitzer, contractor work led to the first prototype XM777 in 2000. Unveiled at Picatinney Arsenal, New Jersey, in June 2000, the XM777 that would be tested over the next several months held out

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[108]Interview, Dastrup with John Yager, TSM Cannon, 7 Mar 00, Doc III-91, 1999 USAFACFS ACH; Email msg with atch, subj: LW 155, 16 Mar 00, Doc III-92, 1999 USAFACFS ACH; "Controversy over Lightweight Howitzer Continues with GAO Report," Inside the Army, 7 Aug 00, pp. 1, 11, 12, Doc III-114.

great promise, according to the Army. The howitzer's reduced size and weight would permit it to be towed by the same vehicle used to tow the M198 and would allow two howitzers to fit into a C-130 aircraft. Additionally, the howitzer could be emplaced in three minutes or less, could fire faster than the M198, could be displaced in two minutes or less, and had a range of thirty kilometers.[109]

[109]Interview with atch, Dastrup with John Yager, TSM Cannon, 16 Feb 01, Doc III-115; Yager, "New Lightweight 155mm Towed Howitzer Unveiled," pp. 1a, 2a; "U.S. Artillery Program Takes Delivery of Guns," Defense News, 17 Jul 00, p. 10; Fact Sheet, subj: XM777 LW 155 Howitzer, undated, Doc III-116.

More than anything else, the Towed Artillery Digitization (TAD) package that was scheduled to be added to the Army variant distinguished the XM777 from the M198. As the Army explained, TAD would give the howitzer onboard advanced capabilities like those associated with self-propelled howitzers, such as the M109A6 155-mm. Self-propelled Howitzer and the futuristic Crusader 155-mm. Self-propelled Howitzer and would eliminate the need for external survey, aiming circles, aiming posts, and collimeters. Capabilities, such as self-locating and orienting, onboard firing data computation, easy-to-read electronic sights, digital communications, and improved direct fire sight, would also make the XM777 superior to the M198. Additionally, TAD would be compatible with the Advanced Field Artillery Tactical System. In light of this, the Army released a request for proposal to industry on 10 February 2000. After analyzing six proposals from private industry, the Army awarded a contract to General Dynamics Armament Systems of Burlington, Vermont, on 15 September 2000 to engineer, manufacture, and develop TAD for operational testing by 2003.[110]

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[110]Email msg with atch, subj: LW155, 1 Mar 01, Doc III-117; Andrew Koch, "General Dynamics to Develop TAD System," Jane's Defense Weekly, 27 Sep 00, p. 8, Doc III-118; Email msg, subj: LW 155 Info, 16 Feb 01, Doc III-119; Fact Sheet, subj: TAD, undated, Doc III-120; "The XM777 Lightweight 155-mm Howitzer," Army, Oct 00, pp. 303-04, Doc III-121; Interview with atch, Dastrup with Yager, 16 Feb 01; Yager, "New Lightweight 155mm Towed

Meanwhile, the Army continued to experiment with the RFPI modified M198 howitzer. In September 2000 it took the howitzer to Fort Knox, Kentucky, to test the direct fire sight. Crews fired 185 rounds at targets between the ranges of 1,600 and 3,150 meters. Although some technical problems existed, the sights demonstrated their capabilities.[111]

Future Direct Support Weapon System or Advanced Technology Light Artillery System

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Howitzer Unveiled," pp. 1a, 2a; "Controversy Over Lightweight Howitzer Continues with GAO Report," pp. 1, 11, 12.

[111]Interview with atch, Dastrup with Yager, 16 Feb 01.

In 1996 the Field Artillery began exploring earnestly the elimination of all 105-mm. howitzers currently used as direct support weapons for the light and special purpose forces for several reasons. First, the 105-mm. howitzer had only two types of munitions that enhanced weapon range and lethality. These munitions included the recently produced rocket assisted projectile, the M913, and the recently type-classified dual-purpose improved conventional munition (DPICM), the M915. The munitions, however, lacked sufficient killing power and required large expenditures of ammunition to achieve the desired effect upon targets. Second, the 105-mm. howitzer offered little opportunity to improve its overall combat effectiveness, extended little or no growth potential as a weapons platform for the future battlefield, and would not satisfy Army XXI requirements. Third, the 155-mm. howitzer fired a far broader family of munitions that had much greater effectiveness when compared to the 105-mm. howitzer shell. Fourth, technology had advanced to the point where it was feasible to produce a 155-mm. direct support weapon weighing little more than the current 105-mm. direct support weapon, the M119A1 howitzer.[112]

In order to acquire a lightweight 155-mm. howitzer for direct support missions in light or special purpose forces to replace 105-mm. howitzers, the Field Artillery School developed and staffed a mission need statement with industry and other government agencies at a Integrated Concept Team meeting. The U.S. Army Training and Doctrine Command (TRADOC) subsequently approved the mission need statement in November 1997 and forwarded it to the Department of the Army where it was assigned a Catalog of Approved Requirements Documents number. Funding was being addressed in the Program Objective Memorandum for Fiscal Year 2000-2005.[113]

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[112]1997 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), p. 81.

[113]Ibid.; Msg, subj: ATLAS Input to Annual Command

History, 17 Mar 99, Doc III-123, 1998 USAFACFS ACH.

The Field Artillery School explained that the expected light weight of the Advanced Technology Light Artillery System (ATLAS) 155-mm. howitzer would be achieved by employing two complementary recoil management means. Renamed the Future Direct Support Weapon System (FDSWS) early in 1999, the system would employ soft recoil or fire out of battery technique. In the soft recoil application the howitzer cannon tube would move forward to achieve forward velocity. As this was occurring, the weapon would be fired. The recoil energy generated by the departing projectile had to overcome the forward motion of the tube before the tube would begin its rearward motion. This technique, although it was not new, would dissipate up to fifty percent of the recoil force in just overcoming the forward movement of the tube. Also, the system was being considered for the integration of electrorheological fluid technology. Upon the application of an electrical charge, electrorheological fluids would change viscosity. The integration of electrorheological fluids would permit real time management (fine tuning) of the recoil force imparted to the cannon upon firing. Such management would occur in milliseconds because the application of an electric charge to the fluid would change the viscosity instantaneously. These combined technologies would result in a weapon platform of five thousand pounds, which would be only eight hundred pounds heavier than the M119A1 howitzer.[114]

Late in 1998 and early 1999, further developments shaped the FDSWS/ATLAS program. In the fall of 1998, the Commandant of the Field Artillery School, Major General Leo J. Baxter, explained, "ATLAS will provide the lethality, strategic deployability, and operational and tactical mobility needed to defeat future threats across the spectrum of conflict."[115] The howitzer's light weight would make it ideal for the light forces. Along this line General Baxter made a critical decision on 23 February 1999. He reaffirmed that the lightweight 155-mm. howitzer

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[114]1997 USAFACFS ACH, pp. 81-82; Msg, subj: ATLAS Input to Annual Command History, 17 Mar 99; Msg, subj: ATLAS Input to Annual Command History-Reply, 17 Mar 99, Doc III-124, 1998 USAFACFS ACH.

[115]MG Leo J. Baxter, "ATLAS: Close Support for Future Light Forces," Field Artillery, Sep-Oct 98, p. 1, Doc III-125, 1998 USAFACFS ACH.

would replace the M198 towed 155-mm. howitzer and that FDSWS/ATLAS would be a direct support weapon for the light forces to replace the M119 towed 105-mm. howitzer. This effectively ended considering the FDSWS/ATLAS for a general support role. Equally important, the General deferred making a decision on the caliber size, pending a forthcoming analysis to determine the ideal caliber (105-mm. to 155-mm.), the range, and the other desired characteristics. This meant as of early 1999 that the caliber was undecided even though the mission was not.[116]

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[116] Ibid., p. 2; Interview, Dastrup with Steve Johnson, Project Manager, DCD, 23 Feb 99, Doc III-126, 1998 USAFACFS ACH; Msg, subj: ATLAS Input to Annual Command History, 17 Mar 99.

In the fall of 1999, the new Chief of Staff for the Army, General Eric K. Shinseki, delivered a speech to the Association of the United States Army in Washington D.C. that outlined his vision and concept to reorganize the Army and that significantly altered the FDSWS program. Essentially, the General desired to make the heavy forces lighter and more deployable and to make the light forces more lethal with greater staying power. His plan, dubbed the Medium Brigade Concept, called for the organization of two brigades at Fort Lewis, Washington, beginning in September 2000 as a step towards meeting his vision.[117]

Although the initial brigades would be fielded with existing equipment, General Shinseki wanted a common platform to reduce the logistics, training, and maintenance burden on the units. Accordingly, TRADOC began the development of requirements documents for the interim brigade, now called the Interim Brigade Combat Team (IBCT), to be fielded with current weapon technology but integrated on the common platform. The Directorate of Combat Developments in the U.S. Army Field Artillery School worked extensively to prepare the operational requirements document for the Fire Support Team Variant and the Self-propelled Howitzer Variant of the IBCT Capstone Requirements Document. As the same time the Directorate worked with the Department of the Army to develop the funding profiles for the Program Objective Memorandum for Fiscal Years 2002-2007. To fund the IBCT and the Objective Force, the Army deleted the funding line for the FDSWS in the Program Objective Memorandum (POM) for Fiscal Years 2002-2007 and effectively ended the program.[118]

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[117]Email msg with atch, 17 Mar 00, Doc III-93, 1999 USAFACFS ACH.?

[118]Email msg with atch, subj: Update to USAFAS Command History, 7 Mar 01, Doc III-122; Email msg with atch, 17 Mar 00; Email msg with atch, 20 Mar 00, Doc III-

The M119A1 Towed 105-mm. Howitzer Light Artillery System Improvement Program

94, 1999 USAFACFS ACH.

Largely through the efforts of the personnel at Fort Bragg, North Carolina, the 82nd Airborne Division obtained funding in the Program Objective Memorandum for the M119A1 Towed 105-mm. Howitzer Light Artillery System Program (LASIP) to provide some needed changes to the howitzer to make it more easily maintained and more operationally suitable. Initial funding came in Fiscal Year (FY) 1998 and envisioned about one million dollars annually for five years to accomplish the desired improvements. The Army later extended program to the sixth year.[119]

As planned, the improvements would be made in two block modifications. Block I would consist of adding a low temperature recuperator, improving the braking system with a larger commercial brake design, adding trail lifting handles to help crewmen emplace and displace the weapon, providing a trail-end step to preclude damage to the brake master cylinder, and improving the trunnion adapter by incorporating a stronger and more durable design for mounting the fire control components, among other things. Block II would include redesigning the elevation gearbox, incorporating a new rammer/extractor tool to replace the M102 105-mm. towed howitzer design, removing the compensating tubes in the recuperator and providing direct linkage with the primary recoil buffer, providing a firing platform reshroud kit, and providing a roll bar to protect the fire control mounts during air drop and air assault operations. Completion of Block II modifications was scheduled for FY 2002.[120]

The M198 155-mm. Towed Howitzer Improvement Program and

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[119]Email msg with atch, subj: Update to USAFAS Command History, 7 Mar 01, Doc III-123.

[120]Ibid.

Enhancements

The M198 155-mm. Towed Howitzer Improvement Program and Enhancements (HIPE) program originated with the development of a prototype subsystem that used an electric pump to pressurize the hydraulic system on the M198 used to raise and lower the howitzer wheels quickly. The electric motor was powered by means of a cable from the prime mover. This prototype subsystem could raise or lower the howitzer wheels in about thirty seconds in comparison with the two and one half minutes required by two cannoneers pumping manually. This subsystem known as the Hydraulic Power Assist Kit together with some other initiatives was funded in the Program Objective Memorandum as the HIPE Program. The program consisted of the following initiatives: the hydraulic power assist kit, a trail-mounted power distribution system, and a bogey wheel to be placed under the weapon trails to assist loading the weapon on U.S. Air Force aircraft for air loading and to permit moving the howitzer on hard surfaces with a much lighter truck than the standard five-ton truck. Other improvements included an airborne/air assault upgrade that would have a trail-mounted power supply, a radio for linkage to the fire direction center, the elimination of the wire linkage to a command and control installation, a longer communication range, and an antenna, voltage regulator, and recharge capability.[121]

Multiple-Launch Rocket System

During the last ten years, improvement efforts with the Multiple-Launch Rocket System (MLRS) focused on enhancing the munitions to give them better range and precision and making the launcher more responsive. Although MLRS performed well during Operation Desert Storm in 1991, its rockets and their submunitions raised serious concerns. During the war, many Iraqi artillery assets outranged their coalition counterparts, including MLRS. Also, the high dud rate of munitions, including MLRS submunitions, raised apprehensions about the safety of soldiers passing through impact areas. Together, the proliferation of rocket systems with greater ranges than MLRS and the unacceptable dud rate led to the requirement for an extended-range (ER) MLRS rocket with a range of forty-five kilometers and a lower submunition dud rate. Such a range would increase

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[121]Email msg with atch, subj: Update of USAFAS Command History, 7 Mar 01, Doc III-124.

the commander's ability to influence the battlefield at depth and to fire across boundaries and simultaneously would improve the survivability of launcher crews.[122]

[122] 1995 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), p. 126; Fact Sheet, subj: MLRS Rockets, 1998, Doc III-127, 1998 USAFACFS ACH. See Memorandum for Record, subj: MLRS, 2 Jun 99, Doc III-95, 1999 USAFACFS ACH for a good history of MLRS.

Between 1995 and 2000 the Army moved ahead with developmental efforts on the ER-MLRS M26A1 rocket loaded with the M85 grenade with a self-destruct fuze. Although the self-destruct fuze was improved as indicated by tests in 1995 and although the required range for the rocket was met, tests in 1996 disclosed that the dud rate was still too high. This caused the Army to develop a "get well plan" in April 1996 to improve the self-destruct fuze and to conduct additional testing in 1997. After the M85 grenade had demonstrated a reduced dud rate that satisfied the requirement, the Army moved the rocket into low-rate initial production in 1997 with operational testing in Fiscal Year (FY) 1998. Although the ER-MLRS rocket successfully passed the operational tests in 1998, funding constraints and the decision to transition to a guided MLRS rocket with more accuracy limited production of the ER-MLRS to less than five thousand rockets. Because equipment that could produce the M85 grenade at the desired quantities was unavailable, the Army started fielding the ER-MLRS M26A2 rocket loaded with the M77 dual purpose improved conventional munition (DPICM) with a standard fuze to U.S. Forces, Korea, in 1999 to meet their urgent need for extended-range capability. After the production equipment could be validated and could actually generate the needed quantities of M85 grenades, the remaining quantities of ER-MLRS rockets would be loaded with the M85 grenade and would be designated the M26A1 rocket. Funding cutbacks in 1999-2000 and the expense of the M85 grenade, however, caused the Army to produce the ER MLRS rocket with the M77 munition and to decide against producing and fielding an ER-MLRS M26A1 rocket with the M85 grenade.[123]

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[123]1996 USAFACFS ACH, p. 123; 1997 USAFACFS ACH, pp. 82-83; Fact Sheet, subj: ER-MLRS, Feb 99, Doc III-128, 1998 USAFACFS ACH; Fact Sheet, subj: MLRS Rockets, 1998; Interview with atch, Dastrup with MAJ Patrick J. Sutherland, TSM RAMS, 24 Feb 00, Doc III-96, 1999 USAFACFS ACH; Fact Sheet, subj: MLRS Rocket, Apr 99, Doc III-97, 1999 USAFACFS ACH; FY 99 Annual Report (Extract), Directorate of Testing and Evaluation, subj: ER-MLRS Rockets and GMLRS Rockets, Doc III-98, 1999 USAFACFS ACH; Interview, Dastrup with Jeff Froysland, TSM RAMS, 2 Mar 00, Doc III-99, 1999 USAFACFS ACH; Information Paper, subj: XM235 Self Destruct Fuze, 10 Feb 00, Doc III-100, 1999 USAFACFS ACH; Memorandum for Record, subj: MLRS, 6 Feb 01, Doc III-125; MLRS Newsletter, Jan 99, pp. 6-7,

Doc III-125A; Interview, Dastrup with Jeff Froysland, TSM RAMS, 21 Feb 01, Doc III-126; Email msg with atch, subj: MLRS Input for 2000 Annual Command History, 22 Feb 01, Doc III-127.

As the Army worked to introduce the ER-MLRS rocket, it decided to adopt an extended-range guided MLRS rocket that could be fired from the M270A1 MLRS Launcher and High Mobility Artillery Rocket System (HIMARS) Launcher. Writing in Army in September 1996, the Commandant of the Field Artillery School, Major General Randall L. Rigby, explained the reasoning behind the decision to develop the extended-range guided MLRS rocket. In recent years the Army's ability to protect itself from long-distance attack had been eroded with the proliferation of long-range rocket and cannon systems. To counter this the U.S. Army Missile Command's Research, Development, and Engineering Center with support from industry initiated work on an extended-range guided rocket for the MLRS to replace ER-MLRS in the twenty-first century. Unlike the accuracy of the traditional free-flight MLRS rocket that degraded as the range to the target increased, the guided rocket's guidance system would provide consistent, improved accuracy from a minimum range of fifteen kilometers to a maximum of sixty to seventy kilometers, depending upon warhead weight and type of propellant, to attack area and point targets, would enhance the ability to conduct precision strikes, would reduce the number of rockets required to defeat a target, and would give the MLRS an additional fifteen kilometer range beyond the ER-MLRS. Such a range would permit hitting more targets and would make the MLRS more survivable because it could be positioned farther from the target. Given the need for the rocket, the Army awarded a contract to Lockheed Martin Vought Systems in November 1998 for a four-year, five-nation (United Kingdom, France, Italy, Germany, and the United States) engineering and manufacturing development (EMD). Based upon successful testing, low-rate initial production would begin in 2002 with the first unit equipped scheduled for 2004. Because technical problems arose in 2000 that caused the program to slip, the first unit equipped was moved back to 2006.[124]

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[124]1996 USAFACFS ACH, pp. 123-24; 1997 USAFACFS ACH, p. 83; Fact Sheet, subj: Guidance and Control for Guided MLRS Rocket, Feb 99, Doc III-129, 1998 USAFACFS ACH; Fact Sheet, subj: MLRS Rockets, 98; "International Partners Sign $121 million GMLRS Contract, MLRS Dispatch," Fourth Quarter 1998, p. 2, Doc III-130, 1998 USAFACFS ACH; Fact Sheet, subj: MLRS Rockets, 1998, Doc III-131, 1998 USAFACFS ACH; Fact Sheet, subj: MLRS Smart Tactical Rocket, 1998; "Guided MLRS Moving into EMD," MLRS

Dispatch, Third Quarter 1998, p. 2, Doc III-132, 1998 USAFACFS ACH; Annual Report, Program Executive Officer Tactical Missiles, 1998, pp. 18-19, Doc III-133, 1998 USAFACFS ACH; Email msg with atch, subj: Future of Heavy Systems, 6 Jan 00, Doc III-101, 1999 USAFACFS ACH; Interview, Dastrup with Jeff Froysland, TSM RAMS, 2 Mar 00; Fact Sheet, subj: MLRS Rockets, Apr 99; FY 99 Annual Report (Extract), Director of Operational Test and Evaluation, subj: MLRS ER- and Guided-MLRS Rockets; Email msg with atch, subj: MLRS, 13 Mar 00, Doc III-102, 1999 USAFACFS ACH; MLRS Newsletter, Jan 99, pp. 2-3; Lockheed Martin Missiles and Fire Control of Dallas, Press Release, 14 Dec 00, Doc III-128; "Field Artillery and Mortar Systems," Army, Oct 00, pp. 300-01, Doc III-129; Army RDT&E Budget Item Justification (Extract), MLRS, Feb 99, Doc III-130; Interview, Dastrup with Froysland, 21 Feb 00.

The guided MLRS rocket, moreover, would be complemented by the smart MLRS tactical rocket with a maximum range of sixty to seventy kilometers. The smart munition that would be effective against a wide variety of high-value targets to include counterfire, air defense sites, and maneuver elements. In 1999, however, the Department of the Army terminated the smart MLRS rocket to save money for developing and fielding the Initial Brigade Combat Team as part of the transformation of the Army effort to make the Army more strategically deployable. Although the Field Artillery School started rewriting the operational requirement document for the munition in 2000 as directed by the U.S. Army Training and Doctrine Command, it remained unfunded.[125]

As the Army was dropping one MLRS rocket program, it explored the possibility of adding another in 1999. Looking at Kosova in 1999 and the need to reduce damage to civilian property and lives during combat operations, the Army required a more accurate MLRS rocket with a high-explosive, unitary warhead and investigated the possibility of acquiring the unitary rocket. It would be equipped with a fuze with the capabilities of a proximity fuze, a point-detonating fuze, or a time-delay fuze, depending upon the target. The proximity fuze capability would give a large burst over the target. The point-detonating fuze capability would reduce the size of the burst and collateral damage because of the ground burst, while the time-delay fuze capability would permit the rocket to penetrate certain types of structures or targets and then detonate the rocket. Besides the availability of three different fuze capabilities with each having advantages and disadvantages, the unitary rocket would be equipped with an anti-jam guidance system to improve accuracy beyond even the guided MLRS rocket. Yet, the unitary MLRS rocket remained unfunded in 2000 because the Commandant of the Field Artillery School, Major General Toney Stricklin wanted to put money into a unitary projectile for the Crusader 155-mm. self-propelled Howitzer under development and wanted to fund a smart MLRS rocket.[126]

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[125]See Footnote 159 and Interview, Dastrup with Froysland, TSM RAM, 21 Feb 01.

[126]Interview, Dastrup with Froysland, 2 Mar 00; Email msg with atch, subj: MLRS Rockets, 6 Mar 00, Doc III-103, 1999 USAFACFS ACH; Email msg, subj: MLRS Rockets, 6 Mar

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00, Doc III-104, 1999 USAFACFS ACH; Memorandum for Dir, TSM Rockets and Missiles, subj: Coordination of 1999 USAFACFS Annual Command History, 29 Mar 00, Doc III-104A, 1999 USAFACFS ACH; Interview, Dastrup with Froysland, 21 Feb 01; Email msg with atch, subj: MLRS Input for 2000 Annual Command History, 22 Feb 01.

Meanwhile, two critical factors generated the drive to modernize the MLRS M270 launcher. Early in the 1990, the Army realized that the M270 launcher was growing obsolete with electronic parts becoming more expensive and difficult to obtain by the twenty-first century. To combat the growing obsolescence, the Army initiated the Improved Fire Control System (IFCS) program in 1992 to replace dated electronic systems and to provide for growth potential for future munitions. Subsequently, the analysis of Operation Desert Storm of 1991 that was later supported by emerging North Korean tactics caused the Army to conclude that it needed a more responsive and survivable MLRS launcher to engage highly mobile targets. This led to the Improved Launcher Mechanical System (ILMS) program in 1995 to reduce reaction times by decreasing the time to aim, displace, and reload the launcher.[127] For several years the Improved Fire

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[127]DOTE FY 1999 Annual Report, MLRS M270A1 Launcher, Doc III-131; Memorandum for Director, TSM RAMS, subj: Coordination of 2000 Annual Command History, 19 Mar 01, Doc III-132; Interview with atch, Dastrup with MAJ Patrick J. Sutherland, TSM RAMS, 24 Feb 00; FY 99 Annual Report (Extract), Director of Operational Test and Evaluation, subj: MLRS M270A1 Launcher, Doc III-105, 1999

Control System and Improved Launcher Mechanical System modifications were two separate program elements. As a result of the integrated test program initiative, the Army combined the two programs in 1997 to make one. Together, the two modernization efforts would produce the M270A1 launcher early in the twenty-first century.[128]

USAFACFS ACH; Fact Sheet, subj: History of MLRS Launcher, undated, Doc III-133.

[128]1997 USAFACFS ACH, p. 84; Fact Sheet, subj: MLRS Launcher Improvements, 1998, Doc III-136, 1998 USAFACFS ACH; "M270A1 Production to Begin," MLRS Dispatch, Third Quarter 1998, p. 5, Doc III-132, 1998 USAFACFS ACH; Report (Summary), Director of Operational Testing and Evaluation, subj: MLRS M270A1 Launcher, 12 Feb 99, Doc III-137, 1998 USAFACFS ACH; Interview with atch, Dastrup

with MAJ Patrick J. Sutherland, TSM RAMS, 24 Feb 00; Email msg with atch, subj: MLRS, 13 Mar 00; Fact Sheet, subj: History of MLRS Launcher, undated.

Even before serious developmental work on the M270A1 started, a critical need arose that led to a parallel development effort with the M270 launcher. In 1993 the Army determined that the ATACMS Block IA would receive its Global Positioning System (GPS) initialization data directly from the launcher. Although the M270A1 launcher would have that capability, the Block IA missile would be introduced in 1998 before the launcher would be fielded. In view of this, the Army decided to upgrade a limited number of M270 launchers by incorporating GPS navigation to create the Improved Positioning Determining System (IPDS) launcher that it could fire the ATACMS Block IA. As of 1998, funding existed to field twenty-nine IPDS launchers beginning in 1998 and continuing into 2006 when they would be retrofitted to M270A1 configuration. Ten IPDS launchers went to the C Battery, 6-37th Field Artillery in Korea, which received new equipment training in February 1998, and nineteen went to the 2-18th Field Artillery at Fort Sill, Oklahoma, which underwent new equipment training in March-May 1998.[129]

As work on the IPDS launchers moved forward, developmental work on the M270A1 launcher progressed. Based upon successful testing of the Improved Fire Control System and Improved Launcher Mechanical System early in 1998 to demonstrate that the deficiencies identified in 1997 testing had been fixed, the Program Executive Officer of Tactical Missiles, Brigadier General Willie Nance, approved moving into low-rate initial production (LRIP) of forty-five launchers on 28 May 1998 with a goal of conducting initial operational test and evaluation in September 1999 and fielding the launchers in the fourth quarter of FY 2000.[130]

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[129]1997 USAFACFS ACH, pp. 83-84; Memorandum with atch for Director, TSM RAMS, subj: Coordination of 2000 Annual Command History, 19 Mar 01; "2-18th Certified on MLRS IPDS Use," MLRS Dispatch, Second Quarter 1998, p. 4, Doc III-134, 1998 USAFACFS ACH; Fact Sheet, subj: Improved Positioning Determining System Launcher, 1998, Doc III-135, 1998 USAFACFS ACH.

[130]Interview, Dastrup with CPT Richard P. Howard, TSM RAMS, 9 Feb 99, Doc III-138, 1998 USAFACFS ACH; Memorandum for Director, DCD, subj: Coordination of 1998 USAFACFS Annual Command History, 29 Mar 99, p. 234, Doc

III-138A, 1998 USAFACFS ACH; Fact Sheet, subj: MLRS Launcher Improvements, 1998; "M270A1 Production to Begin," MLRS Dispatch, Third Quarter 1998, p. 5; Report (Summary), Director of Operational Testing and Evaluation, subj: MLRS M270A1 Launcher, 12 Feb 99; MLRS Newsletter, Jan 99, pp. 3-4, Doc III-134; MLRS Newsletter, Jun 98, pp. 3-4, Doc III-135.

Because of rapidly changing technology that made the M270A1 launcher's 486 computer obsolete, the Army, meanwhile, decided to replace it with a Power PC processor and the VX Works operating system for the initial operational test and evaluation and the first unit equipped. As explained to acquisition officials in 1998 and 1999, the new computer would provide numerous advantages. It would increase the processing capabilities significantly, would expand random access memory (RAM) capacity from eight megabytes to thirty-two megabytes, would provide a sixty-four bit rather than a thirty-two bit processor, and would provide a cost reduction of $33,000 per launcher. Meanwhile, the VX Works operating system would provide state-of-the-art capabilities, would enhance software flexibility, and would significantly reduce software maintenance costs.[131]

Just as the LRIP M270A1 launcher was coming out and new computer systems were being added, the Army generated new system requirements as part of the drive for better situational awareness, which was the ability to know where everyone was on the battlefield. The growing concern with situational awareness forced M270A1 hardware to be replaced in the near future so that the MLRS launcher could interface with the tactical Internet, which was a system of computers, radios, and other communications equipment to simplify interoperability and provide combat vehicles with a common situational picture of the battlefield. The implementation of these improvements was scheduled for Fiscal Year 2004 to support the first digital corps.[132]

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[131]Interview with atch, Dastrup with Sutherland, 24 Feb 00; FY 99 Annual Report (Extract), Director of Operational Test and Evaluation, subj: MLRS M270A1 Launcher; Email msg with atch, subj: MLRS, 13 Mar 00; Memorandum with atch for Director, TSM Rockets and Missiles, subj: Coordination of 1999 USAFACFS Annual Command History, 29 Mar 00; Memorandum for Record, subj: MLRS, 6 Feb 01; Memorandum for Director, TSM RAM, subj: Coordination of 2000 Annual Command History, 19 Mar 01.

[132]Memorandum for Director, TSM RAM, subj: Coordination of 2000 Annual Command History, 19 Mar 01; Interview with atch, Dastrup with Sutherland, 24 Feb 00; FY 99 Annual Report (Extract), Director of Operational Test and Evaluation, subj: MLRS M270A1 Launcher. See Rupert Pengelley's "Battling with Tactical Internets,"

Jane's International Defense Review, Feb 00, pp. 44-50, Doc III-28, 1999 USAFACFS ACH, for additional discussion on tactical Internets.

Problems, however, halted testing. Data collected from training the test crews early in 1999 showed that the soldiers were having problems with the modem for digital communications and as a result had to reconfigure their communications more often than appeared necessary. This problem with the digital communications, the immaturity of the VX software, and the unavailability of LRIP-configured M270A1 launchers that were required for the initial operational test and evaluation prompted senior management officials in July 1999 to postpone the initial operational test and evaluation until May 2001. The delay would permit further maturation of the VX software and would allow using LRIP M270A1 launchers as planned rather than engineering and manufacturing development launchers that did not have the enhanced processors that could run the VX Works operating software that was planned for fielding.[133]

Meanwhile, the decision of the Chief of Staff of the Army, General Eric R. Shinseki, caused the Army to revise the number of M270A1 launchers to be purchased. Initially, the Army had planned to buy 857 launchers. With the

[133]Interview with atch, Dastrup with Sutherland, 24 Feb 00; FY 99 Annual Report (Extract), Directorate of Test and Evaluation, subj: MLRS M270A1 Launcher; "IOTE for New Multiple-Launch Rocket System to Slip 18 Months," Inside the Army, 22 Nov 99, pp. 1, 11, Doc III-106; Email msg with atch, subj: MLRS, 13 Mar 00; Email msg, subj: MLRS Input to Annual Command History, 21 Feb 01; MLRS Feedback, Jan 00, p. 4.

emphasis shifting to medium forces, the Army cut the number to 412 in 1999. These would go to the counterattack forces of the III Armored Corps. Subsequently in February 2001, the Army increased the number of launchers to 456 to ensure that sufficient systems were fielded.[134]

[134]Email msg with atch, subj: MLRS Input for 2000 Annual Command History, 23 Feb 01, Doc III-136; Interview with atch, Dastrup with Sutherland, 24 Feb 00; Memorandum for Dir, TSM Rockets and Missiles, subj: Coordination of 1999 USAFACFS Annual Command History, 29 Mar 00.

In September 2000, in the meantime, system integration anomalies emerged that adversely influenced system functionality and operational safety. This forced the Army to move the early system integration testing from December 2000 to March 2001 and to reschedule initial operational test and evaluation from April/May 2001 to August/September 2001. To meet the new schedule, the contractor, meanwhile, made numerous software fixes, while revised crew procedures during reload and maintenance operations were implemented to ensure soldier safety so that the system would be ready for testing in 2001.[135]

High Mobility Artillery Rocket System

Although the Army first envisioned the need for a light multiple rocket launcher system in the 1980s as it started to field more light divisions, efforts to introduce it increased in urgency in the 1990s. In a message in mid-September 1990, the Commanding General of the U.S. Army Training and Doctrine Command (TRADOC) wrote, "TRADOC support for the HIMARS [High Mobility Artillery Rocket System] program has not waned. Indeed recent world events [the crisis in the Persian Gulf] serve to highlight the need for such a capability. The HIMARS program will

[135]Email msg, subj: MLRS Input to Annual Command History, 21 Feb 01; Email msg with atch, subj: MLRS Input for 2000 Annual Command History, 23 Feb 01, Doc III-137.

continue to receive full TRADOC support. . . ."[136]

[136]1995 U.S. Army Field Artillery Center and Force Sill (USAFACFS) Annual Command History (ACH), pp. 132-33. See 1994 USAFACFS ACH, pp. 163-86 for an in-depth discussion of the development of HIMARS.

Although HIMARS was well-received throughout the Army with a few exceptions and showed promise, budgetary problems stalled development. In 1991 the Army did not fund HIMARS in its Long-Range Research, Development, and Acquisition Plan because the payoff of fielding two battalions was not deemed worth the cost of a new start. The Operational Requirements Document (ORD) stated only a requirement for two battalions with three being desired, whereas Legal Mix VII, being conducted by the U.S. Army Field Artillery School, supported a requirement of four to six battalions based on the Army's need to respond to two major regional contingencies in rapid sequence. Notwithstanding the requirement for increased "capability and lethality of. . . early deploying forces," HIMARS lost funding in the Army's program objective memorandum in March 1992 because the small amount of funding marked the program as being unable to be executed by budget managers in Headquarters, Department of the Army.[137]

As a part of the effort to obtain HIMARS, in the meantime, the U.S. Army Field Artillery School began working as early as the spring of 1992 to find funding to construct one or two prototypes. Prototypes would permit commanders and other Army officials to observe the system's capabilities firsthand and to erase any doubts about the necessity of funding it. Perceiving that the Department of Defense's Science and Technology Initiative (Thrust) Number Five, Advanced Land Combat, could be an avenue to begin HIMARS development and gain momentum with the program, the School looked to that source. However, Dr. Fenner Milton, the chairperson of Thrust Number Five, only authorized money ($4.2 million) in December 1992 for Fiscal Years (FY) 1994-1996 to develop technology that could feed into HIMARS because of its potential to provide a substantial warfighting capability to early deploying light forces. Notwithstanding this, the HIMARS program still lacked funding for prototype development because Dr. Milton only provided money for developing the technology that might be used in HIMARS and not for developing prototypes.[138]

The Field Artillery School's struggle to field HIMARS continued into the next year. On 24 February 1993 the Office of the Assistant Secretary of the Army for Research

[137] Ibid., pp. 133-34.

[138] Ibid.

and Development wrote that Dr. Milton had expressed interest in working with the Field Artillery School. He wanted to reach an overall research and development strategy that supported HIMARS, that was affordable, and that could be justified.[139] In a subsequent telephone conversation with the Director of the Directorate of Combat Developments (DCD), U.S. Army Field Artillery School, on 5 March 1993, Dr. Milton reemphasized his support for HIMARS. With this, funding from Thrust 5 seemed possible for HIMARS prototypes, but it never came.[140]

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[139] Ibid., pp. 134-35.

[140] Ibid., p. 135.

Meanwhile, the School pursued action with the U.S. Army Tank and Automotive Command, the U.S. Army Missile Command, the Program Manager of Multiple-Launch Rocket System (MLRS) and others to build a mockup HIMARS. This would permit collecting user input, maintaining visibility at high-profile events, and demonstrating the feasibility of the design. Equally important, the mockup could eventually lead to funding for prototypes.[141] Although funding for HIMARS remained critical during 1993, the mockup, which could be carried by a C-130 but could not fire, could elevate and traverse to fixed positions, and had a two-person crew, produced the desired results. At the Association of the United States Army convention in October 1993, the Chief of Staff of the Army, General Gordon R. Sullivan, expressed an interest in the mockup. Based upon successful mockup demonstrations, the Undersecretary of Defense and other Department of Defense agencies also expressed an interest in developing HIMARS prototypes. Even though high-level support existed, even though the Depth and Simultaneous and Attack Battle Laboratory at the Field Artillery School and the Joint Precision Strike Demonstration Task Force were working to obtain funds, and even though a test firing in December 1993 was successful, HIMARS still remained unfunded at the close of 1993.[142]

Although funding did not materialize in 1994, support for HIMARS continued to grow. In January 1994 the Field Artillery School shipped the HIMARS mockup to Fort Polk, Louisiana, for the light commander conference. Army commanders there "loved" HIMARS as did the Marines, who desired to display it at Twenty Nine Palms, California. As many in the Field Artillery School anticipated, the Marine Corps enthusiastically endorsed HIMARS. In fact, School participants at the March 1994 demonstration for the Marine

[141] Ibid.

[142] Ibid., pp. 135-36.

Corps reported, "They [Marine Corps] were all impressed with the HIMARS."[143] Eight months later, the Army Chief of Staff expressed his support.[144]

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[143]Ibid., p. 136.

[144]Ibid., pp. 136-37.

Although the support failed to produce any funding at the end of 1994, Program Manager, Multiple-Launch Rocket System and the Rapid Force Projection Initiative (RFPI), a joint effort sponsored by U.S. Army Missile Command (MICOM) and Dismounted Battle Space Battle Laboratory, Fort Benning, Georgia, signed a memorandum of agreement early in 1995 to build four HIMARS prototypes with RFPI putting $33 million towards rapid design, fielding, and experimentation in 1998. The RFPI, a multi-year effort, planned to conduct an Advanced Concepts Technology Demonstration (ACTD) in 1998 using new target acquisition systems, "shooters," and command and control systems with the intent of moving mature technological solutions into significant operational capabilities to fill the gap created by the aging forward-based equipment and the power projection strategy of forced or early entry operations. Through the ACTD the RFPI ultimately wanted to address the vulnerabilities of early entry forces during the initial days of a deployment and before the entrance of follow-on forces into the area of operations by increasing their lethality, survivability, and ability to control battle tempo. One of the new systems would be the HIMARS prototypes. After the ACTD of the summer of 1998, the RFPI planned to leave three of the four HIMAR prototypes behind for the XVIII Airborne Corps to use and evaluate for approximately two years.[145]

In 1996 the HIMARS experienced mixed progress. Even though the Field Artillery School reaffirmed the requirement for HIMARS, the Army removed funding for the first two years of engineering and manufacturing development (EMD) in July 1996 from the Fiscal Year (FY) 1998 Program Objective Memorandum. As the U.S. Army Training and Doctrine (TRADOC) System Manager, Rockets and Missiles in the Field Artillery School explained, this produced a disconnect. Funded when the Army and the contractor signed a contract in February 1996, the four RPFI ACTD prototypes would be fielded late in 1998. User testing by the XVIII Airborne Corps would be completed about 2000. Without funding for engineering and manufacturing development of HIMARS, however, the Army slipped the start of development of the objective system to FY 2004 and the first unit equipped date to FY 2009. The lack of EMD funding, therefore, created a gap of several

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[145]1997 USAFACFS ACH, pp. 91-92; Fact Sheet, subj: RFPI ACTD, Apr 98, Doc III-145, 1998 USAFACFS ACH.

years between the end of user testing with the prototypes in FY 2000 and the first unit equipped date of FY 2009. As a result, the Field Artillery School feared the inability of incorporating lessons learned from the prototype testing into the development of the objective HIMARS system. Funding had to be restored to eliminate the gap and to minimize losing the lessons learned and contractors with development experience.[146]

[146]1996 USAFACFS ACH, pp. 139-40; 1997 USAFACFS ACH, p. 92.

Fortunately, the Army partially resolved the funding issue in 1997 and 1998 and could move ahead with HIMARS development. With the availability of some funds, the Army decided to initiate a maturation phase in 2001 and to introduce modifications to HIMARS based upon the extended user evaluation, to begin engineering and manufacturing development in 2000, to start procurement in 2004, and to launch fielding in 2005. Because the system would add considerable fire support capability to early deploying light forces and because emerging force structure studies called for each of the two field artillery brigades in support of the light division to consist of two HIMARS battalions and one towed artillery battalion, the Army funded HIMARS in the POM.[147]

Against the backdrop of obtaining funding, work with the four prototype HIMARSs continued. After receiving the RFPI contract in March 1996, Lockheed Martin of Dallas,

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[147] Ibid.; CPT Jason W. Robbins, "HIMARS for Deployable 'Heavyweight' Fires," Field Artillery, May-Jun p. 33, Doc III-146, 1998 USAFACFS ACH; Fact Sheet, subj: MLRS Launcher Improvements, Apr 98, Doc III-147, 1998 USAFACFS ACH; Msg, subj: HIMARS, 14 Feb 99, Doc III-148, 1998 USAFACFS ACH; Msg, subj: HIMARS History, 12 Feb 99, Doc III-149, 1998 USAFACFS ACH.

Texas, built the four prototypes and delivered three of them to the U.S. Army XVIII Airborne Corps in February 1998 for participation in the ACTD. Following HIMARS's successful showing in the RFPI ACTD of mid-1998, the Army left the three HIMARS prototypes behind for the XVIII Airborne Corps to form a platoon of three in the 3-27th Field Artillery to use for two years beginning in October 1998 and ending in September 2000 with the intention of obtaining additional information that could aid development. The fourth HIMARS, meanwhile, remained at the contractor's facilities for continued development.[148]

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[148]"High Mobility Artillery Rocket System Succeeds in First Joint Test," Inside the Pentagon, 7 Aug 00, pp. 7-8, Doc III-137A; Scott R. Gourley, "HIMARS Update," Army, Dec 00, pp. 61-62, Doc III-138; Fact Sheet, subj: HIMARS, 23 Dec 99, Doc III-139; "HIMARS Fires First Rockets," MLRS Dispatch, Second Quarter 1998, p. 2, Doc III-134, 1998 USAFACFS ACH; Robbins, "HIMARS for Deployable "Heavyweight" Fires," p. 33; Msg, subj: HIMARS, 14 Feb

99; Memorandum for Dir, TSM Rockets and Missiles, subj: Coordination of 1999 USAFACFS Annual Command History, 29 Mar 00.

After the RFPI and in the midst of the extended user evaluation, the Commanding General of XVIII Airborne Corps and his staff expressed their confidence with the system. In an interview published in the January-February 1999 issue of the Field Artillery, Lieutenant General William F. Kernan commented about the importance of the missile system. He noted, "HIMARS is paramount to our success and survivability."[149] Concurrently, Lieutenant Colonel Donald E. Gentry and Major Cullen G. Barbato of the 3-27th Field Artillery, who participated in the ACTD as part of the XVIII Airborne Corps, wrote in the same issue of the Field Artillery, "HIMARS is a significant leap forward in fire support for early entry and light forces. Light force commanders who must deploy to undeveloped areas soon will have the firepower normally associated with heavier forces."[150] In view of the positive the field evaluations, which also included firing a Army Tactical Missile System Block IA missile in 1998, and the RFPI, the

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[149]Interview, Patrecia S. Hollis, editor of Field Artillery, with LTG William F. Kernan in Field Artillery, Jan-Feb 99, p. 3, Doc III-109, 1999 USAFACFS ACH.

[150]Gentry and Barbato, "HIMARS: Firepower for Early Entry Forces," Field Artillery, Jan-Feb 99, p. 19, Doc III-110, 1999 USAFACFS ACH.

Army approved an accelerated HIMARS program with the goal of equipping the first unit in FY 2005. The Program Executive Office for Tactical Missiles authorized moving the program into a thirty-six month maturation phase in 2000. Based on this, the Army awarded Lockheed Martin a contract in December 1999 to manufacture and deliver six EMD HIMARS for developmental testing FY 2001 and operational testing in FY 2004. The design of the EMD launchers would be based upon ACTD findings and the extended user evaluation with the XVIII Airborne Corps and would include any necessary modifications.[151]

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[151]"HIMARS," MLRS Feedback, Jan 00, p. 3, Doc III-140; Gourley, "HIMARS Update," pp. 61-62; Fact Sheet, subj: HIMARS, 23 Dec 99; Memorandum for Dir, TSM Rockets and Missiles, subj: Coordination of 1999 USAFACFS ACH, 29 Mar 00, Doc III-104A, 1999 USAFACFS ACH; MG Leo J. Baxter, "Force Modernization: It isn't Just for Heavy Forces Anymore," Field Artillery, Jan-Feb 99, p. 1, Doc III-107, 1999 USAFACFS ACH; Interview with atchs, Dastrup with MAJ Lawrence J. Abrams, TSM RAMS, 24 Feb 00, Doc III-108, 1999 USAFACFS ACH.

Although funding issues forced the Army to make minor changes with the development and fielding schedule, HIMARS made significant progress in 2000. As part of the Transformation of the Army effort, the Army decided to put the system in the interim division and objective division as a general support weapon and announced that the six EMD HIMARS would be delivered in FYs 2001 and 2002 for testing and that low-rate initial production would begin in FY 2003. Meanwhile, the XVIII Airborne Corps opted to keep the three prototypes until it received HIMARS production models in 2005. As a result of an exercise in July 2000 where HIMARS demonstrated its deployability and firepower, the U.S. Marine Corps subsequently decided in December 2000 to participate with the Army in the EMD phase by procuring two EMD HIMARS for its technology demonstration program and planned to employ the system as its future general support field artillery system.[152] **Army Tactical Missile System and**

[152]Fact Sheet, subj: Lockheed Martin's HIMARS Performs Magnificently in Fort Bragg Exercise, 31 Aug 00, Doc III-141; "HIMARS Update," MLRS Feedback, Jan 01, p. 10, Doc III-142; Briefing (Extract), subj: HIMARS Issues, 2000, Doc III-143; Press Release, Lockheed Martin Missiles and Fire Control, Dallas, 20 Dec 00, Doc III-

Brilliant Antiarmor Submunition

144; Interview, Dastrup with MAJ Lawrence J. Abrams, TSM RAMS, 8 Feb 01, Doc III-145; Gourley, "HIMARS Update," pp. 61-62.

As it fielded the Army Tactical Missile System (ATACMS) Block I and Block IA, the Army initiated work on ATACMS Block II during the 1980s and 1990s and soon coupled it with the Brilliant Antiarmor Submunition (BAT).[153] In 1984 the Army started development on the BAT as part of a larger combat development program, the Tri-Service Standoff Attack Missile (TSSAM). TSSAM was a joint program to develop a stand-off cruise missile that would employ stealth technology to enhance survivability with the Army version being launched from the Multiple-Launch Rocket System (MLRS) launcher. Meanwhile, BAT was designed to employ acoustic and infrared seekers to acquire, classify, and destroy moving armored combat vehicles deep within enemy territory (one hundred kilometers or more). BAT would have allocation logic to minimize the possibility of multiple BATs engaging a single vehicle and a large acquisition footprint to locate targets within four kilometers of the dispense point. Equally important, the Army designated TSSAM as the primary system to deliver BAT with ATACMS Block II being the secondary choice if TSSAM development should slip any more or be cut because of budget reductions.[154]

Although ATACMS could carry BAT, the Army preferred TSSAM. The latter depended upon stealth technology to evade detection and had the ability of delivering more BAT submunitions than ATACMS Block II could (twenty-two versus thirteen). Because ATACMS Block II would fly almost three

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[153]1997 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), pp. 84-85; 1995 USAFACFS ACH, pp. 130-31; Interview, Dastrup with MAJ Jay Hilliard, TSM RAMS, DCD, 5 Feb 99, Doc III-139, 1998 USAFACFS ACH; Memorandum for Dir, TSM Rockets and Missiles, subj: Coordination of 1999 USAFACFS Annual Command History, 29 Mar 00, Doc III-104A, 1999 USAFACFS ACH. See Memorandum for Record, subj: ATACMS, 2 Jun 99, Doc III-111, 1999 USAFACFS ACH, for a short history on ATACMS.

[154]Email msg with atch, subj: ATACMS Block II - Bat Cmd History Input, 13 Mar 01, Doc III-146; Report (Summary), Director of Operational Testing and Evaluation, subj: ATACMS Block II/BAT, 12 Feb 99, Doc III-144, 1998 USAFACFS ACH; 1995 USAFACFS ACH, pp. 108-09.

times faster than TSSAM, it gave the target less time to move after the missile had been fired and to evade being hit. Although the cost-per-kill with both, TSSAM and ATACMS Block II, was almost equal, integrating BAT with ATACMS Block II would be difficult. To dispense more BAT submunitions, ATACMS Block II would require a much blunter nose, which would make it less aerodynamic. Also, experts had to solve the problem of dispensing submunitions from ATACMS Block II over the target because the missile would be traveling at supersonic speeds when it released its submunitions. Regardless of the carrier missile, BAT would enable the Army to attrit enemy armored combat vehicles at great depth and "meter the flow" to make the close battle more manageable.[155]

In November 1993 the option of using TSSAM as a BAT carrier lost its attractiveness, forcing changes in priorities. Because of test failures and the increasing cost of the missile, the Army obtained permission from the Office of the Secretary of Defense to pull out of the TSSAM developmental effort. This left ATACMS Block II as the carrier missile and meant, at least for the time being, that the Army had to find a way to dispense BAT from a fast-moving missile. By coming so late in 1993, the decision to withdraw from TSSAM prevented the Army from funding ATACMS Block II as a carrier for BAT in Fiscal Year (FY) 1994. As a result, fielding BAT was set back three years from 1998 to 2001.[156]

[155]Ibid., p. 109.

[156]Ibid., p. 109-10.

Between 1994 and 1999 the Army conducted various tests of BAT to determine its reliability. Held in 1994, design verification tests significantly reduced the concerns with BAT. In the initial test the Army dropped two BATs from an airborne aircraft to validate hardware design. Both hit their respective targets. Minor problems in a subsequent test in 1995, however, caused BAT to miss its target. This influenced the Army to delay testing while additional engineering changes were made. BAT drop testing from aircraft resumed in 1996 and produced several successful engagements. On 16 October 1997 a flight test occurred in which BAT submunitions were successfully dispensed from the ATACMS Block II missile for the first time. Based upon this and other successful flight tests, the ASARC of December 1998 approved entry into low-rate initial production with ATACMS Block II BAT and prepared for the Defense Acquisition Board of February 1999, which had oversight responsibilities for the missile. Successful testing in 1999 led to awarding a low-rate initial production contract in the fall of 1999 with operational testing in 2000 and initial operational capability in 2001.[157]

During 2000, ATACMS Block II underwent successful

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[157]1997 USAFACFS ACH, p. 88; Interview, Dastrup with Hilliard, 5 Feb 99; Memorandum for Record, subj: Annual History Input from MAJ Jay Hilliard, TSM RAMS, 24 Feb 99; Interview with atchs, Dastrup with MAJ Jay D. Stephens, TSM RAMS, 24 Feb 00; Email msg with atch, subj: ATACMS Block II - BAT Cmd History Input, 13 Mar 01.

testing. Based upon the results of an operational test in May 2000, the Army concluded that the command and control systems, computers, and target acquisition systems could support ATACMS Block II. Subsequently in August 2000 a test conducted at White Sands Missile Range, New Mexico, demonstrated the missile's ability to deliver the BAT submunitions to their targets accurately.[158]

[158]Fact Sheet, subj: Lockheed Martin's ATACMS Block II Missile Successfully Completed Developmental Test Flight, 1 Sep 00, Doc III-147; Interview with atch, Dastrup with Leighton Duitsman, TSM RAM, 14 Feb 01, Doc III-148; Email msg with atch, subj: ATACMS Block II - BAT Cmd History Input, 13 Mar 01.

Meanwhile, the Army made critical changes to the BAT program. Although the original justification -- the Soviet and Warsaw Pact threat -- had disappeared with the end of the Cold War, the requirement for BAT still existed and led to changes in the 1990s. In 1994 the Army explained, "The greatest potential threat to US Forces is that posed by armored and motorized forces. These highly mobile armored maneuver forces, supported by armed helicopters, are expected to pursue battlefield objectives using numerical force superiority, speed, and penetration."[159] The Army also noted that it had an inadequate capability to attack armored vehicles and surface-to-surface missile launchers beyond the range of close combat weapons. In addition, the Army had the urgent need for an autonomous, terminal homing submunition to defeat moving and stationary targets in the second echelon of the threat array.[160]

In view of the requirement to attack stationary armored vehicles and surface-to-surface missile (SSM) transporters, erectors, and launchers (TELS), the Army visualized the need for improving the BAT. The BAT Pre-Planned Product Improvement (P3I) would have the capabilities of attacking moving armor, stationary armor, hot or cold armor, SSM TELS, and heavy multiple rocket launchers; would be more capable in bad weather and against countermeasures; and would be carried by ATACMS Block IIA. Carrying six BAT submunitions rather than thirteen as the ATACMS II would, ATACMS Block IIA would have a range of one hundred to three hundred kilometers and would use a global positioning system (GPS) augmented guidance system that was similar to

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[159] 1995 USAFACFS ACH, p. 112.

[160] Ibid.

the one in the ATACMS IA and ATACMS II to improve accuracy. As planned in 1997 and 1998, the BAT P3I would also be fielded in the remaining ATACMS Block II missiles starting in FY 2005 rather than BAT. ATACMS Block IIA with BAT P3I would also have an initial operational capability of FY 2007.[161]

[161]1997 USAFACFS ACH, p. 89; Fact Sheet, subj: ATACMS, Feb 99; Fact Sheet, subj: ATACMS, 1998; Interview, Dastrup with Hilliard, 5 Feb 99; Memorandum for Record, subj: Annual History Input from MAJ Jay Hilliard, TSM RAMS, 24 Feb 99; Email msg with atch, subj: ATACMS, 6 Mar 00, Doc III-114, 1999 USAFACFS ACH.

In 1999 the Chief of Staff of the Army, General Eric K. Shinseki, revamped the Army's priorities when he announced his intention to field a medium-weight brigade combat team in the near future that was part of the Transformation of the Army initiative. To find money for Army Transformation initiatives, the Army terminated ATACMS Block IIA along with other programs in 1999. Rather than letting the ability to attack MRLs and TELs disappear, the Army chose to integrate the capability of the P3I BAT into the ATACMS Block II and continued work on P3I BAT in 2000.[162]

Firefinder Radars

Because of the growing threat of counterfire from hostile fire support systems, the Army initiated action in 1984 to improve its AN/TPQ-36 and AN/TPQ-37 radars. The Army considered these radars to be too large and heavy for AirLand Battle and for use with the light forces that were being developed. Through product improvements the Army planned to field a mobile, survivable Firefinder radar to

[162] Email msg with atch, subj: ATACMS Block II - BAT Cmd History Input, 13 Mar 01; Interview with atch, Dastrup with Stephens, 24 Feb 00; Email msg with atch, subj: ATACMS, 6 Mar 00; Interview with atch, Dastrup with Duitsman, 14 Feb 01.

replace the Q-36 and Q-37 radars in the target acquisition battery. To do this, the Army created a block improvement program in 1985-1986 to integrate existing Firefinder radars into a single follow-on system that would be based on the Q-36.[163] The program eventually led to fielding the Q-36 Version 7/High Mobility Multipurpose Wheeled Vehicle that was fielded between 1993 and 1995 and the Q-36 Version 8 that was scheduled to be fielded between FY 2001 and FY 2005 to the active component and Army National Guard.[164]

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[163]1986 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Historical Review (AHR), p. 90.

[164]1996 USAFACFS Annual Command History (ACH), pp. 143-44; 1997 USAFACFS ACH, p. 94; Memorandum for Record, subj: SME Comments on Firefinder Radars, 24 Feb 99, Doc

III-149A, 1998 USAFACFS ACH; Fact Sheet, subj: Firefinder Q-36 Improvement Program, undated, Doc III-149; Memorandum for AC, USAFAS, subj: AN/TPQ-36(V8) Fielding Concerns, 22 Dec 98, Doc III-150; Interview, Dastrup with Ron Anderson, FF Program Manager, DCD, 17 Feb 99, Doc III-151; Briefing (Extract), subj: Q-36 (V8), 2 Mar 01, Doc III-152.

In the meantime, the Field Artillery School introduced another change to its counterfire radar system modernization program in 1990. Because the existing Firefinder Q-37 radar lacked the range, survivability, mobility, and target processing and identification capability to support future requirements and because the Q-36 modernization effort would not meet all of the Field Artillery's radar requirements as initially planned, the School identified the need for the Advanced Target Acquisition Counterfire System (ATACS) to replace the Q-37. The Q-37, which was 1970s radar technology, was obsolete and vulnerable to enemy radar, radio intercept, and locating and jamming systems. The Advanced Target Acquisition Counterfire System would take advantage of leap-ahead technology to give the Army a passive system or, at a minimum, passive or active cuing, would reduce the equipment and manpower needs significantly, and would furnish support to the corps area of influence in AirLand Operations. In addition, it would be capable of driving on and off a C-130 and larger aircraft and air insertion by CH-47D and would reduce crew size from twelve to six.[165]

In 1991 three alternatives existed to satisfy the Advanced Target Acquisition Counterfire System requirement. First, the Army could start a new research and development program. Second, it could introduce material changes to the existing Q-37 that would be less expensive than a new start. Third, the Army could negotiate a memorandum of understanding with France, the Federal Republic of Germany, and the United Kingdom to enter the European Counterbattery Radar (Cobra) program. Because the third option was the least expensive and most promising, the Army opened negotiations with the Europeans in August 1991 to participate in their program, but it lacked the funding to proceed beyond this point with Cobra. Later in 1992, the

[165]1995 USAFACFS ACH, pp. 141-42.

Army withdrew entirely because Cobra was becoming too expensive and large and did not meet the Field Artillery's requirements.[166]

[166] _Ibid_., p. 142.

In 1993-1994 the Army chose to upgrade the existing Q-37 to meet its requirements for target acquisition because it was less expensive than a new start. As of 1994, the Enhanced Firefinder AN/TPQ-37 (Block I) program and the Firefinder AN/TPQ-37 Pre-planned Product Improvement (Block II) program existed. Basically, the Q-37 Block I represented an upgrade to the existing Q-37. Enhancements would include improved transportability, better mobility, and the incorporation of Modular Azimuth Positioning System (MAPS). The reliability, availability, and maintainability of the system would be upgraded through hardware and software improvements. After successful testing was completed at the Yuma Proving Ground, Arizona, production of twenty-six modification kits began in 1995. During the following year, the Army began fielding the Q-37 Block I radar to the active force. Funding, however, limited fielding to twenty-six systems through 1997. This meant that only part of the active force would have the Q-37 Block I radar. The rest were left with the original Q-37 until more funding could be obtained.[167]

The Advanced Target Acquisition Counterfire Radar, renamed Advanced Firefinder System in 1992, the AN/TPQ-37 Firefinder Pre-planned Product Improvement (P3I) Block II in 1994, the AN/TPQ-37 Block II in 1996, and the AN/TPQ-47 in 1998, offered significant improvements over the existing Q-37. Utilizing advanced technology, the Q-47 would provide rapid and increased target location, improved accuracy, and enhanced target classification at greater ranges. At the same time it would significantly reduce equipment and manpower requirements and improve transportability, maintainability, and reliability for increased effectiveness on the battlefield. Besides this, it would furnish support to the entire corps area of influence with enhanced target processing and multiple friendly fire capability. Although research and development funding would not be available until Fiscal Year 1997, the U.S. Army Training and Doctrine Command (TRADOC) approved the operational requirements document, written by the Field Artillery School, in August 1995. Subsequently, the Department of the Army approved the requirements document in September 1996, and the request for proposal went out to private industry in the fall of 1997 with a contract for three prototypes being awarded to

[167] Ibid., pp. 142-43; 1997 USAFACFS ACH, p. 95.

Raytheon in July 1998 and with the operational requirements document being approved in September 1999. Ultimately, the Q-47, would replace all Q-37s, including the Q-37 Block I, on a one-for-one basis and meet the needs of a digitized battlefield.[168]

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[168]1996 USAFACFS ACH, pp. 146-47; 1997 USAFACFS ACH, p. 96; Interview, Dastrup with Ron Anderson, 17 Feb 99; Interview, Dastrup with Wehri, 6 Mar 00, Doc III-115, 1999 USAFACFS ACH; Operational Requirements Document for the AN/TPQ-47 Firefinder Radar, Nov 99, Doc III-116, 1999 USAFACFS ACH.

In 2000 funding issues influenced the Q-47 program. Because the Department of the Army shifted so much funding to the Initial Brigade Combat Team effort, the Q-47 lost some funding, which slowed down development and caused the initial operational test and evaluation to be slipped from FY 2004 to FY 2006. Yet, the significance of the program and existing funding line caused the program to be placed under the oversight of the Office of the Secretary of Defense and to be possibly designated as an acquisition category (ACAT) II. This would involve moving it from a lower ACAT III ranking.[169]

Profiler

In 1995 the U.S. Army Field Artillery School started working to replace the existing meteorological measuring set that used antiquated technology by obtaining data from radiosonde instrumentation carried aloft by balloons and sent back to a ground-based receiver with the Profiler. As the operational requirements documents, signed on 15 October 1996 by the U.S. Army Training and Doctrine Command explained, the Profiler would provide a modernized, real-time meteorological capability over an extended battle space out to five hundred kilometers and would provide vital target area meteorological information from a mesocale model that acquired information from weather satellites, the current radiosonde, and the integrated meteorological system for the employment of smart weapons to ensure proper munition selection and optimal aiming. The Profiler would also furnish field artillery forces with current or expected weather conditions along the projectile trajectory and within the target area. In 2000 the Army let the contract for the system to the Environmental Technologies Group of Baltimore, Maryland, and issued a developmental schedule. Operational testing would be in FY 2002. Production of ninety-two systems would begin in the fourth quarter of FY 2003, and the first unit equipment would be in the first quarter of FY 2004.[170]

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[169]Interview with atch, Dastrup with Gordon Wehri, Material Requirements and Integration, DCD, 2 Mar 01, Doc III-153; Memorandum for Chief, Material Requirements and Integration Division, DCD, subj: Coordination of 2000 USAFACFS Annual Command History, 20 Mar 01, Doc III-153A.

[170]Operational Requirements Document for the Profiler, 15 Oct 99, Doc III-117, 1999 USAFACFS ACH; Email msg with atch, subj: Radar, GLPS, and Profiler, 10

The Bradley Fire Support Vehicle and Striker

Mar 00, Doc III-118, 1999 USAFACFS ACH; Interview, Dastrup with Wehri, 2 Mar 01.

In 2000 the U.S. Army Field Artillery School (USAFAS) continued working on fielding the Bradley Fire Support Vehicle (BFIST) that was programmed to be the successor to the M981 Fire Support Vehicle (FISTV). Late in the 1970s, a U.S. Army Training and Doctrine Command (TRADOC) working group, Close Support Study Group (CSSG) II, met to optimize observed fire support for the maneuver forces. Besides reaffirming the necessity of the Fire Support Team (FIST) that had been created in the mid-1970s to integrate fire support with the maneuver arms at the company level, the group recommended fielding a mobile fire support vehicle for reliable, secure communications.[171]

In its drive to ensure effective fire support, CSSG II considered alternatives to the improved M113 armored personnel carrier that had been designated as the FIST vehicle in the mid-1970s. The first option involved employing the XM2 infantry fighting vehicle/XM3 cavalry fighting vehicle family of vehicles. Either vehicle offered greater mobility and survivability than the M113 and the newer M981. The cavalry fighting vehicle was a derivation of the infantry fighting vehicle with minor interior modifications for crew size, additional ammunition, and equipment storage and did not have the firing ports and associated weapons. The second option centered on adopting the M981. After examining the alternatives the study group recommended fielding the M981 as the Field Artillery's fire support vehicle, retaining the M113, and using both vehicles as interim solutions until the XM2/XM3 (named the Bradley Fighting Vehicle in 1981 after General of the Army, Omar N. Bradley) modified for fire support missions and called the Bradley Fire Support Vehicle (BFIST) could be introduced as the long-term solution.[172]

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[171] 1995 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), p. 144; Interview, Dastrup with MAJ David W. Johnson, Jr., Materiel, Requirements, and Integration (MRI) Division, Directorate of Combat Developments (DCD), 6 Mar 00, Doc III-119, 1999 USAFACFS ACH; Email msg with atch, subj: BFIST and Eyes for the Light Fighters, 13 Mar 00, Doc III-120, 1999 USAFACFS ACH; Memorandum for Record, subj: The Bradley Fighting Vehicle, 13 May 94, Doc III-120A, 1999 USAFACFS ACH.

[172] 1995 USAFACFS ACH, pp. 144-45; Memorandum for

Record, subj: The Bradley Fighting Vehicle, 13 May 94; "United Defense LP M2 Infantry Fighting Vehicle/M3 Cavalry Fighting Vehicle," Jane's Armour and Artillery: 1998-1999, p. 375, Doc III-121, 1999 USAFACFS ACH.

CSSG II did not heartily endorse neither the M113 nor M981 as the fire support vehicle for several key reasons. Early in the 1980s, the Army would be fielding the XM1 (Abrams) tank and the XM2/XM3 Bradley, which would provide significant mobility and survivability over the M113 and M981. According to doctrine, the fire support vehicle required mobility and survivability equal to the supported force. Only XM2/XM3 Bradley vehicles modified as a BFIST could furnish the requisite mobility and survivability. In the meantime, the Field Artillery would have to employ M113s and M981s until sufficient numbers of XM2s/XM3 Bradleys were available for fire support, which meant compromising effective close support for the maneuver arms.[173]

Operation Desert Storm (ODS) of 1991 and subsequent studies highlighted the deficiencies of the M981 and reaffirmed the necessity of the BFIST. During the war, mobility and sustainability problems hampered the M981's ability to keep pace with the maneuver forces that were equipped with the Abrams tank and the Bradley fighting vehicle. Also, the M981 lacked self-protection against armored threats, presented a unique signature that made it easy to identify as a fire support vehicle, causing it to be an attractive and vulnerable target for hostile fire, and required excessive maintenance as explained in 2000. In addition, infantry and armor units did not stock sufficient spare parts for the M981 because it was a low-density vehicle. Subsequent, studies projected that future

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[173]Ibid., pp. 145-46.

warfare would be extremely mobile and fluid and that the M981 would lack sufficient speed to fight on such a battlefield.[174]

[174] Ibid., p. 146; 1996 USAFACFS ACH, p. 149; 1997 USAFACFS ACH, p. 97; Army Heavy Force Modernization Plan (Extract), p. D-1, Doc III-106, 1998 USAFACFS ACH; Memorandum for Record, subj: The Bradley Fighting Vehicle, 13 May 94; MAJ Neill J. Hamill, "BFIST is on the Way," Field Artillery, May-Jun 97, p. 45, Doc III-122, 1999 USAFACFS ACH; BFIST XM7 Initial Operational Test and Evaluation Doctrinal and Organizational Test Support Package, undated, pp. 1-1, 1-2, Doc III-154; Operational Requirements Document for the Heavy/Light Fire Support Vehicles, 12 Mar 01, pp. 1, 4, 5, Doc III-155.

After funding became available early in the 1990s and after the maneuver arms got their Bradley fighting vehicles, equipping the Field Artillery with the BFIST became a reality and promised to solve the problems created by the M981. Outlined in the Operational Requirements Document approved by TRADOC in September 1994, the BFIST would have mobility comparable to the supported force, use common repair parts, present a common signature with the supported force, be equipped with a 25-mm. chain gun for self-defense, and have a first-generation forward looking infrared (FLIR) sight and digitization.[175]

[175]1995 USAFACFS ACH, pp. 146-47; 1997 USAFACFS ACH, pp. 97-98; Email msg with atch, subj: BFIST and Eyes for the Light Fighter, 13 Mar 00.

As of 1995-1996, combat and materiel developers envisioned two models of BFIST (the M7 and M7A1) with each being a type-classified system. The M7 would integrate a fire support mission package onto a Bradley A2 ODS chassis. The fire support mission package initially included a laser designator (later removed as a requirement), a ring laser gyro and inertial navigation systems, a forward entry device, a lightweight computer unit, and associated components to process digital information. The A2 ODS would also have a laser ranger finder, a global positioning system, a driver's thermal viewer, and a battlefield combat identification system (when it became available) to reduce the probability of fratricide.[176] With a scheduled fielding in 2004, the M7A1 would be more advanced and use a Bradley M2A3 chassis with the fire support mission package. The M7A1 would add a core electronic architecture to process messages on the digitized battlefield, and would have two second-generation FLIR sights. The second-generation FLIR on the M7A1 would double the target identification range of the first-generation FLIR on the M7.[177] Meanwhile, work

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[176]Briefing (Extract), subj: BFIST Overview, Oct 96, Doc III-68, 1996 USAFACFS ACH; Interview, Dastrup with MAJ Neil J. Hamill, BFIST Manager, DCD, 30 Jan 97, Doc III-69, 1996 USAFACFS ACH; LTC Robert M. Hill, "Future Watch: Target Acquisition and Precision Attack Systems," Field Artillery, Jan-Feb 96, pp. 18-19, Doc III-67, 1996 USAFACFS ACH; Fact Sheet, subj: Bradley M2A2/M3A2 Operation Desert Storm, 26 Jan 01, Doc III-156; Fact Sheet, subj: Fire Support Branch, 7 May 99, Doc III-157.

[177]1996 USAFACFS ACH, p. 150; 1998 USAFACFS ACH, p. 144; Email msg with atch, subj: BFIST and Eyes for the Light Fighters, 13 Mar 00; Hill, "Future Watch," pp. 18-21; Briefing, subj: BFIST Overview, 1995, Doc III-122A, 1999 USAFACFS ACH; Briefing, subj: BFIST Overview, Oct 1996, Doc III-122B, 1999 USAFACFS ACH; Director of Operational Test and Evaluation, Annual Report for FY99 (Extract), subj: BFIST-A3, Doc III-123, 1999 USAFACFS ACH; "The Bradley Fire Support Vehicle," Field Artillery, Oct 94, p. 19, Doc III-124, 1999 USAFACFS ACH; Memorandum for Record, subj: The Bradley Fire Support Vehicle, 13 May 94; Interview, Dastrup with MAJ Neil J. Hamill, DCD, 30 Jan 97, Doc III-124A, 1999 USAFACFS ACH; Memorandum for Director, Directorate of Combat Developments, subj: Coordination of 1999 Annual Command History, 29 Mar 00,

on the BFIST moved forward. On 1 October 1996 the contractor, United Defense Partnership, delivered four prototype M7s to the Army for testing. During January-October 1997, technical testing conducted at the Aberdeen Proving Ground, Maryland, focused on system reliability and maintainability, fire support team mission equipment performance, and system integration. Overall, the testing demonstrated that all critical system design characteristics had been met.[178]

The following year, the Army made several critical decisions about the BFIST. In May-June 1997 the Army conducted a limited user's test. Using soldiers from the 3rd Infantry Division, the Army placed the M7 BFIST in an operational environment at Fort Sill, Oklahoma, where it

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Doc III-124B, 1999 USAFACFS ACH; Fact Sheet, subj: Fire Support Branch, 7 May 99.

[178]1996 USAFACFS ACH, p. 151; 1997 USAFACFS ACH, p. 98.

functioned as a fire support vehicle for the first time. During the test, software problems restricted the vehicle's ability to perform its mission as desired. Because the vehicle's overall performance met the requirements during the user test and because the system satisfied design characteristics during the technical testing of early 1997, however, the Army moved the M7 BFIST into low-rate initial production with the objective of having the initial operational test and evaluation completed in 1999.[179]

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[179]1997 USAFACFS ACH, pp. 98-99; Interview, Dastrup with Rick Dies, Dep Dir, MRI, and MAJ Ron Todd, MRI, 2 Mar 99, Doc III-155, 1998 USAFACFS ACH; Army Heavy Force Modernization Plan, 1998, p. D-2; Memorandum for Director, DCD, subj: Coordination of 1998 USAFACFS Annual Command History, 29 Mar 99, p. 264, Doc III-138A, 1998 USAFACFS ACH; Email msg, subj: BFIST and Eyes for the Light Fighters, 14 Mar 00, Doc III-125, 1999 USAFACFS ACH; "United Defense LP M2 Infantry Fighting Vehicle/M3 Cavalry Fighting Vehicle," Jane's Armour and Artillery: 1998-1999, pp. 374-79; "United Defense LP M2 Infantry Fighting Vehicle/M3 Cavalry Fighting Vehicle," Jane's Armour and Artillery: 1999-2000, pp. 360-66, Doc III-126, 1999 USAFACFS ACH; Interview, Dastrup with MAJ Neil J. Hamill, BFIST Manager, DCD, 30 Jan 97; Email msg, subj: BFIST and Eyes for the Light Fighter, 14 Mar 00; Hamill,

"BFIST is on the Way," p. 45; Fact Sheet, subj: Fire Support Branch, 7 May 99.

Over the next several years, additional and activities decisions reshaped the BFIST programs. Late in 1998, the Army's Heavy Force Modernization Plan announced that the BFIST would go to all heavy brigades and that the more advanced M7A1 would be fielded to the modernized heavy digitized brigades. Based upon the successful limited user's tests in 1998, the Army subsequently conducted developmental testing on the M7 BFIST in 1999 and held the initial operational test and evaluation in 2000. In the meantime, the Program Executive Officer for Ground Combat and Support Systems approved Milestone II decision for the M7 BFIST that permitted moving it into low-rate initial production contract with fielding beginning in 2000 and continuing into 2007 and new equipment training beginning in 2000.[180]

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[180]Interview, Dastrup with Johnson, 6 Mar 00; Email msg with atch, subj: BFIST and Eyes for the Light Fighters, 13 Mar 00; Email msg, subj: BFIST and Eyes for the Light Fighters, 16 Mar 00, Doc III-127, 1999 USAFACFS ACH; Interview, Dastrup with Rick Dies, Div Chief,

Material Requirements and Integration, DCD, and MAJ Ron Todd, Material Requirements and Integration, 2 Mar 99, Doc III-155, 1998 USAFACFS ACH; Army Heavy Force Modernization Plan, 1998, p. D2, Doc III-106, 1998 USAFACFS ACH; Memorandum for Director, DCD, subj: Coordination of 1998 USAFACFS Annual Command History, 29 Mar 99, Doc III-138A, 1998 USAFACFS ACH; Memorandum for Director, Directorate of Combat Developments, subj: Coordination of 1999 Annual Command History, 29 Mar 00; Briefing, subj; BFIST CG Update, 13 Feb 01, Doc II-68, 2000 USAFACFS ACH; Interview, Dastrup with MAJ Terry A. Ivester, Fire Support and Combined Arms Department (FSCAOD), 13 Feb 01, Doc II-69, 2000 USAFACFS ACH; Email msg with atch, 9 Mar 01, Doc III-158; Briefing, subj: Training Strategy BFIST/Striker, undated, Doc III-159; Email msg with atch, subj: none, 9 Mar 01, Doc III-160; Email msg with atch, subj: Information, 9 Mar 01, Doc III-161.

In the middle of these critical developments, the project manager for the BFIST modified the acquisition strategy for the M7A1 system in 1999 by initiating an engineering change proposal to the M7 BFIST to develop it to the A3 BFIST and halted work on the M7A1. This meant that there would not be a M7A1 as initially expected. The A3 BFIST would be based on the Bradley M2A3 chassis and integrate the M7 fire support mission package. Thus, as of 1999-2000, the M7 BFIST and the A3 BFIST existed as official Army endeavors to adapt the Bradley fighting vehicle to fire support missions.[181]

Meanwhile, the Combat Observation Lasing Team (COLT) also employed the M981 fire support vehicle. Besides lacking mobility and stealth, the M981 had been designed for armored and mechanized forces and presented a unique signature in forces that used High Mobility Multipurpose Wheeled Vehicles (HMMWVs) as their scout vehicles. In response to this discrepancy, TRADOC approved a change to the Fire Support Vehicle Operational Requirements Document in April 1997, written by the Field Artillery School, to leverage fire support vehicle technology for heavy and light forces. In the Operational Requirements Document the Field Artillery School retained the BFIST for the heavy forces and urged developing a vehicle with BFIST mission capabilities for the COLTS by integrating the fire support mission equipment package onto a HMMWV chassis, known as the Striker, to provide COLTS with unprecedented mobility, flexibility, and stealth to replace the M981. Also, the Striker would be less noticeable because it would present a common signature, would save Bradley assets for fire support teams, and would lower operating costs for COLTs. Based upon its performance in the Task Force XXI Advanced Warfighting Experiment of March 1997, the Striker vehicle, as well as the Striker concept that furnished six Striker vehicles to each heavy maneuver brigade, was adopted by the U.S. Army and was approved as a Warfighting Rapid Acquisition Program (WRAP) by the Chief of Staff of the Army on 14 May 1997. This meant development and fielding

[181]Email msg, subj: BFIST and Eyes for the Light Fighters, 14 Mar 00; Email msg with atch, subj: M7 vs A3 BFIST Comparison, 18 Mar 00, Doc III-128, 1999 USAFACFS ACH; Memorandum for Director, Directorate of Combat Developments, subj: Coordination of 1999 Annual Command History, 29 Mar 00.

could be accelerated.[182]

[182]Memorandum for Director, DCD, subj: Coordination of 1998 USAFACFS Annual Command History, 29 Mar 99, Doc III-138A, 1998 USAFACFS ACH; 1997 USAFACFS ACH, p. 99; Email msg with atch, subj: BFIST and Eyes for the Light Fighters, 13 Mar 00; Memorandum for Director, Directorate of Combat Developments, subj: Coordination of 1999 Annual Command History, 29 Mar 00, Doc III-124B, 1999 USAFACFS ACH.

In July through October 1998 the Army conducted customer testing on a prototype Striker vehicle at the Yuma Proving Ground, Arizona, as a result of WRAP. Although testing revealed daytime vision to be good, nighttime vision failed to meet the requirements. Equipped with a Ground/Vehicle Laser Locator Designator (G/VLLD) with a first-generation Forward-Looking Infrared (FLIR) thermal night sight, the Striker lacked the ability to see far enough in the night during testing. Even so, the Army approved low-rate initial production on 30 September 1998 with the caveat that the night vision capability had to be extended to meet the requirement and scheduled the first major test in the second quarter of FY 2000.[183]

In 1999 several critical events with Striker occurred. Early in the year, the Army type-classified the system as the M707 Striker and conducted a successful air drop test to demonstrate Striker's ability to be dropped from an aircraft. Also, the contractor built three prototypes for developmental and operational testing in 2000 by the 4th Infantry Division, which would also be the first unit equipped. Once fielded, the Striker would give the Army a mobile system that would permit the fire support team to plan, coordinate, and execute accurate fires.[184]

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[183]Interview, Dastrup with Rick Dies and MAJ Ron Todd, MRI, 2 Mar 99; Memorandum for Director, DCD, subj: Coordination of 1998 USAFACFS Annual Command History, 29 Mar 99; Memorandum for Director, Directorate of Combat Developments, subj: Coordination of 1999 Annual Command History, 29 Mar 00.

[184]Interview, Dastrup with LTC Johnson, 6 Mar 00; Email msg with atch, subj: BFIST and Eyes for the Light

The Lightweight Laser Designator Rangefinder

Fighters, 13 Mar 00; Email msg with atch, subj: None, 9 Mar 01, Doc III-162.

Early in the 1990s, fire supporters employed the Ground/Vehicular Laser Locator Designator (G/VLLD) to lase targets for location and precision-guided munitions. The system weighed 107 pounds, reduced the mobility of light fire support teams, did not meet their needs, and was not a man portable system. In response to this situation and the lack of a man portable system to designate targets, the U.S. Army Field Artillery School wrote an Operational Requirements Document that was approved in February 1994 by the U.S. Army Training and Doctrine Command (TRADOC) to replace the G/VLLD with the Lightweight Laser Designator Rangefinder (LLDR). Although the LLDR remained unfunded for several years, the School still pursued it. Combining technological advances in position/navigation (Precision Lightweight Global Positioning System), thermal sights, and laser development, the LLDR was a lightweight, compact, man-portable system designed for dismounted or mounted operations. Besides determining range, azimuth, and vertical angle, the LLDR would permit light forces to perform fire support functions quickly and accurately on a fast-paced, less dense, and more lethal battlefield and would offer the best alternative to the G/VLLD. Because of its modular design, it could be readily tailored to the mission. In its target location configuration the LLDR weighed about twenty pounds and had the ability of locating targets accurately out to ten kilometers and seeing the battlefield with a near, all-weather capability at shorter ranges. An integrated thermal night-sight provided continuous day/night operations and the ability to see through obscurants, such as fog and smoke. If needed, the LLDR could be configured with a separate laser designator module to designate moving and stationary targets for precision munitions. This configuration increased the system's weight to thirty-five pounds. Equally important, the LLDR could be used in training environments because of its eye-safe rangefinder.[185]

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[185]1997 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), pp. 99-100;

Memorandum for Director, Directorate of Combat Developments, subj: Coordination of 1999 Annual Command History, 29 Mar 00, Doc III-124B, 1999 USAFACFS ACH.

In 1996-1997 the situation with the LLDR changed dramatically. Recognizing the need for such a piece of equipment, the Program Management Office for Nightvision funded the LLDR through the end of engineering and manufacturing development, while the Field Artillery School made the system an initiative of the Task Force XXI Advanced Warfighting Experiment of March 1997. During the experiment, the surrogate LLDR performed well and was subsequently approved as a Warfighting Rapid Acquisition Program (WRAP) in April 1997. WRAP status would accelerate fielding to the light forces and integration onto the Striker. As a final design review of June 1998 indicated, the LLDR satisfied the requirements, and work on a baseline production model began during the latter months of 1998. Additionally, funding was approved to pursue development of a longer range variant that could meet the Striker's thermal range requirements. However, technical problems with the software and hardware forced slipping initial operational test and evaluation from 1999 to 2001.[186]

The Gunlaying and Positioning System

In 2000 the Field Artillery School continued working on the Gun Laying and Positioning System (GLPS). For years the field artillery battalion provided survey. This meant that towed howitzer batteries and M109A5 155-mm. self-propelled howitzer batteries had to wait for conventional survey to be furnished by the battalion, which was time consuming and inefficient, in order to furnish accurate fires. In light of this, the Field Artillery School wrote an Operation Requirements Document that was approved by TRADOC in July 1993 for the GLPS. The system would be a tripod-mounted positioning and orienting device that consisted of a gyroscope, an electronic theodolite, an eye-safe laser rangefinder, and a Precision Lightweight Global Position System Receiver and that would give the battery autonomous positioning and directional capability. Lightweight and mobile, the GLPS established an orienting station, allowed the battery commander to position and

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[186]Memorandum for Director, DCD, subj: Coordination of 1998 USAFACFS Annual Command History, 29 Mar 99; Interview, Dastrup with Rick Dies and MAJ Ron Todd, Materiel Requirements and Integration, DCD, 2 Mar 99; Interview, Dastrup with LTC David Johnson, MRI, 6 Mar 00; WRAP Information/Issue Paper, subj: LLDR, undated, Doc III-163; Fact Sheet, subj: LLDR, undated, Doc III-164.

orient his howitzers accurately and rapidly, and permitted retaining the unreliable and old Positioning and Azimuth Determining System in reserve as a backup. Based upon its performance in Task Force XXI Advanced Warfighting Experiment of March 1997, GLPS was approved to be part of the Army's Warfighting Rapid Acquisition Program, which would expedite fielding.[187]

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[187]1997 USAFACFS ACH, p. 101; Memorandum for Cdr, U.S. Army Training and Doctrine Command, subj: GLPS, 22 Mar 93, Doc III-129, 1999 USAFACFS ACH; SFC James S. Howell and SGM (Ret) Chauncey L. Austad, "GLPS: Fielding Now to National Guard Units," Field Artillery, Jul-Aug 00, pp. 42-44, Doc III-165.

In 1998 the Army tested GLPS prototypes and revised the number to be fielded. Initial operational testing and evaluation in July-October 1998 and subsequent climatic testing in Alaska and Australia demonstrated the GLPS's overall ability to withstand wide ranges in temperature and to operate below the equator, even though accuracy and correctable maintenance problems existed, and permitted moving into follow-on testing and evaluation in 1999 and fielding to the Total Army beginning with the active Army in 1999 and then the Army National Guard in 2000-2002. In the meantime, the growing need to reduce the amount of work by the survey team in light units, the Army planned to expand the number of GLPSs from one per battery to two per battery so that each platoon would have one. Including a battalion float, each battalion would have seven GLPSs.[188]

Advanced Field Artillery Tactical Data System

Almost ten years after the Field Artillery had initially recognized the need for a computer for command, control, and communications to improve its responsiveness on a mobile battlefield, it gained its first experience with the application of automated data processing in 1959 with the development of the Field Artillery Digital Automated Computer (FADAC). The computer calculated technical fire direction data faster and more accurately than humans could and promised highly precise and rapid fire. However, the breakdown of equipment, the requirement to back up the computer with manual procedures, and the lack of education about the computer's capabilities caused many Field Artillerymen of the late 1950s and early 1960s to accept computerized gunnery reluctantly.[189]

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[188]Interview, Dastrup with Rick Dies and MAJ Ron Todd, Materiel Requirements and Integration Division, DCD, 2 Mar 99; Interview, Dastrup with Wehri, 6 Mar 00; Interview with atch, Dastrup with Gordon Wehri, Material Requirements and Integration Division, DCD, 2 Mar 01, Doc III-153; Memorandum for Chief, Material Requirements and Integration Division, DCD, subj: Coordination of 2000 USAFACFS Annual Command History, 20 Mar 01, Doc III-153A; GLPS Fielding Schedule, 6 Dec 00, Doc III-165A; Howell and Austad, "GLPS: Fielding Now to National Guard Units," pp. 42-44.

[189]1995 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), p. 148. See General Accounting Office Report, subj: Battlefield

Automation, Nov 95, Doc III-129A, 1999 USAFACFS ACH, for background information on the Army's effort to digitize its forces.

The drive for better responsiveness as the battlefield was becoming more mobile and desire for first-round accuracy encouraged the Army to develop a second-generation computer for field artillery command, control, and communications. Between 1961 and 1965 the Army conducted extensive studies to determine where the improvements to automation should be made. The results of the studies led to the requirement for the Tactical Fire Direction System (TACFIRE), which was fielded in the mid-1970s and computed technical and tactical fire direction data.[190]

Because TACFIRE was large, heavy, and based on 1950s and 1960s technology, the Army took steps to replace it. In response to a memorandum of 13 November 1978 from the Office of the Undersecretary of Defense for Research and Engineering that authorized a new computer for fire support command, control, and communications, the Army initiated work on a successor system that would optimize operational efficiency, simplify training, ease maintenance requirements, reduce life cycle costs, and improve survivability. Later in 1981, the Army and the Department of Defense (DOD) approved developing the Advanced Field Artillery Tactical Data System (AFATDS) as part of the Army Tactical Command and Control System (ATCCS), which would be a family of computers, peripherals, operating systems, utilities, and software to support each individual battlefield operating system.[191]

After a decade of work on the hardware and the software that was fraught with many software developmental delays, the Army started testing AFATDS to determine its readiness for fielding. According to the Field Artillery School in

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[190]Ibid., pp. 148-49; Memorandum for Boyd Dastrup, subj: Untitled, 26 Feb 99, Doc III-157, 1998 USAFACFS ACH.

[191]1996 USAFACFS ACH, pp. 152-53.

1990, AFATDS represented a complete departure from TACFIRE. Whereas AFATDS offered distributive (decentralized) processing using office computers, networking of computers, and employing task menus, TACFIRE depended upon centralized command and control and was a format driven system. TACFIRE taxed training because the operator had to memorize many formats and legal entries and had to use them frequently to remember them. As such, AFATDS would be more user friendly and a significant improvement over TACFIRE.[192]

[192] Ibid., p. 153.

Work on the software for AFATDS pressed forward in 1990-1991. On 27 April 1990 the Army signed the full-scale development contract with Magnavox for version one (later renamed AFATDS 96) software. Scheduled for fielding in 1992, version one (AFATDS 96) would update the software developed for the concept evaluation program that had been conducted late in 1989, would provide initial functionality at all echelons of fire support from the corps to platoon level, and would integrate field artillery, mortar, naval gunfire, and close air support into planning and execution functions. In fact, the Preliminary Design Review held in November 1991 verified moving version one (AFATDS 96) software into the critical design phase of development with Force Development Testing and Experimentation (FDTE) scheduled for September 1993. However, software problems forced rescheduling the FDTE for October 1993. Work on version two (later renamed AFATDS 97) software, which would have more capabilities than version one (AFATDS 96), in the meantime, began during the latter months of 1992. Subsequently, a private contractor or the government would produce version three (later renamed AFATDS 00) software, which would have even more capabilities than the other two versions and would meet the objective system requirements.[193]

Technical problems with version one (AFATDS 96) software arose during technical testing in 1993 and caused delaying the FDTE again. In fact, in August 1993 the Army slipped the FDTE from October 1993 to January 1994. Pushing back the FDTE also forced moving the Initial Operational Test and Evaluation (IOTE) from May-June 1994 to July-September 1994. Further version one (AFATDS 96) software developmental problems caused the IOTE to be moved into mid-1995.[194]

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[193]Ibid., pp. 153-54.

[194]Ibid., pp. 154-55.

After the FDTE of May 1995 had determined that version one (AFATDS 96) had been improved since the initial testing and was ready for operational testing, the U.S. Army Operational Test and Evaluation Command held an Initial Operational Test and Evaluation in July-September 1995 at Fort Hood, Texas. The test unit, the 1st Cavalry Division, conducted a pilot test, a record test, and an interoperability test. Although the tests revealed some deficiencies, no single or aggregation of deficiencies warranted rating the system as being ineffective. During the tests, version one (AFATDS 96) demonstrated the ability to receive and process information from a variety of sources to support tactical field artillery fire plans and showed that it enhanced the maneuver commander's control of fire support. In view of this and the overall success of the test, the Office of the Assistant Secretary of the Army for Research, Development, and Acquisition authorized the Program Executive Officer for Command, Control, and Communications Systems in December 1995 to proceed with full-rate production with AFATDS and to field version one (AFATDS 96) software. In 1996-1997 the Army sent the software through many technical and operational tests to ensure that deficiencies identified in the 1995 IOTE had been resolved and fielded version one (AFATDS 96) to a division artillery, three corps artilleries, two army fire support elements, three battlefield coordination detachments, an enhanced deep operations coordination cell, and command post Tango in Korea units.[195]

In the midst of developing, testing, and fielding of the version one (AFATDS 96) software, the Army revamped the AFATDS fielding schedule in 1996. The Army planned to field three different variations of AFATDS version two between 1997 and 1999 as AFATDS 97, AFATDS 98, and AFATDS 99 and version three AFATDS software in 2000 as AFATDS 00. As explained by U.S. Army Training and Doctrine Command

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[195]Ibid., p. 155; "AFATDS Update," Field Artillery, Mar-Apr 98, p. 34, Doc III-158, 1998 USAFACFS ACH; FY 95 Report (Summary), Director of Operational Test and Evaluation, subj: AFATDS, Doc III-159, 1998 USAFACFS ACH; FY 97 Report (Summary), Director of Operational Test and Evaluation, subj: AFATDS, Doc III-160, 1998 USAFACFS ACH; Report, subj: Assessment Report for the Division XXI AWE, Jan 98, Section 3, Doc III-67, 1998 USAFACFS ACH.

(TRADOC) System Manager for Fire Support Command, Control, and Communications (FSC3) in the fall of 1996, the releases would enhance corps and echelons-above-corps deep operations functions, joint capabilities, and Multiple-Launch Rocket System (MLRS) and Paladin howitzer interfaces and lead to full technical fire direction capabilities. Specifically, AFATDS 97 would furnish corps and echelons-above-corps functionality, modify MLRS/Army Tactical Missile System (ATACMS) command and control processes, and enable the Field Artillery to plan and execute deep battle operations faster and safer than ever before.[196]

[196]1996 USAFACFS ACH, pp. 155-56.

AFATDS 98, AFATDS 99, and AFATDS 00 would provide additional capabilities. To be released in 1998, AFATDS 98 would concentrate on U.S. Marine Corps/joint functionality, meet Department of Defense computing standards, and facilitate greater interoperability among the services. AFATDS 99, scheduled for release in 1999, would begin the move toward technical fire direction on a single platform by building direct interfaces with MLRS and Paladin, while AFATDS 00 (version three) would be the objective system and would be released in 2002. With AFATDS 00 software, AFATDS, as planned in 1997, would automate all 321 specified fire support tasks developed at the Field Artillery School. Moreover, AFATDS would operate in the fire support element and fire support coordination centers of the supported maneuver force and field artillery command posts, fire direction centers, and selected field artillery elements throughout the command structure to furnish integrated, responsive, and reliable fire support. Reflecting upon the state of AFATDS development, a conference held at the U.S. Army Field Artillery School in June 1998 concluded that AFATDS was on the right track and that it would greatly facilitate command, control, and communications for field artillery units.[197]

Technical problems and Task Force XXI Advanced Warfighting Experiments (AWE) recommendations, in the meantime, delayed fielding AFATDS 97 from 1997 into 1998. Following a limited users test in October 1997 that demonstrated that deficiencies cataloged in previous tests had been resolved and following the integration of functional improvements that had been identified during Task Force XXI AWE, the Army released AFATDS 97 in April 1998 and fielded it to the XVIII Airborne Corps artillery, the 82nd Airborne Division artillery, the 101st Airborne Division artillery, and the 2nd Battlefield Coordination Detachment during the course of 1998. For units already equipped with AFATDS 96, new equipment training teams conducted five weeks of training on AFATDS 97 that focused upon the differences between the two version.[198]

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[197]1997 USAFACFS ACH, p. 104; Msg, subj: Annual History Report, 2 Feb 99, Doc III-161, 1998 USAFACFS ACH; Fact Sheet, subj: AFATDS, 29 Oct 98, Doc III-162, 1998 USAFACFS ACH.

[198]"AFATDS Update," Mar-Apr 98, p. 34; Msg, subj: Annual History Report, 2 Feb 99; LTC Douglas G. Beley,

"AFATDS and the Task Force AWE," Field Artillery, Jan-Feb 98, p. 4, Doc III-163, 1998 USAFACFS ACH; "AFATDS Update,: Field Artillery, May-Jun 98, p. 17, Doc III-164, 1998 USAFACFS ACH; "AFATDS Update," Field Artillery, Sep-Oct 98, p. 27, Doc III-165, 1998 USAFACFS ACH; FY 97 Report (Summary), Director of Operational Test and Evaluation, subj: AFATDS; FY 98 Report (Summary), Director of Operational Test and Evaluation, subj: AFATDS.

Based upon existing and future capabilities of AFATDS, the Assistant TRADOC System Manager for AFATDS in the Field Artillery School, Lieutenant Colonel Douglas G. Beley, early in 1998 postulated a paradigm shift in fire control. With TACFIRE or the Initial Fire Support Automated System (IFSAS) the fire direction center was the nucleus for planning and delivering fires. In AFATDS units the fire support officer's role would expand to "focus the artillery fight during both planning and execution."[199] The brigade fire support officer would orchestrate the field artillery battle using AFATDS fire support tools. "Many activities and, more importantly, fire support decisions traditionally expected of the fire direction officer [would] become the FSO's [fire support officer's]. Decisions to modify attack guidance and priority of fires now can be made and implemented at the brigade FSE [fire support element]," Colonel Beley wrote in the January-February 1998 edition of Field Artillery.[200] Ultimately, the key to massing battalion fires and focusing fires to support the brigade commander would be a well-trained brigade and battalion fire support officer. Only time would tell if the forecast was accurate.[201]

In effort to ensure that its Total Army capabilities and power projection responsibilities were met, in the meantime, the Army once again revised the fielding schedule for AFATDS in 1998. The new fielding methodology

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[199]Beley, "AFATDS and the Task Force AWE," p. 5. See Email msg, subj: AFATDS, 2 Mar 00, Doc III-129B, 1999 USAFACFS ACH, for the correct position of LTC Beley.

[200]Ibid.

[201]Ibid.

established by the Army determined that "first-to-fight" units with their "go-to-war" reserve supporting units would be fielded first and less critical active component units and their supporting reserve units would be fielded next. Under the old practice the active component units were scheduled to receive AFATDS through Fiscal Year (FY) 2004. Subsequently, all National Guard units would be fielded from FY 2004 through FY 2008. This practice created a disconnect because many Army National Guard roundout units would not have AFATDS, while their active component units would have it.[202]

[202]Msg with Atchs, subj: Revised AFATDS Fielding Plan, 12 Feb 99, Doc III-167, 1998 USAFACFS ACH.

Meanwhile, the Army continued work on AFATDS 98 that would replace AFATDS 97 and that was the first AFATDS software version to address specific U.S. Marine Corps requirements. In October-November 1998 the Army conducted a joint U.S. Marine Corps and Army limited users test to examine AFATDS 98's ability to satisfy U.S. Marine Corps requirements and identified deficiencies in air operations, naval surface fire support, trigger events, fire planning, and attack aviation. The following June-July 1999, the Army held another test to determine if the deficiencies had been corrected. Besides demonstrating solutions to problems identified during the limited user test of 1998, the 1999 test noted that the latest version of AFATDS 98 had difficulties transferring and receiving friendly and enemy unit status information through the U.S. Marine Corps Tactical Combat Operations, was unable to process air support requests, air tasking orders, and airspace control orders effectively, and was unable to execute fire plans consistently.[203]

Once the deficiencies had been corrected, the Army fielded AFATDS Version 98 in 2000. During the year, new equipment training teams fielded AFATDS 98 to the 17th Field Artillery Brigade, the 214th Field Artillery Brigade, 75th Field Artillery Brigade, the 18th Field Artillery Brigade, and 10th Mountain Division, retrofitted the 82nd Airborne Division Artillery and the 101st Airborne Division (Air Assault) Artillery, which had received AFATDS 97 in 1998 along with other units, with AFATDS 98, and furnished new equipment training. With these fieldings four

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[203]Director of Operational Test and Evaluation, FY 2000 Annual Report (Extract), AFATDS, Doc III-166; FY 99 Annual Report, Director of Operational Test and Evaluation, subj: AFATDS, Doc III-130, 1999 USAFACFS ACH; Interview with atch, Dastrup with William Sailers, Dep Dir, TSM AFATDS, 29 Feb 00, Doc III-131, 1999 USAFACFS ACH; Fact Sheet, subj: AFATDS, Apr 99, Doc III-132, 1999 USAFACFS ACH; Briefing (Extact), subj: AFATDS Accomplishments, Dec 99, Doc III-133, 1999 USAFACFS ACH; "AFATDS Update," Field Artillery, Jan-Feb 00, p. 5, Doc III-134, 1999 USAFACFS ACH, "AFATDS Update," Field Artillery, Jan-Feb 00, p. 5, Doc III-167; MAJ Michael A. Ascura, "Digital Interoperability Between AFATDS and IFSAS," Field Artillery, Jan-Feb 00, pp. 36-37, Doc III-168; Fact Sheet, subj: AFATDS, undated, Doc III-169.

battlefield coordination detachments, four corps artilleries, five divisions, an initial brigade combat team, and three field artillery brigades had AFATDS 98 as of October 2000.[204]

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[204]Briefing, subj: Fire Support's Center of Gravity, 31 Oct 00, Doc III-170; "AFATDS Update," Field Artillery, Jan-Feb 00, p. 5; Ascura, "Digital Interoperablity Between AFATDS and IFSAS," pp. 36-37.

As AFATDS 98 was being fielded to these units, the Army outlined plans to issue AFATDS to Army National Guard units beginning in FY 2001 and continuing into FY 2007 as a part of the 1998 decision to field the system to active component units and their supporting reserve component units. In mid-2000 the Army announced that the 197th Field Artillery Brigade of the New Hampshire Army National Guard, the 196th Field Artillery Brigade of the Tennessee Army National Guard, and the 45th Field Artillery Brigade of the Oklahoma Army National Guard would receive AFATDS in FY 2001. Additional Army National Guard fieldings would occur as equipment became available.[205]

Meanwhile, work on AFATDS 99 began with a limited user's test scheduled for February-March 2001. As explained on 21 June 2000 and reiterated in October 2000, AFATDS 99 would reorganize and simplify menus and windows, would streamline plain text message access, would enhance alerts, would create shortcuts, and would incorporate technical fire direction. This would permit eliminating the Battery Computer System (BCS) for cannon field artillery and Fire Direction System (FDS) for the Multiple-Launch Rocket System (MLRS). Equally as important, it would be easier to train on than AFATDS 98.[206]

DEPTH AND SIMULTANEOUS ATTACK BATTLE LABORATORY

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[205]"National Guard AFATDS Fielding and Training," Field Artillery, Jul-Aug 00, p. 35, Doc III-171; Briefing, subj: Fire Support's Center of Gravity, 31 Oct 00.

[206]Director of Operational Test and Evaluation, FY 2000 Annual Report (Extract), AFATDS; Briefing, subj: Fire Support Digitization, 21 Jun 00; Briefing, subj: Fire Support's Center of Gravity, 31 Oct 00.

Theater Precision Strike Operations Advanced Concept Technology Demonstration

On 21 November 1997 the Department of Defense approved the Theater Precision Strike Operations Advanced Concept Technology Demonstration as a new start for Fiscal Year (FY) 1998 that would run for six years in response to the Joint Forces Land Component Commander's requirement for an enhanced capability to conduct theater precision engagements and fires. In FYs 1999 and 2000 the demonstration exercised and evaluated existing and emerging technology on a synthetic battlefield that incorporated live, virtual, and constructive simulations to provide operational-level warfighting capabilities that would improve the strike planning process, expand shared situational awareness, increase joint and combined interoperability, and improve transition to reinforcement. At the same time the demonstration would provide emerging leave-behind capabilities with U.S. forces in the United States and Korea.[207]

In 2000 the Depth and Simultaneous Attack Battle Laboratory continued to furnish extensive support to the demonstration. United States Forces, Korea (USFK) exercises (Foal Eagle; Reception, Staging, Onward Movement, and Integration; Summer Exercise and Ulchi Focus Lens) provided the opportunity to demonstrate new capabilities and to assess their utility. The new capabilities provided automated methods for deconflicting airspace, updating information on approved target nominations, performing predictive battle damage assessment, and visualizing terrain.[208]

The battle laboratory also continued to enhance the

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[207]1997 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), p. 63; Email msg with atch, subj: Bat Lab Input to 2000 Annual Command History, 20 Apr 01, Doc III-172; Email msg with atch, subj: TSPO History Piece, 8 Mar 00, Doc III-136, 1999 USAFACFS ACH; Fact Sheet, subj: Theater Precision Strike Operations, Apr 99, Doc III-137, 1999 USAFACFS ACH; Memorandum for Record, subj: Battle Lab Input to 1998 Annual Command History, 22 Mar 99, Doc III-96, 1998 UAFACFS ACH.

[208]Email msg with atch, subj: Bat Lab Input to 2000 Annual Command History, 20 Apr 01.

interoperability of forces supporting the USFK mission. Interfaces between Army and Air Force systems were being developed to enhance deliberate targeting and time critical targeting processes. Efforts were made (and would continue to be made) to connect with Marine Corps systems for theater visibility and to enhance their inter-service processes. Work also continued to co-host the Army Deep Operations Coordination System on the Global Command and Control System - Korea for the Theater and Global Command and Control System - Army for other Army forces.[209]

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[209]Ibid.

The Battle Laboratory continued to integrate entity-level fire support simulation into the Corps Battle Simulation to improve training of fire support tasks during the Korean exercises and the Theater Precision Strike Operations Advanced Concept Technology Demonstration. The effort included initiatives to allow tactical command and control systems to communicate with simulations and to field the Fire Support Simulation Trainer to Korea and updates to simulation models.[210]

Fire Support Combined Arms Tactical Trainer

On 10-28 June 1999 the Depth and Simultaneous Attack Battle Laboratory conducted the Fire Support Combined Arms Tactical Trainer (FSCATT) M109A6 variant customer test. The test was successful, and FSCATT production lot IV contract for ten M109A6 variants was subsequently signed on 14 January 2000. A noise reduction engineer change proposal was approved in 1999 for FSCATT and was programmed to be applied as kits in Fiscal Year 2000. A total of thirty-four M109A5 variants and eleven M109A6 variant FSCATTs would be fielded upon completion of lot IV. Production was scheduled to end after lot IV.[211]

In 2000 the Army fielded the last of the thirty-four FSCATT M109A5 variants. Twenty-eight were sent to Army National Guard units, and six were sent to the Army Training Center at Fort Sill. All M109A5 variants were based on the noise reduction engineer change proposal in the last quarter of 2000, and the proposal was cut into the production line for the FSCATT M109A6 variant. The first M109A6 variants were scheduled to be delivered to the Gunnery Department in the U.S. Army Field Artillery School in September 2001. A combined team with members from the Training and Training Technology Battle Laboratory (National Guard) and the Depth and Simultaneous Attack

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[210] Ibid.; Email msg with atch, subj: TSPO History Piece, 8 Mar 00.

[211] Email msg with atch, subj: Annual Historical Report, 6 Mar 00, Doc III-138; "FSCATT for the Gunnery Team," Field Artillery, Sep-Oct 99, p. 41, Doc III-139; MAJ James B. Brashear, "Fire Support Combined Arms Tactical Trainer," Field Artillery, Mar-Apr 00, pp. 24-26, Doc III-139A; Fact Sheet, subj; FSCATT, 16 Oct 98, Doc III-139B; Operational Requirement Documents for the FSCATT (Extract), Mar 93, Doc III-139C

Battle Laboratory furnished new equipment training on the M109A5 variant.[212]

Future Fires Command and Control Concept Evaluation Program

[212]Email msg with atch, subj: Bat Lab Input to 2000 Annual Command History, 20 Apr 01, Doc III-

From 22 May 2000 to 9 June 2000 and 18 October 2000 to 3 November 2000, the Future Fires Command Control (F2C2) Concept Evaluation Program (CEP) conducted experiments at the Depth and Simultaneous Attack Battle Laboratory to examine operational systems and personnel requirements for the organizational transformation (separating command from fire control) and effects management (effects-based fires and the assessment of the Fires and Effects Coordination Cell) in the Interim Brigade Combat Team (IBCT), which were two key tenets of the U.S. Army Field Artillery Vision. The experiment employed a fires test bed to provide the operational setting for the experimentation. It consisted of a mock IBCT command post, two command post vehicle mock-ups, a surrogate battle command system, crew access units for voice communications, and interactive simulations to furnish the synthetic theater of war (STOW) environment set in a Balkan scenario. The STOW was established using four simulation systems: a JCATS simulation for maneuver, engineer, army aviation, and close air support systems; FIRESIM XXI for fire support systems; EADSIM for intelligence and reconnaissance information from echelons above division; and an unmanned aerial vehicle simulation for brigade-level reconnaissance. These systems interacted with the surrogate battle command system, Future Fires Decision Support System (F2DSS), designed for this experiment to support execution of future fires concepts. Player-controller cells provided the stimulation to the command posts and conducted operations from the JCATS and FIRESIM XXI workstations.[213]

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[213]Email msg with atch, subj: Bat Lab Input to 2000 Annual Command History, 20 Apr 01, Doc III-.

In a series of vignettes designed to replicate Stability and Support Operations (SASO) and Major Theater of War (MTW) operations in the Balkans, the laboratory evaluated the procedures for information management at the IBCT Fires and Effects Coordination Cell (FECC) and for the usability and functionality of the F2DSS. The F2DSS was employed in a networked environment that allowed all users to operate from a common operational picture that was populated by a distributed database, which included a set of graphical decision-making tools for planning and executing battle management functions (situational awareness, distributed planning, and terrain analysis). Battle Laboratory leaders anticipated that streamlining and flattening organizations combined with enabling information technologies would improve performance by promoting shared situation understanding, improving asset visibility and sensor-weapon pairings, and eliminating redundancy in the tactical fire control process to decrease sensor to shooter time. The insights gained from the experiment supported this and, in particular, highlighted the importance of linking intelligence, targeting, and attack assets available to the IBCT.[214]

In summary, the IBCT FECC structure and functions were realigned after the first experiment and validated in the second experiment, such that effects-based fires were generated by the FECC as it controlled cannon, rocket, attack aviation, and close air support lethal effects and electronic warfare and psychological operations non-lethal effects. The F2DSS common operational picture improved battlefield visualization and facilitated distributed operations, allowing command posts to share information essential to mission accomplishment. The use of this advanced technology permitted the staffs to shift their focus from information gathering and updating to collaboration and problem solving. A concept for follow-on experimentation involving modeling and operations of the Interim Division FECC was directed by the Commanding General of the U.S. Army Field Artillery Center and Fort Sill and scheduled for Fiscal Year 2001.[215]

Striker II

The Striker II Concept Experimentation Program (CEP)

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[214] Ibid.

[215] Ibid.

for Fiscal Year (FY) 2000 provided the Brigade Combat Team (BCT) with a Common Reconfigurable Sensor System (CRSS) that would be integrated with the Army Battle Command System (ABCS) and long-range (50 to 100 km) high-frequency radio communication systems. This CEP was designed to validate the concept and the achievable accuracy of a common, stabilized, multi-sensor Gimbal and to demonstrate the long-range capabilities of data and imagery transmission. A CRSS-equipped vehicle would support accurate long-range targeting and high-speed data and imagery communication to the Initial Brigade Combat Team (IBCT) Tactical Operations Center (TOC) and the Fires Effect Control Center (FECC) to meet IBCT requirements for targeting, battlefield information, and fire support coordination.[216]

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[216]Email msg with atch, subj: Bat Lab Input to 2000 Annual Command History, 20 Apr 01, Doc III-172.

The Striker II system consisted of the following components. The radar was the AN/PPS-5C Manportable Surveillance and Target Acquisition Radar (MSTAR). MSTAR was a combat-proven, battlefield radar system for detecting and locating moving targets and for adjusting artillery fire. It had the ability to detect a walking man out to seven kilometers, a single small vehicle up to fifteen kilometers, and one larger vehicle to a maximum of twenty-four kilometers. The target location error at twenty-two kilometers was fifty meters. The second-generation FLIR was a lightweight, self-contained, day/night thermal imaging device using an advanced sensor and a solid state thermoelectric cooler. It could operate in adverse battlefield scenarios, including light foliage, smoke, dust, and camouflage, at ranges up to ten kilometers. The second-generation FLIR would not only provide substantial increased range performance and decreased target acquisition time compared to first-generation FLIRs but also provide a major contribution to digitizing the battlefield through image transfer and automation.[217]

The Striker II would furnish added value to warfighters by giving the forward observer an enhanced capability to see the 3-D battlefield at a greater depth with more detail in day or night at ranges greater than forty kilometers. The increased capabilities supported the IBCT requirement for information dominance across a unilateral battlespace with real-time targeting data. It was important to note that the current observer capabilities were limited to daytime and good weather. This package of sensors supported a more proactive planning, execution, and attack of targets of opportunity. The Harris radio demonstrated that voice, digital, and imagery and digital messages could be communicated over a long distance. Meeting the needs of an IBCT force would require a change to high-frequency radio for the forward observer. Field artillery observers would need to provide fire support on a non-linear area of operations where an observer might be several miles from

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[217] Ibid.

the fire support command and control.[218]

GUARDFIST II Upgrade

[218] Ibid.

During 2000, the Depth and Simultaneous Attack Battle Laboratory participated in the development of an Engineering Change Proposal for the Guard Unit Armory Device Full-Crew Interactive Simulation Training Field Artillery (GUARDFIST II). The GUARDFIST II training system were designed to provide a portable system for one student and one instructor, who were designated GUARDFIST II (1:1), and a classroom system for thirty students and one instructor, who were designated GUARDFIST II (1:30). Both systems had been successfully fielded and were performing their intended functions. As with many equipment types, operational experience and advanced technology helped define potential improvements. Upgrades to the GUARDFIST II would be documented in the form of an Engineering Change Proposal (ECP). The changes would be structured to provide a definable baseline for the existing GUARDFIST II (1:1) system and the enhanced GUARDFIST II (1:4) system.[219]

The system would consist of an upgraded GUARDFIST II (1:1) computer cabinet, a liquid crystal display (LCD) projector, portable projection screen, student and instructor binoculars, instructor color monitor, instructor track ball or mouse, printer, keyboard, speakers, transit cases, and associated cables. The enhanced GUARDFIST II (1:1) would utilize a state-of-the-art personal computer coupled with a LCD projector to present the GUARDFIST II scenes, targets, and related training information to the students on a large screen similar to the present GUARDFIST IIA classroom systems. The students would view the scene with binoculars and interface with the instructor and system using verbal commands or the digital interface device (DMD), forward entry device (FED), handheld terminal unit (HTU), or ruggedized handheld computer interface. The computer enhancements would provide the operating system software and CD-ROM capability for additional training opportunities in the form of existing CD-ROM based training courses and other graphic files that could furnish views of

[219]Email msg with atch, subj: Bat Lab Input to 2000 Annual Command History, 20 Apr 01, Doc III-172.

previously unoccupied areas to be used for rehearsals.[220]

Forward Observer Exercise Simulation

[220] Ibid.

On 14 December 2000 the Depth and Simultaneous Attack Battle Laboratory staffed the Forward Observer Exercise Simulation (FOXS) operational requirements document and system training plan (STRAP) worldwide for comments. The FOXS would provide quality training for Military Occupational Speciality (MOS) 13F skill levels 1-3 as well as being a common task trainer for all soldiers. The system would be high-level architecture interoperable. FOXS could operate in a stand-alone mode to train one to thirty students in an institutional training environment or could operate at unit-level to train four forward observers without the use of live ammunition. FOXS would operate with the Fire Support Combined Arms Tactical Trainer (FSCATT) to train field artillery units in collective tasks in a combined arms environment. FOXS would be interoperable with other combined arms tactical trainers locally and via long-haul networks. FOXS would monitor performance and provide feedback in accordance with the Standard Army Action Review System. FOXS would also support institutional training at the U.S. Army Field Artillery School and sustainment training in all active, reserve, and National Guard units. The FOXS operational requirements document and STRAP were forwarded to U.S. Army Training and Doctrine Command headquarters for additional staffing on 28 March 2001.[221]

Battlefield Coordination Detachment Deep Operations and Coordination Cell Conference

During 28-30 March 2000, the Depth and Simultaneous Attack Battle Laboratory hosted the annual Battlefield Coordination Detachment (BCD)/Deep Operations Coordination Cell (DOCC) Conference in Snow Hall with attendees coming from numerous Army major commands and joint organizations. This annual conference provided an excellent venue for exchanging ideas and discussing issues that affected the performance and capabilities of the BCDs, and the 2000 conference was expanded beyond the usual BCD-focus to include corps- and army-level DOCCs. The emphasis of this year's conference was the application of local tactics, techniques, and procedures (TTP); user needs; joint fires; and digital integration.[222]

[221]Email msg with atch, subj: Bat Lab Input to 2000 Annual Command History, 20 Apr 01, Doc III-172.

[222]Email msg with atch, subj: Bat Lab Input to 2000 Annual Command History, 20 Apr 01, Doc III-172.

Attendees to the conference briefed local TTP and joint exercise experience and made recommendations for changes in doctrine, materiel, and training. The Intelligence and Field Artillery Centers, including appropriate U.S. Army Training and Doctrine Command system manager representatives, as well as joint and other service representatives conducted briefings on Army and joint specific subjects. The issues raised during the conference were provided to the appropriate organizations for review and action and would furnish the foundation for the 2001 conference.[223]

Battle Simulation Center

[223]Ibid.

The battle simulation center continued to provide support to the Field Artillery Officer Basic and Captains Career Courses, the Warrant Officer Basic and Warrant Officer Advance Courses, the Advanced Noncommissioned Officer and Basic Noncommissioned Officer Courses, the Battle Staff Noncommissioned Officer Course, and the brigades and battalions of the III Armored Corps Artillery. During the year, the center implemented the Joint Conflict and Tactics Simulation at the Field Artillery School. The center used the Joint Conflict and Tactics Simulation as part of the Digital Battlestaff Sustainment Trainer. The Joint Conflict and Tactics Simulation model was the ground combat model that the center used to support the Future Fires Command and Control Concept Evaluation Program.[224]

[224]Email msg with atch, subj: Bat Lab Input to 2000 Annual Command History, 20 Apr 01, Doc III-172.

LIST OF ACRONYMS

ABCS, Army Battlefield Control System
AC, Active Component/Assistant Commandant
ACH, Annual Command History
ACCP, Army Correspondence Course Program
ACR, Armored Cavalry Regiment
ACTD, Advanced Concept Technology Demonstration
ADLP, Army Distance Learning Plan
ADT, Active Duty Training
AECP, Army Experimental Campaign Plan
AFATDS, Advanced Field Artillery Tactical Data System
AG, Adjutant General
AGR, Active Guard Reserve
AHR, Annual Historical Review
AIT, Advanced Individual Training
ALO, Authorized Level of Organization
ARAC, Army Radar Approach Control
ARARNG, Arkansas National Guard
ARNG, Army National Guard
ASARC, Army System Acquisition Review Council
ASAS, All-source Analysis System
ASI, Additional Skill Identifier
ATACMS, Army Tactical Missile System
ATACS, Advanced Target Acquisition Counterfire System
ATC, Artillery Training Center
ATCAS, Advanced Towed Cannon System
ATCCS, Army Tactical Command and Control System
ATDL, Army Training Digital Library
ATLAS, Advanced Technology Light Artillery System
ATTD, Advanced Technological Transition Demonstration
AWE, Advanced Warfighting Experiment
BAT, Brilliant Antiarmor Submunition
BAT P3I, BAT Preplanned Product Improvement
BCD, Battlefield Coordination Detachment
BCS, Battery Computer System

BCT, Brigade Combat Team
BFIST, Bradley Fire Support Vehicle
BNCOC, Basic Noncommissioned Officer Course
BRAC, Base Realignment and Closure
CALL, Center for Army Lessons Learned
CAS3, Combined Arms Services Staff School
CATA, Combined Arms Training Activity
CCC, Captains Career Course
CEP, Concept Evaluation Program/Concept Experimentation Program
C4I, Command, Control, Communications, Computers, and Intelligence
CG, Commanding General
CGS, Command Ground Station
CGSC, Command and General Staff College
CMF, Career Management Field
COB, Command Operating Budget
COLT, Combat Observation Lasing Team
CONUS, Continental United States
CPT PME, Captain Professional Military Education
CRSS, Common Reconfigurable Sensor System
CSSG, Close Support Study Group
CTC, Combat Training Center
CW, Chief Warrant Officer
DA, Department of the Army
DAB, Defense Acquisition Board
DAC, Deputy Assistant Commandant/Department of the Army Civilian
DAIG, Department of the Army Inspector General
DARPA, Defense Advanced Research Projects Agency
DAWE, Division Advanced Warfighting Experiment
DCA, Directorate of Community Activities
DCD, Directorate of Combat Developments
DCP, Directorate of Civilian Personnel
DCG, Deputy Commanding General
DEQ, Directorate of Environment Quality
DL, Distance Learning
DMD, Digital Message Device
DOC, Directorate of Contracting
DOCC, Deep Operations Coordination Cell
DOD, Department of Defense
DOIM, Directorate of Information Management
DOL, Directorate of Logistics
DPICM, Dual-Improved Conventional Munition
DPTM, Directorate of Plans, Training, and Mobilization
DPW, Directorate of Public Works
DRM, Directorate of Resource Management

DTAC, Digital Training Access Center
DTE, Directorate of Training and Evaluation
DTLOMS, Doctrine, Training, Leader Development, Organization, Materiel, and Soldiers
ECC, Effects Coordination Cell
ECP, Engineering Change Proposal
EDTM, Enlisted Distribution Target Model
EMD, Engineering and Manufacturing Development
ER, Extended Range
FA, Field Artillery
FACCC, Field Artillery Captains Career Course
FADAC, Field Artillery Digital Automated Computer
FAOAC, Field Artillery Officer Advance Course
FAOBC, Field Artillery Officer Basic Course
FAS, Field Artillery School
FAST, Future Army Schools Training
FATC, Field Artillery Training Center
FBCB2, Force Battle Command Brigade and Below
FDC, Fire Direction Center
FCS, Future Combat System
FDIC, Futures Development and Integration Center
FDS, Fire Direction System
FDSWS, Future Direction Support Weapon System
FDTE, Force Development Test and Evaluation
FECC, Fire Effects Coordination Cell
FED, Forward Entry Device
FF, Firefinder
FIST, Fire Support Team
FISTV, Fire Support Vehicle
FLIR, Forward Looking Infrared
FLOT, Forward Line of Troops
FM, Field Manual
FORSCOM, U.S. Army Forces Command
FOTE, Follow-on Test and Evaluation
FSC, Fire Support Center
FSCAOD, Fire Support and Combined Arms Operations Department
FSCATT, Fire Support Combined Arms Tactical Trainer
FSC3, Fire Support Command, Control, and Communications
FSE, Fire Support Element
FSO, Fire Support Officer
FSTS, Fire Support Training Strategy
F2C2, Future Fires Command Control
F2DSS, Future Fires Decision Support System
FTX, Field Training Exercise
FY, Fiscal Year

GAO, General Accounting Office
GD, Gunnery Department
GIT, Gender-integrated Training
GLPS, Gun Laying Positioning System
GPS, Global Positioning System
GSM, Ground Station Module
GUARDFIST II, Guard Unit Armory Device-Full-Crew
Interactive Simulation Trainer II
G/VLLD, Ground/Vehicular Laser Locator Designator
HCT, Howitzer Crew Trainer
HIMARS, High Mobility Artillery Rocket System
HIPE, Howitzer Improvement Program and Enhancements
HMMWV, High Mobility Multipurpose Wheeled Vehicle
HQ, Headquarters
HQDA, Headquarters, Department of the Army
HSOT, Howitzer Strap on Trainer
HTU, Handheld Terminal Unit
HVAC, Heating, Ventilation, and Air Conditioning
IAV, Interim Armored Vehicle
IBCT, Initial/Interim Brigade Combat Team
IDT, Inactive Duty
IET, Initial Entry Training
IFCS, Improved Fire Control System
IFSAS, Interim Fire Support Automated System/Initial Fire
Support Automated System
ILMS, Improved Launcher Mechanical System
IMI, Interactive Multimedia Instruction
IOTE, Initial Operational Test and Evaluation
IPDS, Improved Positioning Determining System
JCF AWE, Joint Contingency Force Advanced Warfighting
Experiment
JRTC, Joint Readiness Training Center
JSTARS, Joint Surveillance Target Attack Radar System
LCD, Liquid Crystal Display
LLDR, Lightweight Laser Designator Rangefinder
LRIP, Low-rate Initial Production
LW, Lightweight
MACS, Modular Artillery Charge System
MAPS, Modular Azimuth Positioning System
MEDEVAC, Medical Evacuation
MICOM, U.S. Army Missile Command
MLRS, Multiple-Launch Rocket System
MOA, Memorandum of Agreement
MOS, Military Occupational Specialty
MPO, Military Personnel Office
MSTAR, MLRS Smart Tactical Rocket/Manportable Surveillance

and Target Acquisition System
MTW, Major Theater War
NCO, Noncommissioned Officer
NCOA, Noncommissioned Officer Academy
NCOES, Noncommissioned Officer Education System
NEPA, National Environmental Policy Act
NET, New Equipment Training
NETD, New Equipment Training Detachment
NOTT, New Organization Training Team
NTC, National Training Center
OAC, Officer Advance Course
OBC, Officer Basic Course
OBCT, Officer Basic Course Training
OCONUS, Outside Continental United States
ODS, Operation Desert Shield/Operation Desert Storm
ODP, Officer Distribution Plan
OES, Officer Education System
OMB, Office of Management and Budget
ORD, Operational Requirements Document
OSD, Office of the Secretary of Defense
OSUT, One Station Unit Training
PCC, Precommand Course
PCS, Permanent Change of Station
PEO, Program Executive Officer
PERSCOM, Personnel Command
PI, Product Improvement
PM, Program Manager
POI, Program of Instruction
POM, Program Objective Memorandum
P3I, Preplanned Product Improvement
PSYOP, Psychological Operations
RAM, Random Access Memory
RAMS, Rocket and Missile Systems
RC, Reserve Component
RFPI, Rapid Force Projection Initiative
RFPI ACTD, Rapid Force Projection Initiative Advanced Concept Technology Demonstration
ROTC, Reserve Officer Training Corps
RSTA, Reconnaissance, Surveillance, and Target Acquisition
SADARM, Sense-and-Destroy Armor Munition
SASO, Stability and Support Operations
SINCGARS, Single-channel Ground and Airborne Radio System
SJA, Staff Judge Advocate
SME, Subject Matter Expert
SOSR, Suppression, Obscuration, Secure, and Reduce
SSC, Small-scale Contingency

SSM, Surface-to-Surface Missile
ST, Special Text
STOW, Synthetic Theater of War
STRAP, System Training Plan
TACFIRE, Tactical Fire Direction System
TAD, Towed Artillery Digitization
TADSS, Training Aids, Devices, Simulators and Simulations
TASS, Total Army School System/The Army School System
TATS, Total Army Training System
TDA, Tables of Distribution and Allowances
TDY, Temporary Duty
TELS, Transporters, Erectors, and Launchers
TF, Task Force
TNET, Telecommunications Satellite Network
TOC, Tactical Operations Center
TRADOC, U.S. Army Training and Doctrine Command
TRAP, TRADOC Remedial Action Program
TSC, Training Service Center
TSM, TRADOC System Manager
TSSAM, Tri-Service Stand-off Attack Missile
TTP, Tactics, Techniques, and Procedures
USACGSC, U.S. Army Command and General Staff College
USAFAC, U.S. Army Field Artillery Center
USAFACFS, U.S. Army Field Artillery Center and Fort Sill
USAFACS, U.S. Army Field Artillery Center and School
USAFAS, U.S. Army Field Artillery School
USAFATC, U.S. Army Field Artillery Training Center
USAR, U.S. Army Reserve
USFK, United States Forces, Korea
VSEL, Vickers Shipbuilding and Engineering Limited
VTC, Video Training Conference
VTT, Video Teletraining
WIDD, Warfighting Integration and Development Directorate
WRAP, Warfighting Rapid Acquisition Program
XO, Executive Officer
ZBB, Zero Base Budget

APPENDIX ONE
STUDENT PRODUCTION FOR FISCAL YEAR 2000

Course	Initial Input	Graduates
FA Captains Career Course	339	335
FA Officer Basic Course	759	735
Basic Noncommissioned Officer Courses	617	607
Advanced Noncommissioned Officer Courses	456	447
Primary Leader Development Courses	951	928
Battle Staff Noncommissioned Officer Course	61	61
Total	3,183	3,113
U.S. Army Field Artillery Training Center (Basic Combat Training, One Station Unit Training, Advanced Individual Training, and U.S. Marines)	19,401	17,945
Grand Total for FY 2000	22,584	21,058

Source: Email msg, subj: Student Production Statistics for FATC during FY 2000, 15 Mar 01, Doc II-71; Email msg, subj: Student Production Figures for FAOBC and FACCC, 15 Mar 01, Doc II-72; Email msg, subj: Student Production Statistics for FY 2000, 20 Mar 01, Doc II-73.

APPENDIX TWO
KEY TRAINING COMMAND PERSONNEL

Commandant and Chief of Field Artillery:
    MG Toney Stricklin, 11 Aug 99-present
Assistant Commandant U.S. Army Field Artillery School and Deputy Commanding General-Training:
    BG William F. Engel, 5 Oct 99-present
Chief of Staff, Training Command/Commander of the 30th FA Regiment:
    COL Theodore J. Janosko, 18 May 98-16 Jun 00
    COL Michael T. Madden, 16 Jun 00-present
Commander, U.S. Army Field Artillery Training Center:
    COL Gerard M. Walsh, 8 Jun 98-20 Jun 00
    COL T. O'Donnell, 20 Jun 00-present
Commandant, Noncommissioned Officers Academy:
    CSM Ricky L. Hatcher, 21 Jun 99-20 Jun 00
    CSM Joseph W. Stanley, 21 Jun 00-present
Director, Directorate of Combat Developments:
    COL George M. Svitak, Jul 99-Jun 00
    COL Jerry Hill, Jun 00-present

Director, Depth and Simultaneous Attack Battle Laboratory:
COL Peter S. Corpac, Jul 98-present
Director, Gunnery Department:
COL Thomas G. Waller, Jr., Nov 98-present
Director, Fire Support and Combined Arms Operations Department:
LTC (P) L. Blum, Aug 99-Jul 00
COL L.G. Swartz, Jul 00-present
Director, Warfighting Integration and Development Directorate:
Dr Phyllis Robertson, Nov 99-present

APPENDIX THREE
KEY USAFACFS PERSONNEL

Commanding General/Commandant of U.S. Army Field Artillery School/Chief of Field Artillery:
MG Toney Stricklin, 11 Aug 99-present
Chief of Staff:
COL David C. Ralston, 13 Jul 99-present
Deputy Commanding General-National Guard:
BG D. McCall, 1 Oct 98-present
Garrison Commander:
COL R.A. Cline, Jun 99-present
Director, Directorate of Community Activities:
Randy B. Cone, Jan 00-present
Director, Directorate of Civilian Personnel:
John D. Kerr, 29 Sep 96-present
Director, Directorate of Information Management:
Phyllis Bacon, Apr 99-present

Director, Directorate of Logistics:
T.S. Haymend, 12 May 96-present
Director, Directorate of Contracting:
Bernie Valdez, Jan 97-present
Director, Directorate of Resource Management:
COL Robert L. Hanson, 8 Jul 96-present
Director, Directorate of Public Works
COL Gary W. Wright, 1 Jun 98-present
Director, Directorate of Environmental Quality:
T.U. Eldridge, 3 Apr 98-present
Director, Directorate of Plans, Training, and Mobilization:
LTC Britt E. Bray, 9 Aug 99-Jun 00
Mitch Pinion (acting) Jun 00-Aug 00
LTC M. Enneking, Aug 00-present

APPENDIX FOUR
FIELD ARTILLERY SCHOOL COMMANDANTS

CPT Dan T. Moore, l9 Jul l9ll-l5 Sep l9l4
LTC Edward F. McGlachlin, Jr., l5 Sep l9l4-26 Jun l9l6
School was closed 26 June 1916-27 July 1917
COL William J. Snow, 27 Jul l9l7-26 Sep l9l7
BG Adrian S. Fleming, 26 Sep l9l7-ll May l9l8
BG Laurin L. Lawson, ll May l9l8-l8 Dec l9l8
BG Dennis H. Currie, 24 Dec l9l8-l0 Jun l9l9
BG Edward T. Donnely, 30 Jun l9l9-9 Jul l9l9
MG Ernest Hinds, 25 Oct l9l9-l Jul l923
MG George LeR. Irwin, l Jul l923-l Apr l928
BG Dwight E. Aultman, 6 Apr l928-l2 Dec l929
BG William Cruikshank, 8 Feb l930-3l Jul l934

MG Henry W. Butner, l7 Sep l934-l0 Mar l936
BG Augustine McIntyre, 29 Jun l936-3l Jul l940
BG Donald C. Cubbison, l Aug l940-22 Dec l940
BG George R. Allin, 20 Jan l94l-30 Jun l942
BG Jesmond D. Balmer, l Jul l942-ll Jan l944
MG Orlando Ward, l2 Jan l944-30 Oct l944
MG Ralph McT Pennell, 3l Oct l944-30 Aug l945
MG Louis E. Hibbs, 30 Aug l945-4 Jun l946
MG Clift Andrus, 20 Jun l946-15 Apr l949
MG Joseph M. Swing, 9 Apr l949-3l Mar l950
MG Arthur M. Harper, 2 Apr l950-l6 Nov l953
MG Charles E. Hart, 4 Jan l954-28 May l954
MG Edward T. Williams, 8 Jul l954-23 Feb l956
MG Thomas E. de Shazo, l2 Mar 1956-31 Jan 1959
MG Verdi B. Barnes, l5 Feb 1959-25 Mar 196l
MG Lewis S. Griffing, 6 Apr 196l-3l Mar 1964
MG Harry H. Critz, l Apr 1964-l5 May 1967
MG Charles P. Brown, 5 Jul 1967-20 Feb 1970
MG Roderick Wetherill, 24 Feb 1970-3l May 1973
MG David E. Ott, l Jun 1973-24 Sep 1976
MG Donald R. Keith, 9 Oct 1976-2l Oct 1977
MG Jack N. Merritt, 22 Oct 1977-26 Jun 1980
MG Edward A. Dinges, 27 Jun 1980-27 Sep 1982
MG John S. Crosby, 28 Sep 1982-3 Jun 1985
MG Eugene S. Korpal, 4 Jun 1985-17 Aug 1987
MG Raphael J. Hallada, 20 Aug 1987-19 Jul 1991
MG Fred F. Marty, 19 Jul 1991-15 Jun 1993
MG John A. Dubia, 15 Jun 1993-7 Jun 1995
MG Randall L. Rigby 7 Jun 1995-7 Jun 1997
MG Leo J. Baxter, 7 Jun 1997-11 Aug 1999
MG Toney Stricklin, 11 Aug 1999-present

This list represents the most accurate information currently available at Fort Sill. Since World War I, the school commandant has also served as post commander of Fort Sill.

APPENDIX FIVE
CHIEFS OF FIELD ARTILLERY

*MG William J. Snow, 15 Feb 1918-19 Dec 1927
*MG Fred T. Austin, 20 Dec 1927-15 Feb 1930
*MG Harry G. Bishop, 10 Mar 1930-9 Mar 1934
*MG Upton Birnie, Jr., 10 Mar 1934-24 Mar 1938
*MG Robert M. Danford, 26 Mar 1938-9 Mar 1942
BG George R. Allin, 20 Jan 1941-31 Jun 1942
BG Jesmond D. Balmer, l Jul l942-ll Jan l944
MG Orlando Ward, l2 Jan l944-30 Oct l944

MG Ralph McT Pennell, 3l Oct l944-30 Aug l945
MG Louis E. Hibbs, 30 Aug l945-4 Jun l946
MG Clift Andrus, 20 Jun l946-15 Apr l949
MG Joseph M. Swing, 9 Apr l949-3l Mar l950
MG Arthur M. Harper, 2 Apr l950-l6 Nov l953
MG Charles E. Hart, 4 Jan l954-28 May l954
MG Edward T. Williams, 8 Jul l954-23 Feb l956
MG Thomas E. de Shazo, l2 Mar 1956-31 Jan 1959
MG Verdi B. Barnes, l5 Feb 1959-25 Mar 196l
MG Lewis S. Griffing, 6 Apr 196l-3l Mar 1964
MG Harry H. Critz, l Apr 1964-l5 May 1967
MG Charles P. Brown, 5 Jul 1967-20 Feb 1970
MG Roderick Wetherill, 24 Feb 1970-3l May 1973
MG David E. Ott, l Jun 1973-24 Sep 1976
MG Donald R. Keith, 9 Oct 1976-2l Oct 1977
MG Jack N. Merritt, 22 Oct 1977-26 Jun 1980
MG Edward A. Dinges, 27 Jun 1980-27 Sep 1982
*MG John S. Crosby, 28 Sep 1982-3 Jun 1985
*MG Eugene S. Korpal, 4 Jun 1985-17 Aug 1987
*MG Raphael J. Hallada, 20 Aug 1987-19 Jul 1991
*MG Fred F. Marty, 19 Jul 1991-15 Jun 1993
*MG John A. Dubia, 15 Jun 1993-7 Jun 1995
*MG Randall L. Rigby 7 Jun 1995-7 Jun 1997
*MG Leo J. Baxter, 7 Jun 1997-11 Aug 1999
*MG Toney Stricklin, 11 Aug 1999-present

*Individuals with an asterisk by their name were officially recognized by the Department of War or Department of the Army as the Chief of Field Artillery. The War Department created the Office of the Chief of Field Artillery on 15 February 1918 to supervise the Field Artillery. On 9 March 1942 the War Department abolished the Office of the Chief of Field Artillery as part of a general wartime reorganization and placed the Field Artillery under the Army Ground Forces, and the Commandant of the Field Artillery School became the unofficial Chief of Field Artillery. BG Allin's dates of tenure reflect his term as Commandant of the Field Artillery School. When the War Department dissolved the Chief of Field Artillery on 9 March 1942, General Allin became the unofficial Chief of Field Artillery and served until 31 June 1942. This explains the overlap in time of service with Generals Danford and Allin. In 1983 the Department of the Army reestablished the Chief of Field Artillery to oversee the development of Field Artillery tactics, doctrine, organization, equipment, and training. Although the War Department and later the Department of the Army did not recognize an official Chief of Field Artillery from 1942 through 1983, the Commandants of the U.S. Army Field Artillery School and its sucessors during those years considered themselves to be the Chief of Field Artillery.

APPENDIX SIX
TRAINING COMMAND ORGANIZATION IN 2000

APPENDIX SEVEN
LIST OF DOCUMENTS

CHAPTER ONE

1. "Silhouettes of Steel," Field Artillery, Nov-Dec

00,
p. 32.
2. Department of the Army, Unit Manning Campaign Plan, 8 Nov 99.
3. Email msg with atch, subj: Transformation of Training Command, 9 Feb 01.
4. Briefing, subj: Ft. Sill Reorganization, 5 Jan 01.
5. Interview, Dastrup with COL Theodore J. Janosko, Deputy Assistant Commandant for Training Organization and Doctrine, Training Command, 17 Jan 01.
6. Memorandum for Record, subj: Field Artillery Training Command, 10 Jan 01.
7. Email msg, subj: Branch School and Branch Technical/Tactical Training Directorate, 17 Jan 01.
8. Email msg with atch, subj: Revision of Transformation of Training Command, 20 Feb 01.
9. "Army to Beef Up Divisions," ArmyLink News, 8 Nov 99.
10. "Army Begins Manning Initiatives," U.S. Army News Release, 8 Nov 99.
11. Department of the Army, Unit Manning Campaign Plan, 8 Nov 99.
12. Memorandum for See Distribution, subj: FY 2001 ODP, 2 Jun 00.
13. Email msg, subj: ODP Cuts, 11 May 00.
14. Interview, Dastrup with CPT Frank A. Socha, G-1, Training Command, 31 Jan 01.
15. Dastrup with SGM R.L. Hatcher, SGM, 30th Field Artillery Regiment, 6 Feb 01.
16. Memorandum for Commanding General, subj: Proposed FY01 Officer Distribution Plan Cuts, 18 Jul 00.
17. Memorandum for Commanding General, subj: TRADOC FY01 ODP, undated.
18. Memorandum for Commander, U.S. Army Training and Doctrine Command, subj: Commander's Statement - TRADOC Resource Review Annex 3 Narrative Showstoppers, 28 Jul 00.
19. Email msg, subj: ODP-EDTM Portion of Annual Command History, 12 Feb 01.
20. FY 2000 Resource Contract, U.S. Army Field Artillery Center and Fort Sill.
21. USAFACFS, FY 2001-07 Mission, Vision, and Installation Priorities, 12 Jun 00.
22. Memorandum for See Distribution, subj: FY 01 Command Operating Budget - OMA TRADOC Budget Guidance (TBG)/FY01 Zero-Based Budget Plan, 15 Jun 00.\

23. Briefing, subj: FY01 Budget Guidance, Commanding General, 14 Jul 00.

24. Briefing, subj: TRADOC Command Plan, Fy01-07, 12 Jun 00.

24A. Memorandum for Record, subj: DRM Director's comments on budget section of 2000 Annual Command History, 6 Jun 01.

25. Memorandum for Cdr, TRADOC, subj: Commander's Statement - FY01 Command Operating Budget, 21 Aug 00.

26. Memorandum for See Distribution, subj: FY00 Appropriation TRADOC Budget Guidance (TBG), 18 Feb 00.

27. Memorandum for See Distribution, subj: FY00 Appropriation TRADOC Budget Guidance (TBG), 8 Feb 00.

28. Memorandum for See Distribution, subj: TRADOC Command Program Management System Phase III - Review and Analysis, 1 Mar 00.

29. Email msg with atch, subj: FY00 Cannot Do Converted to Schedule 50 Format, undated.

30. Information Paper, subj: Operation of automated Small Arms Ranges and OCIE Stock Conditions at CIF at Fort Sill, 22 Mar 00.

31. Information Paper, subj: Operation of Small Arms Ranges, OCIE Stock Conditions, and ITAM for Fort Sill, 12 Oct 00.

32. Information Paper, subj: BASOPS Dining Facilities and Laundry Support to Training, 22 Mar 00.

33. Information Paper, subj: BASOPS Dining Facilities and Laundry Support to Training, 12 Oct 00.

34. Point Paper, subj; Infrastructure Inspections/Repairs and MAR Projects for Fort Sill, 22 Mar 00.

35. Point Paper, subj: Integration for Army Experimental Campaign Plan Exercises and Experiments for Fort Sill, 22 Mar 00.

36. Interview with atch, Dastrup with COL David C. Ralston, Fort Sill Chief of Staff, 6 Dec 00.

37. TRADOC Monthly Status Report, 15 Oct 00.

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39. DOD BRAC 1995 FY 2001 Budget Estimate (Extract), Feb 00.

40. U.S. Army BRAC Office, Fact Sheet with atch, subj: The BRACO Mission, 25 Jan 01.

41. Memorandum for Record, subj: Ft. Chaffee Annual Command History, 24 Jan 01.

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43. "Army Transfers Fort Chaffee Parcel to Local Reuse Authority," U.S. Army News Release, 21 Nov 00.
44. Information Paper, subj: Army Transfers Fort Chaffee Parcel to Local Reuse Authority, Nov 00.
45. Email msg, subj: Fort Chaffee Local Redevelopment Authority and Fort Chaffee Public Trust, 25 Jan 01.
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47. Memorandum for Command Historian, subj: USAFACFS Annual Command History, 31 Jan 01.
48. Information Paper, subj: Discussion, 10 Jan 99.
49. Information Paper, subj: Congressman Asa Hutchinson Announces Pentagon Approval of Fort Chaffee Land Transfer, 6 Sep 00.
50. Information Paper, subj: Congressman Asa Hutchinson Asks for Hearings on Closed Military Facilities, Including Fort Chaffee Redevelopment, 10 Jun 99.
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54. Memorandum for Command Historian, subj: USAFACFS Annual Command History, 31 Jan 01.
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58. "Tentative Decision Announced for DPW Contract," Fort Sill Cannoneer, 10 Aug 00, pp. 1a, 3a.
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60. Fact Sheet, subj: DPW A-76 Study Milestone Schedule, 9 Aug 00.
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64. Statement Posture of U.S. Army (Extract), Fiscal Year 2001, Feb 00.
65. "I've Been Working on the . . .," Fort Sill Cannoneer, 26 Oct 00, p. 9b.

66. Email msg, subj: Fort Sill Annual Historical Review, 22 Mar 01.
67. Email msg, subj: Fort Sill Annual Historical Review (2000), 23 Mar 01.
68. Email msg with atch, subj: Medevac, 5 Feb 01.
69. Interview, Dastrup with Randy C. Palmer, Henry Post Air Field Operations Officer, 16 Jan 01.
70. Fact Sheet, subj: Project Millennium, 12 Feb 01.
71. Tom Jackson, "Supporters Lobby at Capitol for Sill Museum," Lawton Constitution, 8 Mar 01, p. 5a.

72. Memorandum for Command Historian, subj: Coordination of 2000 USAFACFS Annual Command History, 3 Apr 01.

CHAPTER TWO

1. Interview with atch, Dastrup with Bill Lodes, WIDD, 15 Feb 01.
2. Interview, Dastrup with CPT Charles H. Akin, MLRS-NET, Gunnery Department, 12 Feb 01.
3. Distance Learning Homepage, Distance Learning, 6 Feb 01.
4. Training Management Division, WIDD, Homepage, 15 Feb 01.
5. Msg, subj: Implementation of the Army Distance Learning Program, Feb 01.
6. Email msg, subj: TASS, 2 Feb 01.
7. Interview, Dastrup with Sharon Dorrell, WIDD, 8 Feb 00.
8. Interview, Dastrup with Sharon Dorrell, WIDD, 30 Jan 01.
9. Memorandum for Record, subj: TRADOC Integration Elements, 8 Feb 00.
10. Fact Sheet, subj: TASS Readiness Report, 30 Jan 01.
11. "TASS Offers Top Quality Training at Reduced Costs for Army," TRADOC News Service, undated.
12. Email msg with atch, subj: WIDD and IBCT, 12 Feb 01.
13. Email msg with atch, subj: Field of Objective Force, 1 Aug 00.
14. Briefing, subj: Status of Brigade Combat Team Development at Fort Lewis and the Planned Performance Demonstration at Fort Knox, 16 Dec 99.
15. "Army Announces Vision of the Future," U.S. Army

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15A. LTC William A. Raymond, Jr., "Leadership Development for the IBCT," Field Artillery, Sep-Oct 00, pp. 10-14.

16. Email msg, subj: WIDD and the Transformation of the Army, 6 Feb 01.

17. Fact Sheet, subj: WIDD Support to the IBCT in the past 6 months, 5 Feb 01.

18. Briefing, subj: Fires and Effects and Field Artillery Training Strategy, 2 May 00.

19. Interview, Dastrup with LTC Peter Zielinski, Division Chief, Training and Doctrine Development, WIDD, 5 Feb 01.

20. SFC William S. Cluck and Thomas D. Bradford, "13D FATDS Specialist," Field Artillery, Mar-Apr 00, pp. 37-39.

21. Interview, Dastrup with Mike Valentine, WIDD, 26 Jan 01.

22. Email msg with atch, subj: 13D, 8 Feb 01.

23. Email msg, subj: OBC, 2 Feb 01.

24. Briefing, subj: Officer Basic Course Overview, 2 Feb 00.

25. Interview, Dastrup with COL Thomas G. Waller, Director, Gunnery Department, 22 Jan 01.

26. Email msg with atch, subj: FAOBC/Firebase, 11 Feb 01.

26A. "Engineers, Soldiers Construct Firebase," Fort Sill Cannoneer, 18 Jan 01, p. 12a.

27. Email msg with atch, subj: FP241N, 19 Jan 01.

28. Email msg with atch, subj: FP241 Decision Paper, 19 Jan 01.

29. Email msg with atch, subj: FP241 Decision Paper, 19 Jan 01.

30. Email msg with atch, subj: FP241 Engineer Slides, 19 Jan 01.

31. Email msg with atch, subj: EXUM - 2/2VTC with JRTC, 19 Jan 01.

32. "OBC Students Training During Redleg War," Fort Sill Cannoneer, 25 Jan 01, p. 10a.

33. Interview, Dastrup with LTC Robert M. Pyne, Chief, Cannon Division, Gunnery Department, 25 Jan 01.

34. Operation Order RSOP Field Training Exercise, 8 Nov 00.

35. Lesson Plan, POC Database Construction, Sep 00.

36. Lesson Plan, Fire Mission Processing for the M109A6 Howitzer, Oct 00.

37. Lesson Plan, Move Order/Request Data/Communications, Sep 00.
38. Email msg with atch, subj: FAOBC-Proposed Changes, 8 Feb 01.
39. Memorandum for Record, subj: FAOBC and OBCT Concept, 26 Jan 01.
40. Email msg, subj: OBC Track and Functional Courses, 29 Jan 01.
41. Memorandum for Record, subj: Untitled, 26 Jan 01.
42. Briefing (Extract), subj: One-Site Officer Basic Combat Training, 5 Jun 00.
43. Dastrup with Mel Hunt, WIDD, 26 Jan 01.
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State of the Field Artillery 2000: Looking Ahead to the Objective Force--Keep this?

In the November-December 2000 issue of Field Artillery, the Commandant of the U.S. Army Field Artillery School, Major General Toney Stricklin, outlined the state of the Field Artillery in 2000 and its future as part of the objective force envisioned by the Chief of Staff of the Army, General Eric K. Shinseki. The Field Artillery contemplated a clear role in the transformation effort. To this end, General Stricklin reaffirmed the Field Artillery's vision that had first been outlined five years ago and was still valid today. Its tenets stressed effects-based fires, organizational transformation, dynamic force tailoring, and munitions centrality. Effects-based fires would permit a dynamic allocation of assets to deliver the desired effects on the right target at the desired time to meet the needs of the maneuver commander and would require an effects coordination system that would automate the targeting process using real-time intelligence from all relevant sensors and delivery systems. Organizational transformation would allow the Field Artillery to separate effects management from the deliver system, making effects-based fires achievable. This would be accomplished by the effects coordination cell. To capitalize on effects management and strategic mobility, the Field Artillery had to restructure and tailor its forces to permit deploying the right mix. Also, by focusing on munitions, the Field Artillery would use the smallest number of munitions capable of providing the desired range of effects.[1]

[1]MG Toney Stricklin, "State of the Field Artillery 2000: Looking Ahead to the Objective Force," Field Artillery, Nov-Dec 00, pp. 1-5, Doc III-.

(Budget) General Stricklin's concerns reflected those of the past commanders. In his closing comments to the Fiscal Year (FY) 1999 funding cuts, Major General Leo J. Baxter wrote in June 1998, "We are concerned with our ability to execute training to standard when training loads reach peak levels. This will eventually affect unit readiness in the field, and future goals to field Army XXI and Army After Next Systems."[2] One year later in 1999, General Baxter repeated his admonition about the state of funding and its implications upon training. In the statement to the FY 2000 command operating budget, he pointed out on 19 July 1999:

> The FY00 resources continue the downward decline and will be a formidable challenge. We will continue to train the load; however, the flexibility to support increased training loads without resourcing has been eliminated. . . . Although we have identified and implemented efficiencies to posture Fort Sill to meet these reductions, the larger than expected cuts in FY00 significantly impacts our ability to perform our mission within the organizational structure and budget that remains.[3]

As the General's assessment reflected, continued resource reductions would hamper training, which was Fort Sill's

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[2]Memorandum for Cdr, TRADOC, subj: Commander's Statement — FY99 Command Operating Budget, 10 Jun 98, Doc I-27 1998 USAFACFS Annual Command History (ACH).

[3]Memorandum for Cdr, TRADOC, subj: Commander's Statement — FY00 Command Operating Budget, 19 Jul 99, Doc I-10, 1999 USAFACFS ACH.

main mission.[4]

Combat Training Centers and Trends Reversal

[4]Ibid.

On 15 January 1999 the Deputy Commanding General for Combined Arms at the U.S. Army Training and Doctrine Command (TRADOC), Lieutenant General William M. Steele, held a conference with the combat training centers (CTC) at Fort Leavenworth, Kansas, to discuss trends or problems across the battlefield operating systems. To his dismay General Steele learned that existing trends or problems across the battlefield operating systems, which consistently challenged unit operations and warfighting capabilities, were the same ones that had been identified when he was at the National Training Center, Fort Irwin, California, some ten years earlier, and had not been eliminated. He then asked the commander of the National Training Center about the lack of progress, and he responded that TRADOC's service schools were not on board and helping to eliminate the problems. Prompted by this, General Steele tasked the Center for Army Lessons Learned (CALL) at Fort Leavenworth in February 1999 to identify the trends or problems that required reversing, directed TRADOC service schools to cooperate by furnishing solutions, and established the CTC conference of 28 April 1999 as the suspense date for briefing solutions. Meeting the suspense meant reinvigorating the TRADOC Remedial Action Program (TRAP) that identified problems, established solutions, and called for updates by the proponents to ensure that corrective actions were being taken.[5]

Shortly after General's Steele's tasking, CALL pointed out the number one emerging negative trend in fire support. Based upon its analysis, CALL wrote in February 1999, "Indirect fires do not support the close fight."[6] At the Joint Readiness Training Center (JRTC) where contact was made very quickly with the opposition force using guerrilla warfare tactics in low-intensity scenarios, infantry platoon leaders and forward observers reluctantly employed indirect fires during small unit

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[5]Interview, Dastrup with MAJ Daryl Andrews, Fire Support Division, Fire Support and Combined Arms Department, 6 Jan 00, Doc III-52; Memorandum for See Distribution, subj: CTC Trends Reversal Program, 22 Feb 98, Doc III-53; Email msg, subj: Trends, 5 Mar 99, Doc III-54.

[6]Ibid.

contacts. They feared fratricide because the enemy was often only two hundred to three hundred meters away and because many fire support teams were not adequately drilled to provide fire at such close ranges or to adjust fires rapidly in such situations.[7]

[7]Ibid.

At the same time CALL addressed fire support for the heavy forces. At the National Training Center (NTC) where contact was made over a vast, expansive, desert landscape with an armored enemy during high-intensity conflict scenarios, brigades had difficulties shifting from deep operations to close support. Task force observers were routinely out of position to observe enemy formations. Targets were not planned along enemy avenues of approach, and task force observers were not in communication with the appropriate fire support agencies to attack targets of opportunity as they appeared on the battlefield.[8]

Assuming proponency for the trend reversal issue, "Integration of Fires with Maneuver," to improve fire support for the close fight, the U.S. Army Field Artillery School outlined solutions. The school assigned its Fire Support and Combined Arms Department (FSCAOD) the lead. To make the trend reversal issue more manageable, the school divided it into five areas of focus: maneuver commander's intent and focus of fires, transition from the brigade deep battle to the task force close fight, setting the conditions for suppression, obscuration, secure, and reduce (SOSR) to achieve a breach in an obstacle, training and utilization of the combat observation lasing teams (COLTS) in the maneuver brigade, and the integration of aviation into the close fight. Specifically, the school sought input from the Armor School at Fort Knox, Kentucky, the Infantry School at Fort Benning, Georgia, and the fire support trainers at the combat training centers and planned to address each issue based upon doctrine, training, leadership, organization, material, and soldiers (DTLOMS), fix responsibilities, update field manuals and to observe a focused combat training center rotation at the National Training Center in August 2000 for a heavy force and the Joint Readiness Training Center in April 2001 for a light force. The focused rotations at the combat training centers would permit observing the solutions to determine their success and to outline further remedial actions if necessary.[9]

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[8] Ibid.

[9] Memorandum for LTC William M. Steele, subj: Combat Training Center (CTC) Trends Reversal Program, 18 Mar 99, Doc III-55; Briefing, subj: USAFAS Fire Support Trends

Reversal, 14 Aug 99, Doc III-56; Email msg, subj: none, 6 Jan 00, Doc III-57; Memorandum for Record, subj: Quarterly Update from AC's Office, undated, Doc III-58; Memorandum for See Distribution, subj: Trends Reversal Conference Minuted, 28 Apr 99, 14 May 99, Doc III-59; Email msg with atch, subj: CTC Trends Lines Reversal, 31 Jan 00, Doc III-60; Memorandum for Command Historian, subj: 1999 USAFACFS Annual Command History, 23 Mar 00, Doc III-45A.

As General Steele pointed out, the Project Warrior Program initially began in 1989 with a memorandum of understanding among the Combined Arms Training Activity (CATA), the U.S. Army Total Army Personnel Command (PERSCOM), and the U.S. Army Training and Doctrine Command would be a key to the success of the trends reversal program. The memorandum of understanding intended to spread the expertise of the observers/controllers at the combat training centers to the rest of the force by assigning them to TRADOC service schools as instructors or doctrine writers where they could directly influence the writing of doctrine and/or teaching soldiers. Although the second memorandum of agreement of 1993 among CATA, PERSCOM, and TRADOC was unsigned, the Field Artillery assigned officers with combined training center experience and certification in 1999 to the Field Artillery School as instructors or doctrine writers in keeping with the spirit and intend of the Project Warrior Program and with understanding that they were vital to the success of the trends reversal program and that they provided the Army with subject matter experts to train soldiers at the schools and instructors and to write doctrine.[10]

In August 1999 the Field Artillery School's action plan underwent a significant reorientation. Under Major General Leo J. Baxter, who was the Commandant of the School from June 1997 to mid-August 1999, school focused on long-term solutions. When Major General Toney Stricklin arrived in August 1999, the focus shifted to the near-term with trends that could be fixed in the next one to two years. He wanted the school to fix doctrine, and tactics, techniques, and procedures, to look at current and future equipment issues, and to help units with home station training in effort to improve fire support in the close fight.[11]

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[10]Point Paper, subj: To Explain the Status of Project Warrior, 3 May 99, Doc III-61, 1999 USAFACFS ACH; Email msg, subj: CTC Conference, 26 Apr Minutes; Next CTC Conference, 23-25 Aug, 18 Jan 00, Doc III-62; Interview, Dastrup with Andrews, 6 Jan 00.

[11]Ibid.; Email msg with Atch, subj: CTC Trend Lines Reversal, 31 Jan 00.

(2000, Creating IBCT at Fort Lewis in 2000) As the Army searched for an IAV, activating the initial brigade combat teams proceeded with the goal of having the first one operational by December 2001 and the second by December 2002. After the Army issued the official execution order on 3 April 2000, the 3rd Brigade, 2nd Infantry Division started turning in its Abrams tanks and Bradley fighting vehicles and began training using light armored vehicles on loan from Canada until the IAVs were available and developing tactics, techniques, and procedures at Fort Lewis. The Army tailored a training program specifically for the initial brigade combat teams to teach them how to fight a new way. Using live, constructive, and virtual methodologies, training retained the light infantry ethos of physical and mental toughness, developed digital proficiency, and linked developmental training to operational training.[12]

DIVISION ARTILLERY STAFF TRAINER

In 1996 the Unit Training Division, Warfighting Integration and Development Directorate (WIDD), U.S. Army Field Artillery School (USAFAS) pointed out that the future battlefield would be different from current battlefields. Modern weaponry, brilliant munitions, and the high cost of fielding large armies would create widely dispersed battlefields. Operations would be more fast paced and more lethal than in the 1990s, while vast amounts of information produced by advanced technology,

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[12] Email msg with atch, subj: IBCT, 25 May 00, Doc III-; Email with atch, subj: Army News Release, 25 Apr 00, Doc III-; "Future Army Marching Right on Schedule," U.S. Army Public Affairs Office, 23 Oct 00, Doc III-; Email msg with atch, subj: Transformation Information, 18 Apr 00, Doc III-; Email msg with atch, subj: Slippage, 26 Jun 00, Doc III-; Email msg with atch, subj: 3rd Brigade, 7 Feb 00, Doc III-; Email with atch, subj: Transformation Information, 18 Apr 00, Doc III-; MG James Dubik, "IBCT at Fort Lewis," Military Review, Sep-Oct 00, p. 21, Doc III-; Email msg with atch, subj: Transformation Execution Order, 5 Apr 00, Doc III-.

especially digitization, would be generated from many sources. In view of this, the Commandant of the Field Artillery School, Major General Randall L. Rigby, said, "Digitization of the force will require us to rethink the way we train the FA soldier and his commanders and staffs -- our frame of reference will have to shift."[13]

[13] 1996 USAFACFS ACH, pp. 67-68.

To meet the challenges the methods of training division artillery staffs had to change. Upon becoming the Assistant Commandant of the Field Artillery School, Brigadier General William J. Lennox, Jr., launched an initiative to improve such training. Because the division artillery staff had to interact with the division staff and subordinate field artillery units, training was difficult. Traditionally, training took place in division training exercises where the entire division staff and division artillery staff could respond to different tactical scenarios, share information, and pass orders. Although this method proved to be expensive, the lack of training time and personnel tempo provided the rationale for failing to conduct planned division command post exercises. General Lennox saw advanced technology in the form of simulations as a solution.[14]

In view of this, the Unit Training Division started a study in 1996 to determine the requirements for an automated division staff trainer that would use simulations to exercise the division artillery staff and the fire support elements from the division's main and tactical command post in key staff functions. During the year, the division worked to define staff training requirements and current training deficiencies and to determine the feasibility of training a division artillery staff in three training environments -- live, virtual, and constructive.[15]

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[14]Ibid., p. 68; 1997 USAFACFS ACH, pp. 39-40.

[15]1996 USAFACFS ACH, pp. 68-69; 1997 USAFACFS ACH, p. 40.

Based upon that study that was completed early in 1997, a team headed by the Depth and Simultaneous Attack Battle Laboratory in the Field Artillery School conducted a concept experimentation program called the Division Artillery Staff Training Driver. As planned, the program would test the integration of automation, simulation, and digital operations for training division artillery staffs. Using a mission scenario and time-ordered events list, the experimentation team would transmit fire missions, message traffic, and unit movement data from the Digital Systems Test and Training Simulator (DSTATS) or the Fire Support Automated Test System (FSATS) to division artillery tactical operations center's (TOC) command and control systems during a command post exercise (CPX). Specifically, the DSTATS would stimulate the Initial Fire Support Automated System (IFSAS), and the FSATS would activate the Advanced Field Artillery Data System (AFATDS). To further replicate tactical scenarios the experimentation team would even send voice communications to the division artillery tactical operations center and the division's fire support elements. Staff performance would then be measured against expected standards developed for each event.[16]

Employing the results of the tests of the drivers of October 1997 and January 1998, the Field Artillery School intended to develop requirements for an exportable, easy-to-use, digital trainer driver for field artillery units. The system would allow a field artillery staff to conduct realistic, high fidelity sustainment training using their own command and control equipment without any additional outside resources.[17]

Fort Sill's Radar Approach Control

Established in 1959, the Army Radar Approach Control (ARAC) at Fort Sill furnished air traffic control for Henry Post Airfield on Fort Sill, the Lawton municipal airport, the Duncan Haliburton Airport, and the other airports in the surrounding area. Through the mid-1980s Henry Post Airfield was also home for a U.S. Army Forces Command helicopter battalion, two helicopter companies, a medical evacuation platoon, and ten to fifteen U.S. Army Field Artillery Center and Fort Sill helicopters and

[16]1997 USAFACFS ACH, p. 40.

[17]1997 USAFACFS ACH, p. 41.

airplanes. However, in the mid-1980s Fort Sill started losing Army aircraft because of budget cuts. Through restationings and inactivations Fort Sill lost most of its aircraft by the mid-1990s. At the end of Fiscal Year (FY) 1996, for example, Fort Sill had only a few fixed-wing aircraft and three temporary duty medical evacuation helicopters at Henry Post Airfield.[18]

In the meantime, non-Army air traffic began to take up most of the Fort Sill ARAC's time. In 1995, for example, the ARAC handled 170,670 air movements. This included approaches and departures at multiple airfields and overflights. Of this total, only twenty-two percent of the flights were Army. Forty-five percent of the flights were Air Force, and thirty-three percent were civilian.[19]

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[18]1997 U.S. Army Field Artillery Center and Fort Sill (USAFACFS) Annual Command History (ACH), pp. 11-12.

[19]Ibid., p. 12.

In view of the budget cuts of the 1990s, the aging equipment, such as the ASR-8 airport surveillance radar that would cost several million dollars to replace, the reduction in the number of Army aircraft at Fort Sill, and the accompanying decline in Army aviation traffic, the U.S. Army had to consider the rationale for maintaining the ARAC. Late in 1995, the U.S. Army Aeronautical Services Agency (USAASA) reviewed the need for the ARAC and concluded that it should be closed. In January 1996 the USAASA notified the Federal Aviation Administration (FAA) of its intention to return the currently delegated approach control authority to it. The notification stated that U.S. Army would not abruptly cease approach control operations in the Lawton/Fort Sill area that might disrupt commercial or general aviation activities and also recommended the development of a transition plan.[20]

Because Sheppard Air Force Base, Texas, used Henry Post Airfield and Fort Sill's ARAC for Euro-NATO Joint Jet Pilot training, the U.S. Air Force reacted vigorously to the recommendation and pushed for some type of accommodation. After extensive negotiations in 1996-1997, the U.S. Army and U.S. Air Force reached an understanding. According to a memorandum of agreement signed by both services in March 1997, Fort Sill would continue to operate the ARAC until the U.S. Air Force could install a new digital radar with a projected operational date of 2004. After that date Sheppard Air Force Base would assume control of the airspace formerly controlled by the Fort Sill ARAC and would remotely control the new radar. Also, Fort Sill would continue to operate and maintain a precision approach radar at Henry Post Airfield for the foreseeable future. Moreover, the existing level of funding by both services would continue until the U.S. Army relinquished control responsibility

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[20] Ibid.

to the U.S. Air Force.[21]

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[21] Ibid., p. 13; Memorandum for Command Historian, subj: SME Review of Fort Sill's Radar Approach Control Portion of the 1998 Annual Command History, 23 Feb 99, Doc I-52, 1998 USAFACFS ACH.

Despite this agreement, the large budget reductions projected for FY 1999 at Fort Sill forced the installation to reexamine the ARAC issue later in 1997. Lacking sufficient funding to operate the ARAC facility, Fort Sill leaders discussed the possibility of closing the it.[22]

Although the zero base budget process conducted in 1997 for FY 1998 permitted Fort Sill to continue operations of the ARAC facility, operating the ARAC came at a high cost. According to budget projections developed in 1998 for FY 1999, running the facility would cost $1.7 million. The U.S. Air Force would contribute $536,000 as specified in the memorandum of agreement signed in March 1997. This left Fort Sill to furnish approximately $1.2 million of the ARAC's operations. Because the installation had to pay for ARAC operations at the expense of other critical requirements, Fort Sill again contemplated closing the ARAC in FY 1999 if alternative funding could not be found.[23]

Fort Sill's decision generated a flurry of activities during the rest of 1998. Because the ARAC supported the Lawton Municipal Airport, Lawton city officials and Oklahoma's congressional delegation acted immediately. They asked that the ARAC remain operational until an alternative funding proposal could be arranged with the Department of Transportation and FAA. In fact, Oklahoma's congressional delegation under the leadership of Senator Don Nichols had language interjected into the Transportation Appropriations Bill for FY 1999 that provided funding to continue operations of the Fort Sill

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[22]Ibid.; Interview, Dastrup with Mitch Pinion, Dep Dir, DPTM, 7 Jan 00, Doc I-34.

[23]Ltr, Ronald E. Morgan, Acting Associate Administrator for Air Traffic Services, FAA, to The Honorable James M. Inhofe, United States Senate, Washington DC, 21 May 98, Doc I-53, 1998 USAFACFS ACH; Msg, subj: ARAC, 30 Nov 98, Doc I-54, 1998 USAFACFS ACH; Interview, Dastrup with Mitch Pinion, Dep Dir, Directorate of Plans, Training, and Mobilization (DPTM), 6 Jan 99, Doc I-55, 1998 USAFACFS ACH; Msg, Mitch Pinion, Dep Dir, DPTM, to Dastrup, subj: Wording of Transportation Bill, 7 Jan 99, Doc I-56, 1998 USAFACFS ACH.

ARAC until a staff study by the FAA to determine the most cost effective method of continuing air traffic services could be concluded. In view of this, Fort Sill and the U.S. Army opted late in 1998 to delay the decision of discontinuing ARAC operations.[24]

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[24]Interview, Dastrup with Pinion, 6 Jan 99; Msg, subj: ARAC, 30 Nov 98; Fort Sill Public Affairs Office News Release, 12 May 98, Doc I-57, 1998 USAFACFS ACH; Memorandum for Command Historian, subj: SME Review of Fort Sill's Radar Approach Control Portion of the 1998 Annual Command History, 23 Feb 99; Interview, Dastrup with Pinion, 7 Jan 00; Memorandum for Command Historian, subj: Coordination of 1999 Annual Command History, 17 Mar 00, Doc I-34A.

The FAA's failure to complete the study in 1999 as planned led to two agreements between the FAA and the U.S. Army that were signed in March and July 1999 to keep ARAC operating in FY 1999 with FAA funding. The agreements stipulated that the FAA would provide $1.3 million for air traffic services and that Fort Sill would furnish the labor, supervision, material, supplies, and services necessary to operate the ARAC. Subsequently in November 1999, the FAA and the Army signed an interagency agreement that extended the FAA's commitment to provide $1.3 million for FY 2000 for air traffic services and noted that the U.S. Air Force would pay the Army $560,000 to operate the ARAC. Basically, the FAA and the Air Force would pay Fort Sill to run ARAC.[25]

[25]Memorandum of Agreement between FAA and the Department of the Army, 23 Mar 99 and 30 Mar 99, Doc I-35; Modification to Interagency Agreement between FAA and US Army/Fort Sill, 5 Nov 99, Doc I-36; Interview, Dastrup with Pinion, 7 Jan 00; Memorandum for Command Historian, USAFACFS, subj: DPTM Annual History, 10 Feb 00, Doc I-37.