CAA
ANNUAL REPORT
Fiscal Year 1998

DECEMBER 1998

UNITED STATES ARMY
CENTER FOR ARMY ANALYSIS
8120 WOODMONT AVENUE
BETHESDA, MARYLAND 20814-2797

CAA
CENTER FOR ARMY ANALYSIS

FY 98 ANNUAL REPORT

December 1998

Prepared by

MANAGEMENT SUPPORT DIVISION

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DEPARTMENT OF THE ARMY
CENTER FOR ARMY ANALYSIS
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REPLY TO
ATTENTION OF:

CSCA-MSP (5-5d)

04 FEB 1999

MEMORANDUM FOR RECORD

SUBJECT: Center for Army Analysis FY98 Annual Report

1. The dynamic nature of the global security environment has caused significant changes in the demands placed on our Armed Forces. The Army plays a key role in defending the nation, promoting peace, and protecting US interests abroad. CAA endeavors to be responsive to the analytical demands associated with the challenges facing today's Army. We are developing and implementing new approaches to addressing force planning and response issues.

2. This year's accomplishments were as diverse as ever. In FY 98 we worked on the Army's most important problems in such areas as Homeland Defense, Future Force Development, Operation Plan Development, and Current Operations. Much of this work had its origins in last years Quadrennial Defense Review (QDR).

3. I welcome you to read our account of FY 98 and what may lie ahead in the future.

E. B. VANDIVER III
Director

Encl

CONTENTS

CHAPTER 1

INTRODUCTION AND OVERVIEW

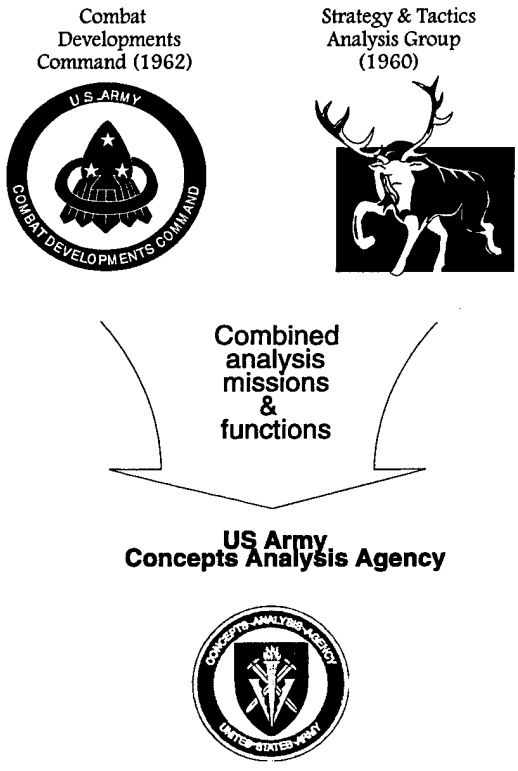
GENERAL

Report Purpose. The fiscal year 1998 (FY 98) Annual Report profiles the Concepts Analysis Agency (now the Center for Army Analysis (CAA)) highlights key elements of FY 98 mission performance, presents the Center's current posture, describes CAA's direction for the near-term future, and serves as the historical record of FY 98 Center activities.

Report Organization. This report is organized into seven major components starting with **Chapter 1** which provides a snapshot of what happened last year; and secondarily, provides insights as to how CAA is positioned to meet the challenges of the future. **Chapter 2** highlights major studies and analysis activities which occurred in FY 98. **Chapter 3** is the total package of analytical summaries completed during FY 98. **Chapter 4** contains a summary of CAA's technological resources and profiles how we are positioned to meet future workloads. **Chapter 5** is a report of stewardship of CAA's personnel and financial resources. A 5- year workload history is at **Chapter 6**, followed by several **appendices**.

CAA ORIGIN, ORGANIZATION, MISSION, PRODUCTS, AND SPONSORS

Origin. CAA was formed as a result of the 1973 STEADFAST Army reorganization which combined missions, functions, and elements of the former Combat Developments Command (CDC) and the Strategy and Tactics Analysis Group (STAG), Figure 1-1. CAA was created to function as the central force analysis activity for the Department of the Army and its leadership.



1973 *Staff Support Agency Assigned to Assistant Chief of Staff for Force Development, HQDA*

1974 *Reassigned to Deputy Chief of Staff for Operations and Plans, HQDA*

1977 *Redesignated as Field Operating Agency*

1979 *Reassigned to the Chief of Staff, Army*

1991 *Designated the US Army's Center for Strategy and Force Evaluation*

1998 *Designated as the Center for Army Analysis*

1999 *Relocate to Ft. Belvoir, VA*

Figure 1-1. CAA History

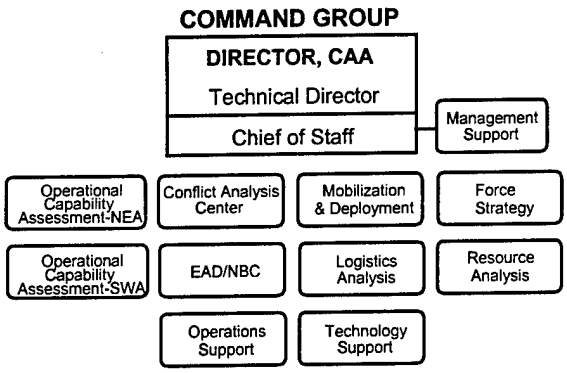


Figure 1-2. CAA Organization Chart

CAA Organization

◆ CAA has evolved over the years to its current organizational structure as a field operating agency (FOA) of Headquarters, Department of the Army (HQDA). While the primary role of CAA remains to support HQDA and Army leadership, its analytic activities have expanded to encompass a wide range of analytical services performed in support of virtually all Army elements, and occasionally other Department of Defense (DOD) and US government agencies.

◆ CAA's organization (Figure 1-2) is headed by the Office of the Director, which includes the Chief of Staff and Technical Director. These two, along with the Director, oversee eight Analysis Divisions, (two of which are special elements performing operational capability assessments for Northeast and Southwest Asia) and three support divisions.

CAA GOALS

Each fiscal year, the Director establishes a broad set of goals to ensure continuous improvement. The goals for FY 1998 were:

- Work on the Army's most important problems.
- Increase work output.
- Improve productivity.
- Bring new capabilities on-line.
- Strengthen VV&A activities.
- Maintain vigorous Military History Program.
- Participate in national and international activities.
- Support a variety of in-house activities.
- Improve professional business practices.
- Build for the future.
- Gain recognition for superior work.
- Conduct a vigorous professional development/ training program.

CAA GLOBAL PERSPECTIVE AND STRATEGIC VISION

The dynamic nature of the global security environment has caused significant changes in the demands placed on our Armed Forces. The Army plays a key role in defending the nation, promoting peace, and protecting US interests abroad. Army doctrine has evolved along with the changes in the global security environment. Key changes include:

- a focus on CONUS-based force projection;
- joint and combined/multinational operations;
- the need for simultaneous attack--close, deep, and rear;
- the requirements for operations other than war;
- increased need for versatility

CAA endeavors to be in a position to play a key role in the regular review of the future vision and goals of the US Army and the US military. In doing so, we are developing new ways to quicken the process of matching resources with threats and requirements.

Transformation. The Director has guided CAA with the vision to transform it into the premier Center for Army Analysis of theater-level warfare, forces, and systems. He authored a Strategic Plan delineating goals for CAA to focus on the most important issues facing the Army senior leadership and providing the highest quality, responsive analytical support. The Director has also initiated a strategic partnership concept whereby individual analysts are placed in supported organizations to provide hands-on, immediate analytical support to Army issues as they develop. CAA has taken the Army lead in addressing Army installation energy conservation and environmental issues of land restoration and hazardous waste disposal. These efforts have resulted in increasing demand from our customers and ultimately culminating in the added

mission of logistical analysis and the official designation as the ***Center for Army Analysis*** as of October 1, 1998.

Mission. Within the Army's overall analytical framework (Figure 1-3), CAA is designated as the Center for Army Analysis. CAA is assigned the primary mission of assessing strategies, strategic concepts, broad military options, and resource allocation alternatives, and analyzing Army force-level capabilities and requirements in the context of joint and combined warfighting.

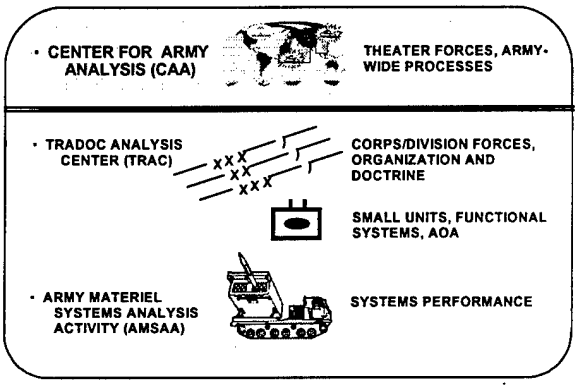


Figure 1-3. CAA Mission Within the Army Analytical Framework

As the Center for Army Analysis, CAA has the following primary mission and functions:

- Conduct studies and assessments of strategic concepts, alternative strategies, and broad military options.

- Conduct studies and evaluations of force structure, design, capabilities, and requirements within the context of joint/combined forces for theater, regional, low-intensity, and contingency operations.

- Conduct quick reaction planning and operational assessments which address pressing issues and the conduct of war.

- Conduct studies and evaluations of the Army's capabilities to mobilize, deploy, employ, and sustain.

- Conduct assessments of force modernization programs, affordability, requirements, and tradeoffs supporting Army inputs to the Planning, Programming, Budgeting, and Execution System (PPBES).

- Conduct combat systems, combat support systems, logistic and personnel analyses.

- Develop and maintain scenarios, models, data bases, and techniques necessary to support CAA's analytical mission and functions.

- Conduct workshops which evaluate a wide range of issues to include those related to smaller scale contingencies (SSC).

- Develop optimization methodologies to evaluate logistical and stationing problems brought on by downsizing.

- Develop strategies and program guidelines which address multifarious, energy, pollution, and environmental concerns.

- CAA performs theater-level analyses (Figure 1-4) to assist the Chief of Staff of the Army to evaluate, plan, and execute the Army's strategic force mission; assess alternative resource applications; and determine requirements and establish objectives for joint and combined theater, regional, low-intensity, and contingency forces.

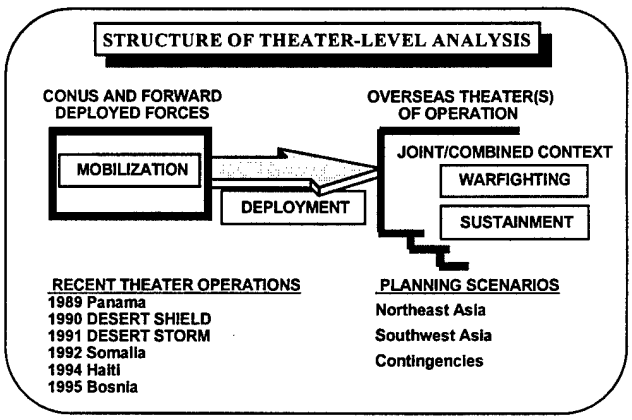


Figure 1-4. Structure of Theater-level Analysis

FY 98 HIGHLIGHTS

CAA worked on the Army's most important problems. Some examples of these are:

- **Homeland Defense**
  - Weapons of Mass Destruction – Terrorism
  - Location of RAID Teams
  - Force Projection
- **Future Force Development**
  - Mission Task Organized Forces
  - Stochastic Analysis for Deployments and Excursions (SADE)
  - Force XXI/Division XXI
  - Total Army Analysis 2007 (TAA-07)
  - Ballistic Missile Defense
- **Operation Plan Development**
  - New Korean OPLAN
  - ARCENT OPLANs
- **Current Operations**
  - Third US Army (TUSA) Deployment to Kuwait

Homeland Defense

Weapons of Mass Destruction-Terrorist Response Study (WMD-TRS). This study was conducted to provide the Director of Military Support, Deputy Chief of Staff for Operations and Plans, HQDA, with analysis to support decision making concerning the expected effects of weapons of mass destruction (WMD) use in the United States and its territories. The objectives were to (1) quantify the effects of WMD on civilian targets, (2) gain insight into civilian resource requirements, (3) perform geographical analysis to assess the location of DOD assets and facilities, primarily the Rapid Assessment and Initial Detection (RAID) Team, to respond to potential WMD incidents, (4) quantify the effects of WMD on military targets and major theater of war outcomes, and (5) determine the availability of continental United States (CONUS) units on selected dates. The timeframe considered was FY 2005. The civilian case involved terrorist attacks against selected targets based on FEMA "Report to the President," 19 Jan 96. The military case involved east to west dual major theater of war (MTW) illustrative planning scenarios based on Defense Planning Guidance 1998-2003 supplemented with terrorist attacks against selected aerial ports of embarkation and seaports of embarkation consistent with the Chemical-Biological 2010 Study, October 1997.

Graphically-Based Analysis System-Enhanced (Weapons of Mass Destruction study) GBASE-WMD. In late 1997, as a partial response to the growing concern about the vulnerabilities of United States cities to weapons of mass destruction incidents, the Department of Defense established RAID Teams within the National Guard. This was initiated in order to leverage the existing knowledge and training within DOD in the identification and evaluation of WMD incidents. The responsible staff agency, the Director of Military Support (DOMS), tasked CAA to assist in determining optimal locations for the 10 RAID teams.

To address this task, the Resource Analysis Division extended the utility of the graphically based tools employed previously in various studies. The resulting GBASE system is a generalized technique using a combination of graphical display techniques supported by a suite of traditional optimization tools designed to solve resource allocation problems. The combination of the two techniques results in a system that is based upon good operations research practices, while being readily accepted and useable by non-technically qualified sponsors. GBASE-WMD was the application of these techniques to the problem of stationing RAID teams to react to a weapon of mass destruction incident within the United States.

In the specific instance of GBASE-WMD, a modification of the total cover problem was used to minimize the maximum response times. The final formulation was small enough that it executed in less than 10 minutes on CAA's optimization solvers, allowing a wide variety of alternatives and parameters to be explored. This was followed by the application of graphical displays, which provided a visual certificate of optimality and ready identification of any existing alternative optima. This in turn allowed the sponsor to readily grasp the important aspects of the rapid response team location problem and provide relevant guidance in further developing the team assignment criteria. The resulting analysis and information was used by the DOMS team to obtain RAID Team stationing decisions at the OSD level and to inform Congressional staff on the rationale behind the locations selected.

Future Force Development

Mission Task Organized Forces. The largest effort was one to capture force and organizational requirements for the entire Army, across the entire spectrum of Army operations, supporting the National Military Strategy. CAA entitled this effort Objective Force Planning - New and Extended (ONE).

Objective Force Planning-New and Extended (ONE). From July 1996 through August 1997, CAA conducted the Objective Force Planning (OFP) Study for the War Plans Division, Deputy Chief of Staff for Operations and Plans (DAMO-SSW). The Objective Force Planning concept was developed in response to the Quadrennial Defense Review. The process produced a series of mission task organized forces (MTOF) to address a wide spectrum of smaller-scale contingencies (SSC). The Defense Planning Guidance Illustrative Planning Scenarios (DPG IPS) and the Dynamic Commitment Wargame series produced situations and scenarios for this process.

The OFP was very successful. However, the process did not address many areas beyond the primary forces needed to accomplish a specific mission. In February 1998, the War Plans Division directed Concepts Analysis Agency (now the Center for Army Analysis) to develop an expanded methodology that would meet the need to capture all Army requirements; to produce a series of MTOFs that itemized these requirements; and to develop an automated capability to provide initial insights into the forces needed to accomplish a designated mission. The War Plans Division titled their effort the Total Army Requirements Determination (TARD). Objective Force Planning-New and Extended is CAA's portion of that effort.

Since its inception in February 1998, four workshops (including a training workshop), two mini-workshops and one review seminar have been conducted. CAA analysts from almost every division have participated, along with over 200 experts across the Army. Twenty-five draft MTOFs have been delivered to the War Plans Division, to include those required for the Total Army Analysis (TAA) development process. The verification and validation process started in September 1998 and is expected to be completed by the end of January 1999. This process includes working sessions with major Army component commands at their locations, reviews by experts in the Army Staff, and a final review within CAA.

MTOF Development Process. CAA and the War Plans Division took an aggressive approach to the enormous task set before them. In Workshops I and II, their objective was to complete a large number of missions which were determined to be essential. In order to do this effectively, the workshop participants were assigned to area of responsibility (AOR) groups. These groups corresponded to geographical areas. Experts in almost every aspect of Army missions, roles, and functions were distributed where the workshop organizers believed they would be most effective. Workshops II and III in July 1998 redistributed expertise into additional areas, to include the formation and expansion of a support group, a base engagement group, and a base generation group. By July, 1998 these groups matrixed with geographical groups to make critical expertise available to all participants.

The process of developing a complete mission is in the form of a linear top-down approach. The first step in the process is to develop plausible scenarios (through 2007) which determines the need for a mission. From these scenarios the threat (if needed), is determined which was further broken down into a threat intent and a threat strategic objective(s). After the situation is refined and described, working group participants then develop the mission statement which explains the goal of the committed force. Also, the working group develops a commander's intent and the commander's concept of operation for each mission. With this information, the plans, framework, and assumptions needed to construct an MTOF are in place.

Using the items developed to date and their expertise, the workshop participants develops the conditions and standards needed to execute the overall mission. Then, the group breaks down the mission into objectives. Each objective, along with the conditions and standards associated with it, explain the accomplishment of a component within the context of the overall mission plan. Participants then select the specific essential UJTL tasks necessary to accomplish each objective (to include additional conditions and standards). These particular tasks must relate to the accomplishment of the mission and must result in the identification of a force, unit, or organization whose function is to execute the task. The result is a force list for each essential UJTL task and their associated conditions and standards.

Once the forces are identified for each UJTL Task, they are rolled up into the objective task

organized forces required to accomplish each objective. These objective forces are then rolled up into the primary mission task organized forces required to complete a specific Mission.

In addition to the AOR working groups, a support working group, composed of administrative and logistic experts, met to develop the support concept for each mission. Also, the group (in coordination with the various geographical working groups) developed the tasks, conditions, standards, and forces needed to execute the concept. The geographical groups integrated the support group's product into each MTOF.

The resulting mission task organized task force is a draft product. The verification and validation process underway includes review and revision by geographical planners, analysts, and Army staff experts. Once the process is completed, a final check is done and the MTOF becomes the input for various studies under way within the Army and the Defense community (to include the Total Army Analysis process).

Operations Plan Development

CFC Warplan Development, COA 1, Phase II (COA1-98OP). The purpose of this quick reaction analysis, sponsored by the Combined Forces Command (CFC), United States Forces Korea C5 Plans, is to assess the overall potential advantages and risks associated with Course of Action 1 (COA 1). The current revision of the operation plan (OPLAN) considers three courses of action for inclusion in the final update. The planning staff in the C5 Plans cell is interested in knowing which course of action is most advantageous to the theater campaign. To support this effort, this quick reaction analysis provides a detailed summary of the advantages and disadvantages of Course of Action 1. The modeling results and supporting graphics and data are the key output of this analysis. The campaign analysis includes assessments of early warning, the impact of chemical munitions use, and the most current Time-Phased Force Deployment Data. The report discusses the results of the simulation in terms of campaign turning points, the forward edge of the battle area (FEBA), combat systems kills/losses, casualties, and operational implications of implementing COA 1.

CFC Warplan Development, COA 2 and 3, Phase II (COAA-98OP). The purpose of this QRA, sponsored by the Combined Forces Command (CFC), Korea, was to analyze courses of action (COA) 2 and 3 campaign plans for CFC staff consideration in the OPLAN update process. Three COA were developed for consideration for the OPLAN. The campaign analysis includes assessments of early warning, the impact of chemical munitions use, and the most current Time-Phased Force Deployment Data. The report discusses the results of the simulation in terms of campaign turning points, the forward edge of the battle area, combat systems kills/losses, and operational implications of implementing COAs 2 and 3. Results of the analysis are classified SECRET and published in CAA Memorandum Report CAA-MR-98-38.

Current Operations

ANVIL 2 Campaign Results Comparison (Anvil 2). Anvil 2 is an example of Warfighting Analysis in a Rucksack (WARS). CAA assisted Third USArmy (ARCENT) in course of action development against a potential conflict with Iraq. Numerous options were created and analyzed regarding a future Iraqi attack on Kuwait.

Bright Star 97 (BS97). Bright Star 97 provided Commander, ARCENT, with a deployable, highly responsive analytical package for the Joint and Combined exercise and proved another successful deployment of Warfighting Analysis in a Rucksack (WARS). WARS is a pilot program developed to provide the theater-level ground component commander, on site, real-time, highly responsive analysis and simulation support for the planning and conduct of combat operations. WARS provides leverage to expert military analysts with a unique integration of analysis tools and state-of-the-art ADP technology. This capability is fielded as a deployable analytical support team (DAST) from CAA. It consists of two officer analysts/operational planners, a Department of the Army civilian analyst/technician, and appropriate hardware and software packages. The team has stand alone combat simulation and analysis capability. The Third US Army, the Army component of US Central Command (ARCENT), integrated the DAST into the staff planning process to examine courses of action, project branches and sequels to ongoing operations, and rapidly extract commander's critical information requirements (CCIR) for display in user-defined decision graphics.

In October 1997, the DAST deployed to Egypt to take part in the Joint/Combined Forces Exercise Bright Star 97. WARS proved to be an invaluable asset to the ARCENT planning staff. Equipped with two laptop computers, the team was able to analyze multiple courses of action and answer the Joint Task Force commander's critical information requirements. The synergistic benefit of these achievements enables the entire campaign analysis process to be conducted within the time constraints of real-world military operations planning, assuring dominance of the adversary's decision making cycle. WARS has clearly placed the warfighting analytical support capability in the operational commander's rucksack, and Exercise Bright Star 97 was another successful validation of the DAST concept.

FY 98 ANALYSIS PROGRAM OVERVIEW

General. In support of the National Security and National Military Strategies, CAA provides analysis of the means to accomplish the National Military Objectives in various ways. Commonly known as the ends-ways-means test of the national military strategy, it is the method by which the US government tries to keep all three aspects in balance.

The purpose of CAA's analysis program is to evaluate the means proposed by Army leadership of applying military force to satisfy the ends; ends being the national military objectives supporting the National Security Strategy. Since the end of the Cold War, our mission has expanded to include a sizable investment in studying ways to efficiently manage the Army's declining resource base. The relationship of ends-ways-means to CAA study categories is notable by how closely our analysis workload correlates with the problems faced daily by national decision makers. This is depicted in the chart at Figure 1-9.

Following Figure 1-9 is a list of key FY 98 study completions to all of the following six study categories:

- Force/Capability Development
- Political-Military Analysis/Arms Control
- Operational Strategy
- Optimal Use of Resources/Requirements Analysis
- Planning Data/Factor Development
- Tool and Methodology Development

In Chapter 2 we feature some of these same studies. Chapter 3 contains a brief summary for all FY 98 analysis completions. Chapters 4 and 5 show how we are equipped and staffed to meet these requirements.

Decision makers are often confronted with the need to make decisions quickly. To assist them in the decision making process CAA performs quick turnaround analyses. In times of war, CAA exercises its various analysis tools to assist the DA decision makers in strategy and force evaluation analyses. In "normal" times, CAA analysts must be ready to interject our suite of resource and force analysis ***models and analysis tools*** into the DA ***planning and programming*** cycles.

Analysis resources are scarce and the demand for quick turnaround of information compels CAA to be ***in the loop*** on short-, medium-, and long-term planning cycles. Each year we are asked to integrate Army planning processes with the rest of the Defense establishment to achieve a level of synergism to carry us through this period of declining Defense dollars. CAA endeavors to stay in step with the ever-changing political-economic environment.

CAA strategic partnerships have been initiated to ensure that CAA remains in the loop on important Army issues as they develop and to interface with principal supported elements in DCSOPS. This program is further elaborated on in Chapter 2.

Products. CAA has two primary products which it delivers to sponsors-- memorandum reports for quick reaction analyses (QRA) and study reports for longer-term efforts. Smaller-scale efforts sponsored externally are labeled projects.

QRA are quick turnaround analyses, requiring precise answers to specific questions. QRA should not exceed 6 professional staff months of effort.

Studies and projects are longer-term efforts which are usually more exploratory in nature. The similarity ends there. By regulation (AR 5-5), a study must be fully documented, from study directive to sponsor's critique. Projects differ from studies to the extent that projects are more of a

support effort, usually of a technical nature, where the desired output/outcome is less certain at the onset of the work. Documentation of a project can take various forms befitting the product(s) delivered.

Inputs. Work comes into the Center via various avenues. There are the well-traveled routes built over many years of supporting traditional sponsors in their annual requirements. There are also ad hoc situations which travel these same routes such as a major theater war (Desert Storm), or a major program review such as the Quadrennial Defense Review (QDR).

New customers and workload travel a more circuitous route, usually ending at a point where the demand for our services meets the supply of unfilled analysis requirements. Workshops, conferences, word-of-mouth, and other forums could be the genesis of a working relationship between CAA and new customers. We are always willing to open new avenues to support new customers.

Outputs. Figure 1-5 illustrates the number of analytical products CAA delivered to sponsors over the past 11 years, peaking at 116 this year. Figure 1-6 illustrates the broad spectrum of support to sponsors. Both charts reflect high achievement when considering that we have experienced a significant decline in resources over the same period; a decline which has only recently stabilized.

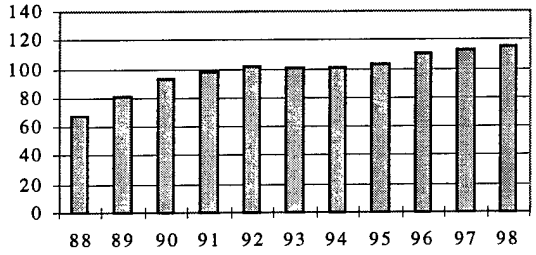
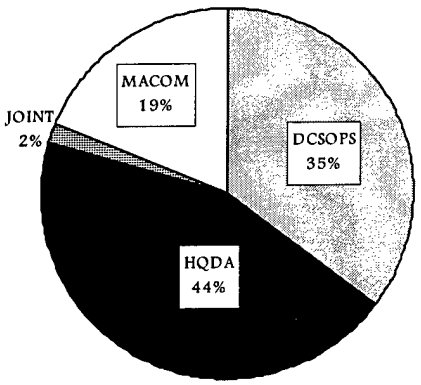


Figure 1-5. Number of Analytical Products Delivered to Sponsors

Future Considerations. To maintain our viability in the face of continuous change in the Defense environment, we must be receptive to new information. We must take this information and incorporate it appropriately into our processes, and we must continue to monitor for change.

Problem solving in the post-Cold War era requires us to focus on the activities that traditionally have not been programmed and that require creative analytical thought. This type of creative thought is fostered in various forums at CAA such as workshops, political-military games, and management planning conferences. Ultimately, however, CAA must incorporate logic into computer-based models and simulations that complement the human ability to observe, recognize, discover, and generate creative ideas. Without it we would have to increasingly rely on heuristics to develop reasonable answers to modern threats, or else be forced to portray current scenarios to fit old models. The longer we can maintain our modeling and technology edge, the better we will be positioned to meet this level and mix of analyses.

Customers. CAA's primary mission is to provide analytical support to HQDA and Army leadership. CAA analysis support is also provided to major Army commands, other Army activities, and occasionally DOD and US government agencies. Figure 1-6 presents a proportional breakout of CAA's FY 98 analysis support to all sponsors.



MACOM	HQDA		Joint
ARCENT	ACSIM	OCSA	JCS
EUSA	ASAILE	OSG	OSD
TRADOC	DCSINT	TAPC	
USA SMDC	DCSPER	VCSA	
USARPAC	DUSA(OR)		

Figure 1-6. Studies and QRA Delivered to Sponsors

A gradual and steady change in emphasis to CAA's workload sponsorship had its genesis in 1986 with passage of the Department of Defense Reorganization Act, known as the Goldwater-Nichols Act. This act established the command relationship between civilian authorities, the Chairman of the Joint Chiefs of Staff (JCS), the JCS, the commanders in chief of the combatant commands (CINCCs) and the Service chiefs. In

short, it gave the CINCCs improved access in the National Command Structure.

In CAA's case, it gave greater emphasis to analysis support of Army components for the Unified Commands. In 1987, 7 percent of CAA's workload and professional staff time was in support of such Army components, referred to as "Joint" and "MACOMs" in our system of accounting. This number has steadily increased to between 20 to 25 percent where it is today.

CAA Productivity

To maintain our productivity levels, we must continually provide our professional staff a wide array of training opportunities. This training is provided to develop and maintain core skills and also to open up new areas of analysis so that, as our mission evolves, we can stay abreast of emerging analysis requirements.

... productivity has increased 2.3 times over 9 years...

This evolution has never been more apparent than when considering that our productivity has increased 2.3 times over the past 9 years, or at an average rate of 10 percent per year. The productivity chart (Figure 1-7) which follows bears out this observation.

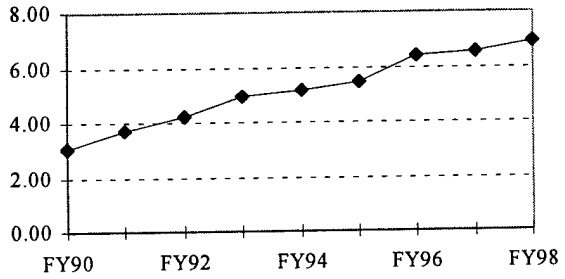


Figure 1-7. CAA Productivity Trend
(scale=analysis products per 10 PSY)

Taken together, these achievements reflect the dedication of CAA's work force and the positive contribution of CAA's Total Quality Management (TQM) program.

RESOURCE TRENDS

As can be seen in Figure 1-8, CAA's decline in budget and manpower has stabilized over the past 3 years. We have managed this decline through hiring freezes and careful planning of our discretionary spending. A stabilization in both resource categories is projected by current planning documents.

CAA has increased productivity through a proactive total quality management program, ongoing research and analysis activities, improved technologies and methods, and a robust training program. Future productivity gains depend on sustaining the hard-earned momentum built up in each of these resource areas over the preceding years.

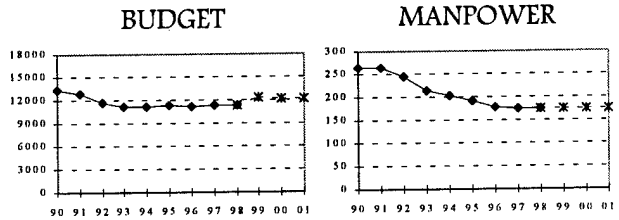


Figure 1-8. FY 98 CAA Resource Trends

SUMMARY

Thus far, this report has touched on the workload and resource challenges facing CAA and the organization, equipment, and tools necessary to efficiently and effectively produce the highest quality and quantity of products possible.

In the coming chapters are specific examples of the investments CAA has made to produce quick turnaround, multifaceted analyses; and the strides which have been taken to reorganize and reequip in such a way to meld assets to maximize productivity and thereby remain responsive to our sponsors' analytical needs and performance expectations.

Also in the coming chapters are highlights and descriptions of CAA FY 98 accomplishments which are the results of these investments and indicative of things to come.

CAA SUPPORT TO THE NATIONAL SECURITY STRATEGY

ENDS	WAYS	MEANS	CAA Analysis
Enhanced Security	•Shape International Environment	•Military Exercises & Training	•Force & Capability Development
	•Enhance Force Capability	•Force 21	
Ability to Respond to Threats & Crises	•Small-scale Contingencies •Major Theater Warfare •Simultaneous Operations	•Rapid Deployment •Adaptive Joint Force Packages	•Operational Strategy •Pol-Mil Analysis
Preparedness for an Uncertain Future	•Force Modernization	•Force Enhancers & Force Multipliers	•Optimal Use of Resources & Requirements Analysis
Enhanced Capabilities & Technologies	•Technology Sharing •Improved Efficiency	•Information Technology •Reinvention	•Tool and Methodology Development •Planning Data/Factor Development

Figure 1-9. CAA Support to National Security Strategy

EXAMPLE ANALYSES UNDER CAA WORK CATEGORIES

- **FORCE/CAPABILITY DEVELOPMENT**

WMD Terrorist Response Study MTOF Issues Workshop (WMD TRS MTOF)
Tiered Readiness Analysis of Costs (TRAC)
Theater Analysis Force XXI - Airlift Analysis (TAF21-AA)
Go-to-War Phases I & II (GTW1&2)

- **POLITICAL-MILITARY ANALYSIS/ARMS CONTROL**

PAEKTU 98 Political-Military Game (PAEKTU 98)
WMD Terrorist Response Study - PHOENIX 98 Pol-Mil Game (PHOENIX 98)

◆ OPERATIONAL STRATEGY

Bright Star 97 (BS97)
FEMTO 98 (FEMTO 98)
Nuclear-Chemical Impact Analysis - 3 (NCIA-3)
LSC2 & LSC3, CFC Draft Campaign Concept, COA 1&3 (LSC2&3)
TAA-05 Force Feasibility Review (TAA05 FFR)
COA 1&3 Analysis - 1998 OPLAN Update (COA1-98OP & COA3-98OP)
Cost-Benefit Analysis of the Environmental Compliance Assessment System (COBECAS)
Graphically-Based Analysis System - Enhanced (GBASE)

◆ OPTIMAL USE OF RESOURCES/REQUIREMENTS ANALYSIS

Implementing Pollution Abatement and Prevention Analysis (I-PAPA)
Wartime Requirements Near Simultaneous Dual MRC, FY05 (WARREQ-05)
Value Added Analysis Phase V (POM 00-05) (VAA 5)
Cost Analysis for the Land Disposal Restriction Utah Group (CALDRUG)
Privatizing Utility Programs (PUP)
Longbow Requirements (LONGREQ)
Patriot Engagement Analysis (PEA)

SUPPORTING ANALYSES

◆ PLANNING DATA/FACTOR DEVELOPMENT

Optimal Laydown (OLD)
Protective Mask Sensitivity to Toxicity (PMaST)
Trends in Land Combat (TLC)
Weapons of Mass Destruction (WMD) Terrorist Response Study (WMD-TRS)

◆ TOOL & METHODOLOGY DEVELOPMENT (in support of operational and FD strategies)

Kursk Operation Simulation and Validation Exercise II (KOSAVE II)
Chemical Degrade of Air Sorties (CHEMSORT)
Medical Analysis Tool Model Evaluation (MAT-OTSG)
Weather Sequencing in CEM (WSICEM)

Note: The status of ongoing model developments such as ARES, GDAS, and MOBCEM are detailed in Chapter 4.

Summaries follow in Chapter 3.

ANALYTICAL EFFORTS OF SPECIAL INTEREST

INTRODUCTION

This chapter is presented in five parts. First are activities deserving special mention which occurred in FY 98. Next are studies that the CAA divisions deem their most notable works for the FY (Analysis Areas of Interest).

Part three describes CAA's contribution to "Shaping the International Environment" by taking part in National and International Military Operations Research Activities.

The fourth part gives special mention to individuals, within and from outside CAA, whose participation in and contribution to our study program were most notable.

Part five describes CAA internal management efforts to focus on maintaining cooperation throughout the Center in the form of management planning conferences.

Section I. SIGNIFICANT ACTIVITIES

REVOLUTION IN ANALYTICAL AFFAIRS

CAA performed a study to analyze the changes that have occurred in the analytical community's capability and responsiveness to customer demands since the end of the Cold War. Additionally, the purpose of this project was to determine likely future trends in the analytical and customer environment, and recommend action best suited to meet these future challenges.

The results of this study are:

➢ There is an ever increasing demand for quick turnaround analysis due to:

- The Army being in a period of accelerated change.
- The rapid technology turnover.
- The increase in quick response funding questions.

➢ There is greater quantity and more diverse scope to the types of analyses required. Some of the reasons this is true are:

- Systems are more complex, and there is a broader threat spectrum.
- There is more emphasis on joint context.
- There is a growing demand for analysts to work as members of an integrated team.
- Customer staff decreases cause increased demands for analysis support.
- There is need for more analysis that is -
  - Resource tradeoff in focus and not directly related to warfighting, e.g., infrastructure, environmental policy impact.
  - Broader in operational context, e.g., smaller scale contingencies (SSC), Homeland Defense, weapons of mass destruction (WMD) scenarios.
  - A key recommendation of this study is the development of strategic partnerships between the analysis community its customer.

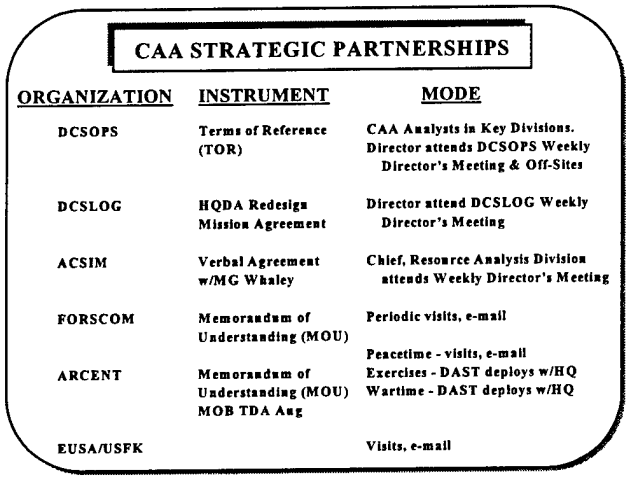
CAA STRATEGIC PARTNERSHIPS

CAA strategic partnerships have been initiated to facilitate an analytical support interface with principal supported elements in DCSOPS and to ensure that CAA remains in the loop on important Army issues as they develop. This concept is put in effect in several ways. Individual analysts have been placed in supported organizations to provide hands-on, immediate analytical support to our sponsors. In addition, key CAA leadership take part in the weekly staff meetings of principally supported organizations.

Reinventing the Customer/Analysis Interface. In order to extend the analytic interface into the customer environment, CAA implemented a plan whereby CAA analysts become integral team members in the customer environment. Implementation can vary as a function of the customer. The range of options includes:

- Full-time on site "forward-deployed" analysts.
- Dedicated customer interface team with frequent and on-call visits.
- Attendance at customer staff call and planning meetings.

Strategic partnerships that have been established to date are depicted in Figure 2-1.



CAA STRATEGIC PARTNERSHIPS

ORGANIZATION	INSTRUMENT	MODE
DCSOPS	Terms of Reference (TOR)	CAA Analysts in Key Divisions. Director attends DCSOPS Weekly Director's Meeting & Off-Sites
DCSLOG	HQDA Redesign Mission Agreement	Director attend DCSLOG Weekly Director's Meeting
ACSIM	Verbal Agreement w/MG Whaley	Chief, Resource Analysis Division attends Weekly Director's Meeting
FORSCOM	Memorandum of Understanding (MOU)	Periodic visits, e-mail
ARCENT	Memorandum of Understanding (MOU) MOB TDA Aug	Peacetime - visits, e-mail Exercises - DAST deploys w/HQ Wartime - DAST deploys w/HQ
EUSA/USFK		Visits, e-mail

Figure 2-1. CAA Strategic Partnerships

The objectives of the strategic partnerships are:

- ☞ Better understand sponsor issues, actions, and milieu to identify analysis support needs.
- ☞ Propose recommendations and alternatives for analysis support
- ☞ Provide on-site analysis or arrange for CAA analysis (or support by other analysis organizations).
- ☞ Assist in the integration of analysis into DA Staff actions and activities.

NEW IN FY 98

Each year analytical techniques are developed to better support our customers, and new opportunities present themselves for analysis. New activities/analyses employed for the first time in FY 98 at CAA are:

➢ Significantly advanced the Army's force planning capabilities with the development of:

- A stochastic model to estimate likely future Army force requirement scenarios and serve as a basis for risk evaluation.
- A comprehensive list of force requirements for a broad range of scenarios using mission task organized forces (MTOF).

➢ Responded to new demand for analysis related to homeland defense issues.

- Weapons of Mass Destruction – Terrorist Response Study (WMD-TRS)
- Antiterrorist/Force Protection (AT/FP)

➢ Further exploited the use of commercial off-the-shelf software for analysis of model inputs and outputs.

➢ Significantly expanded the scope of support to the Total Army Analysis process:

- Employed newly developed strategic mobility model in first major end-to-end deployment analysis.
- Acquired and demonstrated capability to employ EADSIM air defense simulation model.
- Expanded treatment of WMD effects and casualties.
- Represented the effects of digitization.
- Refined and enhanced Wartime Requirements (WARREQ) process.

➢ Established and implemented a "strategic partnering" program with CAA's principal customers.

Section II. ANALYSIS AREAS OF INTEREST

CAA studies assist in determining wartime requirements during operational contingencies and "peacetime" requirements. To that end, CAA's role is to achieve an understanding of our sponsors' purposes and from these a reasonable deduction of their objectives; and through our models and other methods, to assist them by answering their questions.

Support to the Quadrennial Defense Review (QDR) was our most notable work in fiscal year

1997. As highlighted in Chapter 1, during FY 98 we worked on a number of the Army's most important problems. Force planning studies with marked differences in US Army configuration and function, promise to occupy a large part of our attention well into the next century. In the years to come, CAA's mission promises to be even more diverse.

Descriptions of CAA divisions' most notable analyses performed during FY 98 follow, presented in the categories first mentioned in Chapter 1 and which again are:

- Force/Capability Development
- Political-Military Analysis/Arms Control
- Operational Strategy
- Optimal Use of Resources/Requirements Analysis
- Planning Data/Factor Development
- Tool and Methodology Development

FORCE/CAPABILITY DEVELOPMENT

Longer-range strategies may be based on estimates of future interests, threats, objectives, and requirements and are therefore not as constrained by current force posture. These long-range strategies are more often global in nature and may require improvements in military capabilities. Military strategies can be regional as well as global, concerning themselves with specific threat scenarios.

The development of the Objective Force Planning (OFP) Process exemplifies this category of work. It started with strategic military objectives shaped by tenets of the National Military Strategy subsequently reduced to MTOF requirements. This was subsequently used for the Dynamic Commitment Force (DCF) Joint Workshop, a resources-driven endeavor. The DCF Workshop focused on two possible timeline scenarios, both variations of a consecutive major theater war scenario. It is the Army's position that there are more possible contingencies and therefore a baseline engagement force is required; a force that would not employ the rotational forces identified for the MTWs as a wedge for various combinations of smaller scale contingencies.

To that end, our goal is to integrate a further elaborated OFP process into the Total Army Analysis process and thereby permit quicker turnaround analyses of force requirements from available resources. If we are able to efficiently analyze and plan for true requirements alternatives, we may be able to allocate forces fairly without overextending any portion of the total force.

Weapons of Mass Destruction - Terrorist Response Study (WMD-TRS). This study was sponsored by DEP DOMS to develop a comprehensive approach for assessing the impact of weapons of mass destruction on US power projection systems, civilian populations, and the Army's Rapid Assessment and Initial Detection (RAID) teams. The study included two issue workshops and one political-military game. These are: Weapons of Mass Destruction Terrorist Response Study MTOF Issues Workshop (WMD TRS MTOF) and the Weapons of Mass Destruction Terrorist Response Study Integrated Response Issues Workshop (WMD TRS IR); and the PHOENIX 98 Political-Military Game.

- **The Mission Task Organized Forces Issues Workshop (WMD TRS MTOF)** was conducted to identify the forces needed to respond to selected domestic terrorist incidents involving weapons of mass destruction. The workshop refined mission requirements and essential tasks in the Universal Joint Task List (UJTL), described conditions and standards, integrated and leveraged National Guard (NG) and Reserve Component (RC) unique capabilities, identified tasks not performed by military forces, and proposed candidate MTOFs.

- **The Integrated Response Issues Workshop (WMD TRS IR)** examined DOD's support requirements to a domestic WMD incident in the 2005 timeframe. The workshop focused on the identification of the best composition of a response team to detect, identify, and assess chemical-biological hazards at state level; identification of component capabilities to perform required tasks; description of associated component training and equipment requirements; formulation of a proposed draft DOD WMD Integrated Response OPLAN; and resolution of critical areas of concern to improve DOD crisis and consequence management response capabilities.

Go To War (Phase I and Phase II). The Go To War Study (Phase I and Phase II) was used to assist in

determining what courses of action to consider during the fielding of the digital force in regard to prepositioned equipment and warfighting. The War Plans Division, Office of the Deputy Chief of Staff for Operations and Plans, sponsored the study.

Specific issues the study considered were: (1) how prepositioned equipment plans should change to accommodate the digitized force; (2) what changes in war plans are required; and (3) at what point in the campaign should a digitized corps fight together. The study considered the capability of the force with different numbers of digitally enhanced divisions. Corps effectiveness was also evaluated when the corps was fully analog, fully digital, and mixed analog/digital.

The Concepts Evaluation Model (CEM) was used to analyze the contribution of "digitizing" the force. CEM was modified to allow modeling digital capabilities at the individual division, corps, or army level. As part of the effort, the capability to model information dominance and improved logistic capabilities were refined in CEM.

Theater Analysis Force XXI – Airlift Analysis (TAF21-AA) addresses a specific area of interest by the sponsor, ODCSOPS (DAMO-SSW), regarding the strategic deployment analysis performed for Force XXI. The sponsor requested an analysis focused on the allocation of airlift for the first 30 days of the deployment in terms of requirements and deliveries for the US services. Total cargo deploying by air and numbers of sorties by service are determined. Results are compared on the basis of cumulative delivery of the movement requirements by service for the original and relook deployments.

POLITICAL-MILITARY (POL-MIL) ANALYSIS/ARMS CONTROL

In the post-Cold War world, the tendency for conflict of some magnitude persists. These conflicts are loaded with political and military difficulties that test old alliances, our national resolve, and our preparedness for dealing with unconventional threats. CAA takes a lead role in analyzing these issues through a continuous program of workshops and wargames. CAA uses its array of computer models, some of which were developed to deal with unconventional and/or smaller scale contingencies; and subject matter experts including retired military officers who have had first hand experience with these situations.

The PHOENIX 98 Political-Military Game evaluated the Rapid Assessment and Initial Detection (RAID) Teams' preparedness and response to domestic terrorism involving WMD in the 2005 timeframe. The game brought together the key agencies involved in WMD response. PHOENIX 98 evaluated crisis response and crisis management guidelines, procedures, and capabilities to leverage RC preparedness and response capabilities to respond to WMD threats. The workshop defined the organization of a Rapid Joint and Interagency Response Task Force (RJIRTF) and proposed the methodology for integration of RAID Team and RJIRTF functions. The gamers assessed the impact of chemical weapon employment on a US power projection system during an MTW and provided recommendations for improvements to local, state, and other federal agency access to military capabilities and expertise.

OPERATIONAL STRATEGY

Strategies based on existing military capabilities are operational strategies -- those that are used as a foundation for the formulation of specific plans for action in the short-range time period. Therefore, operational strategies must be based on capabilities.

FEMTO 98 Political-Military Game. This US Army Office of The Surgeon General (OTSG) sponsored game examined NATO Partnership for Peace (PFP) operational procedures for gathering and processing Nuclear Biological & Chemical (NBC) medical casualty management requirements in a low-level radiation (LLR) environment. Conducted at NATO Headquarters, FEMTO 98 was the third in a series of four political-military analyses designed to examine the NBC threat facing NATO-PFP operations. FEMTO 98 reviewed NATO standardization issues, analyzed and defined NATO-PFP LLR casualty response and consequence capabilities, defined the medical impact of implementing NATO-PFP LLR operational exposure guidance, determined necessary technical and tactical specifications for NATO-PFP medical radiological crisis response and consequence management equipment, and developed follow-on

actions to support development of the NATO-PFP medical LLR response requirements and capabilities out to 2003.

Forty-five countries participated in the game, including all the NATO members, all aspirants to NATO membership, the preponderance of the newly independent states (NIS), and the majority of the nonaligned European nations. Active discussion among the gamers demonstrated that essential steps still need to be taken to standardize the training and equipping of NATO-PFP forces against LLR hazards. While NATO individual protective equipment was found to be adequate, the RADIAC equipment was judged inadequate for most LLR hazards. Discussions highlighted the significance of the news media in minimizing the psychological effects associated with a radiological environment.

TAA-05 Force Feasibility Review (FFR). A Force Feasibility Review (FFR) was conducted at the end of the resourcing phase of Total Army Analysis 2005 (TAA-05). The purpose of the FFR was to answer a series of questions related to the affordability, within the existing constraints of the Army's programmed budget, to implement the proposed resourcing decisions. These questions were: can we equip, man, train, sustain, provide facilities, and deploy the force? CAA was tasked to provide an answer to the "can we deploy the force" question. The results of the FFR were presented to the senior Army leadership as part of the TAA-05 resourcing decision review and POM lockdown.

The results of the CAA analysis of the "can we deploy the force" question was that given the programmed strategic lift available in 2005, the Army's resourced force can be deployed within the timeframes outlined in the base case theater campaigns.

Logistical Support to the Counteroffensive (LSC). The original Logistical Support to the Counteroffensive (LSC) Study examined logistical support to operations north of the demilitarized zone (DMZ) (the counteroffensive). Currently, CFC and US Forces Korea (USFK) are examining alternative courses of action north of the DMZ. CAA was asked by Republic of Korea (ROK)-US Combined Forces Command (CFC) Deputy Chief of Staff, Operations, C5 to support this effort by evaluating the impact of each course of action on the outcome of the campaign.

In all, CAA evaluated three courses of action. As part of this evaluation, Logistics Analysis Division (LD) was asked to provide a quick update using the LSC technique on the supportability of two of the possible courses of action. LSC2 evaluated course of action 1, and LSC3 evaluated course of action 3. Time constraints (1 week) prevented detailed analysis. Updated LSC analysis was provided to OCA-NEA on time and sent to Korea as requested.

Bright Star 97 (BS97). See Chapter 1, Highlights.

Keep Out Level Assessment (KOLA). In 1996, the Vice Chairman of the Joint Chiefs of Staff tasked the United States Atlantic Command with determining requirements for theater missile defense (TMD). The overarching requirements for a TMD family of systems were formed into the Capstone Requirements Document (CRD). The TMD family of systems is a flexible configuration of interoperable TMD systems in a developing or mature theater capable of joint operations. The TMD CRD is intended to guide the development of operational requirements for future TMD systems and to facilitate development of interoperable systems. While the 1997 draft Capstone Requirements Document was under revision, operational analysis was needed to support the Army position on key performance parameters. The KOLA effort played a key role in this operational analysis.

The Army position was that the TMD family of systems must be capable of a high probability of negation in order to prevent the dire consequences of missile leakers on critical assets on the battlefield. Probability of negation is the probability (per target) of target destruction, deviation from intended flight path, or other actions which protect the defended area from conventional, nuclear, biological, or chemical effects.

The focus of the KOLA analysis was on combat aircraft sortie degradation due to tactical ballistic missiles (TBMs) impacting the main operating air bases in South Korea. The analysis examined the effects that various sortie degradation rates had on personnel and equipment losses and on enemy force penetration in the overall campaign. The KOLA analysis was instrumental in helping the Army determine the maximum acceptable level of missile leakage for the TMD family of systems during future military campaigns.

OPTIMAL USE OF RESOURCES

As we try to stretch defense dollars to cover a wider range of threats, the Army has become far more cost conscious. CAA is often asked to analyze current ways of doing business so that we can squeeze more efficiency out of declining Defense budgets. Included in the cost spectrum are environmental concerns which by law and regulation will drive up the cost of defense if neglected. Other major topics under this analysis category are the development of acquisition and investment strategies.

Longbow Requirements (LONGREQ) determines the required mix of Longbow and HELLFIRE missiles which coordinated and integrated the analytical efforts of and data from TRADOC Analysis Command - White Sands Missile Range, the US Army Aviation Center and School, the Operational Capability Assessments - SWA Division, and the Operational Capability Assessments - NEA Division at CAA.

This QRA produced defensible Longbow missile requirements approved by the Army leadership, accepted by the Office of the Secretary of Defense, and forwarded to Congress. The effort prevented a proposed cut of over $500 million from the Longbow program.

Wartime Requirements FY2005 (WARREQ-05) is a study identifying munitions requirements totaling over $28 billion and major end item loss replacement requirements for 1,185 major end items. The effort implemented multiple methodology and documentation improvements, resulting in the first fully auditable requirements study for Army munitions and major end items.

The study was formally recognized by the DOD Inspector General as producing reasonable requirements and satisfying the recommendations of their audit on Army munitions. The CAA study director also verified, validated, and received accreditation for component analytical models of the WARREQ process.

Patriot Engagement Analysis (PEA) is an analysis tasked by Commander in Chief (CINC), Combined Forces Command (CFC), in support of the update to a specific operation plan. These analyses address important issues such as base contamination, sortie generation capabilities, and force alternative options, all of which depend upon an accurate assessment of Patriot's ability to defend critical assets. As part of the analysis, CAA was asked to determine tactical ballistic missile leakage under saturation attacks.

Science Applications International Corporation (SAIC) was contracted by the Defense Special Weapons Agency (DSWA) to analyze the impact of the use of WMD on the Korean peninsula. This assessment focused on the Democratic Peoples' Republic of Korea (DPRK) employment of chemically-armed ballistic missiles to disrupt operations at ports and tactical air bases. The role of active defense, counterforce, and passive defense to mitigate possible attacks was addressed. The study supported the USFK/ USPACOM Coral Breeze collaborative analysis of the effects of WMD use on command ability to execute existing war plans.

SAIC's analysis was performed in early 1997 and briefed to Combined Forces Command in June 1997. CAA's analysis was briefed to Combined Forces Command in December 1997. Although both SAIC and CAA used the Extended Air Defense Simulation (EADSIM) for their analyses, the findings of the two efforts were significantly different. As a result, CAA was tasked by CINC, CFC, to resolve the differences between SAIC and CAA Patriot engagement modeling.

The initial solution strategy was to ascertain the nature and extent of the differences between CAA and SAIC modeling efforts and to have the Patriot Project Office (PPO), Huntsville, AL, intervene to provide appropriate EADSIM input parameters which should be shared by both parties and to assist in resolution of the differences. SAIC agreed to provide the approved EADSIM results for over 81 different combinations, running 20 replications each. Instead, the PPO has come forward to produce the runs needed for a leaker table which gives the expected number of leakers based on 10- or 60-second time on target attacks for varying raid sizes of SCUD B/SCUD C TBMs against varying levels of defense. The DUSA-OR's office provided quality control, assistance, and concurrence of the process. Following the comparison of our original results, the memorandum report discusses the modeling parameters of interest, the changes which voided the collaborative effort, and the conclusions generated by the PPO analysis.

Privatizing Utilities Program (PUP). The purpose of the Privatizing Utilities Program (PUP) Quick Reaction Analysis (QRA) was twofold. First, the US Army Assistant Chief of Staff for Installation

Management (ACSIM) needed to identify the likely costs and benefits of privatizing Army utilities, especially in terms of the budgetary accounts affected. Second, the ACSIM also required an assessment of the market potential for Energy Savings Performance Contracts (ESPCs) as a way to leverage private sector capital and expertise for investment in energy efficiency in the Army. The sample data from contractor estimates for 51 utility systems was extrapolated to all 191 candidate utility systems in the Army using regression analysis. The basic approach used in this QRA was to separate the analysis into two parts: privatizing utility systems and assessing the market potential for ESPCs.

(1) The approach in the utility privatization part of PUP focused on estimating the likely costs and cost savings to the Army that could result from privatization. for a sample of 51 privatization candidate utility systems from contractor estimates. Privatization costs include initial upgrade costs, annual replacement costs, and annual maintenance costs. The sample data for the 51 utility systems were extrapolated to all 191 candidate utility systems in the Army using regression analysis. The regression analysis specified the relationship between privatization costs and selected variables (installation building square feet, installation population etc.). The variable that had the highest correlation with each utility system was used to make a linear extrapolation of the privatization costs for the candidate utility systems that were not studied by the contractor. Cost savings for utility privatization were estimated for the J (Utility Operations), K (Real Property Maintenance), L (Minor Construction), and MCA (Military Construction, Army) Accounts. Cost savings (for the various accounts) were estimated primarily from the Directorates of Public Works Annual Summary of Operations (Red Book) data. Cost increases and cost savings were compared to estimate the potential economic value added to the Army from utility privatization. Estimates of economic value added (net cost increases/ cost savings) were computed for a Base Case and Low, High, and Breakeven Cost Savings Cases.

(2) The approach for the ESPC assessment part of PUP was based largely on Renewables and Energy Efficiency Planning (REEP) to quantify the potential investment in cost effective energy conservation opportunities (ECO) in the Army. ESPC market potential for BASEOPS was assessed in terms of the Army market for ECO, since ECO would be candidates for ESPCs. An ESPC is an agreement between the government and a contractor to increase energy efficiency and reduce energy related operating costs of a building, group of buildings, or facility. The contractor incurs the cost to implement ECO in exchange for a portion of the actual cost savings directly resulting from ECO implementation. Army ESPC initiatives and challenges to tap into ESPC market potential were also addressed as part of the assessment.

The principal findings of the PUP QRA were:

(1) Leveraging capital and expertise from the private sector for utility privatization and ESPCs should provide value added to the Army in terms of economics, readiness, and quality of life.

(2) The annual costs of the J Account would likely increase by about $112 million (Base Case) or 9 percent. Alternative cases (High/Low Cost Savings) produced J Account increases ranging from $36-$208 million (3-17 percent). Annual net savings to the Army could be about $80 million (Base Case). For the other cases, annual net cost savings ranged from -$79 million (net cost increase) to $229 million. Other benefits of utility privatization (not quantified in PUP) include the shifting of the environmental compliance burden to the utility company and enabling the Army to better support core missions such as unit readiness and weapon system modernization.

(3) Based on the REEP analysis, considerable untapped energy conservation opportunities remain to further exploit ESPCs in the Army. ESPCs could feasibly provide a considerable portion of the $760M in private sector capital for implementation of the BASEOPS ECOs identified by REEP. Other benefits from capturing this potential include 2.2 million tons per year of pollution prevention (over 90 percent being global warming gases). Although challenging and complex, the Army is effectively advancing its use of ESPCs.

PLANNING DATA/FACTOR DEVELOPMENT

Within the Army and CAA there is a constant need for current, standard planning data from which we can project future outcomes and requirements. CAA finds itself on the sending and

receiving ends of this essential element of Army planning and analysis.

Weapons of Mass Destruction-Terrorist Response Study (WMD-TRS). See Chapter 1, Highlights.

Joint Service Chemical Defense Equipment Consumption Rates IV (JCHEMRATES IV) Study. This study, an update of the JCHEMRATES III Study, developed chemical defense equipment (CDE) logistic consumption rates for Southwest Asia and Northeast Asia for all four services based on the 1998-2003 Defense Planning Guidance. Theater campaign simulations were conducted using the Force Evaluation Model, current chemical defense doctrine, and Office of the Deputy Chief of Staff for Intelligence estimates of Red force capabilities. No Blue retaliatory attacks were conducted with either chemical or nuclear weapons. For the campaign simulations, both quantities of Red chemical weapons and the effectiveness of the weapons (to simulate weather differences) were varied. The results of the campaign simulations, i.e., casualties (both chemical and conventional), equipment losses, and contamination percentages were used to calculate the total consumption and consumption rates for the selected chemical defense equipment by service.

Trends in Land Combat (TLC). The TLC quick reaction analysis (QRA) was performed to assist the Office of Net Assessment of the Under Secretary of Defense for Policy in summarizing some of the lessons of land combat history, and in using them to project selected aspects of the land combat environment to the near future. It is assumed that the statistical patterns that have persisted for long periods of time will continue for at least the next few years.

The principal findings of this effort QRA are:

(1) On the average, rates of advance have not changed much over the past 400 years and so are not likely to change much for at least the next few years.

(2) On the average, for the past 400 years, battle durations have tended to increase gradually, and it is likely that this trend will continue for at least the next few years.

(3) On the average, over the past 400 years, personnel strengths in battles have declined a bit while personnel battle casualties have declined steadily and relatively steeply.

(4) Except for the Cold War period, the total active US military strength (all services) has traditionally been about 0.1 to 0.3 percent of the nation's population. It is currently a little over 0.5 percent, and so further declines appear likely.

(5) Over the years, the US Army's tooth-to-tail ratio has varied widely. Perhaps a reasonable goal for the near future would be to maintain a tooth-to-tail ratio in the 40 to 45 percent range.

(6) Over the years, the US Army traditionally has depended heavily on the Reserves and National Guard for additional forces when needed.

(7) On the average, over the past 400 years, casualty exchange ratios favoring the defender were essentially constant, with the defender consistently at a slight disadvantage. However, the intensity of battle declined steadily and steeply.

(8) Interstate war starts appear to be governed by a Poisson process with a constant rate parameter equal to about 0.7 interstate war starts per year. Projecting this rate to the period 2000-2010, we expect 7 (4 to 10) interstate wars to start. Based on interstate war data for the period 1820-1979, statistical projections can be made of the number of battle deaths, the durations, and the levels of total participation anticipated for those interstate wars that start in the period 2000-2010.

(9) Civil war starts appear to be governed by a Poisson process, but one with a gradually increasing rate parameter which currently is about one civil war start per year. Projecting the civil war rate to the period 2000-2010, we expect 10 (7 to 13) civil wars to start. Based on civil war data for the period 1820-1979, statistical projections can be made of the number of battle deaths, the durations, and the levels of total participation anticipated for those civil wars that start in the period 2000-2010.

TOOL AND METHOD DEVELOPMENT

At the base of the CAA study program are models, methods, and other analytical tools which enable us

to produce reliable and sensible answers to a new generation of complex problems and questions.

Graphically-based Analysis System-Enhanced (Weapons of Mass Destruction Study) GBASE-WMD. See Chapter 1, Highlights.

Kursk Operation Simulation and Validation Exercise II (KOSAVE II). The Kursk Operation Simulation and Validation Exercise (KOSAVE) Study is a follow-on to the Ardennes Campaign Simulation (ARCAS) Study of 1995. The final objective of KOSAVE is a comparison of historical combat progress and events in the southern front of the WW II Battle of Kursk with results from a combat simulation of the same campaign, using inputs generated from the Kursk Data Base (KDB), an historical data base derived from primary WWII record archives. This comparison will assess the accuracy of simulation model logic and enable development of algorithmic changes which improve simulation model credibility.

KOSAVE is a three-phase effort. Phase I documented and supplemented the KDB. Phase II, the KOSAVE II Study, applied programming, spreadsheet, and geographic information plotting methodologies to the KDB to develop and document a detailed statistical record of the Kursk Battle for use as both a baseline for the Phase III (KOSAVE III) simulation comparison and as a standalone descriptive reference work for historians.

The KOSAVE II Study Report, Quantification of the Kursk Battle (Southern Front), assessed and portrayed historical trends in activity and movement of units, commitment and losses of personnel and weapons, and inventory and consumption of ammunition in the southern front of the Kursk Battle. Attributes of combat which appeared to significantly affect the historical campaign outcome were also documented. These historical results can be further exploited to derive additional combat factor relationships which can be used to confirm or refine algorithmic rules used in simulation models of theater combat.

Note: the status of ongoing model developments such as ARES, GDAS, and MOBCEM are detailed in Chapter 4.

Section III. NATIONAL AND INTERNATIONAL MILITARY OPERATIONS RESEARCH ACTIVITIES

CAA engages in a host of activities involving the national and international exchange of professional information and techniques; the professional development of analysts; the promotion of research and development efforts in the field of military operations research; and the application of advanced technologies. Collectively, these efforts help maintain the expertise and essential analytical perspective important for understanding and analyzing current issues. Some of the more notable of these activities are identified in this section.

- The Ninth US/French Operations Research/Simulation at the Centre for Defense Analyses, Paris, in April 1998. The Special Assistant for Model Validation organized US participation.

- The Third US/Canadian Symposium on Operations Research in August 1998 was held at the Canadian Forces Command and Staff College, Fort Frontenac, Kingston, Ontario, Canada. Special Assistant for Model Validation organized US participation. The Director, CAA, presented the RAA XXI and SADE studies.

- The Third US/German Workshop on Operations Research was held at the Center for Strategic Leadership, US Army War College, November 1997. A Fourth US/German Workshop on Operations Research was held at Industrieanlagen-Betriebsgesellschaft MBH, Ottobrunn, Germany, in September 1998. The Special Assistant for Model Validation organized the Workshop and the Director, CAA, made presentations on the RAA XXI and SADE studies.

- The Defense Analysis Seminar IX was held in Seoul, Korea, at the Korean Institute for Defense Analysis on 6-10 October 1997. CAA participants included the Director, the Chief of the Conflict Analysis Center, and the Special Assistant for Model Validation.

- CAA hosted the US/UK Joint Program Review meeting in May 1998.

- The 24th meeting of the Quadripartite Working Group on Army Operational Research was held at the Australian Defense Science and Technology Organization facilities in Salisbury, South Australia, in March 1998. In addition to reporting on the activities of the Information Exchange Group on Historical Data Analysis, the Special Assistant for Model Validation made several presentations on CAA activities.

- Dr. Robert Helmbold, Mr. Walter Bauman, and LTC Patrick DuBois attended and present papers at the 15th International Symposium on Military Operations Research at the UK Royal Military College of Science, Shrivenham, in September 1998.

- The Special Assistant for Model Validation continued participation on the Board of Directors of the Military Operations Research Society. CY 97/98 responsibilities included running the Rist Prize competition and the Junior/Senior Analyst Program Committee for the 66th MORS Symposium in Monterey and chairing the Heritage Committee. He continues to support MORS as an Advisory Board Member in CY 98/99.

FOREIGN VISITORS AND DIGNITARIES

CAA has always participated with foreign nations in the exchange of knowledge and information in the area of military operations research. The world, situation following the end of the Cold War however, has served to magnify the importance of these ongoing dialogues. Allied nations continue to share information because, if recent trends continue, ad hoc coalitions and alliances will be the order of the day when it comes to settling international conflicts. To that end, CAA was privileged to host the following dignitaries:

Australia:

- Dr. Bruce J. Brown, Scientific Advisor, Australian Army.

- Brigadier Peter R. Kilpatrick, Commander, Combined Arms Training and Development Centre, Australia.

- LTC John Platt, Australian Army.

- LTC Stephen Quinn, Australian Army Standardization Representative.

- LTC Andris V. Balmaks, Concepts Officer, Australian Army Headquarters.

- LTC Kenneth W. Corke, Directorate of Land Combat Development, Australian Defense Headquarters.

France:

- MGEN Gerard Dugard, Director, Centre for Defense Analyses, Delegation General for Armaments, France.

- Mr. Jean B. Cornelius, Engineer, Centre for Defense Analyses, Delegation General for Armaments, France.

- Mr. Ehard Patrick, Engineer, Centre for Defense Analyses, Delegation General for Armaments, France.

- Mr. Jean L. Igarza, Engineer, Centre for Defense Analyses, Delegation General for Armaments, France.

Germany:

- Mr. Kurt Grau, Department Manager, Industrienlagen-Betriebsgesellschaft MBH.

Israel:

- COL Moshe Sharvit, Head, Center for Systems Analysis, Israeli Defense Force General Staff, Israel.

- Mr. Zachi Shani, Assistant R&D Attache, Embassy of Israel.

Japan:

- Capt. Mayumi Sakurai, Japan Air Self Defense Force.

- Capt. Matsno Hiroaki, Japan Air Self Defense Force.

Korea:

- LTC Sung Chul Suh, PhD, Resource Analysis Officer, ROK Army (Engineer and Science Exchange Program participant, December 1997 through February 1998).
- Mr. H. Kim, Korean Institute for Defense Analysis.
- Dr. Moon, Korean Institute for Defense Analysis.
- Dr. S. Kim, Korean Institute for Defense Analysis.
- LTC Soh, ROK Joint Staff.
- LTC Lee, ROK Joint Staff.
- Maj Yoo, ROK Ministry of Defense.
- Mr. Lee, Korean Institute for Defense Analysis.

Sweden:

- Mr. Lennart Lundh, Director, Research and Technology, Defense Materiel and Administration, Sweden.
- COL Rolf Dahlberg, Manager, Joint Research and Technology, Sweden.

Ukraine:

- COL Oleksandr I. Tarasenko, Division Chief, Main Operational Directorate, General Staff of the Armed Forces of Ukraine.
- LTC Leonid I. Poliakov, State Expert, National Defense and Security Council, Ukraine.
- MAJ Mykhailo V. Filimonov, Senior Officer, Programming and Mathematics Support Branch Main Operational Directorate, General Staff of the Armed Forces of Ukraine.
- MAJ Victor P. Bocharnykov, Section Chief, National Scientific Research Center, Defense Technologies and Military Security, Ukraine.
- COL Oleksander Galaka, Defense Attache, Embassy of Ukraine.
- MAJ Oleksander R. Hubarenko, Senior Research Worker, National Scientific Research Center, Defense Technologies and Military Security, Ukraine.

United Kingdom:

- Mr. James Platt, Attache, Defense Equipment (Land), British Defense Staff, Embassy of the United Kingdom.
- Brigadier VyVyan, Commander British Army Staff, Embassy of the United Kingdom.
- Mr. Michael J. Larcombe, Director (Land), Ministry of Defense, United Kingdom.
- Dr. Alan M. Dixon, Deputy Director, Science (Land), Ministry of Defense, United Kingdom.
- Dr. George Cran, Senior Scientist, Centre for Defense Analyses, United Kingdom.
- Lt Col Andrew D.L. Thomas, Science (Land Directorate), Ministry of Defense, United Kingdom.
- MAJ Gary J. Kinsey, Centre for Defense Analyses, United Kingdom.
- Mr. Colin Irwin, Senior Analyst, Centre for Defense Analyses, United Kingdom.
- Mr. Scott St. J. Weston, Senior Analyst, Centre for Defense Analyses, United Kingdom.

PROFESSIONAL SOCIEITIES

AORS XXXVI - 12-14 November 1997. Fort Lee, VA. The US Army Materiel Systems Analysis Activity (AMSAA) sponsored this annual event. The theme for this year's symposium was "Building an Analytical Bridge to the 21st Century." The following CAA personnel made presentations:

Presenter	Topic
Dr. Elizabeth Abbe	Advances in End-to-end Mobility Modeling
Ms. Julianne Allison	Mobilization Capabilities Evaluation Model Update

MAJ Steven Aviles	Dynamic Commitment Results
Mr. Walter Bauman	Combat MOEs in Relationship to Historical Evidence
Mr. Wallace Chandler	Advanced Regional Explortory System
COL William F. Crain	Quadrennial Defense Review Alternatives Force Assessment
LTC Patrick DuBois	Incorporating Uncertainty in Environmental Risk Assessment
Mr. Karsten Engelmann	Lower Tier Interceptor Requirements
Dr. Robert L. Helmbold	Recent Technological Advances in the Quantitative Analysis of Historical Data on Combat Operations
Mr. Chester Jakowski	Postprocessing of Combat Simulation Results
CPT William McLagan	Planning Tool for Operational Fires
Mr. Daniel Shedlowski	The Army's Evolving Force Planning Process as a Role Model for Joint Force Planning
Mr. John Shepherd (W/Mr. John Dockery)	Architecture for Information Operations Training Simulation
LTC Daniel Maxwell LTC Jerry Glasow & Ms. Linda Coblentz	Joint Logistics Analysis in Support of DOD Resource Allocation

66th MORS Symposium - 23-25 June 1998; hosted by the Navy Postgraduate School, Monterey, California. Twelve papers were presented, and four CAA personnel accompanied Mr. Shedlowski to this annual event. The theme for this year's symposium was "Preparing for Military Operations Research in the 21st Century." The following CAA personnel made presentations:

Presenter	Topic
COL William Crain	QDR- Alternative Force Assessment
	Breaking the Phalanx
	Antipersonnel Land Mine Study
	Warfighting Analysis in a Rucksack
LTC Patrick DuBois	Stochastic Analysis for Deployments and Excursions
	Implementing PAPA
	Calculating the Requirements for Deployment and Logistics Resources
CPT William McLagan	Planning Tool for Operational Fires
Mr. Frank McKie	Advances in End-to-end Mobility Modeling
	Mobilization Modeling & Simulation
Mr. Daniel Shedlowski	Planning Future Military Forces
	RAA Study Results

Note: For 66th MORSS Best Working Group Papers, see next section on Recognition Gained for Superior Work, page 2-13.

PRESENTATIONS AT OUTSIDE FORUMS

MORS Mini-Symposium on the QDR, April 1998.

- COL Andrew Loerch presented: "Review of the Halt Phase Analysis" by LTC Daniel Maxwell.

Institutes for Operations Research and Management Science (INFORMS), October 1998, Seattle, Washington.

- COL Andrew Loerch presented: "Optimization Framework to Support Resourcing Decisions in Total Army Analysis."

- LTC Patrick DuBois presented: "Stochastic Analysis for Deployments and Excursions (SADE)".

15th International Symposium on Military Operational Research (ISMOR), September 1998, Royal Military College of Science, Shrivenham, UK.

- LTC Patrick DuBois presented: "Stochastic Analysis for Deployments and Excursions (SADE)".

- Dr. Robert Helmbold presented: "Trends in Land Combat."

Cornwallis III: Analysis for Peace Operations, April 1998, Lester B. Pearson Canadian International Peacekeeping Training Centre, Cornwallis, Nova Scotia, Canada.

- LTC Patrick DuBois presented: "Stochastic Analysis for Deployments and Excursions (SADE)".

A Joint Conference on the Science and Technology of Intelligence Systems.

- Dr. Charles Leake presented: "Toward an Understanding of Knowledge."

Fourth US Army Conference on Applied Statistics, October 1998.

- Dr. Charles Leake presented: "The Use of Cognitive Processing Adaptive to Decision Making In the JWARS Project."

PUBLISHED ARTICLES AND REVIEWS

CAA emphasizes the importance of actively participating in the scientific advancement of operations research. In FY 98, our technical staff, due to other important activities for the Army, did not publish articles in refereed journals.

Analysts had their written critiques of operations research-related publications published. The following were reviewed by Dr. Charles Leake:

- Decision Analysis for Management Judgment (2d Edn) by P. Goodwin and G. Wright.

- Decision Anaysis: An Integrated Approach by Al Golub.

- Systems Maintainability Analysis, Engineering and Management by J. Knezevic.

- Multivariate Statistical Analysis: In Honor of Professor Minoru on his 70th Birthday, Vol. III.

Section IV. RECOGNITION GAINED FOR SUPERIOR WORK

The 1998 Dr. Wilbur B. Payne Memorial Award for Excellence in Analysis – group category.

Group Award: Stochastic Analysis for Deployments and Excursions (SADE)

The SADE analysis encompasses the development and demonstration of a stochastic methodology to forecast the number of joint contingency operations (by type) in which the US military could be involved during the period 1998 to 2006, using data from the post-Cold War period (1990) to the present.

The following individuals contributed to this excellence in analysis:

LTC Patrick DuBois	COL Andrew Loerch
MAJ Thomas Kastner	Mr. George Peery
Ms. Renee Carlucci	Ms. Nancy Lawrence
LTC William Nanry	

66th MORS Symposium: Best Working Group Papers

CG D - Resources: Calculating Requirements for Deployment/Logistical Resources (CARDEALR) (LTC DuBois)

CG G - Advances in MOR: Revolution in Analytical Affairs - 2000 (RAA-2000) (Mr. Shedlowski)

WG 3 - Arms Control & Proliferation: Anti-personnel Land Mine Studies (COL Crain, CPT Vink, Ms. Lewis)

WG 24- Measures of Effectiveness: Anti-personnel Land Mine Studies (COL Crain, CPT Vink, Ms. Lewis)

WG 12- Land and Expeditionary Warfare: Stochastic Analysis for Deployments and Excursions (SADE) (LTC DuBois)

WG 18-1- Mobility and Transport of Forces: Stochastic Analysis for Deployments and Excursions (SADE) (LTC DuBois)

WG 14- Power Projection, Planning, and Execution: WARS/Bright Star 97 (BS97) (COL Crain, MAJ Bassett)

FY 98 Study Directors' Luncheon. CAA held this annual luncheon on Friday, 13 November, 1998 to honor individuals who served as study directors for studies and other analytical efforts completed during FY 98. The guest speaker was Mr. Vernon M. Bettencourt, Director, Army Models and Simulation Office. At this event 57 individuals received recognition for completing 117 studies, QRA, projects, or RAA during FY 98. Certificates of Achievement were awarded to 42 individuals who directed a total of 58 studies and quick reaction analyses; Certificates of Accomplishment were awarded to 30 individuals who directed a total of 41 projects and research analysis activities.

The Director's Award for Excellence. The 25th Annual Dinner Dance was held on 22 April 1998. As in past years, this event was the venue for presenting the Director's Award for Excellence. The Director hosted this annual event and presented the Director's Award for Excellence to the following individuals:

Individual Support Award:
Ms. Harriet Pulsifer
Mr. Barry P. Groves

Individual Analyst Awards:
MAJ Jerry A. Glasow
LTC Patrick J. DuBois

Team Awards:

Support Force Requirements Analysis 2005 (SRA-05)

LTC Stephen P. Peterson
Mr. Jeffrey L. Hall
Mr. George Stoll
LTC Richard F. Kearney
MAJ Howard A. Waite
MAJ Pamela C. Leonowich
Mr. Giles D. Mills III
Mr. Russell A. Pritchard
Mr. Stanley H. Miller
Mr. Ernest J. Rose
CPT Troy C. Figgins
CPT Daniel M. Shrimpton
COL Richard B. Polin

Quadrennial Defense Review - Force Assessment (QDR-FA)

COL James L. Hillman
COL Wm Forrest Crain
LTC Stephen M. Orloff
MAJ Mark R. Von Heeringen
MAJ Kurt A. Bodiford
Mr. Louis J. Albert
Ms. Rosie H. Brown
Mr. John W. Warren
COL Robert J. Launstein
CPT Matthew G. Chesney

Individual Performance Awards. CAA leadership recognizes excellent performance through a robust awards program which even in lean times is used to promote productivity and quality by rewarding high personal achievement. The following awards were given in recognition of past performance and concomitant gains to CAA and the US Army, now and in the future.

Military Awards

FY 98 Military Service Awards

Army Achievement Medal:	1
Army Commendation Medal:	2
Meritorious Service Medal:	3
Legion of Merit:	0

Military Retirement Awards.

Meritorious Service Medal:	2
Legion of Merit:	6

Total Military Awards: 14

Civilian Awards

Achievement Medal for Civilian Service Award:	4
Certificate of Achievement:	1
Quality Step Increase:	22
Performance Award:	60
Special Act Award:	2

Total Civilian Awards: 89

Section V. CAA INTERNAL & MANAGEMENT SUPPORT ACTIVITIES

CAA CY 98 Military History Program. CAA maintained a vigorous Military History Program in the form of a seminar series on Joint and Combined Operations; knowledgeable guest speakers, and staff rides to historic battle sites.

Joint and Combined Operations Seminars:

- Case Study #1 – Yorktown (11 Mar 98)
- Case Study #2 – WW1 (24 Mar 98)
- Case Study #3 – Korea (8 Jun 98)
- Case Study #4 – Vietnam (4 Aug 98)
- Special – The Ends of the Earth (18 Aug 98)
- Case Study #5 – Gulf War (15 Sep 98)
- Case Study #6 – Bosnia (3 Nov 98)

Guest Speakers:

- Mr. E.B. Vandiver III
- Dr. Frank Vandiver
- Professor Anan Millett
- Dr. Jeffery Clarke
- Mr. Robert Kaplan
- LTG (Ret) John Yeosock
- GEN (Ret) George Joulwan

Staff Rides:

- Gettysburg Seminar & Staff Ride (11-12 Jun 98)
- Leadership Staff Ride–Antietam (10-11 Sep 98)

CAA FY 98 Human Dignity Council. The Human Dignity Council establishes program and activities to recognize and bring attention to the histories, characteristics, and the accomplishment of the diverse ethnic entities and special groups that make up our nation and our organization's family. This fiscal year's activities included:

- International Day Celebration (Jan)
- Dr. M. L. King Birthday Observance (Jan)
- African American/Black History Month (Feb)
- National Women's History Month (Mar)
- Holocaust Memorial Week (Apr)
- Asian/Pacific Heritage Month (May)
- Women's Equality Day (Aug)
- Native American/Indian Heritage Month (Nov)

CAA FY 98 Combined Federal Campaign (CFC). The CFC is a philanthropic organization that is an excellent means of providing financial assistance to a variety of charities. This assistance is provided through the selfless efforts of Federal employees. CAA's CFC was conducted from October to mid-November 1997. The 1997-year's theme was "It All Comes Back to You". The Center for Army Analysis received the "President's" Award for achieving its stated goal ($23,500) and with 80% or more participation.

CAA FY 98 Army Emergency Relief (AER). AER is a Non DOD sponsored, Army charity, helping soldiers, and families through financial problems. The AER contribution period was 30 March 98 through 15 May 98. A substantial contrition to the AER was made of $2243.00 by soldiers, retired soldiers and DA Civilians. This year we had 24 military and 17 civilian contributors. Collections were 97% of last year donations. DA tracks dollars per soldier contribution - we have approximately $52 Per soldier, (a 11% increase over last year).

CAA FY 98 Savings Bond Campaign. "Invest Today, Enjoy Tomorrow" was the theme for the 1998 US Savings Bond Campaign. CAA conducted its annual savings bond campaign during the period 28 May through 24 June 1998. CAA exceeded one of the campaign goals by increasing the number of employees enrolled in the program by 28%.

CAA Silver Anniversary Dinner Dance. On 25 April 1998, the US Army Concepts Analysis Agency, now the Center for Army Analysis (CAA), celebrated twenty-five years of providing valuable analytical support to Headquarters, Department of the Army (HQDA) and other Army decision makers. The CAA Silver Anniversary was marked by a special celebration at the annual Anniversary Dinner Dance which was held at the Fort Myer, Virginia, Officers Club.

CAA was officially created on 15 January 1973. Coming out of the Vietnam War, the Army decided upon a major reorganization to strengthen combat developments and training and to fill two voids: one in operational testing, resulting in the Operational Test and Evaluation Agency (OTEA), the other in force analysis support to HQDA, resulting in CAA. This reorganization, called STEADFAST, created the overall structure of the Army as it has now existed for 25 years. The intellectual leadership for STEADFAST came from two men – the late LTG William DePuy, who was serving as the Assistant Vice Chief of Staff of the Army, and the late Dr. Wilbur Payne, the first Deputy Under Secretary of the Army for Operations Research. Mr. William DePuy, Jr., President of Calibre Systems, Inc., attended the Silver Anniversary celebration to represent his family. Dr. Wilbur Payne will be memorialized next spring when the new CAA building bearing his name will be dedicated.

The initial planning for CAA consisted of the development of, first a Concept Plan, and then a Detailed Plan. This action was given to the Scientific Advisor to the Assistant Chief of Staff for Force Development, Mr. Abraham Golub, who also was in attendance at the Silver Anniversary celebration.

Following the approval of the Detailed Plan, an Implementation Planning Group (IPG) was formed consisting of the Commander Designate, MG Hal Hallgren, COL Joe Murphy, COL John Brinkerhoff, and then Major Larry Skibbe (now LTG Skibbe). With the exception of LTG Skibbe, all members of the IPG were present for the Anniversary celebration as well as the Agency's first Technical Director, Mr. Jack Newman.

Much has changed at CAA over the years. However, one thing that has remained constant for over 17 years is the Deputy Under Secretary of the Army for Operations Research, Mr. Walter W. Hollis. Mr. Hollis honored the Agency with his presence at the Silver Anniversary serving as the Distinguished Guest Speaker. His comments touched on the past of CAA as well as its promise for the future. Upon the Agency's move to the new building at Fort Belvoir, CAA transitions from the Concepts Analysis Agency to the Center for Army Analysis.

The Silver Anniversary party complete with a presentation of colors, toasts, a banquet with cake-cutting ceremony, speeches, and entertainment by the US Army Chorale was a suitable occasion for recognizing 25 years of service to the Army. Highlights of the evening included presentation of 25th Anniversary coin momentos to alumni and present employees, presentation of a Don Stiver's print to be hung in CAA's new building, and presentation of the Director's Award for Excellence – Individual Analyst to both LTC Patrick DuBois (recent winner of the Payne Award) and MAJ Jerry Glasow. The Agency looks forward to the next 25 years of distinguished service.

CAA FY 98 Picnic. The CAA annual picnic, hosted by the Operational Capability Assessments – SWA division, was held Friday, August 7th at the National

Naval Medical Center (NNMC) in Bethesda, MD. Approximately 265 people attended this annual event.

The 223rd Army Birthday. CAA celebrated the US Army's 223rd Birthday on 15 June, 1998 with a ceremony and refreshments.

Management Planning Conferences

Management Planning Conferences are held offsite quarterly for CAA management to plan important future activities. This fiscal year's conferences were held 22 October 1997, and 13 January, 31 March, and 12 August 1998.

CAA is continuously planning for the future by finding new and better ways of doing business. The purpose of our planning meetings is to get away from the day-to-day work activities and focus on specific goals for the near-, mid-, and far-term future of the Center. In addition, each division chief briefs his/her management initiatives and major activities taking place in the near future. Major topics for FY 1998 conferences were:

- **Using the CAA Strategic Plan as a Management Tool.** The Director authored a Strategic Plan delineating goals for CAA to focus on the most important issues facing the Army senior leadership, and to provide the highest quality, responsive analytical support.

- **Revolution in Analytical Affairs (RAA 2000).** The purpose of this activity was to determine likely future trends in the analytical and customer environment, and recommend action best suited to meet these future challenges.

- **Professional Development.** A featured topic of this year's management planning conferences was training. Training encompasses continuing education, professional gatherings, technological training, and any other means by which employees prepare themselves for future assignments.

- **Strategic Partnerships.** Strategic partnerships have been initiated to facilitate an analytical support interface with principal supported elements in ODCSOPS, and to ensure that CAA remains in the loop on important Army issues.

- **Long-range Personnel Planning.** The Director reviewed the civilian employees' years of service versus their age. He recommended that a simulation of CAA civilian personnel be built in order to forecast future distribution of the work force. The results would be used to size and project the Student Education & Employment Program (SEEP) and mobility positions.

- **CAA Documentation Process.** The intent of this project is to recommend a standard briefing and report format and to the extent possible, develop templates, macros, guidance, and training that will assist those preparing these types of documentation. Thus, the overall intent of the project outcome is to be supportive of the individual analyst documentation efforts.

- **CAA Opinion Survey.** Since the end of the Cold War, the Defense establishment, including CAA, has been asked to do more with less. To meet this challenge, we have been focusing on pleasing our customers, streamlining our processes, multiplying our capabilities, and involving everyone at CAA to improve our productivity and the quality of our products/services. This survey, based on the perceptions of everyone at CAA, helps in ascertaining how far we have come, where we are, and what more we need to do.

- **ADP Modernization.** The potential staffing shortfalls and possible consequences were discussed at length. Status reports on technological transfers from the current facility to the new building at Fort Belvoir were provided throughout the year.

- **Relocation to Ft. Belvoir.** The relocation of CAA to Ft. Belvoir is currently scheduled for the end of March 1999.

SUMMARIES OF FY98 CAA ANALYTICAL EFFORTS

STUDIES

Implementing Pollution Abatement and Prevention Analysis (I-PAPA)

Implementation of the PAPA methodology. Implementation at the MACOM level supports prioritization of the command P2 project submissions to the Environmental Program Requirements (EPR) with the use of standardized project costs and benefits. Implementation at the Army level supports ACSIM review of the EPR, as part of the prioritization of the overall Army environmental program. The POC for further information is Mr. Joe Gordon, the Center for Army Analysis, DSN 295-0450.

Kursk Operation Simulation and Validation Exercise II (KOSAVE II)

This three-phased KOSAVE study series is to compare progress of, and events in, the WWII Battle of Kursk (southern front) with the results of a combat simulation of the same campaign, using inputs generated from a history data base (KDB). The objective of KOSAVE II is to develop and document a statistical record of the Kursk Battle from the KDB for use as both a baseline for simulation comparison and as a standalone record. The POC for further information is Mr. Walter Bauman, the Center for Army Analysis, DSN 295-5261.

Nuclear-Chemical Impact Analysis - 3 (NCIA-3)

Determines the impact(s) of nuclear, i.e., radiation, high altitude electromagnetic pulse (HEMP), and source region electromagnetic pulse (SREMP), and chemical effects on theater operations. The POC for further information is Mr. Robert Barrett, the Center for Army Analysis, DSN 295-1655.

Political and Economic Risk in Countries and Lands Evaluation Study II (PERICLES II)

Refines PERICLES framework, enhances the Report and Evaluation Presentation (PREPS), verifies selected historical conflicts and applies a framework to forecast instability for a specified region as part of the Army's overall threat assessment. The POC for further information is Mr. Robert Solomonic, the Center for Army Analysis, DSN 295-6905.

Stochastic Analysis for Deployments and Excursions (SADE)

Develops and demonstrates a stochastic methodology that forecasts the number of joint contingency operations (by type) in which the US military could be involved during the period 1998 to 2006, using data from the post-Cold War period (1990) to the present. The POC for further information is LTC Patrick DuBois, the Center for Army Analysis, DSN 295-6931.

Value Added Analysis Phase V (POM 00-05) (VAA 5)

Major support effort for the development of the 00-05 Program Objective Memorandum (POM). The POC for further information is LTC Rodger Pudwill, the Center for Army Analysis, DSN 295-1609.

Wartime Requirements Near Simultaneous Dual MRC, FY05 (WARREQ-05)

Provides Class III, V, VII requirements based on campaign analysis of a dual MRC (East then West) scenario. The POC for further information is LTC Jerry Glasow, the Center for Army Analysis, DSN 295-1616.

QUICK REACTION ANALYSES, PROJECTS, AND RESEARCH AND ANALYSIS ACTIVTIES

COSAGE 2 ID TOE vs nK NBC Analysis (2ID-nK)

Conducts COSAGE simulations to examine various 2 ID TOEs for comparisons to current structure to assess TOE for defeating generic nK (1) chemical; (2) nuclear; and (3) bio-chem weapon systems to

transport these substances. Also conducts NEA theater simulations to determine significant differences among CEM output of the various combat samples. The POC for further information is Mr. Ronald Bonniwell, the Center for Army Analysis, DSN 295-6934.

Antiarmor Assessment for the Country of Jordan (AAA-J)

Conducts an analysis to determine Jordan's current need for antiarmor capability to combat the Syrian threat and an analysis to determine Jordan's current need to improve border security through enhanced firepower and increased mobility of large caliber weapons which mutually support the first objective. The POC for further information is LTC William Nanry, the Center for Army Analysis, DSN 295-5245.

Air Breathing Threat (ABT) Model Development (ABTMOD)

Develops a dynamic model to represent the threat of non-tactical ballistic missile (TBM) platforms, against US air defense weapon systems on the battlefield. The model was developed using the Stella/I-Think dynamic modeling software. The model is intended to be used as an exportable product to provide rapid results to future sponsors. The POC for further information is CPT William McLagan, the Center for Army Analysis, DSN 295-1652.

Analysis of Class II Excursion (ACE)

Conducts TAA-05 FASTALS excursions to determine the impact on force structure when the Class II planning factor is reduced for MTW scenarios. The POC for further information is MAJ Pamela Leonowich, the Center for Army Analysis, DSN 295-0270.

Army Digitization of Support (ADIOS)

Conducts TAA-05 FASTALS excursions to determine the baseline CS and CSS structure for digitized corps in MTW scenarios. The objective is to produce corps-level force structure templates to be used by ADO as force structure strawmen for digitization costing estimates. The POC for further information is MAJ Pamela Leonowich, the Center for Army Analysis, DSN 295-0270.

Army International Environmental Group (AINTEG)

CAA analyst serves as member of the Army International Environmental, Safety, and Health Working Group which works international environmental, safety, and health policy issues that face the Army. The POC for further information is Mr. Steven Siegel, the Center for Army Analysis, DSN 295-5289.

Automated K-kill Analysis (AKA)

Compares campaign results of SRA-05 MRC-E base case (which used estimated K-kill destroy card values) with campaign results using approved COSAGE/CEM automated K-kill methodology. The POC for further information is Mr. Larry Good, the Center for Army Analysis, DSN 295-5276.

Army Long-term Privatization of Housing (ALPH)

Estimates the potential impacts of the Army family housing privatization initiative, referred to as the Capital Venture Initiative (CVI), on selected budget accounts. The POC for further information is Mr. Joe Gordon, the Center for Army Analysis, DSN 295-0450.

ANVIL 2 Campaign Results Comparison (ANVIL 2)

Compares campaign results of Kuwait/US defense of Kuwait against Iraq. Examines several cases to include best and worst cases and various similar scenarios. The POC for further information is LTC William Nanry, the Center for Army Analysis, DSN 295-5245.

ANVIL 2 Campaign Results Comparison Support (ANVIL 2-C)

In support of SW QRA, compares campaign result of Kuwait/US defense of Kuwait against Iraq where chemical weapons have been employed. The POC for further information is MAJ Bonita Harris, the Center for Army Analysis, DSN 295-1263.

Annual Training Support Analysis (ATSA)

Evaluates the capability of Fort Bliss, Fort Carson, Fort Jackson, Fort Polk, Fort Riley, and Fort Rucker to support heavy and light Reserve Component unit

annual training. The POC for further information is LTC Rodger Pudwill, the Center for Army Analysis, DSN 295-1609.

Alternative Engineer Requirements Study (AVENGERS)

Assesses the potential for using an alternative method for calculating theater construction requirements in the Total Army Analysis (TAA). The POC for further information is LTC Richard Kearney, the Center for Army Analysis, DSN 295-5294.

Bright Star 97 (BS97)

Provides Commander, ARCENT, with a deployable, highly responsive analytical package for Exercise Bright Star 97. The POC for further information is LTC William Nanry, the Center for Army Analysis, DSN 295-5245.

Cost Analysis for the Land Disposal Restriction Utah Group (CALDRUG)

Develops a cost methodology that is analytically based, defensible, and determines the Army's cost of complying with the final Land Disposal Restriction (LDR) rule developed jointly by the State of Utah and the Army. The secondary objective is to determine the cost-benefit of the proposed rule. The POC for further information is LTC Patrick DuBois, the Center for Army Analysis, DSN 295-6931.

CALAPER K-kill Analysis (CALKA)

Analyzes the effect the K-kill methodology, COSAGE boards, and the CEM run utilizing the automated K-kill values have on munition consumption and equipment loss estimates. Results are compared with WARREQ 2005 MTW-East results. The POC for further information is Mr. David Williams, the Center for Army Analysis, DSN 295-1593.

Campaign Analysis for Nuclear and Chemical Impact Analysis (CANCIA)

Conducts theater campaign and analyzes results to assess the impact of weapons of mass destruction (WMD) on NS MRC W/E and to continues to refine US response options. The POC for further information is Mr. John DePalma, the Center for Army Analysis, DSN 295-5252.

COSAGE Automated Postprocessor (CAPP)

Automates the quality benchmark checks, i.e., conditions to be satisfied for satisfactory outputs from COSAGE simulations and produces a set of graphical presentations for briefings. The POC for further information is LTC William Nanry, the Center for Army Analysis, DSN 295-5245.

COSAGE Automated Postprocessor Data base (CAPP DB)

Provides COSAGE analysts with a tool for easily examining model results, comparing different cases, and answering ad hoc questions. A graphical user interface based on Microsoft Access and Excel is preferred due to its ease of use and familiarity to analysts. Visual Basic code may be used to customize and enhance the interface. The POC for further information is Mr. John Warren, the Center for Army Analysis, DSN 295-1690.

Campaign Analysis for Tiered Readiness Postures (CATRP)

Conducts and analyzes theater simulation to support the development of the Army's assessment to Joint Staff and final report to Congress on tiered readiness postures. This analysis provides the Tiered/Cyclical Readiness Study Director with information to develop the Army's assessment as input to the Joint Staff. The POC for further information is Mr. John DePalma, the Center for Army Analysis, DSN 295-5252.

Climate Change Technology Advisory Group (CCTAG)

CAA analyst serves as member of the DOD Global Climate Change Technical Advisory Group which assesses national security impacts of US global change policy established at the 1997 UN Framework Convention on Climate in Kyoto. The POC for further information is Mr. Steven Siegel, the Center for Army Analysis, DSN 295-5289.

COSAGE Digitization (CD)

Examines how modifying input data parameters for COSAGE can represent the effects of digitization. This effort includes testing in COSAGE followed by testing in CEM to determine the effects in the theater. The POC for further information is MAJ James McMullin, the Center for Army Analysis, DSN 295-1627.

COSAGE Data Management System - Phase II (CDMS-II)

Develops software that generates the COSAGE input files from COSAGE data stored in the relational data base; accesses the Ingres data base via CAA's LAN; uses rules to standardize the COSAGE force stylization process; and makes the software remotely accessible from a PC. The POC for further information is Ms. Judith Bundy, the Center for Army Analysis, DSN 295-1675.

Casualty Estimation Steering Committee (CESC)

CAA analyst attends CESC meetings and, in support of the CESC, solicits input on casualty estimation issues from CAA personnel and presents to the CESC. Takes CESC directions and proposals for review and feedback to CAA to disseminate CESC recommendations and decisions to CAA. Serves on CESC working groups and report on CESC activities of interest to CAA. The POC for further information is LTC(P) Rebecca Mackoy, the Center for Army Analysis, DSN 295-1698.

Catalog of CAA's Computerized Historical Data Bases (CHDB)

Prepares a catalog of the computerized databases developed or acquired by CAA during its historical research work, together with diskettes containing the computerized databases. The POC for further information is Dr. Robert Helmbold, the Center for Army Analysis, DSN 295-5278.

Chemical Degrade of Air Sorties (CHEMSORT)

Presents an improved method of quantifying the effects of chemical contamination on air sorties. The POC for further information is Ms. Renee Carlucci, the Center for Army Analysis, DSN 295-5270.

Chemical Warfare Integration in the CEM Follow-on (CHEMWINT II)

Determines whether FORCEM's methodology for computing chemical casualties, MOPP status, and contaminated equipment is valid. Investigates the CHEMWINT process and ensures that FORCEM chemical data is correctly parlayed for use by CEM. Determines CEM's method of integrating chemical input data from FORCEM and provides suggested improvements. The POC for further information is Ms. Arlene Clyburn-Miller, the Center for Army Analysis, DSN 295-0897.

Logistics Analysis for G-3 OPLAN (CLASSACT)

Determines if proposed course of action (COA) is logistically supportable and estimates time intervals required for each logistical step within the COA. The POC for further information is MAJ Keith Wilson, the Center for Army Analysis, DSN 295-6958.

COA 1 Analysis - 1998 OPLAN Update (COA1-98OP)

Analyzes the impact of COA 1 on a theater campaign in support of USFK 1998 OPLAN development. The POC for further information is LTC William Walk, the Center for Army Analysis, DSN 295-5300.

COA 3 Analysis - 1998 OPLAN Update (COA3-98OP)

Analyzes the impact of COA 3 on a theater campaign in support of USFK 1998 OPLAN development. The POC for further information is LTC William Walk, the Center for Army Analysis, DSN 295-5300.

98 OPLAN Update COA Analysis (COAA-98OP)

Analyzes the impact of multiple COAs on a theater campaign in support of USFK 1998 OPLAN development. The POC for further information is MAJ Mark Von Heeringen, the Center for Army Analysis, DSN 295-1677.

Cost-Benefit Analysis of the Environmental Compliance Assessment System (COBECAS)

Determines the monetary cost-benefit of the Environmental Compliance Assessment System (ECAS). A secondary objective is to determine whether it may be more cost effective to use outside contractors to conduct the inspection, rather than the current practice of using the Center for Health Promotion and Preventive Medicine. The POC for further information is LTC Patrick DuBois, the Center for Army Analysis, DSN 295-6931.

Country Forces Assessment FY 98 (COFA 98)

Identifies target countries and tasks for COFA products to be developed by NGIC. Reviews the delivered products for completeness and accuracy IAW the tasking requirements, and compares to the DoDFIP assessments to identify differences. The POC for further information is MAJ Timothy Ockerman, the Center for Army Analysis, DSN 295-0216.

COSAGE History Data base (COHDAB)

Uses historical COSAGE data outputs for analysis and comparison of current COSAGE study results. The POC for further information is LTC William Nanry, the Center for Army Analysis, DSN 295-5245.

COSAGE J-8 Support (COJ-8)

Provides Combat Samples based on SRA-05 to J-8 for use in TACWAR. The POC for further information is MAJ James McMullin, the Center for Army Analysis, DSN 295-1627.

CONUS Residual Forces Available for Terrorist Response (CRATER)

Using the current Program Objective Memorandum (POM) 05 Army Structure Message (ARSTRUC), projects the availability of specified forces remaining in CONUS to support a terrorist response mission. Projects the availability over time at snapshots of C-day, C+90, C+180, C+270, and C+360 as forces deploy to a near simultaneous 2 MTW scenario. The POC for further information is LTC Stephen Peterson, the Center for Army Analysis, DSN 295-1688.

Support to DODIG Audit (DODIG-AUD)

Supporting DODIG in their audit of DOD theater models that generate service threat allocations and of service models and assumptions generating quantitative requirements. The CAA models to be evaluated are CALAPER, COSAGE, and CEM. Evaluation consists of tracing selected munition expenditures from COSAGE through CEM and through the munitions consumption program. The POC for further information is LTC Jerry Glasow, the Center for Army Analysis, DSN 295-1616.

Extended Air Defense Simulation Capability (EADSIMCAP)

Establishes the long-term capability and knowledge to perform missile and air defense analysis using the Extended Air Defense Simulation (EADSIM) Model. In addition, maximizes the use of the capabilities provided by EADSIM in future air defense analysis at CAA. The POC for further information is CPT William McLagan, the Center for Army Analysis, DSN 295-1652.

Enhancement of Kursk Historical Unit Data (EKHUD)

The objective of EKHUD, Phase I of the KOSAVE study, is to supplement the CD-ROM documentation of the Kursk Data base (KDB) with additional data files containing reorganized and reformatted unit narrative information, and unit location information from the KDB. Subtasks within KOSAVE Phase I are extraction, organization, reformatting, and documentation of the supplemental unit information in the KDB. The POC for further information is Mr. Walter Bauman, the Center for Army Analysis, DSN 295-5261.

Effect of Leakers on Korea Campaign (ELOC_K)

Conducts and analyzes theater campaign results to assess the impact of TBM leakers on NS MRC W/E. The POC for further information is Mr. John DePalma, the Center for Army Analysis, DSN 295-5252.

An Examination of RAID Team Alternatives using GBASE (ERTAG)

The management program integration office is examining several alternatives and augmentations to the stationing of the National Guard (NG) Rapid Assessment and Initial Detection (RAID) Teams. CAA performed the initial RAID Team stationing analysis--this is an extension of that effort. The POC for further information is LTC Rodger Pudwill, the Center for Army Analysis, DSN 295-1609.

Equipment Set for European IPS (ESEI)

Sponsor is expanding the concept of the mission task organized force (MTOF) for DAMO-SSW's Go To War study, to include equipment requirements from Army war reserve and prepositioned sets. The

Sponsor desires an assessment of the suitability of available equipment to meet the need of MTOFs as they are needed for the DOD Illustrative Planning Scenarios (IPS). The POC for further information is Mr. Duane Schilling, the Center for Army Analysis, DSN 295-1546.

FASTALS Analysis of Campaign Results Using Automated K-kill (FAST ANC-R)

Assesses the impact on FASTALS analysis of using the approved COSAGE/CEM automated K-kill methodology compared with the estimated K-kill destroy card values used in SRA-05. The POC for further information is Mr. Russell Pritchard, the Center for Army Analysis, DSN 295-4711.

FORCEM Chemical/Biological Effects Tables Update (FCBETU)

Develops chemical effects tables based on new casualty threshold numbers; develops biological effects tables; verifies, validates, and analyzes FORCEM chemical effects. The POC for further information is Mr. Karsten Engelmann, the Center for Army Analysis, DSN 295-1501.

FEMTO 98 (FEMTO 98)

Examines current and future NATO Partnership for Peace (PfP) technical and procedural medical capabilities for operating in a low-level radiological environment out to 2003. The POC for further information is Ms. Julia Sharkey, the Center for Army Analysis, DSN 295-4715.

Force Mix Study (FORMS)

Determines the force mix requirements (ground and air) necessary to achieve campaign objectives. Determines the deployment/strategic lift requirements necessary to generate the force mix requirements. Determines the force mix and deployment/strategic lift requirements associated with employment of future capabilities and doctrine. The POC for further information is Ms. Rosie Brown, the Center for Army Analysis, DSN 295-1686.

Graphically-based Analysis System – Enhanced (GBASE)

Extends the RCTIFYRS methodology to include other services and provides geographic proximity analysis in support of the primary CAA WMD effort. The POC for further information is LTC Rodger Pudwill, the Center for Army Analysis, DSN 295-1609.

GDAS - Purchase Order FY95/96 (GDAS-PUR96)

Tests and demonstrates functionality associated with implementation of five advanced features being developed for CAA by Noetics, Inc. under Purchase Order DASW01-95-M-5536. The POC for further information is Dr. Elizabeth Abbe, the Center for Army Analysis, DSN 295-0027.

Global Deployment Analysis System-Expansion (GDAS-X)

This contract effort expands GDAS resolution specific to intra-theater modeling. It also calls for development of a standard and automated procedure for TPFDD input into GDAS. The POC for further information is Dr. Elizabeth Abbe, the Center for Army Analysis, DSN 295-0027.

Go to War (GTW)

Conducts analysis to determine difference in the theater campaign given a digitized force. Based on changes, determine the potential impact on force deployment, prepositioned equipment, and war plans. The POC for further information is MAJ James McMullin, the Center for Army Analysis, DSN 295-1627.

Go To War Phase II (GTW2)

Explores alternative doctrinal employment of a single digitized corps and multiple digitized corps. The POC for further information is MAJ James McMullin, the Center for Army Analysis, DSN 295-1627.

Historical Ammunition Rates (HAMMUR)

Technical Paper documenting historical ammunition rates. The POC for further information is Dr. Robert Helmbold, the Center for Army Analysis, DSN 295-5278.

Hierarchical Analysis of USARPAC Theater Engagement (HAUTE)

Assists USARPAC in the development of their theater engagement program. The objective is to establish a USARPAC theater engagement hierarchy, which

outlines the linkages between program goals, objectives, and individual theater engagement events. This hierarchy will be incorporated into a decision support system. The POC for further information is Mr. Duane Gory, the Center for Army Analysis, DSN 295-6953.

Investigation of CAA Access to GCCS (ICAG)

Continuation of earlier effort to gain access to GCCS. Reopened because Army now ready to grant CAA access. The POC for further information is Ms. Judith Bundy, the Center for Army Analysis, DSN 295-1675.

JPACS Phase II KIDA Chem-Bio Counterproliferation IW (JPACS-II IW)

Examines US XPRO (counterproliferation) ACEs (area of capability enhancements) and their applicability to ROK-US XPRO initiatives. Identifies ROK-US XPRO measures designed to prevent, deter, and counteract chem-bio proliferation. Identifies measures the CWC, BWC, MTCR use in countering proliferation of WMD and its related technology. The POC for further information is Ms. Julia Sharkey, the Center for Army Analysis, DSN 295-4715.

Keep Out Level Assessment (KOLA)

Determines the impact of various theater missile defense (TMD) leakage levels on future military campaigns. The POC for further information is Ms. Pamela Roberts, the Center for Army Analysis, DSN 295-1591.

Kill of Phased Offline Attrition (KPOLA)

Standardizes CEM between OCA-NEA and OCA-SWA for TAA-07. Eliminates the need for use of POLA. Standardizes deep boards, chemical effects, portrayal of reserves, and CAS/AI. The POC for further information is MAJ Peter Badoian, the Center for Army Analysis, DSN 295-1443.

Life Cycle Costs of Helicopters (LICOH)

Compares life cycle costs of Commanche RAH-66 Longbow with alternatives such as the OH-64D Kiowa Warrior and Apache Longbow. The POC for further information is Mr. Joe Gordon, the Center for Army Analysis, DSN 295-0450.

Longbow Requirements (LONGREQ)

Estimates Longbow missile requirements. The POC for further information is LTC Jerry Glasow, the Center for Army Analysis, DSN 295-1616.

LSC2, CFC Draft Campaign Concept, COA 1 (LSC2)

Evaluates alternative courses of action in support of the OPLAN update. Provides a quick evaluation (1 Day) of the logistical supportability of this alternative. Evaluation will examine whether the distribution system can support the proposed counteroffensive under Course of Action 1. The POC for further information is Mr. Richard Poulos, the Center for Army Analysis, DSN 295-1625.

LSC3, CFC Draft Campaign Concept, COA 3 (LSC3)

Evaluates alternative courses of action in support of the OPLAN update. Provide a quick evaluation (1 week) of the logistical supportability of this alternative. Evaluation examines whether the distribution system can support the proposed counteroffensive under Course of Action 3. The POC for further information is Mr. Richard Poulos, the Center for Army Analysis, DSN 295-1625.

Methodology Development and Demo for Brigade and Above Recap Cost (MAD BARC)

Develops a methodology for determining recapitalization costs of brigade and higher echelon units. A primary objective is the determination of a reasonable level of detail for costing. The POC for further information is Ms. Patricia Murphy, the Center for Army Analysis, DSN 295-0211.

Medical Analysis Tool Model Evaluation (MAT-OTSG)

Provides DASG-HCO with an evaluation of the Medical Analysis Tool performance when fed the populations at risk and the casualty rates for those populations as taken from the TAA-05 campaigns. The POC for further information is LTC(P) Rebecca Mackoy, the Center for Army Analysis, DSN 295-1698.

TAA-05 MRC-East Adverse Case (MRC-E AC)

Provides campaign development, simulation, and analysis for a TAA-05 adverse case campaign. This

campaign is based on the use of weapons of mass destruction as described by DAMO-SSW. The results are used to assess support force requirements in the adverse campaign case. The POC for further information is COL William Crain, the Center for Army Analysis, DSN 295-1581.

New Effects from Water Reduction (NEWTRD)

Conducts TAA-05 FASTALS excursions to determine the impact on combat service support (CSS) structure when the water consumption planning factor is reduced for MTW-E scenarios. The POC for further information is MAJ Pamela Leonowich, the Center for Army Analysis, DSN 295-0270.

Near Peer Scenario Samples - Europe (NPSS-E)

Develops combat samples in support of Near Peer Scenario Europe for a QDR analysis. The POC for further information is Mr. Toivo Tagamets, the Center for Army Analysis, DSN 295-6942.

Operation Joint Endeavor-Mobilization and Deployment (OJE-MOBDEP)

Conducts research on, and gathers information relating to, mobilization and deployment operations during Operation Joint Endeavor. This data will be compiled for later use in a verification and validation project concerning the MOBCEM and GDAS Models. The POC for further information is Mr. Franklin McKie, the Center for Army Analysis, DSN 295-1699.

Optimal Laydown (OLD)

Determines the optimal laydown for Patriot assets in South Korea. Of specific concern is the laydown which maximizes sortie generation and/or air power. The POC for further information is Ms. Renee Carlucci, the Center for Army Analysis, DSN 295-5270.

PAEKTU 98 Political-Military Game (PAEKTU 98)

Refines mid- and long-term chemical and biological counterproliferation measures in NEA aimed at preventing the proliferation of WMD and related technology. Enhances development of CINC CFC counterproliferation plans. Examines best use of Chemical Warfare Convention (CWC), Biological Warfare Convention (BWC), Missile Technology Control Regime (MTCR), and other organizations in countering these technologies. Assesses subsequent consequence management for regional WMD incidents. Examines international XPRO cooperative efforts. The POC for further information is Mr. Mark Clements, the Center for Army Analysis, DSN 295-6904.

Patriot Engagement Analysis (PEA)

Documents the work done by CAA in conjunction with work done by other agencies to determine the effectiveness of current Patriot defenses fielded in Korea given an enemy tactical ballistic missile (TBM) attack. The POC for further information is Ms. Renee Carlucci, the Center for Army Analysis, DSN 295-5270.

Preprocessor for Eagle Terrain (PET)

Creates an automated, user-friendly tool to assist analysts in the preparation of terrain-related inputs required by the Eagle Model for simulation of corps-level warfare. This project seeks to develop more effective methods of preparing maneuver network and terrain input data by drawing on the Defense Mapping Agency (DMA) digitized terrain data base, the Terrain Evaluation Model. The POC for further information is Dr. Ralph Johnson, the Center for Army Analysis, DSN 295-1542.

WMD Terrorist Response Study - PHOENIX 98 Pol-Mil Game (PHOENIX 98)

Evaluates Rapid Assessment and Initial Detection (RAID) Teams, response to domestic WMD incidents; identifies Rapid Joint Interagency Response Task Force (RJORTF) organization. Proposes how to integrate RAID and RJIRTF functions and Leverage RC preparedness and response capabilities to respond to WMD threats. Assesses impact of chemical weapon employment on US power projection system during an MTW. The POC for further information is Ms. Julia Sharkey, the Center for Army Analysis, DSN 295-4715.

Protective Mask Sensitivity to Toxicity (PMaST)

Estimates the ability of the M40 series protective mask to protect users against higher toxicity values. Compares to those used to determine the M40 series mask design requirements. The POC for further information is LTC Jerry Glasow, the Center for Army Analysis, DSN 295-1616.

Privatizing Utility Programs (PUP)

Estimates the costs of privatizing Army-owned utilities. The POC for further information is Mr. Joe Gordon, the Center for Army Analysis, DSN 295-0450.

QDR Large Competitor/Near Peer Parallel Effort Support (QDRIII-LC)

Assists DAMO-FDX in conducting Army parallel analysis of RAND Near Peer Competitor analysis in order to compare and verify RAND results. Provides insights into the RAND JICM model. The POC for further information is COL Andrew Loerch, the Center for Army Analysis, DSN 295-5259.

Quality of Life Measurement and Analysis II (QUAILMAN II)

Assesses the Army's quality of life (QOL) programs subsequent to the results reported in the first QUAILMAN Study. This study updates the findings of the original QUAILMAN Study and compare them with findings based on information obtained from the Installation Status Reports (ISR). The POC for further information is Mr. Frank Womack, the Center for Army Analysis, DSN 295-6930.

Revolution in Analytical Affairs - 2000 (RAA-2000)

Collects data and conducts interviews to analyze changes that have occurred in the analytical community's capability and responsiveness to customer demands in the ensuing period since the end of the Cold War. Projects likely future trends in the analytical and customer environment and recommends action best suited to meet these future challenges. The POC for further information is Mr. Daniel Shedlowski, the Center for Army Analysis, DSN 295-1532.

Replacement Laptops - 1998 (RELAPS-98)

Replaces the laptop computers now used by the Deployable Analytical Support Team for campaign analyses with the next generation of laptop computers which will be connected together in a local area net. The POC for further information is Mr. Martin Dwarkin, the Center for Army Analysis, DSN 295-1663.

ROK JCS Defense Concept and Security Zone Analysis (ROKJCS)

Investigates and discusses the impact of implementing two alternatives to the current Draft Campaign Concept. This work is related to the Course of Action 3 analysis and related OPLAN development and specifically addresses concerns surfaced during interactive briefings with the CINC, CFC and US Forces Korea during the week of 17-21 Jul 98. The POC for further information is MAJ Mark Von Heeringen, the Center for Army Analysis, DSN 295-1677.

Strategic Crisis Exercise - 1998 (SCE-98)

Participates as subject matter expert and nuclear, biological, and chemical (NBC) Controller in Army War College (AWC) Strategic Crisis Exercise (SCE). This exercise is being conducted by the Center for Strategic Leadership (CSL). The POC for further information is Mr. Robert Barrett, the Center for Army Analysis, DSN 295-1655.

Strike Force Analysis (SFA)

An analysis to determine if a need exists for a rapid deployment strike force capability. Examines this need in the context of an undeveloped theater of operations where US national interests are challenged by a conventional threat of both heavy and light forces--similar to the situation faced in Southwest Asia in August 1990. The POC for further information is COL William Crain, the Center for Army Analysis, DSN 295-1581.

Short-range Air Defense (SHORAD) Kill Study (SHORAD-KLS)

Establishes probabilities of kill and number of rounds fired for short-range air defense (SHORAD) weapon systems and combinations of weapon systems with overlapping fires and mutual support, to accurately portray air defense employment and coverage in the EAGLE model for VAA-05. The POC for further information is CPT William McLagan, the Center for Army Analysis, DSN 295-1652.

Space Operations Cooperation (SPOC)

Provides analytical support to the US Army Space and Strategic Defense Command (USA SSDC) in its Space Operations and National Missile Defense (NMD) missions. The POC for further information is Mr. Matthew Ogorzalek, the Center for Army Analysis, DSN 295-1697.

SRA-05 Required/Resourced Forces Deployment Analysis (SRA-05 R2 DA)

Develops the movement requirements for the recent GOSC-approved SRA-05 required doctrinal support force for MRC-NS (E/W). Perform two separate deployment analyses of this force. Develops the resourced movement requirements of this force using the results of the MERLIN match process. The POC for further information is Ms. Margaret Loudin, the Center for Army Analysis, DSN 295-1657.

SRX-1 "The Day After the Strategic Crisis of 2008" (SRX-1-98)

In Army After Next (AAN) Project context, helps TRADOC/RAND assess the adequacy of current defense investment choices to respond to emergence of major threats beyond the POM; examine the potential domestic and economic environment in this timeframe and context; gains appreciation of non-Army and non-DOD perspective on these issues; and conducts series of SRX tests to test adequacy of gaming materials. The POC for further information is Mr. John Elliott, the Center for Army Analysis, DSN 295-1680.

Surge Movement Requirements - FY 2005 (SURGE-05)

Determines the movement requirements for two heavy divisions in MRC-E of an MRC-E/W near simultaneous scenario with their associated echelons above division (EAD) combat support/combat service support (CS/CSS) force structure as part of the TAA-05 combat force. The POC for further information is Mr. Giles Mills, the Center for Army Analysis, DSN 295-1630.

TAA/TLC Benchmark Study (TAA/TLC-BMRK)

Compares TAA-05 data to selected trends found in the TLC study. The POC for further information is Dr. Robert Helmbold, the Center for Army Analysis, DSN 295-5278.

TAA-05 Force Feasibility Review (TAA05 FFR)

Using a TAA-05 resourced force provided by DAMO-FDF, determines the difference in strategic deployability of that force, vice the TAA-05 required force. Includes briefings of the comparative analysis for 3 Nov Council of Colonels. The POC for further information is MAJ Howard Waite, the Center for Army Analysis, DSN 295-6962.

TACWAR 5.0 Upgrade in NEA (TAC-NEA)

Implements the latest version of the TACWAR model and updates corresponding data bases for NEA, upgrades from version 4.0 with J-8 modifications to version 5.0 in order to take advantage of model enhancements and improvements. The POC for further information is Mr. Louis Albert, the Center for Army Analysis, DSN 295-1580.

TACWAR 5.1 Upgrade in NEA (TAC51-NEA)

Implements the latest version of the TACWAR model and updates corresponding databases for NEA. Upgrades the recently acquired DAWMS NEA second MRC data base from version 4.0 with J8 modifications to version 5.1 in order to take advantage of model enhancements and improvements. Upgrades the NEA first MRC data base from version 5.0 to 5.1 in order to take advantage of model enhancements and improvements. The POC for further information is Mr. Louis Albert, the Center for Army Analysis, DSN 295-1580.

Tiered and Cyclic Readiness - Deployment Analysis (TACR-DA)

Based on TAA-05 GOSC approved force with Wartime Executive Agency Requirements (WEAR), performs a strategic deployment analysis for major theater war – near simultaneous (MTW-NS) (E/W) using tiered readiness assessment times for activation of active and reserve units. Determines

the impact of unit readiness on strategic deployment in terms of arrival times for combat and selected combat support units, and delivery profile for major cargo categories. The POC for further information is Ms. Margaret Loudin, the Center for Army Analysis, DSN 295-1657.

Theater Analysis Force XXI - Airlift Analysis (TAF21-AA)

Using results of TFXXI deployment analysis, for the first 30 days of the deployment, determines total cargo deployed by air and number of sorties by service. The POC for further information is Ms. Margaret Loudin, the Center for Army Analysis, DSN 295-1657.

Theater Analysis for FXXI - Revised (TAF21-R)

Conducts theater-level analysis of TRADOC conservative heavy division (CHD) design. Develops operational and logistical concepts of operation (CONOPS) to employ for modeling. Develops a fully defined dual major regional contingency (MRC) East/West (E/W) theater force for the CHD design. Compares this fully-defined theater force with the TAA-05 required dual MRC theater force (E/W). Analyzes strategic deployment requirement for the CHD and compare to TAA-05 strategic deployment. The POC for further information is COL Andrew Loerch, the Center for Army Analysis, DSN 295-5259.

Theater Analysis Force XXI - Deployment Analysis (TFXXI DA)

Develops movement requirements for major regional contingency near-simultaneous (MRC-NS) scenario based on Force XXI conservative division design, and the doctrinal support forces requirements based on SRA-05 allocation rules. Performs a strategic deployment analysis of this force within the context of the MRC-NS scenario and compares results with those of the SRA-05 deployment analysis for the same scenario. The POC for further information is Ms. Margaret Loudin, the Center for Army Analysis, DSN 295-1657.

Trends in Land Combat (TLC)

Describes trends in land combat that have persisted over extended periods of time (decades or centuries). Emphasis is on long-term trends in rates of advance; battle durations; personnel strengths and attrition in battle; evolution of US Army force structure from circa WWI to circa 1985, Lanchester parameter values; and frequency/duration/losses in wars. The POC for further information is Dr. Robert Helmbold, the Center for Army Analysis, DSN 295-5278.

TMD Follow-on Analysis (TMD FOA)

Performs theater missile defense (TMD) analysis for the CINC USFK/CFC. Focuses on determining the expected Tactical Ballistic Missile (TBM) leakage for the currently fielded Patriot system. The analysis evaluates the defense of single assets attacked by various raid sizes, spacing, and threat composition. The analysis determines under what conditions the Patriot system currently deployed in NEA becomes saturated. The POC for further information is Ms. Trudy Ferguson, the Center for Army Analysis, DSN 295-1027.

TMD Follow-on Korea Support (TMD FOLKS)

Performs detailed theater missile defense analysis for the CINC USFK/CFC for the current timeframe. This analysis is based on the new Peninsula Intelligence Estimate (PIE) and includes a more detailed analysis of the Patriot TMD capabilities against the threat assessment than previously conducted at CAA. The POC for further information is CPT William McLagan, the Center for Army Analysis, DSN 295-1652.

Tiered Readiness Analysis and Assessment (TRAA)

This analysis is provided as part of a packaged proposal that DAMO-SSW will present to the Joint Staff. It shows significant differences in losses due to reduced training and manning, and an inability to support tiered readiness with the QDR force structure. The POC for further information is LTC William Nanry, the Center for Army Analysis, DSN 295-5245.

Tiered Readiness Analysis of Costs (TRAC)

Congress mandated that each service will undertake to study the effect of tiering the force, with the expectation that cost savings will result that may then be applied to modernization. This analysis addresses the costs and savings derived by the US Army if the proposed tiered readiness policy is implemented. The POC for further information is Ms. Patricia Murphy, the Center for Army Analysis, DSN 295-0211.

Theater Resolution Scenarios (TRS) for TAA-05 (TRS05)

Provides the link between CAA and TRADOC Analysis Center (TRAC) for synchronization of scenario assumptions used in TAA-05 and TRAC's analysis of force structure capabilities and programmatic options in support of PPBS and to support standard TRADOC scenario development. The POC for further information is Mr. Jeffrey Hall, the Center for Army Analysis, DSN 295-1660.

US-UK Political-Military Gaming Seminar 98 (US-UK PMGS 98)

Explains CAA's political-military gaming process and methodology; reviews recent CAA pol-mil game examples; presents lessons learned from joint and combined pol-mil gaming; applies CAA's pol-mil gaming dynamics; explores UK candidate pol-mil game applications. The POC for further information is Mr. John Elliott, the Center for Army Analysis, DSN 295-1680.

US-Canadian Military Exercise Program Support (VOYAGEUR 98)

Identifies mutually agreed issues affecting US-Canadian defense cooperation; provides recommendations for changes to bilateral US-Canadian military exercise programs and arrangements; conducts outside agency review of the role of the US-Canadian Permanent Joint Board on Defense (PJBD) in joint exercise programs(s). The POC for further information is Mr. John Elliott, the Center for Army Analysis, DSN 295-1680.

Vulnerability Factors for Total Army Personnel Command (VRD-TAPC)

Provides TAPC-MOB with logical region and population class vulnerability factors for battlefield casualties and the corresponding disease and non-battle injury (DNBI) rates. The POC for further information is Mr. Stanley Miller, the Center for Army Analysis, DSN 295-5292.

Winforce 2.0 Completion and Fielding (WINFORCE2A)

Completes coding and fielding the WINFORCE 2.0 model. The POC for further information is Mr. David Smith, the Center for Army Analysis, DSN 295-6961.

WMD Terrorist Response Study Integrated Response IW (WMD TRS IR)

Identifies complementary capabilities or Reserve Components (RC); identifies best composition and location for 10 prototype, state-linked Rapid Assessment and Initial Detection (RAID) Teams; identifies task oriented training and equipment required for RC force elements. Examines how to integrate DOD assets w/local, state, and other federal agencies' resources. Resolves critical areas of concern to improve DOD consequence management response capabilities and outline DOD WMD response OPLAN. The POC for further information is Ms. Julia Sharkey, the Center for Army Analysis, DSN 295-4715.

WMD Terrorist Response Study MTOF Issues Workshop (WMD TRS MTOF)

Refines mission requirements and essential tasks (UJTL); describes conditions and standards; integrate and leverage National Guard (NG) and Reserve Component (RC) unique capabilities, and identifies tasks not performed by military forces and proposes candidate MTOFs. The POC for further information is Ms. Julia Sharkey, the Center for Army Analysis, DSN 295-4715.

Weapons of Mass Destruction Joint Working Group (WMD-JWG)

Participation in the weekly meetings of the Weapons of Mass Destruction Joint Working Group. The POC for further information is Mr. Matthew Ogorzalek, the Center for Army Analysis, DSN 295-1697.

WMD-Terrorist Response/Deployment Analysis (WMD-TR/DA)

Provides the weapons of mass destruction (WMD) Tiger Team with an initial deployment analysis assessing the impact of terrorists attacks at select military ports. The POC for further information is Ms. Vera Hayes, the Center for Army Analysis, DSN 295-1583.

Weapons of Mass Destruction (WMD) Terrorist Response Study (WMD-TRS)

Provides the weapons of mass destruction (WMD) Tiger Team with supporting analytical study data that provides an initial estimate of the expected impact of terrorist use on US power projection

activities and civilian life. These studies and activities support manpower, equipment, doctrinal, and funding requirements for FY99. The POC for further information is Mr. Robert Barrett, the Center for Army Analysis, DSN 295-1655.

Weather Sequencing in CEM (WSICEM)

Develops methods for generating statistically sound time series of weather states for CEM and other theater campaign models, based on available climatology data. The POC for further information is Dr. Yuan-Yan Chen, the Center for Army Analysis, DSN 295-1079.

TECHNOLOGY RESEARCH AND ANALYSIS SUPPORT

TECHNOLOGY RESEARCH

General. The Advanced Research Projects Office (ARPO) has a threefold mission: to identify and evaluate advanced technologies and methodologies for potential applicability to the CAA mission; to provide consultation on advanced technology subjects and methods; and to develop and execute an applied research program. During FY 98, ARPO pursued a variety of exploratory and developmental efforts to apply new and emerging technology to CAA study, analysis and QRA processes. Major ARPO projects and activities are summarized below.

Combat Simulation Trajectory Management. Dr. Gilmer (Wilkes University) continued research on the applicability of multitrajectory simulation techniques to force-on-force combat simulations. Multitrajectory simulation follows two or more outcomes of a random event, instead of only a single outcome determined by chance as is the usual practice for a single replication of a stochastic simulation. Gilmer's method follows and preserves many trajectories or paths and their associated probabilities through the simulation state space. One of the goals is to define and generate sets of path basis objects that span path space in a way that supports expression of new paths (such as may occur for the hundreds to thousands of brigade-level engagements in a theater campaign) as functions of the basis objects. Dr. Gilmer's self-built tool kit includes object classes which may permit model builders to add multitrajectory techniques to ordinary object-oriented simulations.

Applicability of Primal-Dual Formalism to Combat Simulation. Dr. Robinson (University of Wisconsin - Madison) began work to adapt and extend his research on combining the best of simulation and mathematical optimization in order to add marginal values to model decision processes. For starters, he examined standard importance values within the CAA attrition calibration (ATCAL) method for determination of fire allocation and attrition to combat targets. Although importance values work well most of the time, technically, they are not dual variables. Dr. Robinson's ongoing research seeks measures, which are duals and work accurately, and efficiently, all of the time.

Comparison of Representations of Target Allocation and Attrition. Early in 1997, Professor James Taylor (Naval Postgraduate School) undertook an objective comparison of long-standing approaches to modeling fire allocation and attrition to targets as embedded within Johnsrud's (CAA) ATCAL, Anderson's (IDA) Antipotential Potential, and Bonder's and Farrell's (VRI) methods. Dr. Taylor's final report is a scripted briefing, Research on the Comparative Evaluation of Attrition-Modeling Methodologies, June 1998.

ATCAL Representation of Area Fire. In FY97, research began on the representation of area fire in ATCAL, a methodology for extending the results of high-resolution modeling to the thousands of non-standard combat engagements (in the sense of different numbers of systems and different unit frontages) that arise in the simulation of theater campaigns in models such as the CEM. Campaign analysts had noted that added artillery was not always exploited as intended. Early research identified many circumstances under which the relations among engaged systems appeared correct, but also identified several deviant cases, which confirmed analysts' concerns. The FY 98 effort developed a more generalized formulation of area fire effects determination. The results were interesting but erratic and required extensive analysis and testing to resolve the most persistent problems, which cleared the way for concluding the analysis in FY99.

High Performance Computing. Dr. Kosmo Tatalias continued his assignment as the Army High Performance Computing Research Center (AHPCRC) on-site representative. His involvement in a variety of modeling and computing initiatives included careful study of the details of research on the ATCAL representation of area fire and related issues, coordinating adoption and application of geographic information systems (GIS), and investigation of data mining techniques.

Artificial Intelligence (AI) Related Activities. The application and promotion of AI technology has been a long-standing ARPO goal.

COSAGE Tool Kit. A cooperative knowledge engineering, software development and relational data base effort among several divisions neared completion with the integration of a suite of existing tools and some newly developed software. Ms. Bundy led the analysis team in developing and implementing an operational GUI-based system (CDMS II) to define, build, and automatically check model ready input to COSAGE.

Data Mining Seminar. In July, Dr. Simmonds and LTC Crocoll of the US Army Logistics Management College presented 1-week on site data mining course.

Access to AGCCS. Over 3 years ago, preliminary study indicated that it would be beneficial to achieve direct access to the Army Global Command and Control System. After a long path of requirements definition, milestone achievement, and formal approvals, CAA was brought on line in late 1997. Fully efficient access awaits upgrade of communication bandwidth.

Visualization. Mr. Cooper continued to expand in-house computer visualization capabilities with emphasis on helping analysts see and understand simulation results. Throughout FY 98, he worked with selected CAA action teams to design, develop, implement, and maintain useful static and dynamic display routines. Wolfram Research's Mathematica, in its Version 3.0, continued as a power tool of choice.

METHODOLOGY RESEARCH

General. CAA uses a wide variety of simulations, models, and special purpose information technology systems to accomplish its study program. These tools, often referred to collectively as models, range from simple spreadsheets and data processing systems to complex simulations of theater combat. The following paragraphs describe major accomplishments in our continuing program of methodology development and enhancement.

Development Efforts:

Advanced Regional Exploratory System (ARES). This regional theater campaign simulation model development effort continues work begun initially under the Concurrent Theater-Level Simulation (CTLS) development program. Specifically, ARES has evolved as a merger of the CAA-developed CTLS and the Theater Exploitation Study System (TESS) model developed for the US Army INSCOM, Land Information Warfare Activity (LIWA). The ARES design provides for an event-sequenced, object-oriented structure with the capability to represent regional conflicts in a combined, joint, and coalition context, ranging from full-scale theater operations to lesser regional contingencies. ARES brings together the intelligence, communications, and information warfare simulation features of TESS with the flexible regional campaign representation capability of CTLS. This flexibility is realized through a user-specified maneuver network which allows adaptable representation of maneuver warfare and a robust command and control process, with both user-scripted and rule-based decisions, which permits user control of the phased execution of an operation plan, all controlled through an extensive graphical user interface (GUI). The design work for ARES began in late FY 95, with the objective of producing a first prototype version by mid-FY 97. This objective was achieved in September 1997 with the installation of the initial operational capability (IOC) version of the model. During FY 98, the emphasis has been on acceptance testing, debugging, and additional functional upgrades. Large-scale operational testing is planned for early FY99.

Global Deployment Analysis System (GDAS). CAA has developed GDAS, a high-resolution transportation modeling system for comprehensive simulation of end-to-end deployment of troops, equipment, and supplies from CONUS/OCONUS origins to theater tactical assembly areas (TAAs). GDAS, which combines a multi-modal entity model with a relational data base system, provides seamless simulation of movement of forces from origin to within theater destination. GDAS is unique in its capability to distribute distinct types of cargo onto vehicles of multiple modes (e.g., road, rail, air, sea, pipeline, and inland waterway) across an expandable global network with detailed facility structure. GDAS combines scheduling techniques for effective selection of mode, route, and assignment of vehicles with an objective of achieving timely deployment in combination with efficient use of resources based on user priorities. The data structure is expandable by network, vehicle type, and facility type. Tools for preventing data inconsistencies have been built into the relational data base. Recent major applications

include the Reception, Staging, Onward Movement, Integration plus Strategic (RSOI-S) Study, the Support Force Requirements Analysis FY 2005 (SRA-05) Study, the Decision Support Model – RSOI (DSM-RSOI) Study, the Strategic Lift Tradeoff (STRATLOFF) Study, and support for other analyses, including the Quadrennial Long Range Deployment Analysis for ODCSOPS and Force XXI. Ongoing study applications include SRA-07 (addresses origin to TAA, chemical attack effects on theater RSOI, movement of units from postures of engagement and transload operations) and support to the OSD sponsored Mobility Requirements Study (MRS-05). Formal GDAS training has been conducted at both CAA and USTRANSCOM, and installation discs and user manuals have been released to interested groups. GDAS expansion during FY 98 included conversion of the relational data base to Microsoft Access 97.

Mobilization Capabilities Evaluation Model (MOBCEM). MOBCEM will simulate the mobilization process for units and individuals from home station to port of embarkation (POE). The MOBCEM prototype model completed in FY95 was successfully evaluated and is now the basis for full-scale model development, which began in January 1996 and is currently in the middle stages of Phase II. While the prototype concentrated on activities at the mobilization station/power projection platform, Phase I development incorporated home station processing, requisitioning, transportation between stations and depots, and design of the interface of MOBCEM with deployment models. Phase II includes design and implementation of training centers, CONUS replacement centers and POEs, as well as an extended GUI with additional output reports and graphics. Phases I and II will constitute the Army version of MOBCEM, expected to be completed in the spring of 1999. The mobilization processes of the other services will be added in Phase III. MOBCEM will be the mobilization component of the Joint Warfighting System (JWARS) under development by OSD.

Methodology Improvement Efforts:

Concepts Evaluation Model (CEM). The CEM is a computer simulation model of ground and air warfare operations used by CAA to conduct analysis of the capabilities of given forces engaged in warfare at theater level or to determine the requirements for forces to meet a given conflict situation. Previously, the CEM was modified to permit introduction of personnel casualties and equipment contamination due to chemical weapons employment and to enhance deep fire capability to more adequately reflect the commander's strategy. Following successful transport of the model to the laptop PC environment using a Unix-like operating system, CEM has been used several times by a team of analysts deployed OCONUS for in-the-field campaign analysis. Other improvements included expansion of the number of weapon systems which can be treated in the model, development of the capability to treat the campaign as a series of planned phases with user-controlled force reorganizations between phases, and the development of an extensive new data postprocessing capability using standard data base and spreadsheet tools and a graphical user interface to provide the user with a greatly expanded and highly flexible system for the analysis and display of campaign simulation results.

Stochastic Concepts Evaluation Model (STOCEM). A stochastic version of the CEM, called STOCEM, provides users the option of treating certain CEM processes--including commanders' decisions, the assessment of combat attrition, the disposition of casualties and of combat-damaged vehicles, and the movement of engaged forces--as stochastic (based on statistical distributions) rather than deterministic (based on expected values). STOCEM research has examined the sensitivity of the most critical simulation results to the specific CEM processes, which are treated stochastically, using two current scenarios, the Northeast Asia and Southwest Asia campaigns for the SRA-05 Study, as the test cases. Investigation also continued on the question of alternative ways to treat stochasticity based on the recommendations of the Ardennes Campaign Study (ARCAS), which applied STOCEM to the historical 1944 Ardennes campaign, in order to improve the fidelity and robustness of the simulation. In FY 98, further efforts toward STOCEM validation have been initiated using historical data and simulations of the July 1943 Battle of Kursk.

Combat Sample Generator (COSAGE). This division-level stochastic simulation model continues to be used to generate weapon system level attrition and expenditure data for use by a number of theater campaign models, including, but not limited to, the CAA CEM, FORCEM, and ARES Models. Little change has been made to the functionality of the model during the last year. Instead, attention has been concentrated on reducing the effort required to prepare input data, run the model, and analyze the

results, with the aim of improving the quality of the final product. To this end, the COSAGE Data Management System (CDMS II) project, has been organizing COSAGE input data into tables in a relational data base management system with automated data generation and checking, under control of a graphical user interface for simple and rapid data manipulation. Similar effort has recently been expended on the development of a whole new set of postprocessor methods for analysis of model output data, using data base management systems and spreadsheet applications.

Force Analysis Simulation of Theater Administrative and Logistics Support (FASTALS). Significant logic changes to the model continued in FY97 under a model modernization program begun in FY95. A major logic change was to increase the number of workloads representing military logistical activities, thereby raising the level of resolution in determining the type and number of units required for the support force structure. An improved Petroleum, Oils, Lubricants (POL) consumption methodology was developed to better reflect the percent of time in moving and stationary states for units. New output reports and extensive revisions to existing reports were implemented and considerable effort was devoted to the verification and validation of the model. New algorithms, data requirements, and reports were coordinated with other outside user agencies. All of these enhancements were applied successfully in the FASTALS support of the SRA-05 Study.

Computer-Assisted Match Program (CAMP). During FY 98, the CAMP process was continually upgraded, resulting in numerous enhancements to this process that generates Army unit and non-unit movement requirements. The improvements included restructuring many of the programs to process logical regions so that location codes for tactical assembly areas and theater stockage areas could be generated in support of intra-theater deployment analyses for program/planning year scenarios. Additional reports were also generated to track the movement tonnage, the theater air or sea port of debarkation and the reception, staging, and onward integration mode for the combat, combat support, and combat service support units.

Data Base Support for Simulation Models. Over the past several years, considerable effort has been devoted to the application of graphical user interface (GUI) techniques and data base technology to managing, checking, displaying, and analyzing both input and output data of CAA models. Pre- and postprocessor developments for CEM, COSAGE, GDAS and MOBCEM have been described above. In addition, several independent data base development efforts for simulation model support have come to fruition in FY 98. These include a formal data base for weapon systems performance data used in COSAGE, which will eventually be linked to the model through a preprocessor; a data base management system, supported by the National Ground Intelligence Center (NGIC), for threat force and equipment data; and a collection of databases for mostly US force, equipment, transportation, deployment, and performance data, which is easily accessible throughout CAA by user query capability on the internal CAA web.

INFORMATION TECHNOLOGY (IT)

The Center strives to achieve a hardware and software environment which places at the disposal of each analyst, an automation tool set sufficient to meet that analyst's needs. This tool set is designed to be flexible so that it can be readily modified/enhanced to meet changing needs in a reasonable manner. Through networking of individual computers and cross-platform software compatibility tools this seamless analyst's environment is rapidly becoming reality. During a 3-year aggressive IT modernization effort, workstations and network assets have been replaced and/or upgraded to gain this working environment. FY 98 was the first year following the completion of the modernization, and acquisitions were made to continue the modernization by dealing with approximately one-third of the IT assets and targeting them for enhancement/replacement with state-of-the-art upgrades. The following significant automation items have been added:

- Portable/notebook Pentium computers (15)
- Pentium-based PCs (46)
- IBM RS-6000/590 Workstations (8 memory upgrades)
- Auspex superserver increased useable storage by 140GB through introduction of RAID methods
- Networked Enterprise color laser printer
- Windows NT servers and Novell 4.1 upgrade

MISSION AND MANAGEMENT SUPPORT

PERSONNEL MANAGEMENT

Organization and TDA

• **Structure.** CAA continued operating as a flat organization with 11 division chiefs reporting to the Director (reference Chapter 1, Figure 1-2).

• **TDA.** The FY98 TDA authorized the same number of civilian and military positions as FY97 with the exception of the high grade cap which was reduced by two. The FY98 TDA has a net reduction of three spaces from FY98 and reduces the high grade cap by one. The Headquarters Redesign Initiative had the following impact on the FY98 TDA: reduced the total strength by 10 percent (13 civilian and 5 military spaces), added 15 civilian spaces from Logistics Integration Agency and a Logistics Analysis Mission, and renamed the Agency The Center for Army Analysis.

• **High Grade Cap.** The number of GM/GS-14s and 15s continued to be managed at the DA level.

• **Relocation.** Implementation of the 1995 Base Realignment and Closure (BRAC) recommendation to relocate this Center to Ft. Belvoir continued. The Baltimore District of the U.S. Army Corps of Engineers completed the design of a new building for 180 people to be constructed at Goethals and Franklin Roads at Ft. Belvoir, Virginia. The construction contract was awarded 25 August 1997 to Sigal Construction Co., and the notice to proceed was issued 15 September 1997. The current schedule has a move-in date of 25 March 1999.

• **Personnel Strength.** FY98 personnel end strength by quarter were as follows:

CIVILIANS

Quarter	Authorized	Assigned
1	124	120
2	124	118
3	124	114
4	124	113

MILITARY

	Authorized			Assigned		
Quarter	Off	Enl	Tot	Off	Enl	Tot
1	53	1	54	49	1	50
2	53	1	54	51	1	52
3	53	1	54	49	1	50
4	53	1	54	47	1	48

OPERATING BUDGET RECAP

A summary of the Agency's FY98 budget execution, by major expense category is provided below. The Agency's direct funding obligation rate was 99.99 percent . External funding obligation rate was 100 percent .

Budget Category	Direct Funding (OA 22 Provided) ($000)	External (Outside Agencies) ($000)	Total (OA22+Outside) ($000)
Payroll & Benefits	$9,185.0		$9,185.1
ORSA Cell/ISC	$0		$0
Maintenance	$130.1		$130.1
Security	$284.5		$284.5
Communications	$151.0		$151.0
Licenses & Leases	$69.2		$69.2
Supplies & Equipment	$434.2	$162.0	$596.2
Reproduction	$24.7		$24.7
Travel	$206.3	$103.0	$309.3
Training	$190.5		$190.5
Facilities	$0		$0
Study Support	$623.9	$360.7	$984.6
Total Direct Funding	$11,299.4	$625.7	$11,925.1

The Center was able to fund essential programs with its direct funding authority, the Center also made significant monetary commitments to model upgrades and moderate monetary commitments to computer hardware improvements.

As in previous years, external agencies provided CAA with significant direct funding or executed funds on behalf of the Center. These funds provided an extra measure of flexibility to our program and continued to provide a great benefit to the Center. The following is a list of major funding provided

directly to CAA or spent on behalf of CAA from outside activities:

- $162K - From the ISC for ADP improvements.
- $90K - From EUSA/USFK for Korea travel.
- $13K - From USAMMA to support study-related travel.
- $149.7K - From MISMA for EAGLE support.
- $50K - From MISMA for study support.
- $161K - SAM payroll.

SECURITY

Orientation and Training. The CAA Security Office conducted the following activities: Center security procedures presentations to CAA Newcomers' Orientation class and the annual NATO security access briefing. The SAEDA briefing was given to all CAA employees in October 1997.

Inspections

- The annual NATO security inspection was conducted by the Office of the Central US Registry, NATO, during November 1997, and no major discrepancies were noted.
- The Physical Security Survey inspection was completed July 1997 by Mr. Dennis G. Thomidis, Chief, Force Protection Branch, HQDA Security Services Division, Washington, DC. No major discrepancies were noted.
- The annual TOP SECRET inventory was conducted during June 1998 by the Top Secret Control Officer and an individual from the Mobilization and Deployment Division. A complete accounting was made of all TOP SECRET documents held by the Center.

Other

- Contract awarded to Lockheed/Martin to furnish and install control system for the new building at Ft. Belvoir.
- Updated all SCI billets, submitting changes to DA/SSO.
- Updated the Occupant Emergency Plan and distributed changes to affected personnel.
- Submitted plans to HQDA/SSO for approval of SCIF for the new building.
- Requested and received approval to purchase a new shredder June 1998 from DOD Washington Headquarters Services, Washington, DC.

LOGISTICS

Procurement Actions. The Center Information Technology modernization effort, described on page 4-5, consisted of many acquisition actions and several contracting procedures such as the IMPAC credit card, governmentwide acquisition contracts (GWAC), task orders, and indefinite delivery/indefinite quantity (IDIQ) contracts. Several large-item purchases were completed with considerable savings on these investments and with less processing time.

The Small Business (8a) Contract with GMSI was completed this past year.

The GDAS programming continuation service task orders were awarded to Noetics. The two task orders will provide continuing detailed program updates and documentation.

With the increased use of the Center credit card, the procurement lead time continues to greatly reduce the cost of obtaining computer supplies, services, and equipment.

PUBLICATIONS, GRAPHICS, AND REPRODUCTION

Equipment and Services. Publications continued to provide editorial, keyboarding, data conversion, data archive and restoration, graphic arts, audio-visual, and photographic support to the Agency. Branch personnel have been provided with

upgraded hardware and software commensurate to the jobs at hand.

Publications. This year the Branch assisted in the preparation, publication, and dissemination of approximately 60 documents including study reports, technical papers, research papers, and memorandum reports. Other Branch projects included preparation of special displays for the MORS Symposium, AORS Symposium, Human Dignity Council, Federal Women's Program, Association of the US Army (AUSA), Black History Month, Hispanic and Asian-American Heritage, and other CAA functions. Special displays and video support were provided for numerous political-military games as well as for other functions.

Reproduction. Coordinated by the Printing Control Officer, Defense Automated Printing (DAP) continued to provide reproduction support for Agency documents at the Navy's Carderock facility. Turnaround time and quality of support continued to be more than satisfactory. Approximately 137,459 unclassified impressions and 54,320 classified impressions were reproduced by DAP this year. Two Minolta walkup copiers leased through DAP were replaced by Konica equipment in order to provide more efficient support for Agency personnel; in excess of 170,330 impressions were logged on these two copiers.

ANALYTICAL EFFORTS COMPLETED BETWEEN FY91 AND FY98

This chapter contains a title listing of all analytical efforts completed by CAA during the period FY91 through FY98. Contact CAA (ATTN: CSCA-MS) if information is needed for CAA analytical efforts completed prior to FY91.

FY98 STUDIES

ACRONYM	TITLE	SPONSOR
I-PAPA	Implementing Pollution Abatement and Prevention Analysis	ACSIM
KOSAVE II	Kursk Operation Simulation and Validation Exercise II	CAA
NCIA-3	Nuclear-Chemical Impact Analysis - 3	DCSOPS
PERICLES II	Political & Economic Risk in Countries & Lands Eval Study II	DCSINT
SADE	Stochastic Analysis for Deployments and Excursions	DCSOPS
VAA 5	Value Added Analysis Phase V (POM 00-05)	DCSOPS
WARREQ-05	Wartime Requirements Near Simultaneous Dual MRC, FY05	DCSOPS

FY98 QUICK REACTION ANALYSES, PROJECTS & RESEARCH ANALYSIS ACTIVITIES

ACRONYM	TITLE	SPONSOR
2ID-nK	COSAGE 2 ID TOE vs nK NBC Analysis	CAA
AAA-J	Antiarmor Assessment for the Country of Jordan	ARCENT
ABTMOD	Air Breathing Threat (ABT) Model Development	CAA
ACE	Analysis of Class II Excursion	DCSOPS
ADIOS	Army Digitization of Support	DCSOPS
AINTEG	Army International Environmental Group	ASA
AKA	Automated K-kill Analysis	CAA
ALPH	Army Long-term Privatization of Housing	ACSIM
ANVIL 2	ANVIL 2 Campaign Results Comparison	ARCENT
ANVIL 2-C	ANVIL 2 Campaign Results Comparison Support	ARCENT
ATSA	Annual Training Support Analysis	DCSOPS
AVENGERS	Alternative Engineer Requirements Study	CAA
BS97	Bright Star 97	ARCENT
CALDRUG	Cost Analysis for the Land Disposal Restriction Utah Group	ASA
CALKA	CALAPER K-kill Analysis	CAA
CANCIA	Campaign Analysis for Nuclear and Chemical Impact Analysis	DCSOPS
CAPP	COSAGE Automated Post-Processor	CAA
CAPP DB	COSAGE Automated Post-Processor Data base	CAA
CATRP	Campaign Analysis for Tiered Readiness Postures	DCSOPS
CCTAG	Climate Change Technology Advisory Group	ASA
CD	COSAGE Digitization	CAA
CDMS-II	COSAGE Data Management System - Phase II	CAA
CESC	Casualty Estimation Steering Committee	DCSPER
CHDB	Catalog of CAA's Computerized Historical Data bases	CAA
CHEMSORT	Chemical Degrade of Air Sorties	EUSA
CHEMWINT II	Chemical Warfare Integration in the CEM Follow-on	CAA
CLASSACT	Logistics Analysis for G-3 OPLAN	ARCENT
COA1-98OP	COA 1 Analysis - 1998 OPLAN Update	EUSA
COA3-98OP	COA 3 Analysis - 1998 OPLAN Update	EUSA
COAA-98OP	98 OPLAN Update COA Analysis	EUSA
COBECAS	Cost-Benefit Analysis of the Environmental Compliance Assessment System	ASA
COFA 98	COFA FY 98	CAA
COHDAB	COSAGE History Database	CAA
COJ-8	COSAGE J-8 Support	JCS
CRATER	CONUS Residual Forces Available for Terrorist Response	DCSOPS
DODIG-AUD	Support to DODIG Audit	HQDA
EADSIMCAP	Extended Air Defense Simulation Capability	CAA
EKHUD	Enhancement of Kursk Historical Unit Data	CAA

ELOC_K	Effect of Leakers on Korea Campaign	DCSOPS
ERTAG	An Examination of RAID Team Alternatives using GBASE	DCSOPS
ESEI	Equipment Set for European IPS	DCSOPS
FAO	Force Augmentation Options 98	EUSA
FAST ANC-R	FASTALS Analysis of Campaign Results Using Automated K-kill	CAA
FCBETU	FORCEM Chemical/Biological Effects Tables Update	DCSOPS
FEMTO 98	FEMTO 98	DASG
FORMS	Force Mix Study	DCSOPS
GBASE	Graphically-Based Analysis System - Enhanced	DCSOPS
GDAS-PUR96	GDAS - Purchase Order FY95/96	CAA
GDAS-X	Global Deployment Analysis System-Expansion	CAA
GTW	Go To War	DCSOPS
GTW2	Go To War Phase II	DCSOPS
HAMMUR	Historical Ammunition Rates	CAA
HAUTE	Hierarchial Analysis of USARPAC Theater Engagement	USARPAC
ICAG	Investigation of CAA Access to GCCS	CAA
JPACS-II IW	JPACS Phase II KIDA Chem-Bio Counterproliferation IW	EUSA
KOLA	Keep Out Level Assessment	DCSOPS
KPOLA	Kill of Phased Off Line Attrition	CAA
LICOH	Life Cycle Costs of Helicopters	DACS
LONGREQ	Longbow Requirements	DCSOPS
LSC2	LSC2, CFC Draft Campaign Concept, COA 1	CFC
LSC3	LSC3, CFC Draft Campaign Concept, COA 3	CFC
MAD BARC	Methodology Development & Demo for Bde & Above Recap Cost	CAA
MAT-OTSG	Medical Analysis Tool Model Evaluation	DASG
MRC-E AC	TAA-05 MRC-East Adverse Case	DCSOPS
NEWTRD	New Effects from Water Reduction	DCSOPS
NPSS-E	Near Peer Scenario Samples - Europe	DCSOPS
OJE-MOBDEP	Operation Joint Endeavor-Mobilization &	CAA
OLD	Optimal Laydown	EUSA
PAEKTU 98	PAEKTU 98 Political-Military Game	EUSA
PEA	Patriot Engagement Analysis	EUSA
PET	Preprocessor for Eagle Terrain	DUSA-OR
PHOENIX 98	WMD Terrorist Response Study - PHOENIX 98 Pol-Mil Game	DCSOPS
PMaST	Protective Mask Sensitivity to Toxicity	DCSOPS
PUP	Privatizing Utility Programs	ACSIM
QDR III-LC	QDR Large Competitor/Near Peer Parallel Effort Support	DCSOPS
QUAILMAN II	Quality of Life Measurement and Analysis II	ACSIM
RAA-2000	Revolution in Analytical Affairs - 2000	DUSA-OR
RELAPS-98	Replacement Laptops - 1998	CAA
ROKJCS	ROK JCS Defense Concept and Security Zone Analysis	EUSA
SCE-98	Strategic Crisis Exercise - 1998	USAWC
SFA	Strike Force Analysis	TRADOC
SHORAD-KLS	Short-range Air Defense (SHORAD) Kill Study	CAA
SPOC	Space Operations Cooperation	USA SSDC
SRA-05 R2 DA	SRA-05 Required/Resourced Forces Deployment Analysis	DCSOPS
SRX-1-98	SRX-1 "The Day After the Strategic Crisis of 2008"	DUSA-OR
SURGE-05	Surge Movement Requirements - FY 2005	DCSOPS
TAA/TLC-BMRK	TAA/TLC Benchmark Study	CAA
TAA05 FFR	TAA-05 Force Feasibility Review	DCSOPS
TAC-NEA	TACWAR 5.0 Upgrade in NEA	CAA
TAC51-NEA	TACWAR 5.1 Upgrade in NEA	CAA
TACR-DA	Tiered and Cyclic Readiness - Deployment Analysis	DCSOPS
TAF21-AA	Theater Analysis Force XXI - Airlift Analysis	DCSOPS
TAF21-R	Theater Analysis for FXXI - Revised	DCSOPS
TFXXI DA	Theater Analysis Force XXI - Deployment Analysis	DCSOPS
TLC	Trends in Land Combat	OSD
TMD FOA	TMD Follow-on Analysis	EUSA
TMD FOLKS	TMD Follow-on Korea Support	EUSA
TRAA	Tiered Readiness Analysis and Assessment	DCSOPS
TRAC	Tiered Readiness Analysis of Costs	DCSOPS
TRS05	Theater Resolution Scenarios (TRS) for TAA05	TRADOC
US-UK PMGS 98	US-UK Political-Military Gaming Seminar 98	DUSA-OR
VOYAGEUR 98	US-Canadian Military Exercise Program Support	DCSOPS
VRD-TAPC	Vulnerability Factors for Total Army Personnel Command	TAPC
WINFORCE2A	Winforce 2.0 Completion and Fielding	CAA

WMD TRS IR	WMD Terrorist Response Study Integrated Response IW	DCSOPS
WMD TRS MTOF	WMD Terrorist Response Study MTOF Issues Workshop	DCSOPS
WMD-JWG	Weapons of Mass Destruction Joint Working Group	DCSOPS
WMD-TR/DA	WMD-Terrorist Response/Deployment Analysis	VCSA
WMD-TRS	Weapons of Mass Destruction (WMD) Terrorist Response Study	VCSA
WSICEM	Weather Sequencing in CEM	CAA

FY97 STUDIES

ACRONYM	TITLE	SPONSOR
AFPDA-03	Army Force Planning Data and Assumptions - 2003	DCSOPS
PAR-P4	Personnel Attrition Rates in Land Combat Operations, Phase 4	CAA
SRA-05	Support Force Requirements Analysis 2005	DCSOPS
STALDRUG	Statistical Analysis for the Land Disposal Restriction- Utah Group	USA MEDCOM
STRATLOFF	Strategic Lift Tradeoff	DCSOPS
YATIRP	Yearly Analysis of Techniques for Installation Readiness Prioritization	ACSIM

FY97 QUICK REACTION ANALYSES & OTHER PROJECTS

05CAN	SRA-05 Campaign Analysis	DCSOPS
ACAR	Authorization of CINC Assets to Requirements	DCSOPS
ADAFSA05	Air Defense Artillery Force Structure Analysis-2005	DCSOPS
ADVReport	Prepare Memorandum Report documenting PHALANX articles	CAA
AF-JCHEM3-UP	Air Force JCHEMRATES III Update	DCSLOG
AFS	Alternative Force Structure	VCSA
AMUCK	Army Modernization Update- a Time- Constrained Problem - 1	DCSOPS
AMUCK2	Army Modernization Update- a Time- Constrained Problem - 2	DCSOPS
AMUCK3	Army Modernization Update- a Time-Constrained Problem - 3	DCSOPS
AMUCK4	Army Modernization Update- a Time-Constrained Problem - 4	DCSOPS
AMUCK5	Army Modernization Update- a Time-Constrained Problem - 5	DCSOPS
AMUCK6	Army Modernization Update- a Time-Constraint Problem - 6	DCSOPS
APLM	Antipersonnel Land Mine Study	SARD
APLM-NE	Antipersonnel Land Mine Study/NEA	SARD
APLM2	Antipersonnel Land Mine Study #2	SARD
ARCOPLAN	ARCENT OPLAN	ARCENT
ARES	Advance Regional Exploratory System	DUSA-OR
ARFERR-1	Ardennes Fractional Exchange Ratio Research - Phase 1	CAA
ATOMIUM 97	ATOMIUM 97	DCSOPS
BIOCAS	Biological Casualty Assessment Study	PERSCOM
BRACKEN	Theater Model Comparison	DCSOPS
BTP-EXP	Breaking the Phalanx Exploration	DCSOPS
C4ISRID	C4ISRID Influence Diagram Model Construction	DCSOPS
CAC-05	Campaign Analysis - Chemical 2005	DCSOPS
CAF21	Campaign Analysis for Force XXI	CAA
CARDEALR	Calculating Requirements for Deployment/Logistical Resources	USAREUR
CASCOM LPF	Review of CASCOM Logistic Planning Factors - Class V & VII	CAA
CASRA-05	Campaign Analysis for Support Requirements Analys is 2005	DCSOPS
CBMR-WARREQ03	Capabilities Based Munitions Requirements using WARREQ-03	DCSOPS
COAFIB	Costs of Alternative Forces in Bosnia	DCSOPS
COF-OF	CENTCOM Operational Fires	USCENTCOM
COMP-D2X	Comparison of DAWMS and 2 Other Analyses	DCSOPS
COP98	Combined Forces Command Operations Plan 1998	EUSA
COP98-HI	CFC Operations Plan 98 - High Chem	EUSA
COP98-LOW	CFC Operations Plan 98 - Low	EUSA
COP98-VAR	CFC Operations Plan 98 - Chem/Force Capability Variants	EUSA
COS-J8	J8 Request for COSAGE Combat Samples	JCS
COS-SLOC	TAA05 COSAGE Data for OSD-SLOC	DCSOPS
COS-USAF	USAF Request for TAA 2005 COSAGE Data	AFSAA
CRD-SSI	Casualty Rates Data for Soldier Support Institute	DASG
CRD-TAPC	Casualty Rates Data for Total Army Personnel Command	TAPC

D-WORRM	Deep Attack Weapons Mix Study Support - WORRM Model	DCSOPS
DAMSA	Decision Analysis for MTMC Site Alternatives	ACSIM
DAWMS (SF)	DAWMS Scaling Factors	DCSOPS
DAWMS-HS	DAWMS Helicopter Sortie Excursion	DCSOPS
DAWMS-LOG	DAWMS Logistics Excursion	DCSOPS
DRM-I	Degrade Risk Matrix	EUSA
DSM-RC	Decision Support Modeling (Resource Constrained)	EUSA
DSM-RSOI	DSM IV - Reception, Staging, Onward Movement, & Integration	EUSA
ECI-SWA-97	Expediting the SWA Counter-offensive	VCSA
EFBALL	Economic Failure Based Upon Albania Lessons Learned	USEUCOM
EN-DSM IV	EN Support to Decision Support Modeling IV Follow-up	EUSA
EXERS97	Exercise Roving Sands 1997	ARCENT
FAO	Force Augmentation Options 98	EUSA
FAR SIDE	Fleet Age Recapitalization - System Input Data Excursions	DCSOPS
FEDEX	Force XXI Echelon Above Division Design Evaluation Excursion	TRADOC
GDAS-MCOM	GDAS Model Comparison	CAA
HARPI	Health Assessment Risk - PERICLES Improvement	DASG
HEADI	Heavy Division Impact	DCSOPS
IAMSEP	Imbedded vs Applique Mix of SEP	PAE
IWSIM	Information Warfare Simulation	DISA
JPACS-IW	JPACS Phase I KIDA Chem-Bio Issues Workshop	EUSA
LSC	Logistical Support to Counteroffensive	EUSA
MARTYRDOM	MARTYR Doing Other Matches	CAA
MERCS-SSA	Measuring Ethnic Religious Communal Stress, Sub-Sahara	USEUCOM
MRED II	Managing Research in Environmental Decision Making II	ACSIM
NEWMEC	New Methodology for Combat Support Companies	DCSOPS
NMC-JCR3	New Mask Concept for JCHEMRATES III	AMC
OFP-I	Objective Force Planning - Workshop #1	DCSOPS
OFP-II	Objective Force Planning - II	DCSOPS
P2POM	P2 Investment Strategies in Support of 98-03 POM	ACSIM
PFMF	Planning Future Military Forces	DCSOPS
POLA	Phased Offline Attrition	CAA
PREMOB-SA	Premobilization Sensitivity Analysis	EUSA
PRISM-97	Partnership for Peace & NATO/MED Working Party Pol-Mil Game	DASG
PTOF	Planning Tool for Operational Fires	ARCENT
QDR I-DC	QDR I - Dynamic Commitment	DCSOPS
QDR I - DCR	QDR I - Dynamic Commitment Revisited	DCSOPS
QDR-FA	QDR Force Assessment	VCSA
QDR-II CA	Quadrennial Defense Review - II Cluster Analysis	DCSOPS
QDRF-RA	QDR Force - Risk Analysis	VCSA
QDRLR-DA	Quadrennial Defense Review Long Range - Deployment Analysis	DCSOPS
RS97	Roving Sands 97	ARCENT
SAAALAAA	Support to the Army Audit Agency's Land Acquisition Analysis	ACSIM
SAMSONITE	Survey of Army Mobility: Strategic Operations, Nat'l Infras, Tech & Equip	DCSLOG
SEACA	Simulation Enhancements from Ardennes Campaign Analysis	CAA
SICS	STOCEM Investigation of COSAGE Sampling	CAA
SMOR	Saudi Military OR Training	DUSA-OR
SOKCOM	SRA-05 Share of Kill Comparison: CAA & CENTCOM	DCSOPS
SRA-05 DA	SRA-05 Deployment Analysis	DCSOPS
SRA-05 DA/BC	SRA-05 Deployment Analysis/ Base Case	DCSOPS
SRA-05 DA/LM	SRA-2005 - Deployment Analysis - LRC/MRC	DCSOPS
SRA05 EC	SRA 05 Early Counter-offensive Excursion	DCSOPS
TA	Transportation Analysis	DCSOPS
TAA CHEM E	Total Army Analysis Chemical Excursion, East MRC	DCSOPS
TAA CHEM W	Total Army Analysis Chemical Excursion, West MRC	DCSOPS
TAA05 WEAR	TAA-05 Wartime Executive Agent Responsibility	DCSLOG
TACWAR-NEA	TACWAR Support to DAWMS Effort in NE	DCSOPS
TAEBAEK 97	TAEBAEK 97 Political/ Military Game	EUSA
TAF21	Theater Analysis for FXXI	TRADOC
TF97	TALKING FISH 97 Political/ Military Game	DCSOPS
TIM	TACWAR Installation and Modification	CAA
TNP	The "New Paradigm"	DACS
TS2TS	Transportation Structure Sensitivity to TAA-03 Stockage	DCSOPS

WARREQ-03C	Wartime Requirements - FY03 Chemical	DCSOPS
WSR-APC	Warfight Sustainability Report (APCs)	EUSA
WSR-M	Warfight Sustainability Report (Mortar)	EUSA

FY96 STUDIES

ALCHMMI	Assessment of Log & Costs for Haz Mats Mgmt Implementation	ACSIM
APAB-PI	Active, Passive, Attack, BMC41 - Pillar Integration	USA SSDC
ARCAS-FO	Ardennes Campaign Simulation - Follow on	CAA
DSM IV	Decision Support Modeling IV - Support for CFC/USFK J-5	USFK
ELVS	Evaluating Land Value Study	DCSOPS
ITMD-CAP	Integrated Theater Missile Defense - Capability Assessment	DCSOPS
JCHEMRATES III	Joint Svc Chemical Defense Equipment Consumption Rates III	DCSLOG
KURSK III	The Battle of Kursk, Southern Front - Phase III	CAA
LOGWAR	Impact of Army CSS on Warfighting Capability	DCSOPS
NBCCAS	NBC Casualty Assessment Study	DCSPER
NIA-2	Nuclear Impact Assessment - 2	DCSOPS
PAR-P3	Personnel Attrition Rates in Land Combat Operations, Phase 3	CAA
PASMPR	Prioritization of Army Strategic Mobility Project Resources	DCSLOG
PERICLES	Political/Economic Risk in Countries & Lands Evaluation	DCSINT
PERSEUS	Plng Environmental Resource Strategy Evolution & Util Sty	ACSIM
SRA-03	Support Force Requirements Analysis-2003	DCSOPS
SRA-05C	SRA-05 COSAGE	DCSOPS
SRA05-BC(NS)	SRA-05 MRC(NS) Base Case Campaign Development	DCSOPS
VAA 98-03	Army Program Value Added Analysis 98-03	DCSOPS
WARREQ-03	Wartime Requirements Near Term Simultaneous Dual MRC, FY2003	DCSOPS

FY96 QUICK REACTION ANALYSES & OTHER PROJECTS

A2MR	Antiarmor Munitions Requirements	DCSOPS
A2R2	Antiarmor Requirements & Resource Analysis Study	DCSOPS
AATOP-02	Army Attack Operations-Northeast Asia 2002	USA SSDC
ABAPM-SWA	Assessment of Banning Antipersonnel Mines - SWA	DCSOPS
AEA-MDSQ	An Examination of Alternative MDSQ Factors	DCSOPS
AMUSE	Assessment of Military Units with Spreadsheet Effort	DCSOPS
APC1-4	Alternate Procurement Campaigns	PAE
ARBATTS	Army Battalions	DCSOPS
ASP 96	Army Strategic Planning Workshop - 1996	DCSOPS
BOSS	Bosnia, SWA Scenario	DCSOPS
BRSA	Brown and Root Substitution Analysis	DCSOPS
CANTELOUPES	Cost Analysis Tool-Estimate Lt Opns Peacekeeping Scenarios	DCSOPS
CAS-TO-SPT	Casualty Estimation w/in CS & CSS Functional Areas	DASG
CATMID I	Campaign Analysis, Integrated Theater Missile Defense Ph I	USA SSDC
CD-SUSA	Contingency Deployment - CAA Support to 3d US Army	ARCENT
CONPLAN 1015RA	Contingency Plan 1015 Requirements Analysis	ARCENT
DAD	Data Analysis of Demography	DCSOPS
DAWMS	Deep Attack/Weapons Mix Study Support	PAE
DAWMS (AD)	DAWMS (Air Defense)	DCSOPS
DAWMS SPT	DAWMS Support	DCSOPS
DFP-K	Dual Force Packages for Korea	FORSCOM
DNBI-EFFECTS	Impact of DNBI Casualty Rates on Theater Force Structure	DCSOPS
DSMIV-WARN	DSM IV - Korea as a Second MRC - Warning Excursions	EUSA
EIC-SWA	Early Counteroffensive Investigations - SWA	DACS
ELVS II	Evaluation of Land Value Study II	DCSOPS
EUCOM-LA	EUCOM Land Mine Analysis	USEUCOM
FAD	Forecasting Available Dollars	DCSOPS
FAR ARMS	Fleet Age Recapitalization - Armored Systems	DCSOPS
FAR COMMS	Fleet Age Recapitalization - Communications System	DCSOPS
FAR FIRES	Fleet Age Recapitalization - Fire Support	DCSOPS
FAR HELOS	Fleet Age Recapitalization - Helicopters	DCSOPS
FAR WHEELS	Fleet Age Recapitalization - Tactical Wheeled Vehicles	DCSOPS
FOCAA	Four Country Analysis of Africa	USEUCOM
FUN-CATS	Functional Category Battle Casualty Rates	USAFISA
GF95	Groundfire 95 Low-level Radiation Issues Workshop	DCSOPS

GHQ-95 PPRDE	Nondivisional Combat Forces Casualty Rates	DASG
GMAS-DA	Ground Maneuver Analysis Support - Data Analysis	DCSOPS
GOU	GCC OPLAN Update	EUSA
GS96	Groundshine 96	DCSOPS
GT96	GDAS-TPFDD 96	EUSA
HEDRISM	Heavy Division Reduction Impact on Strategic Mobility	DCSOPS
HELIARC	Helicopter, Attack/ Reconnaisance - Campaign Modeling	DAIG
ILIB	Impact of Light Brigades on Division Design	TRADOC
ILOOK	Internal Look	ARCENT
ILS2	Internal Look-1015	ARCENT
IPS	DPG IPS Review	DCSOPS
JCBD PRI	Joint Chemical & Biological Defense Program Prioritization	DCSOPS
JTAD BMC4I	Joint Theater Air Defense BMC4I Analysis Working Group	AFSAA
KILBASA	Korea Intermediate Logistics Base Support Assessment	USARPAC
KOBOSH III	Korea, Bosnia, Haiti Analysis, Third Version	DCSOPS
KUTRACE	Kuwait Training Cost Estimate	DCSOPS
LEGAL MIX	LEGAL MIX Support	TRADOC
LOTSA-MSLS	Lower Tier Stockage Alternatives-Missile Inventory Solutions	USA SSDC
MDSQ-EVALU	Minimum Distribution System Quantity Evaluation Update	DCSOPS
MODERN ROK	Modernization of Network in ROK	DUSA-OR
MRED	Managing Research in Environmental Decision Making	ACSIM
OFP	Objective Force Planning	CAA
OP1002-CL	OPLAN 1002 Consumption and Losses	ARCENT
PAM	Prioritization of Antitank Munitions	DCSOPS
PC-96	Pacific Challenge 96 Political-Military Game	DCSOPS
PE-FP	Peace Enforcement - Force Protection	DCSOPS
PHANTOM WARRIOR	Phantom Warrior	ARCENT
PMS	Partial Modernization Strategy	PAE
PMS-EAGLE	Partial Modernization Strategy (EAGLE)	PAE
PV-95	Pacific Vision 95 Issues Workshop	DCSOPS
QUAILMAN	Quality of Life Measurement and Analysis	ACSIM
RDA3	Research, Development & Acquisition Alternative Analyzer	DCSOPS
SCAT	Support for CSA Testimony	DCSOPS
SNCO	Sourcing NATO Contingency Operations	DCSOPS
SOAP-D	Southwest Asia OPLAN Analysis of Patriot - Deployment	ARCENT
SORREQ	Sortie Requirements	DCSOPS
STAAF	Stability Analysis of Africa	USAREUR
STRAT-3X	Strategic Deployment to Korea and Two Other Pacific Regions	DCSOPS
SW-PREPO	Southwest Asia Preposition Strategy	ARCENT
SWAPP	SWA Additional Patriot Preposition Analysis	ARCENT
TLC-EVAL	Theater Logistics Concept Evaluation	DCSOPS
TLS-ADS	Theater-level Simulation of Ammunition Distribution System	DCSOPS
TMD COEA	Theater Missile Defense COEA	USA SSDC
TMD COEA-2	Theater Missile Defense COEA - Phase II	USA SSDC
TOPR	TAA-03 OSD PA&E Review	DCSOPS
VAA-COMSUP	VAA 98-03 Corps Operations Modeling Support	DCSOPS
VAA-UC	VAA Unit Cost	AMC
WARBLORR	Wartime Based Lieutenant Officer Replacement Requirements	DCSPER
WSR-ARTY	Warfight Sustainability Rpt - Artillery	EUSA
WSR-HELO	Warfight Sustainability Rpt - Helicopters	EUSA
WSR-TANK	Warfight Sustainability Report (Tank)	EUSA
X-MLRS-2	Follow-on Analysis for JPSD	SARD

FY95 STUDIES

AFPDA 97-03	Army Force Planning Data and Assumptions FY 1997-2003	DCSOPS
EAD-CAS-MET	Echelon Above Division Casualty Estimation Methodology	DCSPER
KAMMO	Korean Ammunition Distribution System Analysis	EUSA
MOBCEM-PD	Mobilization Capabilities Eval Model - Prototype Devlopment	DCSOPS
PAR-P2	Personnel Attrition Rates in Land Cbt Opns, Phase 2	CAA
ROLES/MISSIONS	Analysis Support for Army Roles and Missions	DCSOPS
RSOI-S	Reception, Staging, Onward Mvmt, & Integration - Strategic	EUSA
SEW	Synthesizing Energy Worth	ACSIM
WARPATH	War Reserve Positioned Across Theater(s)	DCSLOG

FY95 QUICK REACTION ANALYSES & OTHER PROJECTS

95KOR-SEN	Korean Combat Samples with Modified Sensors - 1995	EUSA
AAMAA II	Anti-Armor Mission Area Analysis Phase II	DCSOPS
ABC	Artillery Brigade CS/CSS Analysis	ARMY SCI BD

ABC-APR	Analysis of BCTP vs CAA - Ammo Process & Results	DCSOPS
AFPDA-DA	Army Force Planning Data & Assumptions - Document Automation	DCSOPS
ARF	Army Required Forces	DCSOPS
ARSTRAP	Army Strategic Planning Workshops	DCSOPS
BF-95	BLUE FLAG 95	ARCENT
BF-II	BLUE FLAG II	ARCENT
BF3	BLUE FLAG 3	ARCENT
BFIII-S	BLUE FLAG III Support	ARCENT
BLACKJACK 95	Assumptions Working Group for Campaign XXI	DCSOPS
BOST95	BOLD STROKES 95 Pol-Mil Game	EUSA
BRAIN	Bayesian Representation & Analysis in International Negotia	DUSA-OR
CAMPAIGN XXI	Campaign XXI	DCSOPS
CAMRULE	Cost Analysis for Munitions Rule	ASA
CANIA-2	Campaign Analysis Nuclear Impact Assessment - 2	DCSOPS
CARSTAR-94	Campaign Analysis for Army Strategic Force Architecture-94	DCSOPS
CATMID	Campaign Analysis for Integrated Theater Missile Defense	CAA
CORAL REEF	Correlate Funding to Readiness for Reserve Forces	OCAR
CURAM	Chemical Unit Requirements Analysis Methodology	DCSOPS
DFP	Dual Force Packages	FORSCOM
DSM I	Decision Support Modeling - Single MRC	EUSA
DSM II	Decision Support Modeling II- Dual MRC	EUSA
DSM III	Decision Support Modeling III- Support for CFC USFK J-5	EUSA
EBSFI	Enhanced Brigade Support Force Impact	DCSOPS
EUCOM-FRE	HQ EUCOM Force Requirement Exercise	DCSOPS
FACEI	Feasibility Analysis of CTLS-Eagle Interoperability	DUSA-OR
FAST-OR	Force Analysis Spreadsheet Tool - OOTW Requirements	DCSOPS
FOPROA II	Force Projection II	CENTCOM
FREEFALL 95	FREEFALL 95 Political-Military Game	DASG
GHQ-95 P2	General Headquarters Exercise Part 2	DCSOPS
GHQ-95 P3	General Headquarters Exercise Part 3	DCSOPS
GHQ-95 P4	General Headquarters Exercise Part 4	DCSOPS
GHQ-95 P5	General Headquarters Exercise Part 5	DCSOPS
GHQ-PD	GHQ 95 Personnel Data	TAPC
GHQ-PPD	GHQ-95 Peacekeeping Personnel Replacement Data	DCSOPS
GHQ-X95 P-1	General Headquarters Exercise X95 Phase I	DCSOPS
GMAS	Ground Maneuver Army Support	DCSOPS
GMAS-IA	Ground Maneuver Analysis Support - Issue Assessment	DCSOPS
GMAS-II	Gound Maneuver Assessment Methodology - II	DCSOPS
GMAS-NI	Ground Maneuver Analysis Support-Needs Identification	DCSOPS
HL-95	HAMMERLOCK 95 Pol-Mil Game	DASG
JAMIP/JWAR	Joint Analytic Model Improvement Program, Joint Warfare System	DCSOPS
JCBD(NT)	Chemical Joint ServiceInte-gration Group Analysis Support	DCSOPS
JROC-TRACK	Tracking JROC through the ARSTAF Lead Agents Working Group	DCSOPS
KAMMO-SLAM	Korean Ammo Distribution System Analysis using SLAM	EUSA
KOBOSH II	Korea, Bosnia, Haiti Analysis, 2d Version	DCSOPS
KURSK II	The Battle of Kursk, Southern Front, a Validation Database	DUSA-OR
LIBAITAN	Linking BASOPS Investments to Training & Readiness Analysis	ACSIM
LINGLANG-II	Linguist and Language Analysis II	DCSINT
MINIPOM-95	Value Added Analysis Support to Mini POM 97-02	DCSOPS
NEARTIA	Northeast Asia Regional Forces Intelligence Assessment	CAA
NEDS	A Nexus of Environmental Decisionmaking in the Services	ACSIM
NIGERIA-95	NIGERIA-95 Issues Workshop	DCSOPS
NIMBLE DANCER	Nimble Dancer Joint Staff Support	DCSOPS
NKAE	North Korean Artillery Effects	EUSA
OLYMPUS-94	OLYMPUS-94 Pol-Mil Game	USAREUR
PERSREP-GHQX95	Personnel Replacement Requirements Analysis GHQX95 Scenario	PERSCOM
PPROFOR	Power Projection Forces	DCSOPS
PROSPECT	Plan Research Operations Strategy for P2 Efforts	ACSIM
PSS-VULFACS	Vulnerability Rates for Personnel Service Support Branch	CASCOM
REIN DEER	Researching Environmental Initiatives & Decision Evaluation Rules	ACSIM
REPREPO	Reconstitution of the Prepo-Afloat Package	DCSOPS
RSOI-GDAS	Reception, Staging, Onward Movement, and Integration - GDAS	EUSA
SAIM-11/94	SAMAS November-94 Update of Reserve Component Data	ACSIM

SOA	Stockage Objective Analysis	DCSOPS
SOMR-HA	SRA-03 OOTW Movement Requirements - Humanitarian Assistance	DCSOPS
SOMR-LRC	SRA-03 OOTW Movement Rqmts Lesser Regional Contingency	DCSOPS
SOMR-PE	SRA-03 OOTW Movement Requirements - Peace Enforcement	DCSOPS
SOMR-PK	SRA-03 OOTW Movement Rqmts-Peace Keeping	DCSOPS
SPT2XXI	Analytical Support to Force XXI	DCSOPS
SRA-03 DA	SRA-03 Deployment Analysis	HQDA
SRA-AC(OWIT)	SRA - Adverse Case (Only War in Town)	DCSOPS
SRA03-MED-FACT	SRA-03 Medical Planning Factors Alternatives Analysis	DCSOPS
SUSCM	Support Slice for C-17 Movement	DCSOPS
SWA-FOPROA	Southwest Asia Force Projection Assessment	ARCENT
SWAAGS	South West Asia Armored Gun System Effectiveness Analysis	DCSOPS
SWAHAKO	SWA and Haiti's impact on Korea	DCSOPS
T-CAN 02	Tactical Missile Defense COEA Analysis NEA 2002	USA SSDC
TARA	TAA Ammunition Requirements Analysis	DCSOPS
TAURUS-94	TAURUS-94 Pol-Mil Game	USAREUR
TERCDA	TAA-03 Engineer Regional Construction Data and Analysis	DAEN
TOSCA	Tactical Engineering Mobility System O&S Cost Analysis	DCSOPS
TOSFRAM	TAA-03 OOTW Support Force Requirements/Analysis Methodology	DCSOPS
TRAP	Transportation Rail and Pipeline Denial Analysis	DCSOPS
TRSDOC03	Theater Resolution Scenario Documentation for TAA03	DCSOPS
TU-95	Tactical Wheeled Vehicle Modernization Update - 95	DCSOPS
VW	Vigilant Warrior	CAA
WARRU-NEA	WARREQ 01 - Army Reserve Requirements Update - NEA	DCSOPS
WARRU-SWA	WARREQ 01 - Army Reserve Requirements Update - SWA	DCSOPS
WIDCOMP	War Fighting Impact of Delaying the Comanche Program	DCSOPS
WRAC-NEA	Wartime Requirements Adverse Case - Northeast Asia	DCSOPS
WRAC-SWA	Wartime Requirements Adverse Case - Southwest Asia	DCSOPS
XMLRS	Counter MLRS	SARD

FY94 STUDIES & CONTRACTS

ABC-SWA	ARSTAR-94 Base Case - Southwest Asia	DCSOPS
ACAP 94	Army Support of Cooperation & Peacekeeping 94	DCSOPS
ARSTAR-94	Army Strategic Force Architecture Study - 94	DCSOPS
ARSTAR-94 DA	ARSTAR-94 Deployment Analysis	HQDA
CASRA-03	Campaign Analysis for Support Requirements Analysis 2003	DCSOPS
COSAGE-03	Combat Samples - 2003	HQDA
COSAR	Joint Combat Sample Request	DUSA-OR
CTLS-93	Concurrent Theater-level Simulation - FY93	DUSA-OR
CVAS	Corps-level Analysis Team, VAA III Support	DCSOPS
E-MAR	EUSA OPLAN - Major Ammunition Requirements	EUSA
ETAJUP	Equitableness of Treatment in Army Judicial Procedings	DCSPER
FOUNDATION 93	Strategies for the Information War	DCSOPS
FRPPO	Force Requirements Planner for Peace Operations	DCSOPS
FUSSPRINT	Future USAREUR Site Selection Prog for Reduction in Troops	USAREUR
GAS	GHQ-94 Analytical Support	DCSOPS
GDAS-ADD	GDAS Advanced Development	CAA
GDAS-TEST	Global Deployment Analysis System - TEST	CAA
JCHEMRATES II	Joint Service Chem Defense Equipment Consumption Rates II	DCSLOG
KURSK I	The Battle of Kursk, Southern Front, Validation Data base	CAA
MDSQ-EVAL	Ammunition Minimum Distribution System Quantity Planning Factors Evaluation	DCSOPS
MIKIMAC-94	Mission Kill Metric as Applied to Combat Models	DUSA-OR
MOBCEM-RD	Mobilization Capabilities Evaluation Model - Redesign	DCSOPS
MRS BURU	Mobility Requirements Study Bottom Up Review Update	DCSLOG
PAPA	Pollution Abatement and Prevention Analysis	ASAILE
PYONG-WHA 93	Pol-Mil Issues Analysis for Exercise ULCHI FOCUS LENS 93	EUSA
READMISSIONS	Personnel Attrition Rates Historic Land Combat Operations: A Note on Probability of Readmissions & Multiple Wounds	DUSA-OR
TCAS	Theater Capabilities Assessment Study, Phase I	DCSLOG
VAA 96-01	Army Program Value Added Analysis 96-01	DCSOPS
WARREQ MRC-E	Wartime Requirements MRC-East, FY 2001	DCSOPS
WARREQ MRC-W	Wartime Requirements MRC-West, FY 2001	DCSOPS

FY94 QUICK REACTION ANALYSES

3DCAN	Three Divisions Corps Analysis	TRADOC
555 CA	555K Endstrength Capabilities Assessment	DCSOPS
AAMAA	Antiarmor Mission Area Analysis	DCSOPS
AAMAA-C	Antiarmor Mission Area Analysis - COSAGE	OSD
ACAP II 94	Army Support of Cooperation and Peacekeeping II 94	DCSOPS
ALP-ES	Assessment of Long-Term Peacekeeping - Endstrength	DCSOPS
ALP-PT	Assessment of Long-Term Peacekeeping - Personnel Turbulence	DCSOPS
APOF	Analysis of Peace Operations Functions	DCSOPS
ARRCS-SUFA	Allied Rapid Reaction Corps (South) Support Force Analysis	USAREUR
ASUPOW	Analysis of Support Units in Peace Operations and War	DCSOPS
CL-94	CALYPSO 94 Pol-Mil Game	DCSOPS
CLIKAMMO	Campaign Logistics in Korea: Ammunition Availability Impact	EUSA
COMA	Support to Technical Advisor for Calibration of MACRO	DCSOPS
COSSEUC	Combat Samples in Support of USEUCOM OPLAN	USEUCOM
CT94	CERTAIN TRUMPET 94 Political-Military Game	EUSA
DEEP FIRES I	ATACMS Missile Requirements	DCSOPS
DEEP FIRES II	ATACMS Block II Missile Requirements	DCSOPS
DEMOB	Demobilization Issues Workshop (GHQ95)	DCSOPS
DIVRATES	Divisional Rates-Killed/ Captured/MIA & WIA	DCSPER
EAD-CASRATES	Nondivisional Wounded in Action Rates for the Army	PERSCOM
EAFA	Early Arriving Forces Analysis	DCSOPS
EARR	Engineer Allocation Rule Revision	DCSOPS
EU-94	EUROPA 94 Pol-Mil Game	USAREUR
GF-94	GREEN FLASH Pol-Mil Game	USARPAC
GHQ PLAYER	General Headquarters Exercise-94 Player	DCSPER
GHQ-NEA I	GHQ-94 MRC-W Campaign Simulation (Part I)	DCSOPS
GHQ-NEA II	GHQ-94 MRC-W Campaign Simulation (Part II)	DCSOPS
GHQ-S	GHQ-X94 Exercise Control Group Support	DCSOPS
GHQ-S II	GHQ-X94 SWA & NEA Campaign Analysis w/Logistics Assessment	DCSOPS
GHQ-S III	GHQ-X94 Exercise Group Support III	DCSOPS
GHQ-S IV	GHQ-X94 SWA Campaign Analysis Wrap-up	DCSOPS
GIRM	Gelling Installation Resource Management	ACSIM
HDSS	Heavy Division Support Slice	DCSOPS
HILICSS	Haiti's Impact on Light Infantry and Combat Service Support	DCSOPS
IBUR-OT	Intelligence Bottom-Up Review - Operational Tasks	DCSOPS
JTAGS-EA	Joint Tactical Ground Station-Effectiveness Assessment	ASARDA
KC95	Korean Conflict 95: A Force Ratio Analysis	EUSA
KOBOSH	Korea, Bosnia, Haiti Analysis	DCSOPS
LINGLANG	Linguist and Language Analysis	DCSINT
LMS-RTW	Louisiana Maneuvers Support Road to War	TRADOC
MP01-EPW	Military Police 2001 - Enemy Prisoner of War	DCSOPS
NEAPEREQ	Personnel Replacement Requirements Analysis, GHQ NEA	DCSPER
NLWE	Non-Lethal Weapon Employment	DUSA-OR
OLMA-I	Operational Level Military	ARCENT
OLMA-I94	Operational Level Military Assessment - Iraq 1994	ARCENT
OOTW-SRA(HA)	Operations Other Than War - SRA (Humanitarian Assistance)	DCSOPS
OOTW-SRA(LRC)	OOTW - SRA (Lesser Regional Contingency - Light)	DCSOPS
OOTW-SRA(PE)	Operations Other Than War - SRA (Peace Enforcement)	DCSOPS
OOTW-SRA(PK)	Operations Other Than War - SRA (Peace Keeping)	DCSOPS
PECAN	Peacekeeping Cost Analysis	DCSOPS
PERS-MOB-SPT1	Personnel Mobilization Planning Support to TAPC-1	PERSCOM
REACH	Reevaluation of the Analysis on Ft. Chaffee	DCSOPS
REPWREP	Review EPW Report	DCSOPS
ROKOB	Republic of Korea Ground Forces Order of Battle Update	EUSA
RSOI-O	Reception, Staging, Onward Movement, & Integration Operations	EUSA
SADEX	SADARM Examination	DCSOPS
SH-93	SHALIMAR 93 Pol-Mil Game	USARPAC
SH-94	SHALIMAR 94 Pol-Mil Game	USARPAC
SRA-BC(NS)	SRA-Base Case (Near Simultaneous-East)	DCSOPS
STAB UP	Update of the STAB QRA	DCSOPS
SWA-RA	Southwest Asia Risk Analysis	ARCENT
SWA-RA II	Southwest Asia Risk Analysis II	DCSOPS

TALPANAL	Total Army Language Program Analysis	DCSINT
TERPS	The Environment Resources Programing Study	ACSIM
TRAIN REQ	TRAINLOAD Requirements Update	DCSOPS
TRAINLOAD	Training Load on Active Duty Installations	DCSOPS
TU-93	Tactical Wheeled Vehicle Modernization Update - 93	DCSOPS
VAA: VAST	Value Added Support for TRADOC	TRADOC
VAAJAPA	Value Added Analysis: Javelin and Predator Analysis	ASARDA
WARREQ-NSC	WARREQ-01 No SADARM	DCSOPS
WRSA	War Reserve Stocks for Allies	EUSA

FY94 OTHER PUBLICATIONS

STS DOC	Spreadsheet Transshipment Simulation Documentation	CAA
USOB	US Order of Battle Update	CAA
CEMWES	Requirements for Running CEM at WES	CAA
DATA DISK	A Catalog of Attrition & Casualty Data Base on Diskette	DUSA(OR)
MANHATTAN	MANHATTAN Project Report	CAA
SPOP	Study Process Overview Pamphlet	CAA

FY93 STUDIES & CONTRACTS

ACRONYM	TITLE	SPONSOR
AFPDA 95/2001	Army Force Planning Data & Assumption - FY 95/2001	DCSOPS
AORNFS	Army Operational Requirements for Nuclear Fire Support	DCSOPS
ARCAS	ARDENNES Campaign Simulation	CAA
ARM	Active/Reserve Mix Study	DCSOPS
ARMIN-DA	Army Initiatives-Deployment Analysis	DCSOPS
ARSTAR-92	Army Strategic Force Architecture - 92	DCSOPS
BAMS	Biological Assessment and Modeling Study	DCSOPS
CHEMDET	Chemical Deterrence Study	DCSOPS
DRAGON-ANVIL	USAREUR Political-Military Cell Preparation	USAREUR
EAD-CAS-MET	Echelon Above Division Casualty Estimation Methodology	DCSPER
EAHAP	Economic Analysis of HQDA Automation Program Study	SEC ARMY
EASTWIND 93	Political Environments Sensitivity Pol-Mil Game	USARPAC
EFES	Expanded Force Employment Study	DCSOPS
EMA	Evaluation of the MDEP Architecture Study	PAE
ETAJUP	Equitableness of Treatment in Army Judicial Procedings	DCSPER
J-CHEMRATES	Joint ServiceChemical Equipment Consumption Rates Defense	DCSLOG
JKACS	Joint US-ROK Arms Control Study, Game I	EUSA
KPOL	Korean POL Distribution Analysis	EUSA
LATAM 2001	Latin America Scenarios through 2001	DCSOPS
MADCAP-1	Combat Samples for Master Data Calibration Project-1995	ARCENT
MCOG I	Military Centers of Gravity Study - I	EUSA
NIA-1	Nuclear Impacts Analysis - 1	DCSOPS
PAR S&V	Personnel Attrition Rates in "Historical Land Combat Operations:" - Susceptibility & Vulnerability of Major Anatomical Regions	CAA
PAR-P1	Personnel Attrition Rates in Historical Land Combat Operations - Phase 1	CAA
RCTIFYRS	Reserve Component Training Installation Facility Yearly Requirements Study	DCSOPS
REEP	Renewables and Energy Efficiency Planning	COE
ROKMOD II	Republic of Korea Modernization II	EUSA
SRA-01	Support Requirements Analysis 2001	DCSOPS
STOCEM3	Stochastic Concepts Evaluation Model - Phase 3	CAA
TAA-01AE	Total Army Analysis - 2001 Alpha-East	DCSOPS
TACAAN	TACWAR Attrition Analysis	CENTCOM
UC RETRO	USAREUR Class V/VII Retrograde	USAREUR
VECCEM II	Structured Programming for Large Simulation II	DUSA-OR
WARREQ-95K	Wartime Requirements Analysis-Korea, FY 1995	DCSOPS
WARREQ-95M	Wartime Requirements Analysis-SWA, FY 1995	DCSOPS
WHITE RAIN 92	Chemical Weapons Deterrents Alternatives Strategies Wargame	DCSOPS

FY93 QUICK REACTION ANALYSES

ACAP 93	Army Support of Cooperation and Peacekeeping Workshop	DCSOPS
ALP	Assessment of Long-term Peacekeeping	DCSOPS

ANFORSC	Assessment of NATO Force Success Criteria	DCSOPS
ANSG	Analytical Needs Study Group	USARSO
ARM-ACBOS	Active Reserve Mix-Assessment of Congressional Budget Office Force Options	ASAMRA
ARSTAR CA-2	ARSTAR Capabilities Analysis - 2	DCSOPS
ARSTAR CA-3	ARSTAR Capabilities Assessment	DCSOPS
ARSTAR CA-4	ARSTAR Capability Analysis-4	DCSOPS
ARSTAR CA-5	ARSTAR Capability Analysis - 5	DCSOPS
ASP-92	Army Strategic Force Planning Workshop 92	DCSOPS
BAT CAPER	Brilliant Anti-Tank Munition's Capability at Extended Range	DCSOPS
CHAPARRAL-93	CHAPARRAL 93 Law Enforcement Military Simulation	FORSCOM
CHEMDET II	Chemical Deterrence Survey	DCSOPS
CMASS SPT	Counterdrug Modeling & Simulation System Support	USARSO
CSA-CI	CSA Calendar Improvement	DACS
DA-ORH	Deployment Analysis, Operation Restore Hope	DACS
DIVCOST	Active-Reserve Division Costing	DCSOPS
EFSA	Engineer Factor Sensitivity Analysis	COE
FE 90-93	Force Employment 90-93	DACS
FSCM-BA	Force Structure Composition Model Branch Analyzer	DCSOPS
GEMS	GEMS For Analysis	DUSA-OR
GHQx -93	GHQx Issues Workshop	TRADOC
HEAT	Helicopter Effectiveness Analysis Task	DCSOPS
ICE-PAC3	Intercept & Chemical Effects-PATRIOT Advanced Capabilities 3	DUSA-OR
JKACS-CEM-I	Joint US-ROK Arms Control Study-CEM-I	EUSA
JTAD-MAA	Joint Theater Air Defense-Mission Area Analysis	DCSOPS
LAMS	Louisiana Maneuver Support	TRADOC
LMI-QRA	Logistics Management Institute - QRA	OSD
LRPMW	Long-range Planning Methodology Workshop	DCSOPS
MCOG II	Military Centers of Gravity Air Campaign	EUSA
MCOG IV	Military Centers of Gravity IV - Concept of Operations	EUSA
MCOG V	Military Centers of Gravity V - nK Intent	EUSA
MCOG VI & VII	Military Centers of Gravity VI&VII, Seasonal & TPFDD Variations	EUSA
MCOG VI-DA	Military Center of Gravity VI-Deployment Analysis	EUSA
MED-01 DNBI	Medical 2001-Rules and DNBI Rates	DASG
MEMU	Mine Expenditure Methodology Update	DCSOPS
MERLINS STAFF	MDEP Equation for Resource Linking System Supporting Trooplists	PAE
PAC3REVIEW	Patriot PAC-3 Missile Program Review	DUSA-OR
PALACE	Patriot Lethality and Chemical Effects	DCSOPS
PEKO	Peacekeeping Operations	DCSOPS
RAM CA-1	Roles and Missions Capabilities Analysis	DCSOPS
RAMEUR	Requirements Analysis for MRC-Europe Movement Requirements Analysis	DCSLOG
REESIN	Renewables and Energy Efficiency Sustainable Investment	ASA
ROKMOD 94-95	Republic of Korea Modernization 94-95	EUSA
ROKMOD LP	Republic of Korea Modernization Linear Programming	EUSA
S3C	Self Service Supply Centers	DCSLOG
SEMM	Support to Engineer and Mine Warfare Modernization Analysis	DCSOPS
SILENT	Survivability Issues Longbow Enhanced Tactics	DUSA-OR
SLS	Senior Leaders' Seminar	EUSA
STAB	Support to Total Army Basing Study	JCS
STRAT-MOD	Stratification Model of Theater Casualties	DCSPER
SUFRAS	Support Force Risk Assessment	DCSOPS
TAA-01AW	Total Army Analysis - 2001 Alpha-West	DCSOPS
TAB	The Army Briefing	DCSOPS
TAC	Tri-service Standoff Attack Missile ATACM Comparison	DCSOPS
TAC BAT	Tactical Air Contributions in the BAT Study	DCSOPS
TACOS	TAA-01A/COMRAD Similarity	DCSOPS
VAA: DICE	Value Added Analysis: Declining Investment in Coming Era	DCSOPS
VAA: GREYBEARDS	VAA: General Officer Rec Evaluations for Economic Analysis of Research & Development Stra	DCSOPS
VAA: MINI POM I	VAA: Mini Program Objective Memorandum - I	PAE

VAA: MINI POM II	VAA: Mini Program Objective Memorandum - II	PAE
WARREQ-01 DA	Wartime Requirements 2001 Deployment Analysis Support	DCSOPS
WARREQ-95E	Wartime Requirements Analysis-Europe, FY 1995	DCSOPS
WARREQ-95K	Wartime Requirements Analysis-Korea, FY 1995	DCSOPS
WARREQ-EURUP-99	Wartime Requirements Europe Updated - 99	DCSOPS

FY93 OTHER PUBLICATIONS

AOT-K	Anatomy of a Theater-Korea	CAA
CALAPER-92	Munitions Consumption Program Input-Output Guide	CAA
CAMP-REV1	Computer Assisted Match Progam User's Manual First Revision	CAA
CORBAN-UAV	Possible Modifications to the Corps Battle Analyzer Model	CAA
DOC TRANSMO	Documentation for TRANSMO Users and Analysts	CAA
GLOFAM-MI	Global Force Allocation Model-Methodology Improvement	CAA
KCAC 2000	Korean Campaign Analysis Comparison-2000	CAA
KORCAP	Korea Capstone	CAA
PK COS	COSAGE Probability of Kill Methodology Basic Data Requirements	CAA
UCUM	COSAGE User's Manual, Volumes I & II	CAA
TEAM ABRAMS	Test, Evaluation, and Modelling of ABRAMS	CAA

FY92 STUDIES AND CONTRACTS

AIMS 99-I	Army Integrated Mobilization Study-99, Phase I	DCSOPS
ARC	Analysis of Army Reserve Component Clothing Replacement Process	DCSLOG
ARSTAR	Army Strategic Force Architecture	DCSOPS
ASOS	Army Support Options Study	ASAMRA
BE-91	BEAU GESTE - 1991 Political-Military Game	DCSOPS
C2A2	Command & Control AcquisitionAlternative Study	DCSOPS
CARG-O	Conventional Arms Reduction Game - Optimized	CAA
CASMO-VAL	Combat Analysis Sustainability Model Verification and Validation	OPTEC
COMRAD	Component Requirements & Authorization Determination	ASAMRA
CTLS-91	Concurrent Theater Level Simulation	DUSA-OR
CURE	Chemical Unit Requirements	DCSOPS
E-CEP	Enhanced Casualty Estimation Planning	DCSPER
HIGHWIRE 92	Nuclear Weapons Political IssuesPolitical-Military Game	DCSOPS
IAMS II	Integrated Army Mobilization Study-Phase II	DCSOPS/ DCSLOG
INFSCAP	Interservice Nuclear Fire Support Capabilities	DCSOPS
KOPLAN-91	Korean Operation Plan-1991	EUSA
META	Application of Meta-Analysis	CAA
RCIF	Review of the Calculation of Ammunition, Petroleum,and Equipment Requirements (CALAPER) Input Factors	DCSOPS
ROK-EAD	Republic of Korea - Extended Air Defense	CAA
SKYFLASH 92	Nuclear Weapons Requirements Political-Military Game	DCSOPS
SMA	Strategic Mobility Alternatives	DCSOPS
STOCEM 2	Stochastic Concepts Evaluation Model-Phase II	CAA
TAC LINK	Tactical Combat Samples & Linkage to TACWAR	EUSA
TW-91	Concurrent Processing and Time Warp Development	DUSA-OR
VAA 94-99	Army Program Value Added Analysis 94-99 - Phase II	DCSOPS
VALOR	Value Added Linear Optimization of Resources	CAA
VECCEM	A Structured Approach to Large-scale Battlefield PHASES I&II Simulation	DUSA-OR
WARREQ 99	Wartime Requirements, Fiscal Year 99	DCSOPS

FY92 QUICK REACTION ANALYSES

AAF	Army Availability Factor	USAFISA
ACFAA	Army College Fund Allocation Analysis	DCSPER
AIMS II-M	Army Integrated Mobilization Study II - Medical	DASG
AIR OPTIONS	Aircraft Resource Allocation Options	DCSLOG
ALADDIN 92	ALADDIN 92	CAA
ARSTAR CA-1	ARSTAR Capabilities Analysis-1	DCSOPS
ASFPW	Army Strategic Force Planning Workshop	DCSOPS
AUTOCORE	Analytic Support to the Field Test of the Automated Core Document (ACD) System	DCSPER
B-FASS	Base Force Analysis	VCSA
BASFORMA	Base Force Reductions and Modernization Alternatives	DACS

BIODEF	Biological Defense Analysis	DCSOPS
CALOG SOS	Comparison of Army Logistics Support to Other Services	DCSLOG
CCASM	Contingency Corps-Armored Systems Modernization	DCSOPS
CFCS	Combined Forces Command Sustainment Assessment	EUSA
CFCS II	Combined Forces Command Sustainability Phase II	EUSA
CFCS-UP	Combined Forces Command Sustainability-Update	EUSA
CHEMSTORM	Chemical Warhead Impact on DESERT STORM	DCSOPS
CIA	Comanche Impact Analysis	DCSOPS
CONCOR-UMD	Contingency Corps Unit Movement Data	TRADOC
COSAA	Combat Samples for the Air Force Studies & Analyses Agency	DUSA-OR
COSMIC	Cost Model Input Calculations	PAE
DNBI 2001	Disease and Nonbattle Injury Rates-2001	DASG
DOK	Defense of Korea	VCSA
DS-SEAD	Desert Storm-Suppression of Enemy Air Defense	CAA
DTCTS-SWA	Deployment-TRADOC Common Teaching Scenario-Southwest Asia	TRADOC
EADIMP	Economic Analysis of the DCSOPS Information Management Program	DCSOPS
EVADED	Evaluation of Elected Voluntary Alternate DESCOM Discipline	DCSPER
FASTAEDP	Fast Total Army Equipment Distribution Program	DACS
FOSMODTOS-IN	Force Structure and Modernization Tradeoff Analysis - Inputs	DCSOPS
FRONTIER 92	Global Wargame FY 1992	DCSOPS
GETAR-99	Global Excursion of Transportation Allocation Rules, SRA-99	TRADOC
HDASSCS	Heavy Infantry Division Analysis ofSoldier Support System Cost Study	AMC
HELL vs LONG	HELLFIRE versus LONGBOW	DCSOPS
IPAEMA	Investment Programs of the Army: Economic & Modernization Analysis	DCSOPS
IRAFORMS	Initial Requirements Analysis for MRC-W Scenario	DCSLOG
KNOTS	Knowledge of Time Slippage	DCSOPS
KOWAP	Korean War Plan	EUSA
KOWAP-MOB	Korean Warfighting Operations Plan-Mobility Assessment	EUSA
LC3	Light Contingency Corps Capability	DUSA-OR
LC4	Light Contingency Corps Capability Continued	DUSA-OR
LIDASSCS	Light Infantry Division Analysis of Soldier Support System Cost Study	AMC
MEDEVAC 2001	Medical Evacuation 2001	DASG
MP EXC 99	Military Police Excursion, TAA-99	DCSOPS
MRC-CASREP-97	Major Regional Contingency Casualty Replacement Requirements Report	DCSPER
MRSSWA-POMEX	Mobility Requirement Study-Southwest Asia, POMCUS Excursion	DCSOPS
MSS-TDB	Mobilization Stationing Study-Transportation Data bases	ChOE
POMCAPE	POMCUSITE System Capability Expansion	USAREUR
POMCAPE SME	POMCUSITE Capability Expansion Siting Model Enhancement	USAREUR
POMEVAL 94-99	Evaluation of POM 94-99	PAE
RAM SLAM	Replacement Maintenance Using SLAM	EUSA
RAM SLAM 2	Replacement Maintenance Using SLAM - II	EUSA
RCSTAS	Reserve Component Stationing Study	DCSOPS
RETRO-EUR	Retrograde-Europe	DCSOPS
ROKMOD	ROK Modernization	EUSA
ROK-MODS	ROK Modernization Sustainability	EUSA
SAWVAS	Support Area Wheel Vehicle Vulnerability Assessment	EUSA
SCSC-M	Support to Conventional Systems Committee-Munitions	DCSOPS
ST BARBARA 91	Army Nuclear Fire Support Synergistic Game	DCSOPS
SWA 2000	Southwest Asia 2000	DCSOPS
TARO 91	Political-Military Game TARO 91	USARPAC
TD90	Tae Kwon Do, FY 90	EUSA
THAADS-SWA	Theater High-altitude Air Defense System-Southwest Asia	DCSOPS
TPUG	Tank Propulsion Upgrade	DACS
TRETOAD+	The Restructured European Theater of Operations Air Defense Plus	PAE
TS	Tank Sight	DCSOPS
TU-92	Tactical Wheeled Vehicle Modernization Update - 92	DCSOPS
UAV-ROH	Unmanned Aerial Vehicle to Replace Older Helicopters	PAE
VAA: AMAVRTL	VAA: Analysis of Modernization Alternatives at Various Research, Development, and Acquisition (RDA) Total Obligational Authority Levels	PAE

VAA: CSAOR	Value Added Analysis: Chief of Staff Army Offsite Review	DCSOPS
VAA: LAPS	Value Added Analysis: Long-range Research, Development, and Acquisition Plan (LRRDAP) Analysis Planning Session	DCSOPS
VAA: LGORS	Value Added Analysis: Long-range Research Development, and Acquisition Plan (LRRDAP) General Officer Review Support	DCSOPS
VAA: SAMQ	Value Added Analysis: Secretary of the Army Modernization Questions	SEC ARMY
VAA:EATSM	Value Added Analysis: Economic Analysis of Tradeoffs in Structure & Modernization	PAE
WW-CASREP-97	Worldwide Casualty ReplacementRequirements Report, FY97	PERSCOM
XDTRAP	Counterdrug Transportation Requirements Analysis Program	USARSO

FY92 OTHER PUBLICATIONS

ARBSIT	ATVAL Recommendations: Brigade Samples in Theater	CAA
ATVAL II	Attrition Calibration (ATCAL) Evaluation Phase II - Indirect Fire	CAA
ATCAL P2SIM	ATCAL Phase II, Simscript II.5	CAA
BAMC	Benchmark for Artillery Munitions Consumption	CAA
E-CALAPER	Enhancements to Calculation of Ammunition, Petroleum, and Equipment Rates Process Review	CAA
CAS-IMPACTS99	Impacts of Force Structure (FY99) Changes on Casualty Generation Report	CAA
CASPRO	Casualty Estimation Process Review	CAA
FSSS-MR	FASTALS Sensitivity with Small Scenario-Minor Rules	CAA
K-TBMD	Korea - Tactical Ballistic Missile Defense	CAA
VOLLEY FIRE	Foundations of the General Theory of Volley Fire	CAA

FY91 STUDIES AND CONTRACTS

A2D2F2	Antiarmor Defense Data, Phase II	CAA
ARIM	Army Resource Integration and Management	DCSOPS
ATVAL	ATCAL Evaluation	CAA
CHEMPHASE	Chemical Protection Hazard Assessment in Europe Study	DCSOPS
CMA	Counterdrug: Mandate for the Army	DCSOPS
DSSLL	DESERT SHIELD Strategic Lessons Learned	DCSOPS
DYNAFOR	Accessions Forecasting for Dynamic Force Structures	DCSPER
EMPDA	Enhanced Massively Parallel Deployment Analysis	DUSA-OR
ETRANS	European Transportation Requirements for Backhaul of Personnel/Cargo	DCSLOG
FES	Force Employment Study	DCSOPS
FASTAUTO	FASTALS Automation Contract	CAA
IMAM	Information Management Modernization Study	DISC4
IV&V FORCEM C2	IV&V FORCEM C2 Module	CAA
IV&V GDAS II	IV&V Global Deployment Analysis System, Phase II	CAA
IWAS-EC	Initial Wartime Army Support-Effectiveness & Capability	DCSLOG
LRAMRP	Long-range Army Materiel Requirements Plan Study	TRADOC
MARTEP	Maritime Terminal Evaluation Program	DCSLOG
NATO 2000V	NATO 2000 Appendix	DCSOPS
OMNIBUS-91F	Operational Readiness Study FY-91 (FORCEM)	DCSOPS
POMCUSITE	POMCUS Unit Siting Alternatives Study	USAREUR
PROBATIONS	Probabilistic Foundations for a Fully Stochastic Theater-level Ground Combat Simulation	CAA
RACCK	Regional Assessment Combat Capability-Korea	EUSA
RACCK-CALAPER	Regional Assessment Combat Capability-Korea, Calculation of Ammo, Petroleum and Equipment	EUSA
RACCK-CHEM	Regional Assessment Combat Capability-Korea, Chemical Analysis	EUSA
RACCK-DA	Regional Assessment Combat Capability-Korea, Deployment Analysis	EUSA
RACCK-FASTALS	Regional Assessment Combat Capability-Korea-FASTALS	EUSA
SCALED II	Simple Combat Attrition Law Evaluation Data, Phase II	DUSA-OR
SOVA	Soviet Air Operation Analysis Study	DCSOPS
SRA-99	Support Force Requirements Analysis - 1999	DCSOPS
STRADER	Strategic Deployment Analysis Review	DCSLOG
TACNUC	Theater Analytic Nuclear Model	DCSOPS

TWVMU	Tactical Wheeled Vehicle Modernization Update	DCSOPS
VALUE ADDED	Value Added Analysis 90-97	PAE

FY91 QUICK REACTION ANALYSES

AAMU	Army Aviation Modernization Update	DCSOPS
AAMU-SR	Army Aviation Modernization Update-Scout Relook	DCSOPS
ALF-1	Airlift Force Study	VCSA
ARVIS-DA	Army Vision Deployment Analysis	DCSLOG
BA91	Political-Military Game BALBOA 91	USARSO
CADAVR	CORBAN Air Defense ArtilleryValidation & Review	PAE
CASIO	Chemical Attacks Against Contingency Staging Areas	DCSOPS
CMMS II-CO	Congressionally Mandated Mobility Study II-CINC Options	DCSLOG
CMMS-NATO	Congressionally Mandated Mobility Study, NATO	DCSOPS
CMMS-NEA	Congressionally Mandated Mobility Study, NEA	DCSOPS
CMMS-SWA	Congressionally Mandated MobilityStudy, SWA	DCSOPS
CMMS2-AMD	Congressionally Mandated Mobility Study 2, Army Mobility Data	DCSOPS
CORCFE	CORBAN Centralized Forces Europe	PAE
COSWA-AF-MEA	COSWA-Alternative Forces-Munition & Equipment Analysis	DCSOPS
COSWA-AIM	COSWA - Air Interdiction Maneuver	DCSOPS
COSWA-ALT	COSWA - Alternative Contingencies	DCSOPS
COSWA-DCAS	COSWA - Division Casualty Stratification Analysis	DCSPER
COSWA-RAN	COSWA - Requirements Analysis	DCSOPS
COSWA-RES	COSWA - Residual Force Requirements	DCSLOG
COSWA-SPT	COSWA - Supportability Analysis	DCSOPS
COSWA-STK	COSWA - Stockage	DCSOPS
COSWA-STK-MEA	COSWA - Stockage-Munitions & Equipment Analysis	DCSOPS
COSWA-SUM	COSWA - Summary	DCSOPS
COSWA-SUM-UP	COSWA - Summary Update	DCSOPS
COSWA-SUMFOR	COSWA - Summary FORSCOM	DCSOPS
COSWA-SUPAN	COSWA - Support Analysis	DCSOPS
COSWA-XAIR	COSWA - Extended Air Operations	DCSOPS
COVARA	Cost Variability Analysis	USASAC
CPOST	Post-CFE Posture Assessment	DCSOPS
CRISK	CFE Circumvention Risk Assessment	DCSOPS
DAIRICOWS	Detailed Analysis/Invest. of Resource Items & Costs of Weapon Systems	DCSOPS
DESERT RAMP	Desert Ramp	DCSOPS
DSAD-FROG	DESERT SHIELD Air Defense-Free Rocket Over Gound	DCSOPS
DSAD-PS	DESERT STORM Air Defense Patriot Stockage	DCSOPS
DSAW-ATEMS	DESERT SHIELD Air Warfare-ATACMS Employment	DCSOPS
DSAW-EAD	DESERT SHIELD Air Warfare-Extended Air Defense Analysis	DCSOPS
DSAW-IUD	DESERT SHIELD Air Warfare-Israeli Urban Defense	DCSOPS
DSCA I	DESERT STORM - Campaign Analysis I	DCSOPS
DSCA II	DESERT STORM - Campaign Analysis II	DCSOPS
DSCA III	DESERT STORM - Campaign Analysis III	DCSOPS
DSCA IV	DESERT STORM - Campaign Analysis IV	DCSOPS
DSCA V	DESERT STORM - Campaign Analysis V	DCSOPS
DSLL	DESERT SHIELD Lessons Learned	DCSOPS
ETRANS-FOS	European Transportation-Roundout Support	DCSLOG
FLOATFOM	Floating FOMCUS Analysis	DCSLOG
FOD-FDAT	Forward Deployed Force Alternative	VCSA
FOMOSA	Force Modernization Sensitivity Analysis	DCSOPS
FORR-MAN	Force Regeneration/Recon-stitution-Mobility Analysis	DCSOPS
GE-TAR	Global Excursion of Trans-portation Allocation Rule	TRADOC
HARMS	HIMAD Antiradiation Missile Survivability Analysis	DCSOPS
HO-91	Political-Military Game Horizon 91	EUSA
HOBOCOBA	Homeward Bound Cost-Benefit Analysis	DCSOPS
IFC-AMA	Improved Force Closure-Army Mobility Analysis	DCSOPS
IFCA-FAS	Improved Force Capability Support Analysis	DCSOPS
KOWAP-DA	Korean War Plans - Deployment Analysis	EUSA
MA91	MAGELLAN 91	DCSOPS
MARCFAC	MARC Availability Factors	USAFISA
MOD-U	Modernization Update, 1980-1990	DCSOPS
MPM-CAS	Medical Planning Module - Casualties	DCSOPS

MRC-E-C	Mobility Requirements-Major Regional Conflict, East, Case C	DCSOPS
MRC-EAST	Mobility Requirements Study-Major Regional Conflict, East, Case B	DCSOPS
MRC-WEST	Mobility Requirements Study-Major Regional Conflict, West, Case C	DCSOPS
MRSSWA-DEX	Mobility Requirement Study Southwest Asia, Case D	DCSLOG
NRISK-90	Non-negotiated Reduction Risk Assessment 1990	DCSOPS
NSO	National Guard Structure Options	DCSOPS
PERSYST	Civilian Personnel Classification System	DCSPER
PS90	Political-Military Game PilSong 90	EUSA
PS90-II	Political-Military Game PilSong 90-II	EUSA
SDOP	Secretary of Defense Option	DCSOPS
SIGINT STORM	Vulnerability of SIGINT Vehicles Within the Context of Operation DESERT STORM	ISC
STIR-FRI	STINGER Threat-based InventoryRequirement-Fast Reaction Investigation	DCSOPS
TA91	Japan/Pacific TARO Political Military Game	USARPAC
TAFES-II	Total Army Force Evolution Study II	DCSOPS
TAFES II-MA	Total Army Force Evolution Study II-Mobility Analysis	DCSOPS
VCSA-CLV	VCSA Controlled Munition Assessment	DCSOPS

APPENDIX A

CAA ANNUAL STUDY, WORK, EVALUATION, AND REPORTING SYSTEM (ANSWERS)

Category (Type)	Sponsor	Mode	Authority	Tasker	Approval Level		Analysis QA		Documentation		
					Sponsor	CAA	Sponsor	CAA	Product	QA	Approval
Study	External	In-house	AR 5-5 AR 10-88	Study Directive	*HQDA Staff Agency Head *MACOM Cdr	Director	GOSC SAG	ARB	*Usually Study Report *Exceptions - Dir approval	PRB	Dir, CAA
		Contract	AR 5-5 AR 5-14 AR10-88	*Management Decision Memorandum *RFP	*AMC *SIMTECH *DOD/DA		SAG IPR		(Note a)	COR	
Quick Reaction Anlaysis (QRA)	External	In-house	AR 10-88 (MOD)	CAA Fm 233	*HQDA Staff Agency Head *MACOM Cdr	Director Division Chief (Note c)	*HQDA Staff Agency Head *MACOM Cdr	ARB	Memorandum Report	TQM	Dir, CAA
Project	External	In-house	AR 10-88	Study Directive	*AMC *SIMTECH *DOD/DA or Dir, CAA (on behalf of sponsor)	Director Division Chief (Note c)	N/A	ARB	Technical Paper (Note a)	PRB COR	Dir, CAA
		Contract	AR 5-5 AR 5-14 AR10-88	*Management Decision Memorandum *RFP							
Research & Analysis Activity	Internal	In-house	AR 10-88	Directive	Dir, CAA	Dir >4 PSM	N/A	TQM	(Note b)	TQM	Dir, CAA
		Contract	AR 5-5 AR 5-14 AR10-88	*Management Decision Memorandum *RFP		Division Chief <=4 PSM		ARB	(Note a)	Div Chief COR	Div Chief Dir, CAA
CAA Management Mission Support	Internal	In-house	AR 10-88	CAA Fm 233	Div Chief	Div Chief	Div Chief	Div Chief	(Note b)	Div Chief	Div Chief

a Documentation for contracts will be as specified by RFP. May be amended by negotiation between CAA and the contractor
b Type product is determined by specified CAA approval authority
c Division Chiefs have interim authority for QRA and Projects

Acronym	Definition
ACSIM	Assistant Chief of Staff for Installation Management
ADA	air defense artillery
AHPCRC	Army High Performance Computing Research Center
AMSAA	Army Materiel Systems Analysis Agency
AOR	area of responsibility
ARCAS	Ardennes Campaign Simulation
ARCENT	US Army Central Command
ARES	Advanced Regional Exploratory System
ARPO	Advanced Research Project Office
ASA	Assistant Secretary of the Army
ASAILE	Assistant Secretary of the Army for Installations Logistics and Environment
ATCAL	Attrition Calibration
AUSA	Association of the US Army
AWC	Army War College
BRAC	Base Realignment and Closure Commission
BWC	Biological Warfare Convention
C4ISR	command, control, communications, computers, information systems reconnaissance
CALAPER	Calculation of Ammunition, Petroleum & Equipment Rates Model
CASCOM	Combined Army Support Command
CCIR	Commander Critical Information Requirements
CDMS	COSAGE Data Management System
CEM	Concepts Evaluation Model
CENTCOM	US Central Command
CFC	Combined Forces Command
CHD	conservative heavy division
CHPPM	US Army Center for Health Promotion and Preventive Medicine
CINC	Commander-in-Chief
CINCC	Commanders in Chief of the Combatant Commands
COA	course of action
COEA	cost and operational effectiveness analysis
CONOPS	concepts of operations
CONUS	continental US
COSAGE	Combat Sample Generator
CS/CSS	combat support/combat service support
CW	chemical warfare
CWC	Chemical Warfare Convention
DA	Department of the Army
DACS	Chief of Staff of the Army
DAMO-FDX	DCSOPS - Force Development Division
DAMO-SSW	DCSOPS - War Plans Division
DAST	Deployable Analytical Support Team
DAWMS	Deep Attack/Weapons Mix Study
DCSOPS	Deputy Chief of Staff for Operations and Plans
DNBI	disease & non-battle injury
DOD	Department of Defense
DOMS	Director of Military Support
DPAE	Director, Program Analysis & Evaluation
DPG	Defense Planning Guidance
DPG-IS	Defense Planning Guidance - Illustrative Scenario
DSM	Decision Support Model
DUSA(OR)	Deputy Under Secretary of the Army (Operations Research)
EAD	echelons above division
EADSIM	Extended Air Defense Simulation
EAGLE	A CAA corp-level model
EPA	Environmental Protection Agency
EPW	enemy prisoner of war
ESPC	Energy Savings Performance Contracts
EUSA	Eighth US Army (Korea)
FASTALS	Force Analysis Simulation of Theater Administrative and Logistics Support
FD	Force Development
FEBA	forward edge of the battle area
FIP	foreign intelligence preparation
FORCEM	Force Evaluation model
FORSCOM	Forces Command
FY	fiscal year
GAO	General Accounting Office
GDAS	Global Deployment Analysis System
GUI	graphical user interface
HQDA	Headquarters, Department of the Army
IDA	Institute for Defense Analysis
IPS	Illustrative Planning Scenario
J8	Strategic Plans & Policy
J5	Force Structure Resources & Assessments
JANUS	A TRADOC model
JCS	Joint Chiefs of Staff
JICM	Joint Integrated Campaign Model
JOPES	Joint Operations Planning and Execution System
JTMD	Joint Theater Missile Defense
JWARS	Joint Warfighting System
JWCA	Joint Warfare Capabilities Assessment Group
KCMIA	killed, captured, missing in action
KIDA	Korean Institute for Defense Analysis
KOSAVE	Kursk Operation Simulation and Validation Exercise
LAN	local area network
LDR	land disposal restriction
MACOM	major Army command
MISMA	Model Improvement Study Management Agency
MOBCEM	Mobilization Capabilities Evaluation Model
MOPP	mission-oriented protection posture
MORS	Military Operations Research Society

Acronym	Definition
MR	memorandum report
MRC	major regional contingency
MTCR	Missile Technology Control Regime
MTMC	Military Traffic Management Command
MTOF	mission task organized forces
MTW	major theater war
NATO	North Atlantic Treaty Organization
NBC	nuclear biological & chemical
NEA	Northeast Asia
NIS	Newly Independent State(s)
NG	National Guard
NGIC	National Ground Intelligence Center
nK	North Korea
NLT	not later than
NMS	National Military Strategy
NS	near simultaneous
OCONUS	outside the continental US
OCS-AIG	Office of the Chief of Staff - Army Inspector General
ODCSINT	Office of the Deputy Chief of Staff for Intelligence
ODCSLOG	Office of the Deputy Chief of Staff for Logistics
ODCSOPS	Office of the Deputy Chief of Staff for Operations & Plans
ODCSPER	Office of the Deputy Chief of Staff for Personnel
ODP	Officer Distribution Plan
OFOR	Over the horizon
OFP	Objective Force Planning
OOTW	operations other than war
OPLAN	operation plan
OPORD	operations order
OPTEMPO	operating tempo
OSD	Office of the Secretary of Defense
PA&E	Program Analysis & Evaluation
PAPA	Pollution Abatement and Prevention Analysis
PC	personal computer
PERSEUS	Planning Environmental Resource Strategy Evolution & Utility Study
PFP	Partnership for Peace
PIP	product improvement plan
POC	point of contact
POL	petroleum, oils, and lubricants
POM	Program Objective Memorandum
POMCUS	prepositioned materiel configured to unit sets
PPBES	Planning, Programming, Budgeting, and Execution System
PSM	professional staff month
QDR	Quadrennial Defense Review
QRA	quick reaction analysis
R&D	research and development
RAA	research and analysis activity
RAID	Rapid Assessment and Initial Detection
RAND	RAND Corporation
RALPH	Reduction to the ATCAL (Attrition Coefficient Phase I model
RC	Reserve Component
RCTIFYRS	Reserve Component Training Installation Facility Yearly Requirements Study
RDA	research, development, and acquisition
RJIRTF	Rapid Joint and Interagency Response Task Force
ROE	rules of engagement
ROK	Republic of Korea
ROK MND	Republic of Korea Ministry of Defense
ROKA	Republic of Korea Army
ROKUS	Republic of Korea & US
SAEDA	Subversion and Espionage Directed against the US Army
SAMAS	Structure and Manpower Authorization System
SARDA	Secretary of the Army for Research, Development, & Acquisition
SEC ARMY	Office of the Secretary of the Army
SIMTECH	Simulation Technology
SRA-05	Support Force Requirements Analysis - 2005
SSC	Smaller Scale Contingencies
STELLA	A dynamic modeling software package
STOCEM	Stochastic Concepts Evaluation Model
SWA	Southwest Asia
SW	Operational Capability Assessments - Southwest Asia (CAA Division)
TAA	Total Army Analysis
TACWAR	Tactical Warfare (model)
TAEDP	Total Army Equipment Distribution Program
TARD	Total Army Requirements Determination
TBM	tactical ballistic missile
TDA	table of distributions and allowances
TMD	Theater Missile Defense
TOE	table of organization & equipment
TPFDD	Time-Phased Force Deployment Data
TQM	Total Quality Management
TRAC	TRADOC Analysis Center
TRADOC	Training and Doctrine Command
UJTL	Universal Joint Task List
UK	United Kingdom
UN	United Nations
USAREUR	US Army Europe
USARPAC	US Army Pacific Command
USEUCOM	US European Command
USFK	US Forces Korea
V&V	verification & validation
VRI	Vector Research Institute
WARREQ	Wartime Requirements
WIA	wounded in action
WMD	weapons of mass destruction