

*United States Marine Corps
Command and Staff College
Marine Corps University
2076 South Street
Marine Corps Combat Development Command
Quantico, Virginia 22134-5068*

MASTER OF MILITARY STUDIES

TITLE:
**THE CAX PROGRAM:
TRAINING THE MAGTF?**

**SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE
OF MASTER OF MILITARY STUDIES**

AUTHOR: MAJOR SAMUEL T. STUDDARD

AY 00-01

Mentor: Dr. Charles D. McKenna, Ph.D.
Approved: _____
Date: _____

Mentor: LtCol David G. Reist, USMC
Approved: _____
Date: _____

Report Documentation Page

Report Date 08 Mar 2001	Report Type N/A	Dates Covered (from... to) -
Title and Subtitle The CAX Program: Are We Training the MAGTF?	Contract Number	
	Grant Number	
	Program Element Number	
Author(s)	Project Number	
	Task Number	
	Work Unit Number	
Performing Organization Name(s) and Address(es) United States Marine Corps Command and Staff College Marine Corps University 2076 South Street Marine Corps Combat Development Command Quantico, VA 22134-5068	Performing Organization Report Number	
Sponsoring/Monitoring Agency Name(s) and Address(es)	Sponsor/Monitor's Acronym(s)	
	Sponsor/Monitor's Report Number(s)	
Distribution/Availability Statement Approved for public release, distribution unlimited		
Supplementary Notes		
Abstract <p>The Marine Corps Combined Arms Exercise (CAX) Program has proven to be a valuable training exercise for the past quarter century. With all of its attributes, the CAX Program is not providing the Marine Corps with the best possible combat training for the entire MAGTF because the current training is limited by an inadequate personnel structure for the Exercise Control Group. Four steps are recommended to help solve this dilemma. First, the Marine Corps must assess its training requirements and ensure the CAX Program provides a venue to accomplish specified combat training requirements. Second, each element of the MAGTF must be provided with equitable training vice the current practice of training only limited portions of the MAGTF. Third, The CAX Program must provide pre-CAX home station training for participating units. Finally, preparation for the future CAX must begin now with plans to incorporate new techniques and new technologies into the program. The CAX Program is one of the best combat training exercises in the world, but to remain relevant it must grow so it can provide each element of the MAGTF with a comparable level of training.</p>		
Subject Terms		

Report Classification unclassified	Classification of this page unclassified
Classification of Abstract unclassified	Limitation of Abstract UU
Number of Pages 73	

REPORT DOCUMENTATION PAGE

FORM APPROVED - - - OMB NO. 0704-0188

public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters services, directorate for information operations and reports, 1215 Jefferson davis highway, suite 1204, Arlington, VA 22202-4302, and to the office of management and budget, paperwork reduction project (0704-0188) Washington, dc 20503

1. AGENCY USE ONLY (LEAVE BLANK)	2. REPORT DATE 8 MAR 2001	3. REPORT TYPE AND DATES COVERED STUDENT RESEARCH PAPER
4. TITLE AND SUBTITLE THE CAX PROGRAM: ARE WE TRAINING THE MAGTF?		5. FUNDING NUMBERS N/A
6. AUTHOR(S) MAJOR SAMUEL T. STUDDARD		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) USMC COMMAND AND STAFF COLLEGE 2076 SOUTH STREET, MCCDC, QUANTICO, VA 22134-5068		8. PERFORMING ORGANIZATION REPORT NUMBER NONE
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) SAME AS #7.		10. SPONSORING/MONITORING AGENCY REPORT NUMBER: NONE
11. SUPPLEMENTARY NOTES NONE		
12A. DISTRIBUTION/AVAILABILITY STATEMENT NO RESTRICTIONS	12B. DISTRIBUTION CODE N/A	
13. ABSTRACT (MAXIMUM 200 WORDS) The Marine Corps' Combined Arms Exercise (CAX) Program has proven to be a valuable training exercise for the past quarter century. With all of its attributes, the CAX Program is not providing the Marine Corps with the best possible combat training for the entire MAGTF because the current training is limited by an inadequate personnel structure for the Exercise Control Group. Four steps are recommended to help solve this dilemma. First, the Marine Corps must assess its training requirements and ensure the CAX Program provides a venue to accomplish specified combat training requirements. Second, each element of the MAGTF must be provided with equitable training vice the current practice of training only limited portions of the MAGTF. Third, The CAX Program must provide pre-CAX home station training for participating units. Finally, preparation for the future CAX must begin now with plans to incorporate new techniques and new technologies into the program. The CAX Program is one of the best combat training exercises in the world, but to remain relevant it must grow so it can provide each element of the MAGTF with a comparable level of training.		
14. SUBJECT TERMS (KEY WORDS ON WHICH TO PERFORM SEARCH) COMBINED ARMS EXERCISE PROGRAM (CAX)	15. NUMBER OF PAGES: 54	
	16. PRICE CODE: N/A	

17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE: UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT
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EXECUTIVE SUMMARY

Title: The CAX Program: Training the MAGTF?

Author: Major Samuel T. Studdard, United States Marine Corps

Thesis: The Marine Corps is not receiving the maximum benefit from the CAX Program, nor can it, given the current training focus and personnel structure. Over the years the CAX Program has grown in relation to the Marine Corps and its doctrine. As the MAGTF embraces new technologies and places more emphasis on integration within the MAGTF, the CAX Program must continue its evolution to maintain its relevance.

Discussion: For the CAX Program to accomplish its mission, set forth in the 1999 Draft MCO 3500.11E - training the entire MAGTF and providing a venue to validate and recommend doctrine - four steps need to be taken. Initially, the Marine Corps must assess its training requirements and ensure CAX events can provide a venue to accomplish these tasks. Second, the CAX must immediately provide equal training for each element of the MAGTF. Third, in the near term, the CAX Program must provide the MAGTF more detailed and proactive training prior to and during the exercise. Finally, in the long term, the CAX Program must help prepare the Marine Corps to fight and win within the parameters laid out in *Joint Vision 2020* and *Marine Corps Strategy 21*.

Conclusion: The Marine Corps can and must improve its CAX Program. This program, which provides the most realistic training exercise outside of combat, is a critical factor in helping the Marine Corps maintain its essential combined arms combat skills. Improving the program will levy a cost, primarily in personnel, but this cost is minor in comparison to the benefit of combat success.

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CHAPTER 1

INTRODUCTION: WHAT IS A CAX?

The Marine Corps' Combined Arms Exercise Program, better known as the CAX, is a live-fire exercise conducted in the Mojave Desert at the Marine Corps Air Ground Task Force Training Command (MAGTFTC),¹ Twentynine Palms, California. This exercise is designed to facilitate training for each element of the Marine Air Ground Task Force (MAGTF): the Command Element (CE), the Ground Combat Element (GCE), the Combat Service Support Element (CSSE), and the Aviation Combat Element (ACE). The current exercise centers on the integration of capabilities and elements in the close fight. As a result, the GCE, which for the typical CAX is a reinforced infantry battalion, becomes the primary beneficiary of the training.² A Marine Colonel, normally an infantry regimental commander, commands the MAGTF.³ His regimental staff fulfills the role of the MAGTF CE. The ACE, composed of multiple squadrons including both fixed wing aircraft as well as rotary wing aircraft, is task organized to accomplish the six functions of Marine Aviation. Rounding out the MAGTF is the CSSE, which forms a Combat Service Support Detachment (CSSD), equivalent to a Marine Expeditionary Unit Service Support Group (MSSG) and tasked with providing the combat service support required by the MAGTF.

¹ Formerly known as the Marine Corps Air Ground Combat Center (MCAGCC) and often referred to as the Combat Center.

² Historically the Ground Combat Element (GCE) has been an infantry battalion, but as recently as CAX 3/4-00 the GCE was a tank battalion. The proposed GCE for CAX 3/4-00 is a light armored reconnaissance battalion.

³ Typically an infantry regimental commander commands the MAGTF; however, an artillery regimental commander, who in turn employed his staff as the MAGTF command element, commanded a recent MAGTF.

The CAX is a twenty-two day training evolution based entirely on live-fire execution. Due to the inherent dangers of live fire execution, the high costs of ammunition, the varying levels of training among units, and limited training time, the CAX is broken into three distinct blocks. Each block incorporates a phased approach or a crawl, walk, and run methodology. Block one, from training day one through training day six, begins with a series of classes focused on procedures required for safe execution of training through techniques and procedures for the application of combined arms in a mid to high intensity mechanized environment. Block one ends with live fire application for the company Fire Support Teams (FiSTs) and each separate rifle company. Block two, from training day seven through training day eleven, is designed to bring the rifle companies together with their FiSTs to plan and execute a reinforced company mechanized or helicopterborne assault under the control of the infantry battalion. This block allows the units to apply the individual skills learned in phase one as a team to achieve a common task. Block three, from training day twelve through training day twenty-two, brings the MAGTF fully into the exercise. In this block the MAGTF CE is assigned a series of tasks requiring them to coordinate and employ all elements of the MAGTF to accomplish the overall mission. Block three begins with an orders briefing by the MAGTF followed immediately by a combined terrain board exercise for all commanders and staffs from the Major Subordinate Elements (MSE) of the MAGTF. This rehearsal exercise, conducted and critiqued in the Combined Arms Staff Trainer (CAST), allows the MAGTF to reduce or eliminate many friction points prior to live fire

execution and serves as the initial step for phase three which culminates with a three-day live-fire exercise, Figure 1 (CAX 1-01 Scheduled Training Highlights).⁴

**CAX 1-01
Training Highlights
October 1 - October 22**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
CAX 1-01 ARRIVAL CLASSES AND BRIEFS	2 RANGE 410A (Col) CLASSES	3 RANGE 410A (C02) RANGE 410A (ENG) RANGE 410 (Col) HAC PLANNING ENGR PRAC APP	4 RANGE 410A (C03) RANGE 410 (C02) RANGE 400 (Col) ASCEX I MAC/OCD OVERVIEW	RANGE 410A (LhR) RANGE 410 (C03) RANGE 400 (C02) ASCEX II ASCEZ II HELO OP (C02)	6 RRANGEE 441100 (LAR) RANGE 400 (C03) FSCEX I	7 EXFOR PLANNING DAY
LARSC (AM) MAC 0 (Col) (PM) HAC CAST	9 MAC DEF (Col) HAC: ASSAULT (C02) (PM)	10 RAC DEF/ EXTRACT (C02) (AM) MAC 0 (C03) (PM)	11 MAC DEF (C03) (AM) MAC 0 (TK CO) (PM)	12 EXFOR PLANNING DAY	13 CAST I (AM) ASCEX III (A) (PM)	14 CAST II (AM) ASCEX III (B) (PM)
15 FSCEX II	16 FSCEX III	17 MOVE TO FIELD PASS RANGE CONTROL	18 FINEX	19 FINEX	20 FINEX	21 CG OUTBRIEF
22 FINEX DEBRIEF CAX 9-00 DEPARTS						

Figure 1. CAX 1-01 Scheduled Training Highlights

The Combined Arms Exercise Program is frequently referred to as the crown jewel of Marine Corps combat training since it “is the most realistic live-fire training exercise in the Marine Corps.”⁵ In his initial Commandant’s Planning Guidance General

⁴ Commanding General, MCAGCC, Combat Center Bulletin 3120, subject “Combined Arms Exercise (CAX) 1-01 AND 2-01,” enclosure (2), 1, Cancel Dec 00.

⁵ Commandant of the Marine Corps, Draft Marine Corps Order 3500.11E, subject “Marine Corps Air Ground Combat Center (MCAGCC), Combined Arms Exercise (CAX) Program,” 1, 1999.

Charles Krulak stated, “No unit training is more important to our warfighting capabilities than the CAX Program.”⁶ The mission of the CAX Program is:

. . .[T]o train, exercise, and critique participating units in the command, control, and coordination of supporting arms in support of ground combat operations. This mission includes providing the training and guidance for Exercise Force (E/F) / Marine Air-Ground Task Forces (MAGTFs) in fire support planning and coordination. To achieve the necessary degree of realism, live ordnance, innovative training aids, and tactics and techniques of the real world opposition forces will be used. Inherent in this mission is the requirement to examine doctrine to ensure currency and adequacy and to use exercises to identify innovative and more effective means of accomplishing the MAGTF mission.⁷

The CAX provides vital training for the Marine Corps because, along with the other armed services, the Marine Corps is tasked with fighting and winning our nations wars - a task at which we must always succeed.⁸ In order to best prepare for fighting and winning our nation’s wars, the CAX Program was developed to provide the Marine Corps with the most realistic combined arms live-fire training possible aside from combat. The CAX also provides an unsurpassed venue to help transform Marine Officers into MAGTF Officers through its intense, experienced-based training.

Over the years the CAX Program has grown subtly but significantly. This growth has been primarily in the scope of the exercise with little commensurate growth in personnel. Based on the mission statement set forth in the 1999 Draft Marine Corps Order 3500.11E, the Combat Center - now called MAGTFTC - via the Tactical Training Exercise Control Group (TTECG), is tasked to train, exercise, and critique all participating units of the MAGTF.⁹ This mission is presently unfulfilled and will remain so unless appropriate measures are taken.

⁶ Lieutenant Colonel Drew A. Bennett, USMC, “CAX: It’s Time to Raise the Bar, Not Lower It,” *Marine Corps Gazette*, vol 83, no 6 (June 1999): 46.

⁷ Commandant of the Marine Corps, Draft Marine Corps Order 3500.11E, 1.

⁸ U.S. President, “A National Security for a New Century,” December 1999, 19.

⁹ Commandant of the Marine Corps, Draft Marine Corps Order 3500.11E, 1.

As Major General Thomas S. Jones, Commanding General, Marine Corps Training and Education Command, notes, MAGTF training is the key and must be the focus of CAX. Marines need to leave the CAX fully understanding that the MAGTF as a whole is the strength of the Corps vice a single element of the MAGTF.¹⁰ The Marine Corps is missing a unique opportunity to provide the entire MAGTF with training and critique tantamount to that given to the GCE. The irony is all the elements of the MAGTF are together, they are working together to achieve a common MAGTF mission, they are already funded, and they have the largest, least restrictive training area available in the Marine Corps for combined arms live fire training (See Appendix A.)¹¹

The three most difficult parts of an exercise are marshalling all elements together in time and space, developing a challenging scenario for all elements, and securing the requisite training areas. These tasks have already been accomplished through the established CAX Program. The primary core, minus resources - primarily personnel, is in place to allow the CAX Program to continue its growth. The Marine Corps can ill-afford to let this exercise get out of step with its present and future training needs.

THESIS

The Marine Corps is not receiving the full benefits from the CAX Program, nor can it, given the current training focus and personnel structure. To accomplish the mission set forth in the Draft MCO 3500.11E four steps need to be taken. Initially, the Marine Corps must assess its training requirements and ensure CAX events can provide a

¹⁰ Major General Thomas S. Jones, USMC, Commanding General, Marine Corps Training and Education Command, interview by the author, 11 December 2000.

¹¹ Turley, Gerald H. Colonel, USMC, *A Managerial Analysis of Selected Marine Corps Bases to Determine Optimum Training Opportunities for the 1980s*, (University of Redlands, 13 August 1980), 72-100.

venue to accomplish these tasks. Second, the CAX must immediately provide equal training for each element of the MAGTF. Third, in the near term, the CAX Program must provide the MAGTF more detailed and proactive training prior to and during the exercise. Finally, in the long term, the CAX Program must help prepare the Marine Corps to fight and win within the parameters laid out in *Joint Vision 2020* and *Marine Corps Strategy 21*.

CHAPTER 2

CAX EVOLUTION: PAST TO PRESENT

To understand how the CAX program arrived where it is today and to lay the foundation for a look at the future, one must understand how the exercise evolved into its current state. This chapter will trace the evolution of the CAX from its inception to its current form. Initial guidance and goals will be highlighted, followed by some of the more notable changes. Concluding this section will be an explanation of the philosophical change that led the CAX to its current status of a training exercise instead of an evaluated exercise.

IN THE BEGINNING

General Louis H. Wilson, the twenty-sixth Commandant of the Marine Corps, was the visionary behind the CAX Program. As the Commander of Fleet Marine Force Pacific in 1972, he wanted a range and an exercise program to replicate the Nightmare Range run by Colonel Bob Boyd during the Korean War. The General believed this live-fire range produced great results for the Marines during the Korean War and helped develop the exceptional combat skills of those veterans who would be the senior leaders involved, some years later, in the Vietnam War.¹

¹ Colonel Verle E. Ludwig, USMC (Ret), *U.S. Marines at Twentynine Palms, California*, (Washington D.C.: History and Museums Division, Headquarters U.S. Marine Corps, 1989), 67. The Nightmare Range was a live-fire, combined-arms range designed to train new infantry units and to sharpen veterans before sending them into them into the line. Colonel Boyd and his staff would evaluate the performances of commanders and their units that went through the training.

The initial combined arms training exercise conducted at the Combat Center² was called the Palm Tree Exercise which eventually grew to be known as today's CAX. In 1979, General Barrow, the twenty-seventh Commandant, assigned Colonel Gerald H. Turley to serve concurrently as the Director of the Combined Arms Exercise, the Director of Operations and Training for the Combat Center, and the Base Operations Officer.³ Colonel Turley developed an extraordinary exercise for the Marine Corps, eclipsing General Wilson's vision. He was uniquely qualified to direct the CAX based on his combat experiences in Korea and Vietnam as well as his tour as the Commander of the Second Marines.⁴ It was during his tour with Second Marines that Colonel Turley developed the RLT-2 SOP to help guide his reinforced regiment in North American Treaty Organization (NATO) Operations *Northern Wedding and Bold Guard*. This SOP would later help form the CAX framework as well laying the groundwork for the techniques and procedures taught as part of the program.⁵

Colonel Turley was given guidance from General Barrow to accomplish four main tasks. First, he was to fully develop the existing exercise into a mechanized-combined arms training exercise. Second on the agenda was developing a tactical scenario which caused the entire EXFOR to move ten to twenty kilometers per day. Next, the exercise was to incorporate at least one company level or higher night move and or attack per night. The fourth task was to get the commanding officers off the hills

² MAGTFCTC was referred to as the Combat Center during this period.

³ Colonel Gerald H. Turley, USMC (Ret), interviewed by the author, 9 October 2000. During the interview Colonel Turley would state that he had too much power by virtue of these billets, but he would also say that this allowed him to rapidly carry the program in the direction he wanted. He went on to say that today it would be impractical to serve in these three billets concurrently.

⁴ Ludwig, 73. The passages on this page detail the tremendous accomplishments of Colonel Turley at the Combat Center and lend further insight as to his unique qualifications.

⁵ Turley interview by the author, 9 October 2000.

and into a mobile fight causing them to command the fight from the front out of a mobile command post.⁶

Although the tasks were daunting, Colonel Turley had generous support from the chain of command. The Commandant, General Barrow, visited and actively observed ten of the first eighteen exercises. In addition to the Commandant, approximately ninety-five percent of active duty Marine General Officers visited the Combat Center during this same time frame. Each time the Commandant spoke about training and warfighting he referred to the CAX Program and the fire support coordination training that was taking place in the desert.⁷

The capstone event of the CAX became known as the FINEX, short for Final Exercise. This evolution was ninety-six hours long with 1,500 vehicles plus the accompanying Marines covering one hundred miles of unforgiving desert terrain. The intent was to stretch logistics and to stress combined arms in a mobile mechanized environment. Colonel Turley was pleased, with one exception. He believed that roughly twenty-four hours of time were wasted during the evolution due to the exercise force looking for personnel coupled with the friction inherent in an exercise of this magnitude. Over time he hoped to decrease the lost training time through better training and technology.⁸

Colonel Turley had the ability to do as he wished since he practically controlled all training areas and operations aboard the Combat Center by virtue of his three concurrent billets. However, the senior support given to the program was the overriding

⁶ Turley interview by the author, 9 October 2000.

⁷ Turley interview by the author, 9 October 2000.

⁸ Turley interview by the author, 9 October 2000.

factor in its success. Colonel Turley repeatedly stated that “you cannot effect change without senior support.”⁹ The same is true today. If the CAX is to continue its growth and relevance, it must be fully supported by the Marine Corps’ senior leaders.

By the end of his tour Colonel Turley had laid the foundation for an exercise program unsurpassed in the Marine Corps and perhaps unsurpassed by any other military organization in the world. This exercise has continued its growth, mirroring the needs of the Marine Corps, while still remaining focused the application of combined arms in a mechanized environment.

THE EVOLUTION OF CAX: THE LAST TWENTY YEARS

The basic CAX framework, with an extended final exercise, remains practically the same today as it was in the past. However, many subtle but important changes have occurred over the past two decades that have helped the program to grow. Primarily the changes have been in personnel, ammunition and weapons usage, pre-FINEX training, and training philosophy.

Regarding personnel, artillerymen largely filled the initial Table of Organization (T/O) for the Palm Tree Exercises. This was eventually changed since there was a perceived loss of maneuver focus in conjunction with fires. The change in the early T/O stood the test of time. Today a mixture of Military Occupational Specialties (MOSs) fills the TTECG staff, with the preponderance coming from the combat arms. This change has helped to strengthen the knowledge base of TTECG concerning the integration of the

⁹ Turley interview by the author, 9 October 2000.

MAGTF's combined arms assets and as a result these portions of the MAGTF have received better training.¹⁰

Regulations and requirements associated with ammunition and weapons employment have improved over time, thus helping the EXFOR to plan and execute a more realistic operation. Changes pertaining to the use of the artillery's Rocket Assisted Projectile (RAP) have proven to be some of the most significant. Originally, the MAGTF was limited to firing the RAP to a three-hour window during two days of phase three. This firing had to be coordinated and approved by the Federal Aviation Administration (FAA) several weeks in advance of training and then again just prior to firing. These restrictions severely inhibited flexibility and reduced counterfire-planning considerations for the MAGTF. The scenario driven by TTECG was limited as well, turning enemy indirect fire and counterfire into a standard event negating a flexible response driven by the MAGTF Commander's Guidance.¹¹ In 1999 this was changed for the better. A compromise was made with the FAA allowing the use of RAP any time as long as an altitude restriction was observed. The training improvements have been substantial for the MAGTF as they are now realistically challenged to plan and execute a surface based counterfire plan vice executing a preordained plan.

Many pre-FINEX changes have resulted from post CAX comments from the Exercise Forces (EXFOR), Marine Corps Lessons Learned (MCLLs), emerging doctrine, and real world missions that units expected to execute while they were deployed. Due to these comments, many evolutions, most notably the Mobile Assault Course (MAC) and

¹⁰ Turley interview by the author, 9 October 2000.

¹¹ Lieutenant Colonel Edward J. Lesnowicz, USMC, Marine Corps Lessons Learned, subject: Direct Support Artillery Range and Ammunition Management, 27 November 1993.

the Helicopterborne Assault Course (HAC), have changed. These comments have also brought about an increased emphasis on teaching fire support coordination as the application and integration of fires in consonance with maneuver.

The MAC and HAC changes have been gradual but when viewed over time they have been substantial. Many post exercise comments noted the limited use of infantry Marines during the CAX.¹² As a result, the scenarios for the MAC and HAC now are both built around an enemy occupying a complex bunker system that requires the Marines to conduct a dismounted assault to accomplish the assigned mission. These concerns have been addressed in the FINEX as well. There are now between twenty and twenty-five opportunities for company-level dismounted attacks during the final exercise depending upon the MAGTF's chosen scheme of maneuver. All of these attacks have the opportunity to be fully supported by the entire compliment of MAGTF combat power including artillery, aviation, and electronic attack.

Doctrinal procedures used by the infantry battalion and MAGTF Fire Support Coordination Centers (FSCCs) and the Company Fire Support Teams (FiSTs) presented a serious fire support concern. Unfortunately, doctrinal publications detailing techniques and procedures for these critical functions are very limited in scope and detail. Addressing this need, TTECG developed and published handbooks prescribing applicable techniques and procedures derived from successful live-fire execution.

Another concern expressed by the Marine Corps was the limited live-fire training and experience of the infantry battalion staff regarding fire support planning,

¹² Major Paul D. Refling, USMC, *Training to Win in the Deadly Battlefield of the Future*, Research Paper Quantico, VA: Command and Staff College, 1990), 11-14.

coordination, and execution.¹³ As a result the MAC scenario was changed from a company movement to contact to a deliberate planned attack thus causing the infantry battalion staff to become involved to a much greater extent. This change gave the infantry battalion three additional exercises to hone its fire support planning and execution skills under live fire conditions. Additionally, a Coyote¹⁴ was assigned to teach and coach in the FSCC during the MAC.

The CAST, as a fire support training tool, has seen enormous growth over the last score of years. Colonel Turley and his staff began the CAST as a tool to help with the basic coordination of fire and maneuver in relation to time and space. The first CAST board was laid out on a four-foot by eight-foot piece of plywood. Initially, the EXFOR was suspicious. They felt as if they were giving their plan away to the Coyotes. However, under Colonel Turley's tutelage units learned how to work out time space calculations. They also realized that many command and control issues could be solved prior to execution in the field, which saved time and enhanced the execution.¹⁵

The CAST continues its growth today. During 1999 the CAST was rewired to accommodate limited portions of the new digital command and control systems being fielded in the Marine Corps. Outside communication links are being established to connect the CAST at Twentynine Palms with other CASTs around the country. Plans are being explored to connect units via the CAST system to enhance pre-CAX training. The

¹³ Captain D. Pere, USMC, Marine Corps Lesson Learned, subject: Limited Role of Individual Marines During CAX, 23 November 1993.

¹⁴ Coyote is the moniker given to the Marines who form the Tactical Training Exercise Control Group.

¹⁵ Turley interview by the author, 9 October 2000.

CAST has proven to be a very effective tool for TTECG but its potential still remains largely untapped.¹⁶

EVOLUTION OF THE CAX TRAINING PHILOSOPHY:
FROM EVALUATION TO TRAINING

The training philosophy of the CAX has undergone the most drastic of all changes. Originally the staff running the CAX was called the Tactical Exercise Evaluation Control Group (TEECG) with the individual Marines referred to as Coyotes. They were responsible for planning and controlling the overall CAX Program. Most importantly, TEECG was responsible for evaluating the EXFOR and writing a report concerning their assessment of the unit's level of training and expertise. CAX quickly became a make or break exercise for commanders and their units.

Why did the evaluation cease? Colonel John A. Keenan, current Director of Amphibious Warfare School and former Director of Tactical Training Exercise Control Group, notes that it was unfair for a number of training reasons. Most notably, units had no tangible control over three essential training factors: long-term training plans, personnel rotations, and the training cycle. The long-term plan of a unit preparing for CAX was often preempted by the chain of command due to actual commitments and assignments. While critical, these missions often did not prepare the Marines for the different challenges associated with live-fire and maneuver presented by the CAX. Personnel rotations were beyond the unit's control, and often these rotations would rob

¹⁶ Colonel Gerald Turley, USMC (Ret), in conjunction with Major General Thomas S. Jones, USMC; Colonel Mel Spiese, USMC; and Mr. Dave Wood, USMC Project Officer for Ranges and Instrumentation, has been a critical catalyst behind the CAST revitalization from 1998 to the present. Mr. Wood is currently directing a study of the CAST to further develop its potential in to reality.

the EXFOR of key billet-holders days before this graded event. Furthermore, it proved impossible to schedule all units for a CAX at the same time in their training life cycle. Many units, recently returned from a deployment, would go to the CAX with a new line up of key billet holders who were not given an opportunity to train together and gel as a coherent team. These units were compared and evaluated against units that had six to twelve months of uninterrupted training with the same team in place. Of course, the execution and the resulting evaluation were, more often than not, poor for the units with recent turnover.¹⁷

Another reason for ending the evaluation was that the Coyotes were beginning to be seen strictly as evaluators and the critical teaching aspect of the CAX began to wane. TEECG relations with the exercise force deteriorated over time due to the Coyotes' attitude coupled with their role as evaluators. These Marines were truly at the top of their professional game, but they were perceived as being arrogant, aloof, and condescending toward the senior officers they were evaluating.¹⁸

The strength of the CAX initially was the relationship between trainers and trained. Three successive Commanders of the MCAGCC, Major Generals Hal Sutton, Leslie Palm, and Ronald Richard realized the importance and value of the teacher / scholar relationship described by Major General John Lejeune early in the last century. Major General Sutton reformed the methodology for delivering critiques and evaluations. His initiatives began to bridge the chasm between the EXFOR and TEECG, which

¹⁷ Colonel John A. Keenan, USMC, current Director Amphibious Warfare School, former Director Tactical Training Exercise Control Group, interviewed by the author, 30 November 2000.

¹⁸ Keenan interview by the author, 30 November 2000.

resulted in better performance by the EXFOR. These steps were continued by his successors. As a result of the reforms the formal tactical evaluations were eradicated. Units were still thoroughly critiqued, but the critique, called “the confessional” by Major General Richard, remained in house. In an effort to demonstrate the transformation the Tactical Exercise Evaluation Control Group’s (TEECG) name was changed to the Tactical Training Exercise Control Group (TTECG).¹⁹ The focus of the staff changed dramatically as well. The Coyotes began to teach classes in an effort to level the playing field for all units and a partnership was formed with the EXFOR. TTECG began to work more closely with the EXFOR in an effort to teach, train, and coach the unit toward success. Today one can see the progression of this transformation during any phase of the CAX. Coyotes and their EXFOR counterparts can now be found side by side pouring over maps, working together to solve a combined arms dilemma.

¹⁹ Keenan interview by the author, 30 November 2000.

CHAPTER 3

CAX AND ITS RELATIONSHIP TO THE MAGTF

The CAX has evolved into the Marine Corps' premier live fire combined arms exercise. It provides an unequalled training opportunity for the all the units of the MAGTF by virtue of their direct involvement in the exercise. The CAX Program gives the MAGTF an established exercise that relieves them of the responsibility to develop and emplace the required targetry, or to provide personnel and communications equipment to control the exercise. The basic force list, equipment list, as well as a recommended MAGTF structure are also provided for the EXFOR via Marine Corps directives. Additionally, much of the equipment for the EXFOR is provided through the Enhanced Equipment Allowance Pool (EEAP). In short, the MAGTF is able to fall in on an established exercise; using existing equipment, which is often in better condition than their own; with a minimal investment in time and personnel. However, something is missing.

The current CAX Program, with all of its seemingly endless virtues, contains fundamental flaws. The majority of the MAGTF does not get trained at CAX. Is this contrary to the aforementioned statement that all units of the MAGTF have a training opportunity at CAX? No. All units have a training opportunity, but all units do not get trained in the same manner with the same intensity or focus. To clarify, participating in a CAX undoubtedly allows units to train themselves for their most important mission, fighting and winning battles. The missing link is training, observation, and critique provided equitably across the MAGTF from outside sources such as TTECG. Currently,

only about thirty percent of the MAGTF receive training from the Coyotes and this is primarily during event execution.¹ Training at CAX without a direct link to TTECG or some other duty expert able to provide instruction and critique in a MAGTF context is really no different from home station training. Units that are not provided with Coyotes during the CAX are required to perform their own after action critiques which are limited to the perspective of their leaders who are often not in a position to see their unit's critical interaction with the rest of the MAGTF. Furthermore, the majority of unit leaders will not have TTECG's experience gained by observing many units trying to accomplish the same type of mission in the same type environment under the same type of tactical circumstances. The Coyote has the advantage of experience and the advantage of seeing how the unit he is teaching and observing fits into the MAGTF picture. Therefore, he is better able to assess strengths, weaknesses, and then to give unbiased recommendations on how the unit may improve as part of the larger picture. One of the primary benefits of the CAX program is the interaction between TTECG and the EXFOR.² As the Commanding General of the Second Marine Division related to Colonel Mel Spiese, Director of TTECG, "The most important agency helping the Division attain its combat readiness is TTECG."³ This asset needs to be given to every element of the MAGTF.

¹ Major Samuel T. Studdard, USMC, "Training the MAGTF," brief presented to the Artillery Operational Advisory Group, Headquarters Marine Corps, Washington D.C., May 2000.

² Major Samuel T. Studdard, USMC, "Fire Support Training Enhancements at CAX," brief to Major General Clifford Stanley, USMC, Commanding General, MCAGCC, March 2000.

³ Colonel Melvin G. Spiese, USMC, Director Tactical Training Exercise Control Group, phone conversation with the author, 26 January 2001.

WHAT ELEMENTS OF THE MAGTF ARE TRAINED BY TTECG DURING A CAX?

The GCE of the MAGTF is the focus of training during the CAX. The majority of the CAX events are planned to meet the wartime missions of the GCE. All other elements of the MAGTF receive their training primarily as a by-product of their support given to the GCE. This is simply a result of limited resources being allocated to the GCE at the point of enemy contact.⁴ Unfortunately, because of this most of the other elements of the MAGTF are left without direct interaction with TTECG. The effect is that most of these units get little, if any, critique or feedback from the Coyotes in comparison to the GCE. Since non-GCE units do not receive the same level of specific building block training and critique from TTECG they often see themselves as a training aid and believe that they could accomplish many of the same tasks at home station. Of course, this is a very myopic view, but one that is stated regularly in the EXFOR's post CAX critiques.⁵

During the first two CAX training blocks, the GCE is the primary focus. Block one of the CAX is six days long. Five of the six days are filled with GCE specific, company level and below, training. Block two, which is five days long, has three infantry battalion specific events, two MAGTF events, and one ACE specific event. All of the events for phases one and two, with the exception of two infantry live fire ranges, are fully supported by the remaining elements of the MAGTF - the ACE, the CSSD, and

⁴ Colonel Melvin G. Spiese, USMC, Director Tactical Training Exercise Control Group, Information paper, subject: "MAGTF Enhancements at CAX," August 2000.

⁵ After the final CAX debrief key leaders from the platoon level through the MAGTF Commander are given an extensive CAX critique to complete. Several commanders, most notably from the ACE and artillery, stated that they felt that their units were just used as training aids for the GCE.

the MAGTF CE. Each of these events is fully critiqued for the GCE. Control requirements essential for the exercise and limited personnel negate specific critiques for the other elements of the MAGTF supporting these events.

Block three's eleven days are focused solely on the MAGTF. The concluding event is a MAGTF debrief conducted by TTECG. This debrief addresses some, but not all, of the MAGTF elements. The GCE is critiqued in detail down to the platoon level. The ACE, the MAGTF CE, and the artillery battalion are critiqued only at their highest levels of participation. The CSSD does not receive any specific debrief or comment from TTECG. Although each unit spends the same amount of time at MAGTFTC fulfilling its role as part of the MAGTF the benefits afforded each unit are not the same.

Inadvertently the CAX has remained GCE-centric while the Marine Corps has evolved into a MAGTF-centric organization

CAX AND THE MAGTF

One of the primary lessons each unit must learn at CAX is what role other elements of the MAGTF fulfill and how they each contribute to the accomplishment of the overall mission. Individual Marines need to leave Twentynine Palms realizing that no unit can stand alone and that the MAGTF is greater than the sum of its parts. In essence, the CAX should be a vehicle to teach MAGTF skills.⁶ By providing TTECG led training and critique for only one-third of the MAGTF, the Marine Corps loses a tremendous opportunity to teach MAGTF skills to the entire force. Also, the Marine Corps is sending a mixed signal as to the level of importance it places on the training of all its units. Units

⁶ Major General Thomas S. Jones, USMC, Commanding General, Marine Corps Training and Education Command, interviewed by the author, 9 December 2000.

that do not receive individual training and critique are perceived to be of less importance than their adjacent units, which is the antithesis of the MAGTF concept.

CHAPTER 4

PHASE ONE

DETERMINE THE FOCUS OF THE CAX

The CAX Program has vast untapped potential as a training vehicle for the MAGTF. To unleash this potential, four phases have been identified which, if acted upon, will help to increase the value of this tremendous program. Each phase will be discussed in detail in the following chapters.

Phase one begins with a review of the current CAX Program to ensure its training is properly oriented so that the Marine Corps receives the maximum return on this substantial training investment. Three issues need to be addressed to ensure the CAX is focused correctly. First, the Marine Corps must decide if the entire MAGTF or only a portion of the MAGTF should receive specific TTECG training. Second, the Marine Corps needs to determine the tasks that the EXFOR must train for during CAX exercises. Finally, the Marine Corps must assess the CAX to determine whether or not the current program and facilities meet those expressed needs of the Corps. After addressing these issues, the Marine Corps then will be in a position to adjust the CAX Program as necessary to best meet its training goals and to continue its march toward the future.¹

Marine leaders, both past and present, responsible for the CAX as well as

¹ Major General Thomas S. Jones, USMC, Commanding General, Marine Corps Training and Education Command; Colonel Gerald H. Turley, USMC (Ret), former Director Tactical Exercise Evaluation Control Group; Colonel John A. Keenan, USMC, Director Amphibious Warfare School, former Director Tactical Training Exercise Control Group; Colonel Melvin G. Speise, USMC, Director Tactical Training Exercise Control Group; Colonel Michael P. Marletto, USMC, Deputy Director MAGTF Staff Training Program; separate interviews by the author August – December 2000. Each of the aforementioned Marines indicated that the initial step taken must determine what the Marine Corps wants and needs from its CAX Program.

operational commanders who have recently been CAX participants all agree that the CAX should be an exercise focused on training the entire MAGTF.² Chapter Three noted that the current CAX is focused squarely on the GCE. This focus is not by design but by default.³ The underlying problem is the sparse TTECG staff. All other major requirements to execute an exercise of this magnitude are in place. The training area is unquestionably the best in the Marine Corps for conducting mechanized combined arms training (See Appendix A).⁴ The aviation and ground maintenance and sustainment facilities for both equipment and Marines at the base camp, Camp Wilson, have been upgraded significantly over the past few years and are without equal given their expeditionary focus. The facilities and staff responsible for the maintenance of the Enhanced Equipment Allowance Pool (EEAP) are among the best in the Marine Corps. Additionally, the location of the Marine Corps Logistical Base at Barstow, California combines with the EEAP to form an unbeatable maintenance combination.

The CAX, like any exercise, will have its limitations. To ensure CAX is the best possible exercise, the Marine Corps needs to identify the specific training it needs units to receive during their twenty two-days at MAGTFTC. Mission Performance Standards (MPS) derived from Mission Essential Task Lists (METLs) are a good way to identify critical skills necessary for the EXFOR. Each phase of the program can then be adjusted, if necessary, to help units gain these essential skills. To identify the requisite skills the Marine Corps - via the Aviation, Command and Control, Ground, and Logistics

² Jones, Turley, Keenan, Spiese, Marletto, and Lieutenant Colonel Mark A. Singleton, USMC, separate interviews by the author, August – December 2000.

³ Colonel Melvin G. Spiese, USMC, Director Tactical Training Exercise Control Group, information paper, subject: “MAGTF Enhancements at CAX,” August 2000.

⁴ Turley, Gerald H. Colonel, USMC, *A Managerial Analysis of Selected Marine Corps Bases to Determine Optimum Training Opportunities for the 1980s*, (University of Redlands, 13 August 1980), 72-100.

Operational Advisory Groups (OAG) - should identify pertinent mission essential tasks for the MAGTF and each of its Major Subordinate Elements (MESs), and then derive the MPSs required to accomplish the METLs at each level. Of course, it will be impossible to address every METL and MPS; therefore, the training requirements should be prioritized focusing on those skills, which are best trained for at Twentynine Palms in a MAGTF context.⁵

The third question pertains to whether or not the current CAX meets the Marine Corps' needs. The CAX concept is firmly based on training the entire MAGTF as expressed in the mission statement.⁶ There is no simple, clear-cut answer regarding the usefulness of the CAX Program without knowing the specific tasks the Marine Corps deems necessary to be accomplished. The positive outcome of Operation Desert Storm is perhaps the best indicator regarding the usefulness of the CAX Program.⁷ The design of the current exercise is such that it can easily accommodate TTECG led training and critique for each element of the MAGTF as part of each current event provided that this training is determined to be necessary.

To get the best return on the CAX training investment, the Marine Corps Training and Education Command must have clear input from the respective OAGs representing the operational Marine Forces. This input needs to highlight the specific tasks regarded as essential for preparing the MAGTF for war. The myriad of tasks must then be prioritized and those tasks that are best attained by training in a combined arms

⁵ Jones, Marletto, separate interviews by the author, November – December 2000.

⁶ Commandant of the Marine Corps, Draft Marine Corps Order 3500.11E, subject: "Marine Corps Air Ground Combat Center (MCAGCC), Combined Arms Exercise (CAX) Program," 1, 1999.

⁷ Colonel John A. Keenan, USMC, current Director Amphibious Warfare School, former Director Tactical Training Exercise Control Group, interviewed by the author, 30 November 2000.

environment should be the focus of the CAX. The instruction, live-fire events, and critiques could then be tailored to meet the identified and agreed upon tasks.

CHAPTER 5

PHASE TWO

EQUITABLE MAGTF TRAINING

Phase two is designed to accomplish two primary tasks. The first task is to ensure all elements of the MAGTF are trained and critiqued equitably.¹ Second, the task is to ensure that all Marines leave CAX with a better understanding of the MAGTF and that they have improved their ability to operate within the MAGTF context.²

CURRENT CAX TABLE OF ORGANIZATION

The Draft Marine Corps Order, MCO 3500.11E clearly directs total MAGTF training as part of the CAX. The TTECG Table of Organization (T/O) in use does not provide enough personnel to support total MAGTF training. There are simply not enough Coyotes to assist each of the major units of the EXFOR in their training.

Presently, a total of nineteen officers are assigned to TTECG, sixteen of which are directly involved with training and exercise control Figure 2 (Current TTECG T/O).³ These Marines are responsible for the execution of the CAX Program involving over three thousand Marines each CAX. Since 1980 only three officers have been added to the T/O.⁴ During this period numerous enhancements have occurred in the CAX

¹ Major General James E. Livingston, USMC and Colonel Dennis M. McCarthy, USMCR, "Enhancements to the CAX in the 1990's," The Marine Corps Gazette vol 76, no 2 (February 1992): 14.

² Major General Thomas S. Jones, USMC, Commanding General, Marine Corps Training and Education Command, interview by the author, 11 December 2000. Major General Jones refers to these as MAGTF skills.

³ Colonel Melvin G. Spiese, USMC, Director Tactical Training Exercise Control Group, information paper, subject: "TTECG Total Personnel Requirements," August 2000.

⁴ Spiese interview by the author, August 2000.

Program such as: adding a twenty-two hour Helicopterborne Assault Course (HAC), adding over twenty-four hours to the combined Mobile Assault Courses (MAC), adding a Light Armored Reconnaissance (LAR) Screen Course, and adding two and one half days of formal classroom instruction.

The need and desire to train the entire MAGTF as part of the CAX Program exists. Unfortunately, the current T/O limits further expansion of the program.

TTECG is not able to conduct any direct training for the CSSE, MAGTF CE, ACE, or the artillery battalion other than formal classroom instruction. Beyond classroom instruction, coverage of the infantry battalion is generally limited to contact on the ranges during training event execution.⁵

Until the personnel inadequacy is rectified, the program will be unable to provide the best possible results for the Marine Corps. To examine this problem more closely the paper will examine the Artillery / Fire Support element of TTECG to demonstrate how the personnel situation in this portion of TTECG affects training for the MAGTF.

Partial TTECG Table of Organization			
	<u>Officers</u>	<u>Enlisted</u>	<u>Civ</u>
Artillery Shop	3	0	0
CURRENT T/O (TTECG Total strength)	19	44	0

Figure 2. Current TTECG T/O

⁵ Spiess interview by the author, August 2000.

THE ARTILLERY SHOP AND MAGTF TRAINING

The TTECG component responsible for ground fire support training and control is called the Artillery Shop. This shop is tasked with three primary missions. In order of precedence they are:

1. Ensuring compliance with CAX Safety Regulations.
2. Providing fire support training for the MAGTF focused on the Infantry Battalion Fire Support Coordination Center (FSCC) and the MAGTF (FSCC).
3. Training of forces at CAX emphasizing the artillery battalion, fire support teams (FiSTs), and observed fire procedures.

For the CAX to function as a realistic live fire exercise, which allows units to execute and clear fires without any non-combat required safety,⁶ the Artillery Shop must provide clearance and deconfliction of all indirect fires with aviation and maneuver forces. This clearance is required for every indirect fire mission and occurs over 30,000 times annually. The Coyotes provide the safety backstop that allows the Exercise Force to train under combat conditions using fratricide risk assessments instead of artificial restraints.

This shop was staffed with four officers until May 2000 when it lost its fourth member to scheduled rotation. This Marine, an Active Reservist, was not replaced because he was considered an overage on the T/O. When the shop was staffed with four Marines it cleared fires for every event, provided critique of all published fire support plans and fire support execution, provided training for the GCE's FSCC, and provided limited training and critique for the Artillery Battalion Fire Direction Center (FDC).

Given the three Marines now in the Artillery Shop TTECG loses the ability to conduct

⁶ The standard procedure for indirect fire safety requires pre-computation of firing data, which is then posted on each individual weapon. This data, called a Safety-T, is referenced before every fire mission to ensure the validity of the firing data for each weapon. Some ranges and exercises impose even more stringent safety regulations. Currently, the CAX is the only exercise, which allows artillery units and fire support coordinators to execute and clear fires under combat conditions without administrative safety measures.

any training for the artillery battalion FDC, and it is unable to maintain a Coyote with the GCE FSCC during each event thus reducing the training and critique for the FSCC.

Each year at the Annual CAX Conference and via CAX After Action Reports the Marine Forces request that TTECG provide training and critique for the MAGTF FSCC, the reconnaissance teams,⁷ and the artillery battalions. TTECG cannot fulfill these requests without additional personnel. The only TTECG sponsored training for the MAGTF FSCC and reconnaissance teams is limited to classroom instruction. The artillery battalion receives only limited training and critique for their FDC and this is only during block three training. The artillerymen send more than 3,200 Marines to CAX each year and spend over 220 days at Twentynine Palms. The vast majority of these Marines never receive a formal class, observation, training, or critique from TTECG. Artillery battalions located within the Continental United States (CONUS) participate in a CAX at the rate of one exercise per every twelve to eighteen months.

With the short term goal of training the entire MAGTF to a level commensurate with that of the GCE, what can be done to achieve this for the MAGTF FSCC as a sub-element of the MAGTF CE, the MAGTF's reconnaissance teams, and the MAGTF's artillery battalion? First, additional Coyotes are needed to serve as trainers, and second they are needed to implement an additional training package during block one for the artillery battalion and the reconnaissance teams.

The initial cost for improving in the short term is five additional Marines in the Artillery Shop, including reconstitution of the active reservist officer who was lost in

⁷ The most noted deficiencies for the teams are their observed fire procedures and how to trigger and then assess indirect fire.

May 2000. These Marines will be able to provide a three-day training package during block one for the entire artillery battalion and the MAGTF reconnaissance teams. Additionally, they will be able to provide training and critique for each element of the artillery battalion during each CAX event. The MAGTF FSCC will also receive fire support training and critique during all MAGTF events from these Marines. All of this training can be accomplished within the context of the current CAX. During block one of CAX 3-00, Lieutenant Colonel Mark A. Singleton's Second Battalion, Tenth Marines, and the accompanying reconnaissance detachment for CAX 3/4-00 executed a TTECG designed three-day artillery and reconnaissance training package with great success. Second Battalion, Eleventh Marines, also executed this package with equal success during CAX 5-00. The primary shortfall was that the units did the training with limited TTECG support. Two Coyotes provided exercise control and gave limited critique. This was far better than no training, but the training was basically the same as they could have executed at home station. The benefits TTECG could have added to the training were lost. This package provides a model to conduct permanently structured training for these elements in the future. Figure 3 (Benefits of Additional Marines).⁸

The Marines needed to fill the additional billets and provide this essential training are best suited to come from the active forces. With the current T/O, TTECG is forced to execute block one training and FINEX with a cadre of approximately twenty Reserve Marines. These Marines provide great support and without them the CAX program could not exist in its current format. However, due to civilian work schedules and other

⁸ Major Samuel T. Studdard, USMC, Brief delivered to the Artillery Operational Advisory Group Spring Headquarters Marine Corps, May 2000. This brief gives much greater detail concerning the implementation of this specific training package.

variables beyond Marine Corps control it is unwise to base further critical training requirements on an uncertain and ever changing personnel situation.

Additions: Cost / Benefit
<u>Cost: Additions to the Artillery Shop</u>
One 0811 – Field Artillery Chief
One 0848 – Operations Chief
One 0861 – Fire Support Chief
One 0802 – Artillery Officer (Captain)
One 0802 – Artillery Officer (Reconstituted Active Reservist)
<u>Benefits:</u>
- MAGTF FSCC will receive TTECG training and critique during each MAGTF event
- Artillery battalion will receive 68 hours of TTECG training and critique
- Artillery batteries will receive 40 hours of TTECG training and critique per battery
- Reconnaissance teams will receive 48 hours of TTECG training and critique

Figure 3. Benefits of Additional Marines in the Artillery Shop

If the goal - training the MAGTF equitably during CAX - is to become reality, the T/O must be increased to provide the necessary personnel to support the additional training. There is a cost, but over an eighteen-month period the Marine Corps will gain great dividends from this training. Each CONUS MAGTF (regimental) FSCC as part of the MAGTF CE will be trained and critiqued, the preponderance of Marine Artillery will be trained and critiqued, and the reconnaissance community will also be trained and critiqued far beyond current levels.

Training each element of the MAGTF demonstrates the importance of the entire MAGTF. The Coyotes, training and critiquing each element, will be able to link the individual unit to the MAGTF by through the critique process. By the end of FINEX, the

elements will begin to see how the parts of the MAGTF are interrelated and that they exist to fight together as a team vice separate elements.

This chapter highlighted what has to be done to bring fire support training in line with the infantry training provided to the GCE. The same thought process could be applied to the ACE, the CSSD, and the remainder of the MAGTF CE. This will serve to balance the current scale and will set the stage for wholesale growth of the CAX. Figure 4 (Total Number of Additions to the TTECG T/O Required to Implement Phase Two)⁹ depicts the personnel additions required to support MAGTF training at CAX. Phase two is not intended to be a step into the future, but a necessary step to bring CAX into the present. The next chapter will explain the near term ideas for overall CAX improvements.

PROPOSED TTECG Table of Organization: Phase Two			
	<u>Officers</u>	<u>Enlisted</u>	<u>Civ</u>
CURRENT T/O (Total strength)	19	44	0
PHASE TWO ADDITIONS	<u>18</u>	<u>38</u>	<u>1</u>
Cumulative total	37	82	1

Figure 4. Total Number of Additions to the TTECG T/O Required to Implement Phase Two

⁹ Spiese interview by the author, August 2000.

CHAPTER 6

PHASE THREE

NEAR TERM CAX IMPROVEMENTS FOR THE MAGTF

The CAX Program cannot afford to stand still. It must continue to grow and evolve with the Marine Corps or it will wither and die. Recommendations made in the last chapter are aimed at accomplishing phase two of the CAX transformation, namely, providing equitable training for the entire MAGTF. Once the entire force is on the same training plane the CAX Program then will be at the point of departure for its third step - near term improvements focused on improved training for the MAGTF as a whole. Many ideas have been presented from many different venues. Some of the more popular and relevant ideas will be examined with brief commentary pertaining to their applicability. The following ideas or suggestions for TTECG-led MAGTF training will be reviewed: provide Mobile Training Teams (MTT) from TTECG, provide logistics training for the entire MAGTF, provide for a more robust CAST, provide training for the command element of the MAGTF and each MSC, and provide a venue for a MEB CAX.

RECOMMENDATIONS:

MOBILE TRAINING TEAMS

MTTs have long been a source for discussion. As mentioned earlier, the EXFOR routinely requests some form of MTT prior to their CAX.¹ Given today's operational

¹ Lieutenant Colonel Kevin J. Murphy, USMCR, "Development of a CAX Mobile Training Team," The Marine Corps Gazette vol 76 no 2 (February 1992): 20-22.

tempo every minute of available training time must be used wisely. Units cannot afford to train inefficiently. Tactics, Techniques, and Procedures (TTPs), just like weapons and munitions, are ever changing. Often unit leaders who have been out of the operational forces are not fully up to date with the latest TTPs. As a result their units arrive at the MAGTFTC and the first time they hear or see the latest technique or procedure is during block one training. These units are often overwhelmed by the CAX tempo and find it difficult to incorporate any new methods into their standard operating procedures (SOP). A TTECG-led MTT between three and six months prior to the CAX will help the MAGTF and its individual units focus their training on relevant skills or missions they will encounter at CAX which, coincidentally, are the same skills and missions needed for their primary mission - combat.²

Classes that are taught by the Coyotes during the first days of the CAX are designed to refresh and, in many cases teach, the EXFOR the latest techniques, and procedures. If these classes were taught at home station, units would be able to incorporate any new techniques or procedures into their SOP prior to their arrival at MAGTFTC and they would arrive with an advanced base of training. MTTs could expose units to any new concepts or training events so the first time they hear them is not on day

² Major General Thomas S. Jones, USMC, Commanding General, Marine Corps Training and Education Command; Colonel Gerald H. Turley, USMC (Ret), former Director Tactical Exercise Evaluation Control Group; Colonel Melvin G. Speise, USMC, Director Tactical Training Exercise Control Group; Colonel Michael P. Marletto, USMC, Deputy Director MAGTF Staff Training Program; separate interviews by the author August – December 2000. Each of the aforementioned Marines indicated that a type of MTT could benefit the CAX training process. Units would be better prepared upon arrival and therefore could go further in training during their twenty-two day CAX cycle.

one of their CAX. An additional two and one half days could be inserted into the schedule since the need for arrival classes would be eliminated.³

For the MTTs to work there has to be a cadre of instructors who know the CAX Program intimately and have the requisite background to teach the required classes.⁴ A recommendation is to form a permanent five⁵ Coyote MTT with one representative each from the Artillery, Aviation, Intelligence, Logistics, and Maneuver Shops. The MTT would also conduct the pre-CAX Letter of Instruction (LOI) Conference, which is currently run by the CAX Director and the Shop Heads - Artillery, Aviation, Intelligence, and Maneuver - between CAX rotations. The LOI Conference and the initial training session would be run in conjunction with each other with additional MTT sessions arranged based on the MAGTF's needs and desires.⁶

Although the training executed at CAX is firmly grounded in current doctrine, there is no formal link between TTECG and Marine Corps Doctrine. The 1999 Draft MCO 3500.11E states a requirement for the CAX Program, “. . . [T]o examine current doctrine to ensure currency and adequacy and to use exercises to identify innovative and more effective means of accomplishing the MAGTF mission.” The proposed MTT could be in a position to serve as the missing link to doctrine. Their tertiary duty, after conducting mobile training and LOI Conferences, would be capturing and then publishing lessons learned and trends from CAX. These observations could in turn be

³ Jones, Turley, Keenan, Spiese, Marletto, separate interviews by the author, August – December 2000.

⁴ Jones interview by the author, 11 December 2000.

⁵ The five Coyote MTT is predicated on the development of a logistical cell as advocated in chapter five.

⁶ Spiese e-mail interview by the author, August – October 2000.

reviewed jointly by the MTT and the doctrine writers for incorporation into the publication system.⁷

MTTs will provide a great asset for TTECG and the MAGTF. Training days now used to teach basic classes could be added back to the schedule because units would be better prepared prior to their arrival. That could enable the Coyotes to focus their training on more advanced subject matter. Additionally, MTTs could provide the missing link to doctrine, which is an unfulfilled and essential part of the CAX mission.

INCREASED LOGISTICAL EMPHASIS

Once phase two CSSD training is in place, the next logical step is to incorporate logistics fully into each CAX event. The vast majority of logistics executed during a CAX is administrative. The individual events are relatively short in duration. Units routinely carry the essential items for their mission and thus never execute any tactical resupply or tactical evacuation of equipment. Medical evacuations are incorporated into the exercise, but these are aimed at the rapid evacuation of a single casualty and do not focus on mass casualty drills that would exercise the CSSD.⁸

The primary issue is to have units realize the importance of their interaction with the CSSD. Each element of the MAGTF must leave CAX understanding the criticality of logistics and how to effect tactical resupply and equipment evacuation. Beginning with block two training units should only be allowed to depart the assembly area with the basic items required to accomplish the initial portion of their mission. During execution

⁷ Marletto interview by the author, 20 October 2000.

⁸ Colonel Melvin G. Spiese, USMC, Director Tactical Training Exercise Control Group, information paper, subject: "MAGTF Enhancements at CAX," August 2000.

they must be required to request more ammunition, food, water, and materials to complete their task. The execution of the resupply must be tactical and the unit must suffer the consequences if their logistical plan is unsatisfactory.⁹

FINEX can become the real test for logistical interaction in the MAGTF. Presently, the FINEX is a fifty-four hour exercise. Just as in block two, units habitually can and do carry all of their necessary sustainment items. By incorporating the two and one half days provided by the MTTs, FINEX could be extended into a five-day event that would force units to exercise the logistical aspects of combat. Furthermore, in an effort to facilitate increased logistical interaction units should only be allowed to carry one day of supply into the event.¹⁰

Well-planned and well-executed logistical interaction is critical for the MAGTF's success in combat. Most often this vital aspect of combat is either overlooked or completed administratively since leaders do not want to cause training tempo to suffer if the beans, bullets or bandages are late. The astute commander knows that logistical training is essential training, and if the MAGTF cannot execute logistically at every level all else quickly becomes irrelevant.

COMBINED ARMS STAFF TRAININER

The CAST at the MAGTFTC provides a tremendous training tool for the MAGTF. It is used primarily for the initial tactical wargaming of the MAGTF's FINEX plan and to help identify flaws in the command and control structure used to support the plan. With all of its benefits, the CAST has vast untapped potential. Mr. Dave Wood,

⁹ Spiese interview by the author, August 2000.

¹⁰ Turley and Marletto separate interviews by the author, October 2000.

the Marine Corps Project Officer for Ranges and Instrumentation, is exploring options for the CAST, which if incorporated could provide a substantially better training tool. Three initiatives form the nucleus of these improvements: the ability to incorporate the Graphic Munitions Effects Tables (GMET) into the system upon request, enhanced command and control, and depiction of aviation. CAST improvements would not be confined to MAGTFTC but would be incorporated in the four other CASTs operated by the Marine Corps.¹¹

The first improvement is to incorporate the GMET into the CAST. Often plans are devised that hinge on the accomplishment of a specific fire support task. Units plan fires to accomplish this task without regard for the amount of ammunition, the type of ammunition, or the time required to deliver the ammunition necessary to accomplish the given fire support task. Furthermore, the logistical ramifications are rarely considered, such as lift required to transport the ammunition, the time required to transport the ammunition, and the availability of the copious amounts of ammunition needed to complete the task. Having the GMET available, as a function of the CAST, will allow the exercise controllers to highlight the tactical and logistical planning details required to execute specific tasks. Also, when the plan is unfeasible, as is often the case, the controllers can use the GMET function to help discern more feasible options.

Command and control (C2) upgrades are needed to allow the EXFOR to use their actual tactical communication devices. Maps are quickly becoming obsolete at the higher headquarters and transfer of information digitally is the wave of the future. The

¹¹ Mr. Dave Wood, USMC Project Officer for Ranges and Instrumentation, interviewed by the author 15 December 200. Mr. Wood has authored a draft proposal based on input from TTECG and operational forces that, if implemented, will revolutionize the CAST usage.

current CAST has an antiquated communication network that limits radio channels at each station and does not allow units to use their newer C2 devices. As a result the C2 architecture is not fully exercised in the CAST nor do the operators receive any ancillary training during a CAST exercise.¹²

Another function for C2 in the CAST is interoperability with units at other CASTs located around the world. Communication architecture that enables units to conduct a CAST exercise simultaneously will add a new dimension to training. An example would be the MTT exercising with a unit at Camp Lejeune, North Carolina, as part of the CAX work-up training concurrently with a CAST exercise at 29 Palms.

Aviation upgrades are necessary to truly make the CAST a MAGTF training tool. Neither aviators nor their ground counterparts can see the attack profile in the CAST. Furthermore, they cannot see the anti-air threat associated with the aviation attack profile or the threat posed by planned friendly fires in conjunction with the attack. The CAST needs to be able to depict indirect fire trajectories, anti-air threat rings, and the aviation attack profiles to help the MAGTF determine the feasibility of the air plan. The three dimensional battle is a difficult concept to comprehend, especially when it is not visually depicted. This upgrade will go far in helping the individual aviator as well as the entire MAGTF understand how all of the elements are inextricably linked.¹³

The CAST is a great tool but it needs to be improved. Upgrades that enable the CAST to incorporate the GMET, to incorporate new C2 devices and world wide linkage, and to incorporate three dimensional aviation and surface fires are necessary to continue

¹² Turley interview by the author, 9 October 2000.

¹³ Spiese e-mail interview by the author, August – October 2000.

moving forward. These changes are beneficial to the CAX, but more importantly these changes will benefit the entire Marine Corps regardless of participation in a CAX.

BATTALION

AND MAGTF LEVEL COMMAND ELEMENT TRAINING

TTECG observes and critiques the CEs of the MAGTF and their subordinate units in a limited capacity during the CAX. There are four areas that warrant TTECG involvement: planning, review of the plan, decisions made during execution, and execution results. Due to personnel limitations, TTECG only participates in observing and critiquing two of these four areas - review of the plan and execution results. Unfortunately, planning and execution decisions are the most critical of the four areas because this is where the thought process occurs. To gain the most accurate assessment and give an accurate, useful critique, TTECG needs to be involved in each of the four areas.¹⁴

A recommended solution is to provide a Coyote with each of the battalion level and higher units involved in the CAX. This Coyote would be with the CE during all planning sessions through execution. Several benefits could flow from this coverage. First, each major subordinate unit would have a duty expert to observe and teach during planning sessions and more importantly someone to help each element of the MAGTF learn how to integrate its plan with the other MAGTF elements. The next benefit would come in execution. The TTECG representative would be in a position to observe why

¹⁴ Major Samuel T. Studdard, USMC, "Training the MAGTF," brief presented to the Artillery Operational Advisory Group, Headquarters Marine Corps, Washington D.C., May 2000.

decisions were made and could then tie the decision to the results during the critique. The thought process or why the decision was made is the heart of the decision cycle and it is this thought process that needs training and critique more often than the actual execution.

MARINE EXPEDITIONARY BRIGADE CAX

Many recommendations have been made pertaining to MEB training as part of the present CAX or designing a special CAX specifically tailored for the MEB. While the idea is logical it might not be the best plan or use of assets.

Today's CAX is designed for a MAGTF built around a reinforced infantry battalion as the primary component of the GCE. The training plan and training area can facilitate unit training from the squad through a regimental sized unit. If an entire MEB were overlaid on CAX, training at the lower end of the spectrum would cease since additional personnel would be pulled from lower level training to support training for the MEB CE. In reality three of the four MEB elements will be trained at CAX with the implementation of phases one through three. The primary element of the MEB that would be untrained is the Command Element. A CE is often better trained via simulation since real-time information flow affecting the decision cycle can be altered and reduced to facilitate a more concentrated exercise in a short period of time. The MAGTF Staff Training Program (MSTP) provides an established syllabus and the necessary expertise, not resident in TTECG, to facilitate this type of training.¹⁵

¹⁵ Marletto interview by the author, 20 October 2000.

One way the MEB could be trained in conjunction with a CAX is at its home station. The CASTs could be linked and a combined training group from TTECG's MTT and MSTP could help facilitate training. The MEB could act as the higher headquarters both feeding and receiving information from the MAGTF involved in the CAX. This idea, while apparently simple, will take time to put into practice since it would first require the implementation of all the upgrades previously discussed.¹⁶

A CAX with MEB involvement is well in the future and should, if conducted, use the CAST as its medium. Any attempt to supplant the current CAX with the MEB CAX will cause a loss in training at the lower levels, training which in many cases is only available at the MAGTFTC. Training the MEB staff via simulation by using the duty experts at MSTP appears to provide the most effective training venue.

PERSONNEL REQUIREMENTS

Each option previously discussed benefits the EXFOR and ultimately the Marine Corps. Although the CAST option is technology based, the preponderance of these initiatives require a price to be paid in personnel. The proposed personnel additions listed in Figure 5 (T/O Additions Required to Implement Phase Three) represent a compilation of the requirements needed to implement phases one, two, and three.¹⁷ The first priority of the CAX must be equitable training of all MAGTF elements. Once this is accomplished the program will be ready to move forward into the future. The options are numerous, but the focus must remain on training the MAGTF as a whole. The entire

¹⁶ Jones interview by the author, 20 October 2000.

¹⁷ Colonel Melvin G. Spiese, USMC, Director Tactical Training Exercise Control Group, information paper, subject: "TTECG Total Personnel Requirements," August 2000.

team must leave CAX with a better understanding of how the entire MAGTF functions and how each unit contributes to its overall success.

PROPOSED TTECG Table of Organization: Phase Three				
		<u>Officers</u>	<u>Enlisted</u>	<u>Civ</u>
CURRENT T/O (Total strength)		19	44	0
PHASE TWO ADDITIONS		<u>18</u>	<u>38</u>	<u>1</u>
Cumulative total		37	82	1
PHASE THREE ADDITIONS	USMC	13	5	1
	USN	<u>1</u>	<u>1</u>	0
Cumulative total	USMC	50	87	2
	USN	1	1	0

Figure 5. T/O Additions Required to Implement Phase Three

CHAPTER 7

PHASE FOUR

A LOOK TO THE FUTURE

Completion of phases one, two, and three cannot signal the end of growth for the CAX Program. The Draft MCO3500.11E directs the proprietors of the CAX Program to “. . . identify innovative and more effective means of accomplishing the MAGTF mission.” This means looking to the future and directing the growth of the program in such a manner as to help the Marine Corps prepare for its future. A comment often made concerning the CAX is that it prepares units to fight the last war. No one really knows how the next war will be fought, but the Joint Chiefs of Staff joint warfighting concept called *Joint Vision 2020* conceptualizes how we expect to fight and win in the 21st century. The Marine Corps further defined its role within *Joint Vision 2020* in a document titled *Marine Corps Strategy 21*. Taken together these documents provide a warfighting azimuth for the Marine Corps and CAX Program to follow.

Full spectrum dominance is at the heart of *Joint Vision 2020*. The four major components that combine to form full spectrum dominance are dominant maneuver, precision engagement, focused logistics, and full spectrum protection. General James L. Jones, Commandant of the Marine Corps, states, in *Marine Corps Strategy 21*, that Marine Forces must, “Evolve maneuver warfare tactics, techniques, and procedures to fully exploit the joint operational concepts articulated in *Joint Vision 2020*.” The CAX of the future must prepare Marines to operate in this manner. To achieve full spectrum dominance units have to rapidly plan and execute. Making decisions more accurately and

more swiftly than the enemy is the key to full spectrum dominance. Rapid and precise decisions are based on information flow and information management. The CAX of the future must challenge the MAGTF in this arena, as it never has before.¹ Phases one through three will lay the foundation for the CAX of the future. However, the Marine Corps cannot afford to wait until the initial steps are in place before proceeding with long range planning.

FUTURE CAX CONCEPTS

Ready to Fight and Win -- Every Marine and Marine unit is ready to rapidly task organize, deploy, and employ from CONUS or while forward deployed to respond and to contain crises, or if necessary, to immediately engage in sustained combat operations. -- Core Competency number one from *Marine Corps Strategy 21*.

The CAX must use this statement as its road map to the future. Developing a future CAX does not necessarily mean an overhaul of the current program. Rather, it requires a continued evolution directed by *Joint Vision 2020* and *Marine Corps Strategy 21*. The primary focus of this evolution will be aimed at the leadership of the MAGTF.

A CAX in 2020 could resemble the following scenario that will exercise the tenants of full spectrum dominance and enroute mission planning. The TTECG MTT conducts pre-CAX training at Camp Lejeune, North Carolina (CLNC), between three and six months prior to the CAX, thus alleviating the need for any initial classroom instruction at MAGTFTC prior to exercise commencement. Several hours prior to the MAGTF's main body departure a warning order is issued to the MAGTF tasking them to accomplish an immediate mission - DOMINANT MANEUVER. This warning order will be updated throughout their transit to MAGTFTC via new systems such as the Position

¹ Colonel Gerald H. Turley, USMC (Ret), interview by the author, 9 October 2000.

Location Information (PLI)² and joint information systems, which will be used by the CE to help build a Common Tactical Picture (CTP)³ across the MAGTF - ENROUTE MISSION PLANNING based on INFORMATION FLOW and INFORMATION MANAGEMENT. The airfield and other facilities already will have been secured by an advanced party, which is conducting a rapid MPF offload at the port of Twentynine Palms, previously known as the EEAP compound - FULL SPECTRUM PROTECTION. Prior to the MAGTF's departure they can rearrange the airflow as required based on the warning order and subsequent information.⁴ Additionally, while enroute, the MAGTF can request any special ammunition or equipment to be offloaded and prepared for distribution upon their arrival - FOCUSED LOGISTICS. The initial elements of the MAGTF will be able to immediately land, arm and move straight to their initial objective which has been refined and clarified enroute - PRECISION ENGAGEMENT and DOMINANT MANEUVER. As the rest of the MAGTF flows into the airfield they will immediately gather their gear and move directly into the field.⁵ The CTP, continually updated by the by the MAGTF based upon information received from PLI and similar venues, will allow the CSSD to be more proactive in their support for the units on the ground and the units still enroute - FOCUSED LOGISTICS.⁶

² Colonel Gerald H. Turley, USMC (Ret), Draft Concept Paper subject: Common Tactical Picture, Fairfax Virginia, 9 August 2000.

³ Colonel Gerald H. Turley, USMC (Ret), Draft Concept Paper subject: Position Location Information Concept, Fairfax Virginia, 3 September 2000.

⁴ Colonel Gerald H. Turley, USMC (Ret), phone conversation with the author concerning enroute mission planning, 12 December 2000.

⁵ Turley, phone conversation with the author, 12 December 2000.

⁶ Joint Chiefs of Staff, *Joint Vision 2020*, GPO, June 2000.

As the objective is secured and the rest of the force moves immediately to the field, block one and two-type training akin to what is in place now will commence. However, each of these training events will be tied into the larger scenario. The events will provide separate ingredients for the MAGTF's preparation for their final exercise, a practice not currently in use. When the need or desire to link the CAX force into a joint operation arises, the CAST with its upgrades will be able to provide a medium for the MAGTF CE without inhibiting the actions on the desert floor.

FEASIBILITY

Is it possible for a scenario like this to work? Yes, but the initial groundwork must be in place. The initiatives outlined in previous phases need to be in place for the future CAX to achieve its desired end state. MAGTF facilities, the MTT, and the CAX scenario will require the closest scrutiny to determine feasibility.

Initially, one might think changes would be necessary to the facilities, but little needs to be changed for the facilities to support a future CAX emphasizing an MPF offload. East Coast units have, in the past, conducted the equipment draw from the EEAP as if it were an MPF offload without any significant change to the facilities. The key facility change will be the upgrades to the CAST, recommended in phase three, which are essential if the MAGTF is to have an outside link to a removed headquarters element, a removed adjacent unit, or a removed subordinate unit.

The MTT will play a vital role in the future CAX. This team must be capable of providing the MAGTF with all the pre-CAX classes and administrative information so they can execute immediately upon arrival. They may also be tasked to observe and

critique the MAGTF beginning with the receipt of the warning order through their arrival at MAGTFTC. Overall, the MTT, once in place, will be able to accomplish this additional task.

The CAX scenario will require the most work. The Marine Corps can ill-afford to lose the lower level training that currently takes place during CAX blocks one and two. The type of events should remain basically the same except they should be tied into the FINEX scenario in such a way that the purpose and outcome of each event sets the stage for the full MAGTF operation that is FINEX. The biggest change is to structure the events so they are tactically linked into the FINEX scenario and that one event flows into the next. As Major General Thomas S. Jones states, “The CAX should be a twenty one day exercise with a three day finale.”⁷ In a nutshell the CAX has the potential to be one continuous event vice a compilation of multiple events.

In summary, the CAX has to be the exercise of the present and with an eye on being the exercise of the future. The program must embrace change to provide the most challenging and relevant combat exercise for the MAGTF. Steps need to be accomplished as outlined in chapters four, five, and six for the CAX to be in a position to provide an exercise to help train and prepare the Marine Corps for its future combat role as described in *Joint Vision 2020* and *Marine Corps Strategy 21*. However, as the initial process of upgrading the CAX for the present begins, the Marine Corps needs to concurrently determine how the CAX of the future should look. The current CAX provides a good foundation for continued growth. This foundation, which was laid upon teaching TTPs at the lower end of the MAGTF, should not be destroyed. Instead, it

⁷ Major General Thomas S. Jones, USMC, Commanding General, Marine Corps Training and Education Command, interview by the author, 11 December 2000.

should be built upon for the future. Combat in the future will place increasing demands upon the MAGTF leadership to make decisions rapidly and accurately, but Marines will still have to execute in a combined arms environment to implement these decisions. Information management will be at the heart of building the common tactical picture for the entire MAGTF and any other friendly forces. The evolution of the CAX must be directed along a path to prepare the MAGTF to meet these increasing demands.

CHAPTER 8

CONCLUSION

The Marine Corps has indicated the importance of its CAX Program from the highest levels of leadership. This program, which has helped train Marines for over two decades, has grown in every respect, but it has now reached a significant crossroad. The current TTECG T/O cannot support any further growth or expansion without a personnel increase. Will the program continue to grow or will it stay the same? The CAX unquestionably must continue to grow, otherwise it will become irrelevant. The direction of this growth is the critical aspect that the Marine Corps must examine. There are many different directions and forms this growth could assume. Regardless of details, *Joint Vision 2020* and *Marine Corps Strategy 21* must be at the forefront providing an aim point for the future.

There are four phases that the program must move through to enable its continued growth in a relevant manner. During phase one, the program must be assessed to ensure current training events provide the proper venue to accomplish Marine Corps directed training. With the assessment completed, phase two amends the CAX so that training is provided equitably for each element of the MAGTF. Phase three will enhance the overall MAGTF training both at home station and at MAGTFTC. Upon completion of the first three phases, the CAX Program will be ready to transform itself into an exercise that trains the MAGTF to operate and fight in the 21st century's arena.

Initially for phase one, the Marine Corps must agree upon a common set of tasks with the accompanying performance standards to be exercised during a CAX. These

tasks should be relevant to combined arms warfare and should be tasks that are best trained for in a MAGTF context in conjunction with the unique facilities and training areas available at MAGTFTC. Identification of these tasks will lay the foundation for future CAX growth. Once the tasks and standards are agreed upon, TTECG can in turn evaluate the current CAX events to ensure they provide the proper venue to attain the stated goals. Although the CAX has moved away from an evaluated exercise, an additional benefit will be garnered from the identification of these tasks. Units can now be given specific, factual feedback based on how efficiently and effectively they mastered the requisite tasks deemed important by the Marine Corps. This feedback, which only needs to go to the exercising unit, will in turn provide a valuable training tool for the unit upon its return home.

Phase two is designed to help the current CAX Program accomplish its mission of training the entire MAGTF. This phase is perhaps the most critical of all. Until the CAX becomes a truly MAGTF training exercise instead of a GCE training exercise supported by the other elements of the MAGTF, the CAX program will not provide the Marine Corps a full return on its investment. Phase two will be a success when all elements of the MAGTF are trained and critiqued by TTECG commensurate with what is currently provided to the GCE. The major requirements necessary for training the MAGTF, such as training space, maintenance facilities, ranges, logistical support, and preplanned events requiring MAGTF participation are in place with one key exception - personnel. The only way to achieve success in phase two is to update the TTECG T/O.

Once the entire MAGTF is trained equitably, the next logical and necessary step is to improve the overall training for the MAGTF by providing a MTT, an increased

logistical emphasis, and an increased emphasis on the command elements supported by improvements to the CAST. MTTs are the key to improved MAGTF training, as their effects will influence several facets of the program. The MTTs will provide the MAGTF a chance to learn and prepare more efficiently at home station prior to CAX and they will provide a much-needed link to doctrine. Furthermore, their use will alleviate two and one half days of classroom training that can, in turn, be added back into the FINEX, which will help in the next area - logistical planning and execution. Little emphasis is presently placed on logistical interaction within the MAGTF. Changes to the amount of ammunition, food, water, and material initially carried by units for each CAX event and the extended FINEX will cause logistics to become a much greater part of MAGTF's operational planning and execution. Specific training directed at the headquarters element of each subordinate unit and the MAGTF CE is another goal for phase three. A more robust CAST will aid in training both the MAGTF CE and its subordinate units. This training tool may also provide a capability that allows a higher headquarters to participate in future exercises without detriment to the MAGTF's training.

Phase four will change the design of the CAX from a very sequential building block exercise to a rapid, continuous exercise that facilitates using the latest command and control technologies. This phase will further challenge the MAGTF to maintain a common tactical picture over vast expanses while drawing information from both Marine and joint assets. While phases one through three have to be in place before phase four begins, planning for this future CAX and building the T/O to support its needs should begin now.

There are numerous ways for directing the CAX Program toward the future. The four phases outlined here provide one of many ways for the current CAX Program to grow. Although the face of the CAX will change over time, its heart and soul, training Marines from the squad to the regimental level on the application of combined arms concurrently with maneuver, can never change.

Today's CAX Program offers a good training exercise with its training areas, facilities, EEAP, CAST, training events, and FINEX scenario. Unfortunately a good exercise is not enough, the CAX must continue to improve. The common thread connecting any type of future growth and improvement is personnel. Currently, the TTECG staff is saturated and cannot support any further growth of the program without additions.

During a recent brief to the Artillery Operational Advisory Group at Headquarters Marine Corps,¹ the senior Marine leaders present said they all wanted more robust training for their Marines who were participating in CAX. As a training plan that met their needs was unveiled, support was strong until the personnel costs were highlighted. The collective concern was that Marines could not be found to source TTECG and the cost was too high in personnel. This concern is valid. The Marine Corps does need to analyze the cost and subsequent benefit of extra Coyotes to determine whether or not additions to the T/O are worthwhile. When this analysis is completed, it will demonstrate the tremendous impact that a few individual Marines will have on the Marine Corps'

¹ Marine Artillery Operational Advisory Group Brief Notes of 20 April 2000. In attendance were Colonels Henry T. Gobar, Edward J. Lesnowitz, Bennet W. Saylor, and John M. Gardner all of whom are either current or post artillery regimental commanders.

operational forces. There are few places where so few can influence so many concerning the most important task the Marine Corps has - Fighting and Winning the Nation's Wars.

Cost of the CAX Program is an important issue and cannot be taken lightly, but is this the best way to view the issue? Perhaps the issue is not what the Marine Corps can afford, but what the Marine Corps cannot afford not to have - the best possible combat training for the nation and its Marines.

APPENDIX A: *A Managerial Analysis of Selected Marine Corps Bases to Determine Optimum Training Opportunities for the 1980s* by Colonel Gerald H. Turley, USMC.

APPENDIX B

ACRONYMS

ACE	Aviation Combat Element
CAST	Combined Arms Staff Trainer
CAX	Combined Arms Exercise
CE	Command Element
CSSD	Combat Service Support Detachment
CSSE	Combat Service Support Element
CTP	Common Tactical Picture
C2	Command and Control
EMP	Enroute Mission Planning
EXFOR	Exercise Force
FSC	Fire Support Coordinator
FSCC	Fire Support Coordination Center
FiST	Fire Support Team
GCE	Ground Combat Element
GMET	Graphic Munitions Effects Table
HAC	Helicopterborne Assault Course
MAC	Mobile Assault Course
MAGTF	Marine Air Ground Task Force
MAGTFTC	Marine Air Ground Task Force Training Command
MCAGCC	Marine Corps Air Ground Combat Center
MCLL	Marine Corps Lessons Learned
MCO	Marine Corps Order
METL	Mission Essential Task List
MPS	Mission Performance Standard
MSE	Major Subordinate Element
MTT	Mobile Training Team
MSSG	Marine Expeditionary Unit (MEU) Service Support Group
OAG	Operational Advisory Group
PLI	Position Location Information
SOP	Standard Operating Procedure
TEECG	Tactical Exercise Evaluation Control Group
T/O	Table of Organization
TTECG	Tactical Training Exercise Control Group
TTP	Tactics, Techniques, and Procedures

MARINE CORPS INSTALLATIONS COMPARATIVE MATRICES

	<u>MCB Camp Pendleton</u>	<u>MCB Camp Lejeune</u>	<u>1st Brigade Hawaii</u>	<u>MCB's Okinawa</u>	<u>MCB 29 Palms</u>
Land Area (Acres)	112,000	70,000	207,000	12,550	595,000
<u>Combined Arms (Ade- quate) Exercise & Impact Area</u>	yes	yes	no	no	yes
<u>Adequate Land Areas for Maneuver Require- ments (3 day exercise)</u>					
Infantry Bat- talion (BLT)	yes	yes	yes	yes	yes
Infantry Regi- ment (RLT)	yes	yes	no	no	yes
Brigade	yes (limited)	yes (limited)	no	no	yes
Division	no	no	no	no	yes
<u>Installation has Ar- tillery Firing Re- strictions</u>					
Day	no	yes 1/	yes	yes	no
Night	yes 1/	yes 1/	yes	yes	no
(See Footnote 1/)					
<u>Any Close Air Sup- port Flight, Re- striction in Effect</u>					
Day	yes	yes 2/	yes	yes	no
Night	yes 2/	yes	yes	yes	no
<u>Mechanized Armor Opns Training Areas</u>	yes	yes	no	no	yes
<u>Tank-Antitank Gun- nery Ranges Available</u>	yes	yes 3/ (limited)	no	no	yes
<u>Moving Vehicle Machinegun Ranges</u>	no	no	no	no	yes

	<u>MCB Camp Pendleton</u>	<u>MCB Camp Lejeune</u>	<u>1st Brigade Hawaii</u>	<u>MCB's Okinawa</u>	<u>MCB 29 Palms</u>
<u>Airfield Operations</u>					
<u>Utilization Capabilities</u>	yes	no	yes	yes	yes
KC-130 aircraft	yes	yes 4/	yes	yes	yes
C-141 aircraft	no	yes 4/	yes 5/	yes	yes
C-5A aircraft	no	yes 4/	yes 5/	yes	yes
Helicopters (all types)	yes	yes	yes	yes	yes

Amphibious Operation

Landing Beaches available	yes	yes	yes (limited)	yes	no
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Research Footnotes

Footnote #1 Artillery Activities

- a. Camp Pendleton: The maximum ordnance of artillery projectiles is 15,000 feet. No firing after 10:00 pm without approval Commanding General, MCB.
- b. Camp Lejeune: Limited impact area. Limited on night-time firing.
- c. Hawaii: No ranges immediately adjacent to artillery unit locations.
- d. Okinawa, Japan: STRICT limitation: maximum ordnance 3,000 feet. Very confined impact area.

Footnote #2 Aircraft Activities

- a. Camp Pendleton: Limited flight pattern, heavy civilian/commercial aircraft traffic along coastline. FAA restrictions on all military aircraft flights over base. No bombing after 10:00 pm without approval Commanding General, MCB.
- b. Marine Corps Air Station, El Toro: Restriction on runway usage and hours of operation (0800-2200 daily)
- c. Marine Corps Air Station, Cherry Point: Restrictions of hours of operation (0800-2300 daily)
- d. Camp Lejeune: Flight patterns restricted, ordnance is limited in size (250-500 lbs), flight operations limited to hours of operation at Cherry Point, MCAS.

- e. Hawaii: Hours of flight operations limited, aviation ordnance bombing ranges have civilian/environmental restrictions.
- f. Okinawa, Japan: Aviation activities are strictly limited. All bombing must be done off the island. Flight operations over Central Training Area limited to 3,000 feet.

Footnote #3 Tank-Antitank Activities

- a. Camp Wendleton: Tank gunnery range limited to one stationary firing position.
- b. Camp Lejeune: One range; daytime firing only. Intercoastal waterway bisects ranges. Civilian boat traffic has priority therefore all firing must cease when boat movement in on the waterway.

Footnote #4: Marine Corps Air Station, Cherry Point is used for the air movement of Camp Lejeune units.

Footnote #5: U. S. Air Force Base Hickam Field is used vice MCAS Kaneohe or U. S. Naval Air Station Barbers Point.

MARINE CORPS INSTALLATIONS COMPARATIVE MATRICES

MCB Camp	MCB 29		MCB Camp 1st Brigade MCB's		
Pendleton Lejeune			Hawaii	Okinawa	Palms
Land Area (Acres)	112,000	70,000	207,000	12,550	595,000
Combined Arms (Adequate) Exercise & Impact Area	yes	yes	no	no	yes
Adequate Land Areas for Maneuver Requirements (3 day exercise)					
Infantry Battalion (BLT)	yes	yes	yes	yes	yes
Infantry Regiment (RLT)	yes	yes	no	no	yes
Brigade	yes	yes	no	no	yes
(limited)				(limited)	
Division	no	no	no	no	yes
<u>Installation has Artillery Firing Restrictions</u>					
Day	no	yes 1/	yes	yes	no
Night	yes 1/	yes	yes	yes	no
(See Footnote 1/)					
Any Close Air Support Flight, Restriction in Effect					
Day	yes	yes 2/	yes	yes	no
Night	yes 2/	yes	yes	yes	no
Mechanized Armor Opns Training Areas	yes	yes	no	no	yes
Tank-Antitank Gun Ranges_Available	yes	yes 3/ (limited)	no	no	yes
Moving Vehicle					
Machinegun Ranges	no	no	no	no	yes

MCB Camp

MCB Camp Ist Brigade

MCB's MCB 29

Pendletoii Lejeune

Hawaii . Okinawa

Palms

Airfield Operations

Utilization Capa

Capabilities	yes	no	yes	yesyes
KC-130 aircraft	yes	yes 4/	yes	yesyes
C-141 aircraft	no	yes T/	yes S/	yesyes
C-SA aircraft	no	yes T/	yes	yesyes
Helicopters (all types)	yes	yes	yes	yesyes

Amphibious Operation

Landing Beaches

available	yes	(limited)	yes	yes	yes	no

Research Footnotes

Footnote #1 Artillery Activities

- a. Camp Pendleton:
- b. Camp Lejeune:
- c. Hawaii:

The maximum ordnance of artillery projectiles is 15,000 feet. No firing after 10:00 pm without approval Commanding General, MCB. Limited impact area. Limited an night-time firing. No ranges immediately adjacent to artillery unit locations.

d. Okinawa, Japan: STRICT limitation: maximum ordnance 3,000 feet. Very confined impact area.

Footnote #2 Aircraft Activities

a. Camp Pendleton:

b. Marine Corps Air Station, El Toro:

Limited flight pattern, heavy civilian/comiimercial aircraft traffic along coastline. FAA restrictions on all military aircraft flights over base. No bombing after 10:00 pm without approval Commanding Gencra l, MCB.

Restriction on runway usage and hoLirs of" operation (0800-2200 daily)

c. Marine Corps

Air Station,
Cherry Point: Restrictions of hours of operation (0800
2300 daily)

d. Camp Lejeune: Flight patterns restricted, ordnance i,, limited in size (250-500 lbs), fliglrit olwi;i,tions limited to-hours of operatioii ;it Cllect-i-lv Point, MCAS.

e. Hawaii: Hours of flight operations limited, aviation ordnance bombing ranges have civilian/environmental restrictions.

.f. Okinawa, Japan: Aviation activities are strictly limited. All bombing must be done off the island. Flight operations over Central Training Area limited to 3,000 feet.

Footnote #3 Tank-Antitank Activities

a. Camp Pendleton: Tank gunnery range limited to one stationary firing position.

b. Camp Lejeune: One range; daytime firing only. Intercoastal waterway bisects ranges. Civilian boat traffic has priority therefore all firing must cease when boat movement in on the waterway.

Footnote #4: Marine Corps Air Station, Cherry Point is used for the air movement of Camp Lejeune units.

Footnote #5: U. S. Air Force Base Hickam Field is used vice MCAS Kaneohe or U. S. Naval Air Station Barbers Point.

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Acknowledgements

I am grateful for the continuing advice and mentorship provided by Colonels Gerald H. Turley, Melvin G. Spiese, and Michael P. Marletto.

A special note of gratitude for my wife Melissa and our children Alexis and Ward, their support and understanding knows no bounds.