THE VII CORPS DEPLOYMENT TO SAUDI ARABIA: AN ANALYSIS OF DEPLOYMENT TRANSPORTATION PLANNING AND MANAGEMENT

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE

by

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This paper investigates the role of planning and management of transportation in deploying large forces by analyzing the VII (US) Corps' deployment in support of Operations Desert Shield and Desert Storm in 1990-1991. The VII Corps deployed without benefit of a contingency plan and initially discounted the importance of transportation planning and management. As the deployment faltered, the Commander-in-Chief, U.S. Army, Europe and 7th Army (USAREUR), directed his staff to assume planning and management responsibility. The study provides the historical context of the deployment, reviews deployment doctrine, compares doctrinal and actual organizations in place, and recounts experiences that shaped the USAREUR's staff's concepts about moving large forces. It provides examples of how planning and managment impacted the speed and time phasing of the forces. It provides evidence that doctrine worked when it was followed and that principles such as unity of effort, coordination, planning, and central management require more command attention during deployment. It outlines lessons to be learned and changes that should be made in technology and organizational equipment.

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE VII CORPS DEPLOYMENT TO SAUDI ARABIA: AN ANALYSIS OF DEPLOYMENT TRANSPORTATION PLANNING AND MANAGEMENT by MAJ Harry S. Hamilton, USA, 125 pages.

This paper investigates the role of planning and management of transportation in deploying large forces by analyzing the VII (US) Corps' deployment in support of Operations Desert Shield and Desert Storm in 1990 - 1991.

The VII Corps deployed without benefit of a contingency plan and initially discounted the importance of transportation planning and management. As the deployment faltered, the Commander-in-Chief, United States Army, Europe and 7th Army (USAREUR), directed his staff to assume planning and management responsibility.

The study provides the historical context of the deployment, reviews deployment doctrine, compares doctrinal and actual organizations in place, and recounts experiences that shaped the USAREUR staff's concepts about moving large forces. It provides examples of how planning and management impacted the speed and time phasing of the forces. It provides evidence that doctrine worked when it was followed and that principles such as unity of effort, coordination, planning, and central management require more command attention during deployment. It outlines lessons to be learned and changes that should be made in technology and organizational equipment.

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LIST OF ILLUSTRATIONS

LIST OF ABBREVIATIONS

ACSTRANS	Assistant Chief of Staff, Transportation
ADCSLOG	Assistant Deputy Chief of Staff, Logistics
AMC	Air Mobility Command
ARCENT	Army Central
ATMCT	Air Terminal Movement Control Team
AUEL	Automated Unit Equipment List
C17	Proposed U.S. cargo aircraft designated to replace the C141 Starlifter cargo aircraft. It provides almost as much lift capability as the C5A Galaxy, but can land on shorter runways.
CAB	Corps Aviation Brigade
CAT	Crises Action Team
CFE	Conventional Forces in Europe Treaty
CINC	Commander-in-Chief
C,JCS	Chairman, Joint Chiefs of Staff
CMCC	Corps Movement Control Center
COMMZ	Communications Zone
COMPASS	Computerized Movements Planning and Status Systems
CONPLAN	Contingency Plan

CONUS	Continental United States
COSCOM	Corps Support Command
DA	Department of the Army
DAT	Deployment Action Team
DB	Deutsches Bundesbahn
DCINC	Deputy Commander-in-Chief
DCSLOG	Deputy Chief of Staff, Logistics
DCSOPS	Deputy Chief of Staff, Operations
DTO	Division Transportation Officer
EAC	Echelons above corps
FSS	Fast sea-lift ship
GAO	Government Accounting Office
JCS	Joint Chiefs of Staff
JTMA	Joint Traffic Management Agency
LOC	Line(s) of communication
MCT	Movement Control Team
MRE	Meal, Ready to Eat
MSC	Military Sealift Command
MTMC	Military Traffic Management Command
MTMC-E	Military Traffic Management Command - Europe

NATO	North Atlantic Treaty Alliance
NCA	National Command Authority
OCONUS	Outside the Continental United States
OPLAN	Operations Plan
OPORD	Operations Order
POMCUS	Pre-positioned Materiel Configured to Unit Sets
REFORGER	Return of Forces to GERmany
RO/RO	Roll-on/Roll-off
RRF	Ready Reserve Fleet
SMESA	Special Middle East Shipping Agreement
STANAG	Standard NATO Agreement
SWA	Southwest Asia
TAACOM	Theater Army Area Command
TAMMC	Theater Army Materiel Management Command
TC-ACCIS	Transportation Coordinator-Automated Command and Control Information System
TMCA	Theater Army Movement Control Activity
TPFDD	Time Phased Force Deployment Data
TPFDL	Time Phased Force Deployment List

TRANSCOM	Transportation Command (different from USTRANSCOM - this is the theater's TRANSCOM)
USAFE	United States Air Force - Europe
USAREUR	United States Army, Europe, and 7th Army
USEUCOM	United States European Command
USJFORSCOM	United States Forces Command
USNS	United States Naval Ship
USTRANSCOM	United States Transportation Command

CHAPTER 1

INTRODUCTION

In the wake of the Cold War, the United States is reducing the size of its military and withdrawing forces from around the globe. Contingency operations and force projection will be increasingly important facets of the Army's mission as it moves into the 21st century.[1]

To support our national interests and objectives the military has formulated a strategy founded on strategic deterrence and defense, forward presence, crisis response and reconstitution.[2] This strategy is further based on the principles of readiness, collective security, arms control, maritime and aerospace superiority, technological superiority, strategic agility, power projection and decisive force. These last three rely on the ability to rapidly deploy forces anywhere in the world.

The deployment of forces, especially heavy forces, is an area requiring improvement. In his book, Recurring Logistic Problems as I Have Observed Them, General Magruder noted that "Speed of deployment is a . . . problem that is raised everytime a deployment of troops is st''ed, considered or directed."[3] In the last thir e years the Army has taken part in five major contingency operations

in Lebanon, the Dominican Republic, Grenada, Panama, and Southwest Asia. Humanitarian operations, such as Provide Comfort and Provide Hope, have provided assistance throughout the world; noncombatant evacuation operations have removed U.S. citizens from life threatening situations in foreign lands; and the military services, especially the Army, have "redeployed" large numbers of forward based units back to the continental United States. In almost every major deployment, managerial errors resulted in the troops and commanders in the theater of operations not receiving required supplies or force packages at the right time. Conversely, extraneous items were often received that clogged the logistics system and reduced the flow of needed men and materiel. The net result has been lost opportunity, time, and lives[4].

Chief of Staff of the Army, General Gordon R. Sullivan's vision of the United States Army is a total force trained and ready to fight, serving the nation at home and abroad, and a strategic force capable of decisive victory.[5] With 80 percent of the Army stationed in the continental United States by 1997, it is obvious that our strategic force will depend on rapid deployment. The Army's goal is to be able to deploy three divisions (one light by air and two heavy by sea) within 30 days with a complete five division corps within 75 days. This goal is to be accomplished through addition of the C17 cargo airplane and

fast (32 knot) roll-on/roll-off (RO/RO) cargo ships to the Air Force and Navy inventories and by using pre-positioned equipment and supplies.[6]

According to GEN Sullivan, in January 1993, the United States had the capability to deploy one and a half divisions in 30 days.[7] In 1990, it took 90 days to deploy the VII Corps from Europe to Southwest Asia and the entire U.S. force took over six months to fully deploy.[8]

While Saddam Hussein allowed the time to deploy a large force, future aggressors or requirements may not. Speed is essential in all phases of the deployment, but even with the C17 cargo aircraft and fast RO/ROs (barring tremendous technological changes in current speeds and cargo capacity) effective operational movement management will be the key element to reduce deployment time.

Deployment planning and execution management will require even greater senior level attention as U.S. forces convert to a United States based, power projection force. GEN Sullivan noted that he now talks about the logistics of moving and supporting forces as well as fighting and winning combat operations, whereas his predecessors concentrated on war fighting.[9] Senior strategic and contingency planners, force developers, resource managers, combat commanders, and logisticians must be prepared to deploy any type force, any where, at any time, for any mission as quickly as possible.

One aspect of becoming prepared is to make use of the lessons learned from previous deployments.

This thesis will help the reader understand the senior level management lessons learned from one deployment, specifically the VII Corps deployment from Europe to Southwest Asia. It illustrates the types of decisions and management that should be combined with doctrine to accomplish deployments or any major movement operation involving large numbers of troops and equipment. This paper analyzes the errors that were made in the inland transportation phase of the VII Corps deployment and the corrective actions that were taken.

Research Question

How important is transportation planning and management doctrine to deployment operations?

To answer the question effectively will involve answering the more specific questions of: Did problems occur during the deployment? If so, what caused them, were they significant, and how were they overcome? Who managed the deployment, what did the manager do, why did he do it and how did he do it? What were the impacts of decisions and actions taken?

Research Methods

A case study approach was used in the paper. This allows the reader to better understand that there are no

"school solutions," to management problems. A case study shows that solutions are dependent on the problem, the commander's intent and the resources available.[10] This approach allows the reader to know the situation, learn the theory involved and observe the tools that were used to accomplish the mission. By analyzing the inland movement of VII Corps' materiel through a case study approach, the reader will understand the problems and the situation in which movement control plans and decisions were made, and how management tools were selected and were used to control the operation.

A case study necessarily involves research in two parts. First, the case must be researched to insure the entire case is presented. Next, as in this paper, the various parts of the movement control system must be researched so the analysis can be done.

The case was researched through personal observations of the deployment and review and analysis of primary data, written requests for information, and personal interviews. Published articles and histories about the VII Corps deployment and various informational briefings were also reviewed. The various parts of the traffic management system were researched by examining U.S. Army and Joint doctrine. Commercial transportation theory was also important in regard to movement control systems and

functions. The final step was to analyze the case using the tools of doctrine and theory found in the second step.

Assumptions

This document will draw its findings from the VII Corps deployment to Southwest Asia in support of Operation Desert Shield and Operation Desert Storm. The conclusion and recommendations will apply to any large troop movement or force deployment from any location to any other location.

Definitions of Terms

Inland transportation. Transportation of materiel via the various means of transportation (rail, highway, barge, and air) purely within the limits of land. In this case, inland transportation is the movement of unit equipment from the unit's home station to the port(s) of embarkation.

Transportation Management. The planning, organizing, directing, coordinating and controlling involved in the movement of a commodity.

Delimitations

The focus of this paper is the inland transportation phase of the VII Corps' materiel in its deployment to Southwest Asia in support of Operations Desert Shield and Storm. (This study does not include the over ocean movement of the Corps equipment, its reception and onward movement in the theater of operations; and it does not address the

movements of personnel or the actions taken by the corps and various communities to safeguard families and facilities left behind.) This paper will examine the operational logistics planning and management of this inland execution.

This paper is unclassified. As a classified document, the knowledge of the paper and its findings would not be readily available to everyone that could benefit from them. All information used in this paper and all findings by this author are based entirely on unclassified sources. Classified documents were initially researched and are not believed to add significantly to the paper or change its conclusions.

Significance of the Study

The focus of this paper is to analyze what the operational level of management did to manage the deployment. Many of the lessons learned involve the importance of the commander and the logistician working together to accomplish the mission. To execute future contingency operations well, previous contingency operations must be studied to determine failures, successes, and the validity of doctrine.

CHAPTER 2

DEPLOYMENT TRANSPORTATION MANAGEMENT

Introduction

The purpose of this chapter is to describe the transportation management function and its importance to the deployment and ultimate success of United States forces in combat. The chapter describes how the management process is accomplished in both deliberate and crisis action planning and execution.

The chapter demonstrates that careful management during planning and execution is essential to accomplishing a rapid, synchronized deployment that allows the combat commander to implement his plans.

Transportation Management and The American Way of War

Transportation management of deployment operations is absolutely critical to the United State's ability to wage war. The American way of war is to bring overwhelming combat power to totally destroy the enemy's armed forces.[1] Our doctrine is based on tenets, imperatives, and principles that maintain the initiative through concentration of combat power to move fast, strike hard, and finish rapidly.[2] Only through transportation management can we bring the

overwhelming combat power to the critical place at the critical time in a timely manner.

Transportation is: "the movement of persons and things to meet the Army's needs and commitments, and those functions assigned for support of the...[other military services] and governmental agencies."[3]

Transportation in the market place moves goods through space and time to add utility and value to the goods.[4] An orange located in Florida has no value or use to a consumer in Minnesota. But, move the orange to Minnesota in a timely manner so as to retain its freshness and the consumer deems it to have value and utility and will buy it. The same concept applies to armies. An army in the United States or Germany is of little value to the combat commander in Southwest Asia. But, move the army to Southwest Asia in time to become part of the commander's plan and it has value and utility.

Many operation planners, however, approach the deployment phase of an operation with a wave of the hand over the map. The only major contingency operation found by this author in which the planners carefully designed the deployment was Operation Just Cause, the invasion of Panama.[5] Deployment was a major consideration in this exercise because GEN Maxwell R. Thurman, Commander in Chief, US Southern Command, forced the planners to bring all the

combatant forces together within a short period of time and treated the deployment like a movement to contact.[6]

Planners may ignore the deployment phase for several reasons. First, planning for, and moving units, soldiers, and equipment is just not as exciting as planning for engaging in battle. Second, it is a complicated undertaking. The planner must reference multiple tables and charts to perform laborious calculations to calculate volume, mass, density and compatibility. Consideration must be given to such things as time requirements, fuel consumption, port handling and discharge capabilities. The planner must also understand economies of scale, efficiencies and effectiveness of the transportation modes. The planner then applies these factors to meet the commander's mission and intent to accomplish the transportation mission.

Transportation management is not easy, but it is absolutely essential for getting combat forces to the point on the ground where they are needed. Transportation management is even more difficult within the urgency associated with a contingency plan.

As the U.S. reduces the size of its military and withdraws from forward bases in Europe and Korea, it is adopting a strategy of meeting contingencies by projecting combat power and forces from the continental United States.[7] The U.S. may also use its smaller forward based

forces in contingency roles which will require further deployment. As part of U.S. European Command, V Corps must be prepared to conduct contingency operations anywhere within or outside its area of operations as VII Corps did during the Gulf War.

Transportation Management

Deployment of forces relies on the careful management of the transportation assets. This management function includes planning, allocating, directing, coordinating, and controlling transportation assets.[8]

Planning

The Army includes in this phase its transportation planning process. The first step in the process is to identify requirements.[9] Requirements include the time in which to complete the deployment, type and size of the forces to be deployed, the order in which forces must arrive, the condition in which forces must arrive, other actions that may be concurrently occurring, and existence and condition by type of port/terminal facilities at both ends of the transportation link.

These requirements are determined by the supported combat commander who will employ the force and these requirements drive all the decisions that will be made by setting the parameters of the types of transportation or methods that can be used.

The transportation manager must then determine his resources. He reviews modes of transportation available, the quantity and types within each mode, and the time available in comparison to the time each mode requires.

The transportation manager next balances resources against requirements. Gross capabilities, not specific units, are matched to requirements to determine ability to meet the plan. If there are shortfalls, alternate methods must be found or the plan altered.

Critical points are identified after the requirements have been resourced. The manager determines bottle necks and critical events in the plan and what must be done to insure the plan succeeds.

Throughout the planning phase, coordination among all the planners is absolutely essential. A plan acts as a system and any action operating on any part of it causes changes in other parts. All planners must be cognizant of changes in other parts of the plan in order to make appropriate changes in their portions of the plan. Further, all planners must understand the impact of constraints, sequencing, synchronization, and follow-on plans.

Allocating

During this phase numbered transportation assets are designated within each mode to accomplish the mission. This may be the assignment of a military transportation unit, the

contracting of civilian trucking, rail or shipping firms or the determination that the deploying unit will move itself.

Directing

Directing is the actual scheduling of particular transportation assets to perform particular missions. This may be the assignment of a transportation unit, the contracting of civilian trucking, rail or shipping firms or the determination that the deploying unit will move itself.

Coordinating

Coordination is continually on going among different managers, different staff members, agencies, and mode operators. Each phase of a unit's movement is coordinated with the previous and subsequent phase and mode/link operator. Cargoes must be tracked so as to reduce the possibility of frustration at stops along the route where they may wait for onward movement or be transloaded to a different transportation mode. All parties must know what is happening at all times and what roles they play.

Controlling

This includes monitoring and course corrections. Each operator's performance is supervised to insure adherence to the plan. The overall schedule is monitored to detect slippage or opportunities to move events up in time.

Traffic Management and the Planning Process

Deliberate Planning

The Joint Operation Planning and Execution System (JOPES) is "an established orderly way of translating assigned tasks into operation plans or orders." Deliberate planning is the process used when time permits the total participation of the commanders and staff of the Joint Planning and Execution Community.[10] Operation Just Cause is an example of a plan that was initiated prior to the actual contingency occurring. This section describes the method currently used for deliberate planning.

The deployment process for a CONUS-based contingency unit starts during the Joint Strategic Review. During this two year cycle the Commander-in-Chief of each theater assesses the situation within his theater, determines missions and priorities, and requests military forces to perform the missions. Eventually, forces are apportioned then allocated to the missions through the Joint Strategic Capabilities Plan.[11] The theater CINC's staff develops or refines existing plans to employ the forces they've been allocated.

Deliberate planning results in either a complete operation plan (OPLAN) or a plan in concept form (CONPLAN) only. It is a continuous process from the time a task is

assigned until the requirement of the task is canceled. The process is conducted in five phases.

In Phase I, a regional Commander-in-Chief (CINC) is assigned a task by the National Command Authority (NCA). The Joint Chiefs of Staff (JCS), by this time, have apportioned the major forces to the CINC for planning purposes.

During Phase II, the CINC develops a mission statement and determines a coordinated concept of operations for the Chairman of the JCS (C,JCS) approval. At the same time, this concept is sent to the subordinate and supporting commanders so they may begin planning. If the requirement was to develop a CONPLAN, the planning effort stops here until some change in the situation warrants its review.

If the CINC is to develop an OPLAN, he begins to develop that detailed plan in Phase III. During this phase, subordinate and supporting commanders determine required support and sustainment of the operation. The CINC then conducts a transportation feasibility study to insure the plan is supportable. This is done in terms of numbers of types of divisions, separate brigades, echelons above corps elements, support troops, and so on. Once the CINC determines it is supportable, the services identify actual units to be used in the plan.

Identification of real units results in the Time Phased Force Deployment List which specifies unit names,

locations, destinations, amounts of equipment and people, and dates they are to arrive in the theater of operations.

From this information, U.S. Transportation Command (USTRANSCOM), the JCS traffic manager/planner, translates gross requirements (numbers and types of units, tanks, helicopters, supplies, etc.) into transportation requirements (i.e., tonnages, cubic/square feet of cargo, number of passengers). USTRANSCOM analyzes the ability of strategic sea and air transportation required throughout the deployment to determine if the plan is feasible with available resources and schedules.[12]

This is an iterative process that is accomplished through automatic data process simulations. Requirements are met with various combinations of transportation resources and departure times and locations until the plan's requirements are met. The objective is to have the right amount of the right type of transportation available to move the units to the theater in a condition and time the commander needs them.

As this paper is written, USTRANSCOM is working to further develop a command, control and communications systems to standardize language, automation and coordination methods.[13] However, despite the increasing sophistication of the automation systems, a major problem exists. Currently the unit equipment data in the Time Phased Force Deployment List is inaccurate and/or incomplete.[14] Unit

equipment data includes the amount of equipment by type, cubic footage, weight and identification of oversize or overweight equipment or equipment requiring special handling. When this data is insufficient (i.e., requirements are not known), planners must estimate required resources as best they can from planning figures or experience.

Planned contingencies allow for a smooth flow of personnel and materiel into the theater of operations. Known requirements allow accurate plans to be generated that insure transportation is sufficient in quantity and type and are available at the right time and place. Further, because the transportation planning is accomplished under the umbrella of USTRANSCOM, it is better coordinated as all transporters are familiar with one another and the plan. When the plan is executed, players anticipate requirements and work with the one another for a common goal. In short, unity of effort exists.

Phase IV begins when the CINC forwards the completed OPLAN to the JCS. The JCS reviews the plan for adequacy and feasibility and either returns it with comments or approves it.

Once the JCS has approved the plan, Phase V starts with the supporting and subordinate commanders preparing their own detailed plans to support the OPLAN.

Crisis Action Planning

The steps in crisis action planning are similar to those found in the deliberate planning process. Major differences are: a greatly reduced amount of planning time (hours or days vs. 18-24 months); the NCA approves the course of action to be conducted; the Crisis Action procedures results in an operations order (OPORD) rather than an OPLAN or CONPLAN; and there are six phases to crises action planning.

Phase I of crisis action planning begins as a situation develops that has possible national security implications.

Phase II begins as assessments and reports are received and the NCA decides to develop a military course of action.

Phase III is the development of the course of action. The course of action may be derived from an existing OPLAN (in which case it may only need modification), a CONPLAN (which requires substantial expansion), or no plan may exist. During this phase, courses of action are developed and evaluated and the CINC assigns tasks to subordinates. USTRANSCOM concurrently prepares deployment estimates and the JCS reviews the CINC's estimate.

If an OPLAN is used, USTRANSCOM's job is easier as a Time Phased Force Deployment List (TPFDL) exists. However,

it may be changed to meet the current contingency. Whether it exists or not, errors and omissions in the data, as have been identified by the General Accounting Office (GAO), negatively impact the ability to determine the actual amount of transportation required.[15] Planning and resource allocations are also more sensitive to error because of a lack of time to conduct iterative analysis. Finally, often planning and execution may be done concurrently, and execution may be started without a plan, as in Operation Desert Shield.[16]

Once asset requirements are determined and the general feasibility plan is agreed upon, requirements are resourced. Again, errors in requirements data will impact this step. Another problem in this area is that most of the force's combat service support (to include transportation units required to mobilize and transport active units) are in the reserve component.[17] Units must be mobilized and deployed in order to deploy the main force. For no notice contingencies requiring immediate execution, deployment problems arise when the units needed to deploy the force are not available.

Phase IV of the crisis action planning process is course of action selection. The C,JCS presents the refined and prioritized course of action to the NCA for approval. The NCA may approve the recommended course of action, some combination of several courses of action or develop a new

course of action. The Phase is complete when C,JCS publishes the course of action chosen by the NCA is an alert order.

During Phase V execution planning is conducted. Deployment plans and schedules are developed, movement requirements are identified, shortfalls are identified and resolved and the OPORD is published.

The OPORD is executed once the NCA authorizes execution via a C,JCS Execute order. Once the deployment actually begins, installation and divisional transportation officers coordinate with the U.S. Army Military Traffic Management Command (MTMC) for transportation of unit equipment from the mobilization station to the seaport of debarkation. MTMC coordinates all CONUS surface movements and movements through CONUS seaports. Using the Time Phased Force Deployment List and the operation plan developed during the planning phase, MTMC coordinates inland transportation to arrive at the station to load and transport the unit's equipment to a seaport.

At the same time MTMC coordinates with the U.S. Navy Military Sealift Command (MSC) to obtain the shipping necessary to move the unit's equipment to the theater of operations. MTMC also coordinates with the Air Force's Air Mobility Command (AMC) to arrange for aircraft (civil or military) to transport unit personnel and equipment to the

theater. MTMC coordinates movements of personnel from the mobilization station to the aerial port of embarkation.

Coordination is eased in several ways. First, MTMC, MSC and AMC come under the umbrella of USTRANSCOM. Second, the data found within the Time Phased Force Deployment List is also available through JOPES to each command (MTMC, AMC, and MSC) prior to execution. This allows all the movement commands to know the entire plan and the part each plays. Third, communications and data exchange are a matter of day-to-day business and plans are rehearsed.

However, problems do occur during execution when rehearsals have not been conducted or the plan was not completed or fully coordinated. Movements may not be synchronized, and assets that should be available to move one force may not be available because they are still moving another force.

Crisis action planning and execution conducted with a CONPLAN or no plan at all, while following the same process as deliberate planning, is fraught with frustration due to the lack of plans, rehearsals, communications, accurate data, mobilization units in the active force, and the "fog and friction of war."

Transportation Management in the Theater of Operations

While the transportation management process itself is the same, the manner in which it is executed in a theater

of operations differs from the way it is accomplished in CONUS. Transportation within the theater is controlled at three levels: the communications zone (COMMZ) by the theater army movement control agency (TMCA); the corps level by its corps movement control center (CMCC); and the division through its division transportation officer (DTO).

As shown in figure 1, the TMCA is doctrinally portrayed as belonging to the theater army staff.

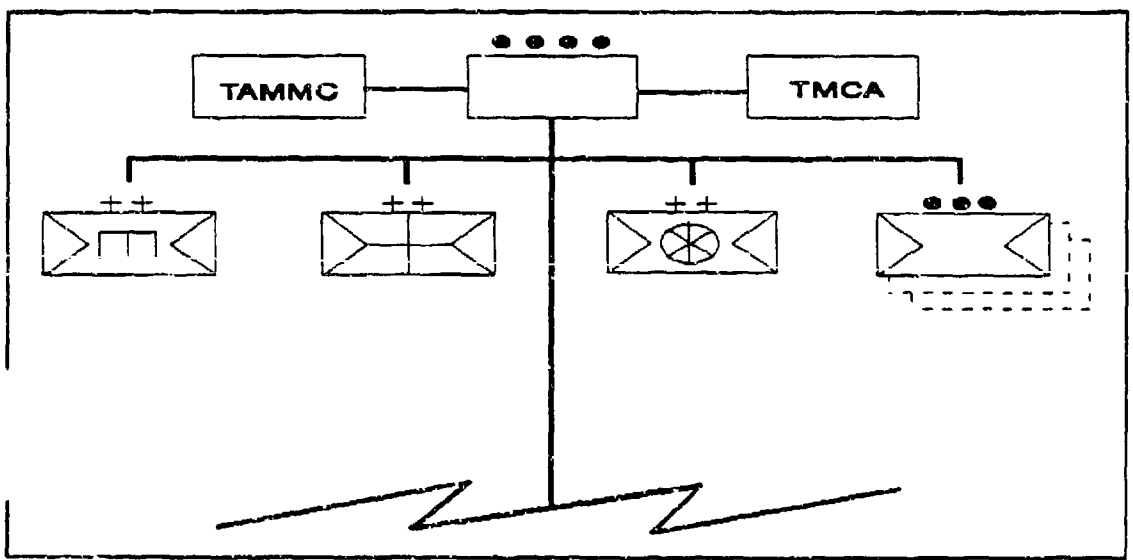

Figure 1. Wiring Diagram of Doctrinal Theater Organization.

Specifically, the theater's DCSLOG has staff supervision responsibility. The TMCA performs the inland transportation functions that U.S. Army MTMC performs in the continental United States.[18] Movements from the division area into the corps area are coordinated by the DTO and movements from the corps area into the COMMZ are coordinated by the CMCC.

This is designed to prevent overloading and works in the following manner.

When the division has a movement requirement, it coordinates for resources through its movement control office within the division support command. If the division does not have the resources, or the requirement is to go out of the division area, the division transportation officer becomes involved. He coordinates for resources from the next higher movements control activity, the CMCC. The DTO contacts the CMCC movement control team (MCT), located at a Corps Support Group (Forward), that provides echelons above division support to the division on a habitual basis. The CMCC tasks corps transportation assets to resource the requirement through the MCT. If assets are not available or the requirement is to go out of the corps area, the corps CMCC coordinates with the theater's TMCA.

The TMCA also has MCTs that may be forward located with the CMCC. The CMCC contacts its supporting TMCA MCT, which works through the TMCA or directly with the host nation to identify rail, highway and inland waterway routes and resources. It works with the theater's Transportation Command (TRANSCOM) to identify military highway resources, through MTMC to identify inter-theater surface vessels, and with Air Mobility Command to identify air resources. After matching resources to requirements it coordinates among the shippers and the moving and gaining command to create a

schedule and plan. Throughout the actual movement, it monitors the performance of all parties and makes adjustments as required.

Transportation Management in USAREUR

US Army Europe and 7th Army's (USAREUR) transportation management structure of 1990 is shown in figure 2.[19] For the most part the doctrinal process was

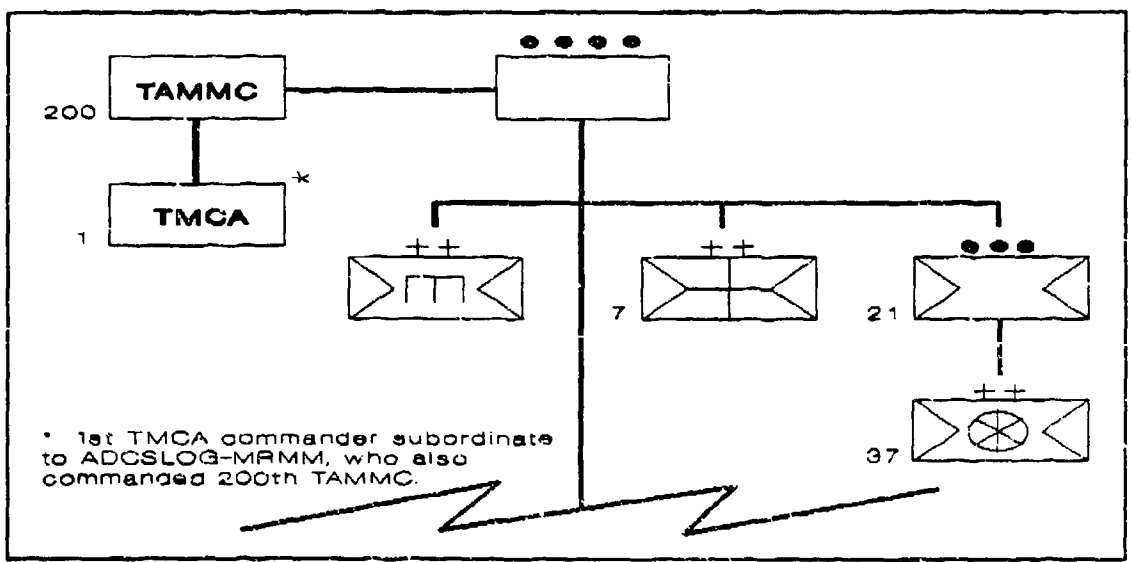

Figure 2. Wiring Diagram Showing USAREUR Organization in 1990.

followed. Organizationally, the 1st TMCA was subordinate to the Assistant Deputy Chief of Staff, Logistics (ADCSLOG) for Maintenance, Materiel, Readiness and Movement, who was also Commander, 200th Theater Army Materiel Management Center (TAMMC). The 4th Transportation Command had been deactivated the year before. The 37th Transportation Group, the mode operator, was subordinate to the 21st Theater Army

Area Support Command (TAACOM) working under supervision of the Assistant Chief of Staff, Transportation (ACSTRANS). The lack of transportation command did not cause problems although the potential did exist. The 21st TAACOM ACSTRANS supported the TMCA's requirements through a habitual relationship (vice a memorandum of agreement). As long as customer's requests for transportation were satisfied, this was more than adequate.

A problem that did occur was with the TMCA's MCTs. The CMCC's MCTs worked for another Corps element so continued to identify with the Corps. The TMCA MCTs were collocated with the CMCC, a significant distance from the TMCA flagpole. Often MCT commanders identified more readily with the corps they were supporting and lost their focus on the overall theater mission which they were supposed to work within. TMCA MCTs worked directly with the Deutsches Bundesbahn and failed to report what they were doing. This lead to loosing track of what was going on. They became subservient to the corps and did what the corps wanted at the expense of the rest of the theater. The MCTs also supported non-corps customers. When the MCT deployed with the corps, a base support MCT was left to deal with all movements requests. Customer service was reduced because this remaining MCT was staffed by local national civilians and non-deployable military personnel at a level below the minimum required to accomplish the residual mission.

Summary

Transportation management is important to the army because it gives utility to its forces. An army does the general no good unless it is in the right place at the right time in the right quantity and mix to be employed against the enemy. The transportation management function provides the ability to bring overwhelming combat power to the battlefield.

The transportation management function is comprised of five steps: planning, allocating, directing, coordinating and controlling transportation assets. The function is accomplished during both deliberate and crisis contingency planning and execution. In deliberate planning and execution enough time is available to create detailed plans, coordinate closely with all parties, conduct rehearsals, update plans, and, perhaps, mobilize reserve units in time to conduct the plan.

In responding to a crisis for which no plans exist, planning and execution may occur simultaneously. Troop lists may not exist and when they do, the list may be changed requiring completely new planning to be conducted. Successful execution will require additional management because of a lack of coordination and plans, rehearsals, and/or assets.

Chapter 3

REHEARSAL FOR DEPLOYMENT

Introduction

As of August, 1990, U.S. Army, Europe and 7th Army (USAREUR) had no contingency plans to deploy large forces from Europe to another theater. Its mission as a forward deployed force was to maintain the peace in Europe by being prepared to fight and defeat a Warsaw Pact opponent. With the disintegration of the Warsaw Pact, USAREUR had begun conceptual discussions with Department of the Army (DA) regarding its use as a contingency force out of Europe.

While deployment plans did not exist to move large forces out of theater, USAREUR did have experience in moving equipment and large forces. The twenty-second Return of Forces to Germany (REFORGER) exercise, moving over 2,000 armored vehicles out of country under the Conventional Forces in Europe (CFE) agreement in less than 40 days, deploying the 12th Combat Aviation Brigade to Southwest Asia, and providing sustainment support to Desert Shield had all been conducted in the past nine months. Additionally, planning for the withdrawal of a division under the provisions of CFE had begun.

In lieu of a plan, experience is the next best thing in executing a mission. The experiences and lessons learned in many cases greatly assisted the accomplishment of the mission. The staffs knew what had to happen and where the pitfalls were. This chapter describes the experiences and lessons learned by the U.S. European Command (USEUCOM) and USAREUR staff, 1st Theater Movement Control Agency (1st TMCA), and Military Transportation Management Command (MTMC) prior to the deployment of the VII Corps.

REFORGER '91 (Centurion Shield)

The U.S. Army had practiced its Return of Forces to Germany (REFORGER) plans twenty-two times prior to the Gulf crises, the last one in early 1990. During that exercise, all lines of communication (LOC) activities had been exercised. Port operations had been practiced, temporary loan of equipment procedures had been worked out, and all modes of transportation (convoy, air, rail and barge) had been used and found to work well. Standard North Atlantic Treaty Organization (NATO) Agreements (STANAGs) had been reviewed and exercised. STANAGs are agreements used between NATO nations and outline standardized procedures for crossing borders, convoy requirements, host nation support and a myriad of other activities associated with LOC operations.

USAREUR was prepared and had practiced at length the movement of large forces into Germany through multiple

European countries from the ports to the final exercise area. Civil and military authorities were familiar with procedures and practices and knew all their key counterparts.

Not all lessons learned from REFORGER were incorporated in military deployment planning. For example, units deploying on REFORGERs from the Continental United States (CONUS) did so with token amounts of equipment via any of the eight US Naval Ships (USNS) Fast Sealift Ships (FSS). The ships used were large, fast, semi-reliable, and used frequently.[1] Most of the strategic sealift capability (96 ships in the Ready Reserve Force [RRF]) however were old break bulk ships in an inactive status. Studies conducted by the Commission on Merchant Marine and Defense stated in 1988 that, "by the year 2000, and probably sooner, the United States merchant marine work force will be insufficient, both in numbers and in skills, to man, operate, and deploy the ships, whose reliability may be increasingly suspect because of age and material condition."[2] Additionally, most of the older break bulk ships had antiquated power plants which were not conducive to quick loading of today's heavy armor forces.[3] Assuming it could be activated in time, what there is of it is in CONUS versus Europe. The fleet was designed to move CONUS based Forces Command (FORSCOM) units to Europe, not deploy

forces from CONUS and Europe to a third location simultaneously.

In response to the Desert Shield deployment, 40 of the RRF ships were activated and sufficient crews were located to man them. However, it was difficult to prepare for the mission because they had not been properly maintained and later many experienced mechanical breakdown while executing the mission.[4] As it turned out, most of the shipping out of Europe consisted of the more modern FSS naval ships and foreign flag carriers.

Another lesson that FORSCOM forces had learned, but USAREUR had not, was that numerous shipping containers were required to move a unit's compliment of equipment, repair parts and supplies. A unit does not have the organic vehicles to transport all its equipment. Containers and the equipment to move them were required, but neither were in sufficient quantity in the inventory. This had not been a major factor for USAREUR units when planning a European war as their equipment and support forces would be just down the road from its wartime positions. However it is became critical when the units moved several thousand miles to an austere theater. USAREUR virtually had no containers at the unit level and only a small amount at theater level.

Combat Vehicle Retrograde

During the period 24 April through 31 May, 1990, some 2,223 combat vehicles were removed from theater in

connection with the CFE treaty. Howitzers, tanks and armored combat vehicles were sold to three countries with the equipment coming from 16 separate sites in four countries. Three transportation modes were used to accomplish the mission in less than 38 days. The primary mission parameters were to perform the mission as cheaply as possible and to ensure the vehicles were out of Europe prior to 31 May, the date set for signing the CFE Treaty. Failing this, the vehicles would be destroyed at an estimated cost of 16 million dollars.[5]

CFE provided a great rehearsal for the Desert Shield deployment. The 21st Theater Army Area Command (TAACOM) Reserve Storage Activities and Combat Equipment Companies received additional experience and learned lessons in the preparation and issue of large quantities of equipment. They used this experience later in issuing equipment to deploying USAREUR elements to make up equipment shortages and again in conducting sustainment operations.

The 1st TMCA was the principal operator for the USAREUR movement control system. It enhanced its experience in offering tenders and negotiating contracts and practice integrating differing transportation modes (barge, truck convoy and rail). The missions involved were: move the equipment expeditiously to port; bring all one buyer's equipment together at one port at the same time from

multiple source locations; and schedule arrivals so as to keep the port from being clogged with equipment.

MTMC-Europe, the port operator and shipper, gained additional experience in negotiating for opportune shipping and conducting port operations involving large amounts of large equipment.

USAREUR conducted the CFE mission in the same manner as they would accomplish it in war. All the STANAGS used provided a better understanding of the agreements and allowed everyone involved to become more familiar with the procedures. The most important experience gained for all was building a sense of teamwork within each organization and becoming better acquainted with counterparts in other organizations. Counterparts became partners in getting the job accomplished.

Another experience was gained in accomplishing the mission within a specified time. The time limit imposed added stress and a sense of urgency and purpose to planning and execution. When Desert Shield operations began, the operators and planners were prepared.

Sustainment Operations

On 2 August, 1990, Saddam Hussein's forces entered Kuwait. Around 10 August, Major General William G. Pagonis, Commander, 22d TAACOM, requested two C130 loads of MREs. Soon requests for support equipment and sustainment supplies were coming directly to USAREUR's Office of the Deputy Chief

of Staff, Logistics from USEUCOM, Army Central Command (ARCENT), U.S. Central Command (USCENTCOM), FORSCOM, DA and other USAREUR elements. It was obvious that unless controls were imposed, the forces in Europe would quickly be swamped with requests all carrying "I need it yesterday" priorities and the airports would be buried with cargo.

A central point for support requests was required because of the confusion of so many players clamoring for attention, the possibility of duplication of requests and conflicting priorities. USAREUR Deputy Chief of Staff, Logistics (DCSLOG) Major General Joseph S. Laposata activated the Crisis Action Team (CAT), to be this focal point and coordinate every action requiring USAREUR attention.

MG Laposata met with USEUCOM Logistics Operations Center (LOC) planners in Stuttgart around 20 August to work out how the joint requisition flow should be accomplished.[6] USEUCOM validated all requests passed to USAREUR to ensure decisions were made at the appropriate level as to the amount of support that could be provided and still accomplish the USEUCOM mission.

Once USEUCOM directed fill, the CAT reviewed stock availability and directed release to the airheads. If the items were coming from POMCUS or Theater Reserve stocks a decision would be requested from CINCUSAREUR, General Crosbie E. Saint. This allowed the Theater Army commander

to make the final decision regarding requests impacting his ability to accomplish his own mission.

The DCSLOG then determined priority of Army cargo to be sent. Priorities were confirmed daily and conflicts between Army, Navy, or Air Force cargo would be decided by USEUCOM, based on input from USCENTCOM. Priorities were passed to 1st TMCA Air Traffic Movement Control Teams (ATMCTs) located at the various air heads to coordinate with United States Air Force, Europe (USAFE) for movement. The ATMCTs were the honest brokers and ensured only items with the highest priority were called forward to the air heads and loaded on aircraft. Even with this in place, units delivered cargo that the driver was told to make sure got on the first plane headed to Saudi Arabia. In one instance, 26 trucks of MREs were sent back from the air head, because they had not been called forward and were not high priority.[7] The word spread quickly to ensure cargo movements were properly coordinated.

MG Laposata brought all the key theater logisticians together in early September to discuss Desert Shield logistics.[8] Every function of supply, transportation, movements, and maintenance was discussed and war gamed until everyone understood the overall scheme of maneuver and the role they would play in it.

These actions, centralizing command and control, developing a scheme of maneuver, and insuring all players

were well read in on their roles, kept the sustainment phase of Desert Shield and later, Desert Storm on track and would be the foundation on which the VII Corps deployment would be built.

12th Combat Aviation Brigade Deployment

The 12th Combat Aviation Brigade (CAB) was ordered to deploy from Wiesbaden Air Base to Southwest Asia on 14 August, 1990, as part of the United States' initial response to Hussein's invasion of Kuwait. The deployment of the 12th CAB from V Corps was another rehearsal and valuable opportunity to learn lessons for the upcoming, but still unknown, VII Corps deployment.

The final deployment plan called for the ground equipment to conduct rail operations to Livorno, Italy on 28 August. The aircraft self-deployed to Livorno in two elements; the first deployed 29 August through 4 September and the second, 14 through 20 October. From Livorno all the equipment was loaded on ship for final movement to Saudi Arabia. The first ship sailed on 7 September beginning the movement that finished 26 October when the last of the 12th CAB equipment arrived in SWA.

Of primary importance to the movement was getting the Corps and the CAB to settle on what it was they were taking with them. From this, 1st TMCA planners were able to order and build trains. After V Corps received the mission, they reported they would deploy only mission essential

equipment. Over the next 6 days they added more equipment to their lists based on reports from USCENTCOM about the austerity of the theater. As 12th CAB and V Corps continued to add equipment, 1st TMCA continued to add trains.

After a week it appeared that the 12th CAB was not going to meet the deadlines and the entire deployment was not synchronized. The cause was the lack of central management of the deployment system. Each organization operated in a decentralized mode, failing to coordinate or synchronize their actions so execution was disjointed.[9] 12th CAB became increasingly confused by not having one central transportation point of contact. Every activity; the USAREUR DCSOPS Crisis Action Team (CAT), the DCSLOG's CAT, 1st TMCA, 37th TRANSCOM and V Corps further confused the situation by "plugging-in" directly to the 12th CAB.[10] This confusion could have been eliminated by establishing one element to centrally command and control the move and serve as point of contact for all the units involved in the movement.

V Corps felt they could conduct all deployment activities themselves and rejected 1st TMCA's offers of assistance.[11] Compounding this, they lacked any type of a strategic SOP and had a dearth of training.[12] They did not understand the situation, their role or the roles of the echelon above corps (EAC) players, and caused those players to go directly to 12th CAB further exacerbating the problem.

The transportation planning staff at the corps level is not designed to possess the tools, skills or experience, necessary to conduct a deployment out of the corps area without a great amount of assistance or augmentation. After it became apparent to the CINC and DCINC that the 12th CAB was not deploying as quickly as it should, the Corps was directed to turn to the Theater transporters for appropriate assistance.

MG Laposata, as the theater DCSLOG became the central manager. He was in a position at the theater level to look at the whole system and "see" all the resources available. He knew the people at the right level in the chain of command to influence the outcome to lead to successful resolution. He identified the problem areas and placed phone calls to the V Corps Commander, USAREUR Chief of Staff, the French DCSLOG and the Commander of MTMC-E, to quickly elevate the problem to the level where the resolving decisions would be made. This brought the problems to the attention of the command level that could do something about them.

In the middle of the rail movement, trains were halted in France and stopped from crossing the border because a middle management French rail official decided USAREUR had not met all of the prerequisites for railing the equipment through France. 1st TMCA and the Deutsches Bundesbahn (the German railroad) worked within the

transportation system while the American Embassy in Paris worked with the French government. MG Laposata also worked the issue through the French Army Logistics Community.

Through these actions, the problem was resolved and the trains were rolling again within 48 hours. Often it is not what you know (the correct procedures to get through the bureaucratic maze), but who you know and at what level to work the problem (the general and the ambassadorial level). Good relations worked out during peacetime in this case lead to quick resolution of a potential "war stopper."[13]

Summary

Many factors assisted the USAREUR logisticians to deploy the VII Corps in as short a period as it did without any detailed plans. Throughout 1990, exercises and missions were conducted that, in fact, proved to be rehearsals for the actual deployment in November and December of that year. Through these rehearsals, lessons were learned, concepts and plans validated, and strengths and weaknesses determined.

Specific lessons learned during these exercises and missions were:

a. Units require containers to move their unit equipment, supplies, and repair parts.

b. The troop and equipment lists of deploying units must be cut off at some point so transportation requirements can be identified and a logical flow established.

c. STANAGs and the cooperation of allies are essential to movements involving crossing international boundaries.

d. MTMC can, and must, make use of opportune shipping to drive costs down and save time.

e. All modes of transportation can be used and orchestrated to lower prices, insure arrival at port at a desired time and in a desired sequence.

f. A scheme of maneuver is absolutely essential and players must be brought in early, understand the scheme, their role in it, and what they must do to accomplish their portion of the mission.

g. The 12th CAB deployment demonstrated a corps is not resourced to deploy itself out of its corps area of responsibility nor is it its job, unless properly augmented. When the mission is to move between theaters, theater transporters perform the mission.

h. Commanders, at all levels, must not task subordinates with missions that are beyond their capability. And when it does occur, the tasked unit must seek assistance and/or resources from supporting staffs and units.

i. Problems must be brought to the attention of the level of command that can most effectively deals with them.

j. Central management at the appropriate level is required to insure synchronized utilization of resources, avoid duplication of effort, insure all required actions are

taken, make the right decision and properly prioritize missions.

CHAPTER 4

THE VII CORPS DEPLOYMENT

Introduction

On 2 August 1990, Iraqi forces invaded the Kingdom of Kuwait "triggering the largest rapid deployment of US forces and supplies in history" to the Arabian peninsula.[1] President Bush directed the deployment of the XVIII Airborne Corps under the command of Central Command to Saudi Arabia as a deterrent to any possible invasion attempt of that country. The build-up of these forces continued through October.[2] As described in Chapter 3, during this time, USAREUR provided sustainment stocks and deployed the 12th Combat Aviation Brigade from V Corps.

During Columbus Day weekend, 6-8 October 1990, the Chairman of the Joint Chiefs of Staff, GEN Colin Powell, met with GEN Norman H. Schwartzkopf (Commander, Central Command) in Riyadh, Saudi Arabia. GEN Powell asked GEN Schwartzkopf what forces he required to go on the offensive. GEN Schwartzkopf asked for the VII (US) Corps as it was the most combat ready armor heavy force in the US inventory.[3] Soon after, GEN Crosbie E. Saint, Commander-in-Chief, USAREUR, directed MG John C. Heldstab, the USAREUR Deputy Chief of Staff, Operations (DCSOPS), and MG Laposata, the DCSLOG, to

work staff contingency plans for the deployment of a corps-sized element to Southwest Asia. At the same time GEN Saint directed LTG Frederick M. Franks, VII Corps Commander, to initiate planning to deploy an armored corps to Southwest Asia.[4] This initiated the traffic management portion of the crises action planning process.

This chapter will describe how USAREUR accomplished the process of deploying the VII Corps. In chapter 2, the process was presented as occurring one step after another; however, during the actual VII Corps deployment, many of these steps were done concurrently with one another and with execution. The events of the deployment have been grouped by type of process step (planning, allocating, directing, coordinating, and controlling). To present a more accurate picture of the deployment, this chapter was organized chronologically, controlling is presented after planning and allocating and directing are combined.

Planning

Coordinating

With GEN Saint's approval, MG Laposata formed a five member planning committee to start the initial planning sequence. The members were: Mr. Joseph L. Lowman, Assistant DCSLOG; Colonel P. G. Phillips, DCSLOG Plans, Operations and Logistics Systems Division Chief; Colonel Robert Fear, DCSLOG Troop, Energy and Transportation Division Chief; Colonel Richard (Rick) Barnaby, commander of

the Military Transportation Management Command - Europe (MTMC-E); and Colonel H. Carl Salyer, commander of the 1st Theater Army Movement Center Activity (TMCA)

Only so much planning could be done without meeting with the operational commander, however. MG Laposata attempted to meet with the VII Corps Command Group in late October to obtain those details and the concept of the operation. Such a meeting never took place, however, because the VII Corps Command Group was too busy.[5]

Planning Facts

The deployments and movement operations conducted previously proved the normal movement control process worked well. As USAREUR units were familiar with it and it had proven successful, the planners decided to use it for the inland movement.[6]

Planning Assumptions

The committee assumed a deployment would be ordered with little or no notice. It would have to be executed quickly based on the nation's past track record of building up enthusiasm slowly and cooling very quickly. Deployment operations would be carried out around the clock, 7 days a week to allow US forces to position quickly. This would allow the President to use force when the time was right.

Identifying Requirements

As the VII Corps would not coordinate with the planning committee, it did the best it could to develop operational details. Using gross planning factors based on experience and known operational details, they developed estimates of the units, the amount and type of equipment to deploy, and sequencing of the move. Based on a 14 year-old deployment text, current data from the 24th Infantry Division and 1st Cavalry Division deployment, the staff identified that 60 US Naval Ships (USNS) roll-on/roll-off (RO/RO) ships would be required.[7] If all the equipment went by rail to the port, about 585 trains would be required. With the requirement to move quickly, one port would not be able to handle the daily flow of equipment. Three ports currently used by US forces were identified.

Identifying Resources

All modes of transportation were available to move units from their home installation to the sea ports of debarkation. The commercial sector could provide rail, barge, air and highway modes. The military could move itself using highway and air assets. Europe has an extensive and well-maintained railway, highway and inland waterway systems that would allow the use of any mode from practically anywhere in Germany.

Balancing Resources and Requirements

The planners identified that multiple transportation modes would be required. Depending on units to convoy their wheeled vehicles would be resource intensive and create tremendous traffic problems. It would also be very slow and cause great wear and tear on the vehicles that would impact mission readiness. Military line haul trucks were not available as they were already committed to the sustainment operation. Commercial line haul would have had most of the same problems as convoying, plus be cost prohibitive.

Rail is the most effective and efficient transportation alternative in Europe. Rail heads are close to every installation; the rails go where the equipment had to go; transit time is 24 to 36 hours; and cost per ton moved is low. However, rail has the problem of commercial competition (and at that time also competition from the British Army of the Rhine, and sustainment operations) for engines, cars, and track space. Some oversize equipment requires special cars or special routing to avoid restrictive tunnels, overpasses, and bridges. Additionally, there are not enough rail heads at the ports to keep pace with the amount of equipment estimated to arrive each day.

Barge use was also examined. Many installations were within easy convoy distance of barge terminals. MTMC-E manages inland waterways in Europe, so delivery of equipment at the barge terminal was equivalent to delivery at the sea

port. Barges have the added advantages that once loaded very few things prevent them from arriving at port (such as highway/railway accidents). Once at the port the equipment can be loaded directly from the barge to the ship.

Air transportation was never considered a real option for deploying the entire corps. However, some deployment by air did make sense. All aircraft self-deployed (flew) to the seaport of debarkation. There they were prepared for shipment and loaded on the ships. Beyond the aircraft, only a few units, (signal, CMCC and medical) were transported by air. These possessed very little equipment and were required in theater prior to the arrival of first units.

Identifying Critical Nodes

From the analysis above the most critical node was the almost total lack of organic assets. Line haul trucks, rail assets and barges would have to be contracted. Second, contact with contractors could not made until after the decision to deploy was made public. A slow contracting process would seriously delay the deployment. Having made the decision to use more than one port also meant that international boundaries would have to be crossed. Host nation support would be required to coordinate all customs requirements.

Lost Planning Time

President Bush told Secretary of Defense Cheney on 24 October he would deploy the VII Corps, but did not want the announcement made until after the 6 November elections. This was an attempt to ensure that the deployment would not be perceived as a ploy to influence the election.[8] The decision to keep things secret resulted in the chain of command stopping planning efforts altogether and losing two weeks of planning time. On or about 1 November, MG Laposata received a phone call from LTG Jimmy D. Ross, the DA DCSLOG. LTG Ross asked MG Laposata what plans he had made to deploy the VII Corps out of Europe. MG Laposata replied USAREUR had been told to stop and hadn't been turned back on. LTG Ross intimated that the deployment order was imminent and that MG Laposata should resume planning.

VII Corps Deployment

On 8 November 1990, President Bush directed additional unit deployments to include the VII Corps from Europe, to Saudi Arabia. The VII Corps that would fight in Southwest Asia was task organized from the three European corps (See Appendix A). GEN Saint gave each corps the mission of deploying its own forces to Saudi Arabia where LTG Franks would assume command and control. MG Laposata advised that such a deployment had to be centrally managed and the corps was not resourced to do that.

During the first week, VII, V, and III Corps elements muddled along, each trying to figure out how best to deploy. The only unit to actually move was the 2d Armored Cavalry Regiment who charged off like the cavalry of the old west. Being fairly close to Bremerhaven and with no competition for rail assets, they had almost all their vehicles at the port within a few days. They then returned to home station to figure out how they were going to move the rest of their equipment they had not be able to upload on their organic vehicles.

Allocating, Directing and Coordinating

After GEN Saint gave the three corps the mission to deploy themselves, MG Laposata hosted a meeting on 10 November at Heidelberg for all players involved in the deployment.[9] The purpose of the meeting was to provide an opportunity for the players to synchronize the deployment by giving an operational overview, a movements concept and concept of support for the deployment.

At this meeting, Lieutenant Colonel John H. Pittman, Commander, 229th Corps Movement Control Center (229th CMCC - the VII corps MCC) assured everyone present that it had "everything in place to do the job and [they were] ready to go." VII Corps Deputy Commanding BG(P) Gene Daniel seconded LTC Pittman's assessment. However, details of the plan were not provided.[10]

The minutes of this meeting also note that the 229th CMCC planned to deploy by phases in order to conduct its USAREUR mission until the end. 1st TMCA had the lead to provide augmentation as the 229th CMCC deployed. Another outcome of the meeting was the establishment of the initial priority of movements for units.

After this meeting MG Laposata told the DCINC, LTG John Shalikashvili and the Chief of Staff, MG Bill Burleson, that in his opinion the corps could not do the deployment. They had not discussed a plan and seemed to be in "overload" due to trying to do too many things at one time. The Corps and COSCOM had to plan to move, arrive in theater and be received, move forward, fight and, at the same time provide family support. Both considered this advice seriously, but said the Corps had to be given an opportunity.[11]

Coordination with the Allies

The deployment out of Europe could not have been accomplished without the support of the United States' allies. USAREUR was totally dependent on them for use of roads and highways, rivers, rail lines and ports. Operations were to be conducted 24 hours per day, 7 days a week, regardless of holidays. This use would require approval from each government. Careful planning and diplomacy were required to insure the laws of each country were observed. Waivers granted by one country were required to be coordinated with all countries involved to insure they

would be observed. Above all, the US had to respect the sovereignty of each nation.

LTG Shalikashvili, working with Colonel Mike Kush, Deputy Chief of Staff, Host Nation Activities, developed a plan to use Standard NATO Agreements and to be completely open and honest in our dealings. Paramount was that diplomatic and military officials had to work closely at all times with each other and with their counterparts.

LTG Shalikashvili and COL Kush made several trips to each of the Ministries of Defense in Belgium, The Netherlands, and Germany. In all cases, USAREUR's requests were honored and the ground work for solid and open communications was laid. While they dealt with their military counterparts, the State Department worked with its counterparts to insure governmental solidarity.

Host nations granted waivers to ship ammunition on vehicles through waterways and raised net explosive weight limits at the ports. The Dutch relaxed their standards by allowing the transporters to use the minimum number of tie-down straps for ammunition shipments through their country. All countries synchronized border crossing requirements.[12]

On 11 November, LTG Shalikashvili and MG Laposata met with Herr Weidemann, a member of the Deutsches Bundesbahn's Board of Directors and head of the Production Department.[13] They told Weidemann that USAREUR required an extraordinary number of trains (twenty per day for an

unspecified time - a total of 585 train loads were estimated). Additionally, special rail cars for outsized loads and ammunition were required. Trains would have to cross international borders, and stabling (trains stopped in a marshalling area) might be required. To add to the fog of war, LTG Shalikashvili and MG Laposata had only the vaguest idea of when the first train would be called, where it would be loaded, its destination, or the cargo. Herr Weidemann felt the DB could handle the workload even though seasonal (Christmas holiday) rail traffic would be increasing. The meeting ended with the Herr Weidemann promising immediate and total support once all requirements were known.

Later in the week, 1st TMCA presented a more detailed briefing to Herr Weidemann, his ten district managers, and to representatives of the Belgium and Dutch rail systems.[14]

Controlling

Ideally, a central movement control activity (VII Corps' movement control center, for example) would have been charged with being the single point of contact and coordinator for all the deploying units. This centralized coordinator would have taken its direction from one commander (LTG Franks) and would have provided priorities and managed the flow of requests. But,this was not done. The three corps did not talk to one another to coordinate actions or keep each other informed of what they were doing.

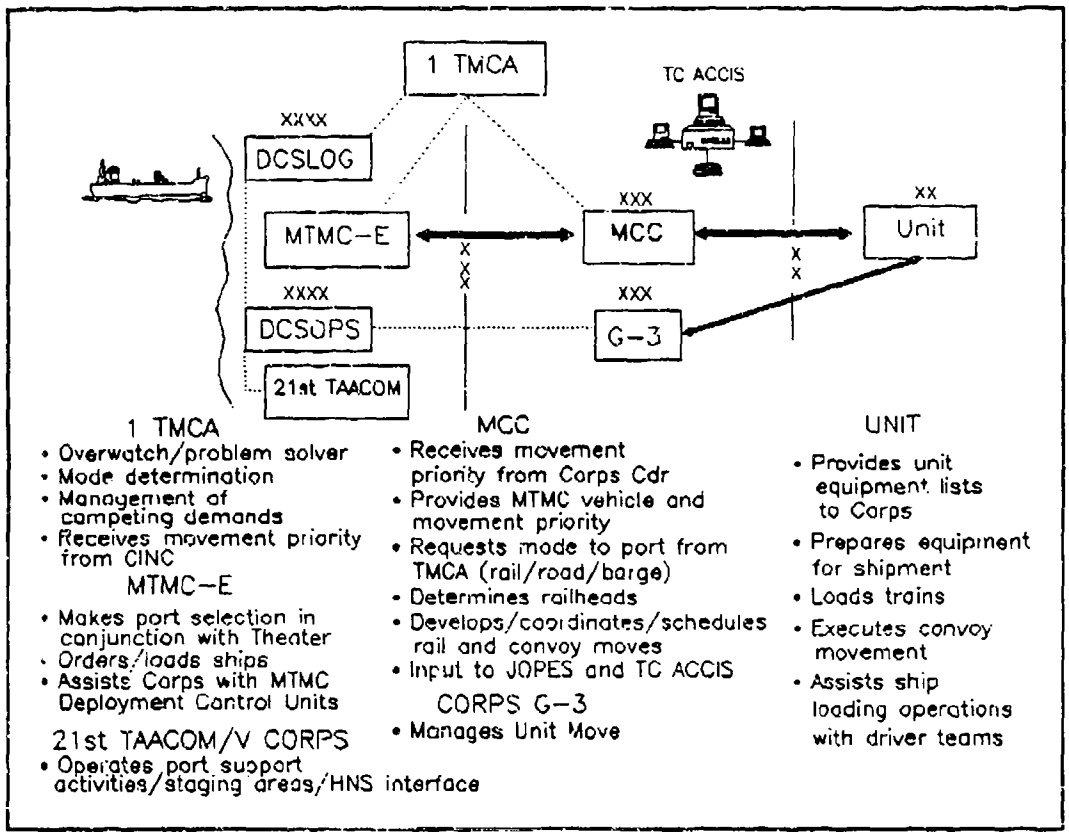

Figure 3. Model Deployment Process

They competed against one another for scarce rail resources and the Bundesbahn scheduled trains for whoever requested one; until they ran out. The ports started to become congested because parts of units were arriving ahead of schedule and they were being held to reestablish unit integrity.

On the night of 11 November, BG Landry, VII Corps Chief of Staff, called MG Laposata at home to complain that the CINC had come into the corps area and accelerated the 2d Armored Cavalry Regiment's movement to the railheads.

Neither 2d COSCOM nor the 229th CMCC had any knowledge of GEN Saint's guidance.

The deployment was quickly getting out of control. All parties were trying to get to the port as quickly as they could. Conflicting orders were issued, countermanded and reissued. No one, it seemed, could see the big picture. Compounding the lack of centralized management, the 229th CMCC was one of the first VII Corps units to deploy, doing so on 16 and 17 November.[15] A portion of 1st TMCA's Movement Control Team (MCT) from the 39th Transportation Battalion (Movement Control) accompanied them. This effectively left the VII Corps without an experienced agency to interface with the Bundesbahn, 1st TMCA and MTMC-E. It also eliminated the one headquarters whose mission is to translate the commander's intent and priorities into a working plan. The link between the commander/operator and technician was removed.

The Corps tried to replace the 229th CMCC with two different organizations. The first was the remains of the MCT from the 39th Transportation Battalion. However, this MCT was technical in nature and no longer staffed nor in a position to conduct the "management and prioritization" mission of the CMCC. On the operations side, the VII Corps stood up the Deployment Action Team (DAT), an ad hoc group of people taken from various units. The DAT's first mission was to develop a type of Time Phased Force Deployment List.

One of the key players in the DAT was Major Jim Chambers, on loan from his regular job as 3d Infantry Division Transportation Officer. He was the most experienced and pro-active officer in the DAT. However, the DAT was no substitute for a regular movement control center either.

The lack of a movement control center haunted theater transporters and MTMC-E throughout the move. When they tried to deal through the VII Corps DAT, they found the DAT had little idea what V Corps or III Corps (Fwd)/2d Armored Division were doing. Communications had also broken down between the corps and division operators and transporters. While the operators, such as the CINC, were concerned about why units were not moving, the transporters were saying everything was ok.

MG Laposata and his planners had intended to use the standard transportation movement procedures it used every day in peace time. It should have been natural for the Corps to continue using the same process it used everyday. However, the VII Corps' movement concept seemed to be based on a principle of delegating control and execution to the lowest possible level. Units prepared for movement and executed that movement as soon as they were ready. The units, in turn, seemed oblivious to the way they had done business in the past and developed unique methods to deploy themselves; thankfully (or predictably), few got very far in actual movement.

The Corps deployment sequence plan was written to deploy and arrive at port as units. However, from the beginning, the Corps decentralized control methodology prevented this form occurring. Units ordered trains without regard to priority of movement or rail car requirements. Without a central point of contact, such as the CMCC, the DB honored requests on a "first come-first served" basis. This allowed later departing units to move ahead of earlier departing units.

Often not enough rail cars were requested for a "one-time lift" of the entire unit, causing part of a unit to remain at the rail head while the rest was en route to port. Those left behind had to request another train and of course this request went to the end of the list. There were incidents of units deliberately disregarding unit integrity as well.[16]

The lack of large ships available at the ports at the beginning of the deployment and the units moving without authority lead to congestion at the ports. To ease this, MTMC loaded ships with what was on hand. Attempts were made to keep units together, but lack of time and space prevented MTMC from straightening out the mess and reestablishing unit integrity which the Corps had broken.

On 12 November, MG Laposata and LTG Shalikashvili, met with the VII Corps leadership and the VII Corps DAT in

Stuttgart. MAJ Chambers briefed the following as the status of the VII Corps deployment to Laposata and Shalikashvili:

a. VII Corps had developed a unit deployment sequence list, but this was changing on an hourly basis.

b. Updated deployment sequence lists were being faxed to units, but all changes were not received by all units. Many units were preparing for movement that should not have been, while others who should have been preparing were not.

c. Movement orders had not been generated as the deployment sequence list was not "finalized."

d. And, because the list was not finalized, it had not been passed to MTMC-Europe. Without it, MTMC-E could not order ships of the proper size and in the proper sequence or publish the call-forward lists.

When LTG Shalikashvili asked why a finalized deployment list had not been published, MAJ Chambers told him no one would authorize it. LTG Shalikashvili told MAJ Chambers he would authorize it and directed it be published. [Note: a "finalized" list never would exist, the deployment list remained a living document and continued to change up to the last week.]

This initial briefing at the DAT also highlighted that VII Corps was already behind schedule and did not have an easy-to-use tracking/management system. In addition to not having a centralized management agency to prioritize

resources against requests or managing the flow, communications had broken down between the operators (the DAT) and the transporters. Doctrine was not being followed.

As they flew back to USAREUR headquarters in Heidelberg that evening, LTG Shalikashvili told MG Laposata to deploy to Stuttgart to direct all unit equipment deployment operations, and he would square it with GEN Saint. While MG Laposata, as DCSLOG, was given responsibility for equipment movements, MG Heldstab, DCSOPS, became responsible for unit (personnel) deployments out of country.

Coordinating

Laposata's Controlling Methodology

MG Laposata had known from the beginning that the deployment would require a well organized and methodical approach to be successful.[17] The lessons learned from the operations conducted during the past 10 months had reinforced his belief in the methods he had developed throughout his career. These methods were centralized management/decentralized execution, well established relations among the players and everyone understanding his role in the deployment. This methodology directly contributed to the successful deployment of VII Corps.

Centralized Management/Decentralized Execution. Several factors supported MG Laposata's decision to use a centralized management style. First, it was doctrine. Second, it was his management style. Third, the officers conducting the deployment were very young, with little or no previous experience at the theater level, and would require the benefit of his REFORGERs and LOC operations experience. Lastly, centralized management was required to synchronize the coordination, planning and monitoring of the operation.

This centralized management style resulted in prioritization of resources, use of unused resources, and increasing the speed of the flow to port. General officer level problems were also identified and resolved at the general officer level faster.

MG Laposata delegated authority to subordinates to execute those portions of the deployment in their areas of responsibility and expertise in accordance with the overall plan. Battalions, brigades and divisions requested transportation and containers through normal channels to the TMCA. A more detailed explanation of the execution is shown below in the section on the deployment process.

Senior Relations. Another aspect of the methodology was using established senior level allied and commercial relations. If such relationships didn't exist, they had to be made quickly. Senior level officers knew each other, got past parochialism and understood each other's problems and

their seriousness. In MG Laposata's words, "I didn't need to take out my ID card just to talk to these guys."[18] This increased the synergism of teamwork. There was no mistrust. If one said something had to happen, then everyone pulled to make it happen.

Understanding Their Roles. The final element of Laposata's methodology was the firm belief that everyone must understand the role he plays in the system. Commanders command through the establishment of priorities and intentions; and logisticians advise, facilitate and execute. This is a fundamental rule, but one often forgotten or ignored and was one of the most important elements of the deployment.

The ARCENT and VII Corps commanders decided the deployment priorities. The logisticians developed the implementation plan and advised the commander of the impact of a decision would be or what alternatives were. The logistician never made a "command" decision. If the logistician found a better way of doing something or speeding the deployment, he advised the commander of the possibilities and requested a decision.

By way of example, one of the most important "advise the commander" episodes occurred early in the deployment. MG Laposata developed a spread sheet to show the unit deployment sequence and port arrival dates. In marking the first copy, his executive officer found that units were

already late. There was no way of making up the time and there was a distinct possibility of additional delays if trains and additional barge loading operations fell through. MG Laposata presented the "evidence" to the DCINC and the CINC. Based on the accompanying advice and guidance, the CINC decided to start convoy operations. Convoys moved about 19% of the equipment and were essential to accomplishing the mission on time.

Deployment to Stuttgart

MG Laposata deployed to the 1st TMCA's 39th Transportation Battalion MCT offices at Grenadier Kaserne on the northern edge of Stuttgart with a driver and executive officer on 19 November 1990. In addition to his normal driving duties, the driver ran errands and served as a messenger. The executive officer served as a combination office manager and chief of staff. He updated reports, accounted for taskings and monitored suspenses. MG Laposata issued orders through him, and expected him to be as aware of the situation as he, himself, was.

The TMCA commander, COL H. Carl Salyer, a major portion of the TMCA operations division (headed up by LTC J. Richard Cauthorn, a British exchange officer), movement control teams, and container teams also deployed to Stuttgart. By "deploying," MG Laposata centralized the management at the scene of the action rather than being two

hours away in Heidelberg. The move also brought TMCA four hours closer.

Laposata brought together every traffic management function to the site. Along with the TMCA, Joint Traffic Management Agency (JTMA - an operational sub-element of the ODCSLOG), and MCT operations, he brought in liaison officers from MTMC-E and the corps. Being close to the action, MG Laposata, himself was instantly available to work problems with the entire staff. Decisions could be fully coordinated and based on full information. If he had stayed in Heidelberg, his attention would have been constantly distracted by GEN Saint or one of the ongoing missions. Additionally, he would not have all the people available to him when coordinated decisions and actions were required.

Once they arrived, the team developed a command and control system by which to manage the deployment. Communications were upgraded to include fax, secure voice to allow reception of reports from the corps DAT, division transportation officers, railheads, airheads, barge sites and sea ports.

MG Laposata spent 5 to 10 days at a stretch in Stuttgart, leaving only to personally brief GEN Saint, LTG Shalikashvili, and MG Burleson. This information was then passed to European Command Commander, GEN Galvin, as well as directly back to the Pentagon. To show this information was really used at the National Command Authority, Bob Woodward

noted in his book, The Commanders, Secretary Cheney briefed the President that "some 600 trains were being used just to transport the forces out of Europe."[19]

Management Tools

Key to the centralized management/decentralized execution is the flow of information. Subordinates manage at their level while passing executive summary information and problem information up to appropriate manager's level quickly.

MG Laposata designated managers for containers; blocking, bracing, and tie-down equipment; barge operations, rail operations and so on. The container manager, Major Victoria A. Leignadier, monitored unit requests for containers, delivery, and pick up of stuffed containers. She passed trend information and "management by exception" type information (something is wrong and is too big for the project manager to handle) to MG Laposata.

Trend information was used to inform the corps that "as a rule, units were/were not doing well." To illustrate: at the beginning of the deployment, units typically overstated the number of containers they required. MG Laposata passed this information to the Corps while directing reconsignment of unused containers. Another example was the chronic lack of materiel handling devices required to load and unload containers from trailer chassis.

Once the corps was made aware this was slowing the deployment they took steps to relieve these problems.

An example of management by exception information is the company commander that reported his containers were ready for pick up so the request for pick up was forwarded to the contractor. When the contractor arrived for the containers, he was told they were not stuffed and was sent on his way. Despite the container manager talking to the brigade and battalion staff, the company commander did this again. The division commander had to be informed one of his commanders was disobedient, was wasting money and a lot of people's time and was slowing the deployment down. Further, if containers were not stuffed and pulled soon, the company would probably arrive in the KTO without them and so not be mission ready. This episode was not repeated a third time.

MG Laposata realized he could not keep all the information for such a massive move in his head. Performance indicator charts were developed to measure progress and to show status of critical elements to keep a record and help make decisions. The charts were simple and few enough to update quickly. If they had not been, too much time would have spent updating charts, or figuring out what the chart meant rather than making decisions.

These charts were extremely casual. When other general officers and colonels were having plexiglass, blacklight boards, computer graphics in multiple colors, and

other state-of-the-electronic-art charts, graphs and tables produced, MG Laposata thumb tacked hand-sketched graphs and charts to the wall. As well as serving as in-house measuring tools they were shown to every general officer that came to receive an update. Appendix B shows examples of the charts and provides directions for their use.

The first chart developed showed unit deployment sequence, earliest and latest arrival data for the port, and the mode the unit was to use to get to the port. The second chart showed the number of units per day programmed into ports. A third chart showed the number of units that had completed their movement to port and the forth chart measured how well we were doing moving the estimated pile of equipment compared to our 585 train equivalent estimate.

A normal day for MG Laposata started at 0600 when he arrived at the MCT. The executive officer updated the charts based on production information generated since the preceding evening. The production period was from 0001 to 2400. This update took about 30 minutes and verified if the proceeding evening's projections had been made during the night. A three day projection of barge, convoy, air and rail production was then made. The current day's projection was a solid goal and depended on the unit's loading and mode operators' performance. The next and following day's projections were "softer" production numbers of barge,

convoy, air and rail that were dependent on unit and mode operators being able to schedule and resource.

During the day trends in data, anomalies, and openings in the schedule were looked for. As these were identified decisions were made as to the best response or action to be taken. If action was required from the transportation operators, the appropriate orders were issued. If the issue belonged to the commander, the DAT and Corps G3 were advised.

About 1800, production reports were received from the mode operators. In most cases these were short of the production goal, but another six hours of production remained. That period was a peak time because trains usually pulled after dark and for some reason barge loading went faster during the night. Again, anomalies and trends were looked for that could be taken advantage of or quelled before becoming problems.

After the final meeting, the executive officer again updated the production charts (based on performance projections) and faxed these to ODCSLOG in Heidelberg. There were then used by the ADCSLOG to brief GEN Saint at the following morning's Operations and Intelligence Update. If MG Laposata was to personally brief GEN Saint, departure for Heidelberg was on or about 2000.

What Equipment was Going

After deciding who would go and in what sequence, the combat commanders decided what they would take. This was agonizing for the transportation managers as their ability to get "the-right-transportation-at-the-right-time-at-the-right-place" was contingent on knowing what and how much of it had to go.

MTMC-E and MSC were dependent on knowing tonnage and volume of equipment being shipped to obtain the right kind and amount of shipping. If the VII Corps had had an on-the-shelf contingency plan it might have had Automated Unit Equipment List (AUEL) from which it might draw this data. Without this information the corps' units had to decide what they were taking and what that meant in terms of transportation requirements. When the corps did figure out what they were taking, they didn't know what that meant in terms of ship tonnage or square feet.

This was more than an inconvenience. A time limit had been imposed on the deployment. Without the corps data, TMCA could not compute overall movement requirements through the inland transportation system. If this was unknown, the amount to be moved per day to meet the time limit could not be computed. Without the data, MTMC-E could not develop call forward data, or pass on accurate shipping requirements to Military Sealift Command. Further the port operators would be unable to manage or schedule the workload. The

deployment would degenerate into sending units to port and loading equipment on ships on a first come/first loaded basis until the equipment was gone. Units would have been broken up because equipment being taken (and universally, all units took more than what they were supposed to own) would not match shipping coming in.[20]

CONTAINERS. A major issue of war-stopping import was the lack of containers in which to move unit equipment, general cargo, basic loads and spare parts. Military Traffic Management Command recommended use of their Special Middle East Shipping Agreement (SMESA) contract. SMESA was a "mini-solicitation under the umbrella of the MSC Shipping and Container Agreements." It incorporated into one document all the terms and conditions required to meet the constantly changing logistics situations while simplifying the administration requirements.[21] This allowed 1st TMCA to let contracts for commercial containers to be delivered to units, then picked up, transported to port, loaded and shipped via commercial shipping to Southwest Asia. 1st TMCA requested the first 100 containers at 2100 on a Friday night. Within 24 hours the first 100 had been delivered and initial deliveries of a subsequent request were being delivered as well.

A very flexible plan for the acquisition of containers was eventually developed. Over 4,000 twenty-foot equivalents of containers were received as gifts, leased,

purchased, purchased with option to sell back, or contracted for to move the Corps.

A second issue was the number of containers the units needed. At first units overestimated the number of containers required. However, as the deployment continued, the number of containers required continued to grow. The reader will remember from chapter 3 that the units did not really know that they would require containers. This came about because units had never moved all the things to their deployment positions that they moved to Saudi Arabia. After the fact, we heard of containers stuffed with wood purchased on the economy because there was no wood in Saudi Arabia. Another container was stuffed with refrigerators. Many units moved their installation property as well; something they had not planned to do for a fight in Germany.

A third issue associated with containers was a loss of accountability of containers. Units did not keep inventories of the equipment they loaded into containers, did not keep a record of container serial numbers, and did not keep copies of bills of lading. Eventually, this was fixed only by a great many people expending large amounts of time going over records and establishing container-by-container accountability.

MG Laposata coordinated with MG John R. Piatik, Commanding General, MTMC and MG Samuel N. Wakefield, the Commanding General, US Army Transportation Center, to

accelerate the fielding of a down-sized version of TC-ACCIS to USAREUR.[22] TC-ACCIS, is a deployment management tool (computer software) that automates unit and installation transportation office movement functions for strategic deployments. Key to the system is that the computer uses equipment data input by the unit based on on-hand equipment. The computer program develops unit equipment lists to update FORSCOM's Computerized Movement Planning and Status System (COMPASS) data base. COMPASS data is then used to update TRANSCOM's JOPES data. MTMC then uses the data to generate rail and shipping space requirements.[23]

PMO, TC-ACCIS and contractor personnel fielded the systems and trained TMCA users at Oberursel (for V Corps) and Kelly Barracks (for VII Corps) in just a few short weeks. TMCA input data, with the information and assistance provided by the unit. The data generated from TC-ACCIS was used by TMCA to generate rail requirements as well as by MTMC to generate shipping requirements. The program also provided a bar code sticker for each piece of equipment. This allowed an automated manifest to be generated for each ship.

TC-ACCIS wasn't perfect, however. The program's output required hand manipulation to make it useful. The system did not accept items other than major end items. This was the reason some mission essential equipment and virtually all the containers were not input into the program

and so have a "bar code" label generated for manifesting. However, the TC-ACCIS system lacked the ability to produce a hard copy back up information in the event of a system failure. While the system was a great contributor to the deployment, if the system had failed the deployment could have been seriously delayed.[24]

A Deadline is Set

In late November/early December, Laposata was called to the offices of the Generals Saint, Shalikashvili, and Burleson to tell them whether the corps could be deployed to Saudi Arabia before 15 January.[25] The Administration was seeking a new resolution from the United Nations stating force would be used to enforce all previous UN resolutions should Hussein not honor them before 15 January. This resolution would serve the dual purpose of serving notice to Hussein that the world would, and could, legally and morally use force against Iraq to make it submit to the UN resolutions and would provide President Bush with support needed at home to be able to initiate combat if required.

Hussein would see such a resolution as a hollow threat if the U.S. and its coalition partners did not have the combat power available to carry it out. Secretary of State Baker, Secretary Cheney, GEN Powell, and GEN Saint discussed at length whether USAREUR could deploy the Corps in time. GEN Saint asked for MG Laposata's opinion, who

consulted with the operators and transporters. MG Laposata went back to the CINC saying it could be done.

MG Laposata's decision was based on the backward planning model. He knew the last ship had to be in a Saudi Arabian port by 15 January. MTMC used an estimated average sailing time to Saudi Arabia of 20 days and figured the last ship had to leave the European port no later than 26 December. From that date had to be subtracted the time to process the equipment arriving on the last train and loading it on the last ship. For good measure, time off for Christmas had to be considered as it is a very important holiday in Europe. The bottom line was that the Corps would get to Southwest Asia if all the equipment were in the ports no later than 20 December. MG Laposata's inland transportation operators said they could meet this. GEN Saint subsequently signed up by saying he could assure
osure at the port by the 26th of December, but after that
was TRANSCOM's responsibility to get them to Southwest
in time to meet the 15 January deadline.

It is interesting to note that the average sailing time to Saudi Arabia of the 105 ships used for the deployment was 20.5 days. If enough large roll on/roll off shipping had been available the average transit time would have been cut to 16.9 days.[26] Further, not only would transit time have been reduced, but loading time would also have been saved because the bigger ships are easier to load

and there would have been less time wasted waiting for ships to move to and from the berths.

The Deployment Process

When MG Laposata was directed to oversee the VII Corps deployment, he directed that standard transportation movement procedures be used. In addition to the central management location at Grenadier Kaserne, he had 1st TMCA personnel move in with the Corps DAT to assist them develop and refine the Corps Deployment Plan. Simultaneously, at 1st TMCA's headquarters in Oberursel, movement control personnel from the German, Dutch, and Belgian armies, and liaison officers from 21st TAACOM and V Corps moved in to the theater movement control and operations center.[27]

The corps determined unit deployment sequence down to the battalion and separate company level. Priorities were passed to MTMC-E who requested shipping through Military Sealift Command. The corps also determined the inland mode of transportation the unit was to use. This was based on proximity to barge site, rail site and port. Units worked with their division transportation officer to request movement from their servicing movement control te (1st TMCA) who acted on the request once the unit had been called forward by MTMC-E.

As ship availability was determined and a ship queue established, MTMC-E called units forward. Each unit was provided an "earliest arrival date" and a "latest arrival

date" determined to maintain a steady flow of units into the port, maintain unit integrity and reduce port congestion.

Units provided TMCA their equipment lists and prepared its equipment for shipment. Convoys were prepared and executed to rail heads or barge sites and the units then helped load their equipment. Throughout the process, 21st TAACOM and V Corps operated port support activities, provided road clearances, and where required, convoy support rest and technical halts.

Once the process got going and was accepted by the corps, it worked wonderfully. It was simple and allowed units to concentrate on moving equipment and preparing soldiers to deploy.

Before Thanksgiving, the amount of equipment to be moved was thought to exceed our best estimates and the transportation schedule would not be met. However, as the deployment continued through the end of November and into December, the efforts of the "SWAT" teams, additional convoys and around the clock barge operations began to pay off. By the end of the first week of December, the original estimate of the "pile" had been almost exactly on target. Further, the last elements to be deployed were going to close on the port five or six days ahead of the 20 December schedule.

Left to deploy was the 2d Armored Division (Forward) and policing up the battlefield of the "onesys" and

"twosys": of oversized equipment that required a special rail car; or the one vehicle that didn't fit on the last train; or the vehicles that were in maintenance when the last train was pulled. The 1st TMCA, jointly with the DB developed a plan to identify the locations of these items and the rail car requirements. The DB then spotted rail cars and designated a special engine to go around to the rail sites to pull these cars.

Bad winter weather slowed the deployment to a crawl. Throughout the deployment USAREUR had experienced a very hard winter Enough snow and rain had fallen to raise the Main River so that units could not use it for barge operations. Snow storm conditions had gotten bad enough several times to force delays in convoy operations. Now, the weather in the North Atlantic had caused sea conditions to become so rough, shipping could not enter or leave northern European ports safely. This weather system had not affected inland transportation system however and unit equipment continued to arrive at the ports. With no shipping coming in, no ships could be loaded and as more trains and barges arrived at port, equipment was off-loaded into already congested holding areas. At the end of the first week in December, the decision was made to continue to police up the strays, but hold them at a staging area ready to move forward. 2d Armored Division would have to hold at its home station, only 20 or so miles from Bremerhaven,

until MTMC-E had cleared the port enough to allow their equipment to enter.

By 15 December, the weather had cleared sufficiently to allow the ports to resume loading. The 2d Armored Division (Forward), the last major unit to deploy, resumed its rail and convoy operations. The final convoy serial arrived at the port on schedule on 1745, 20 December, 1990. At that time, PFC Mikki White of B Company, 498th Support Battalion drove the last five ton tractor and 40-foot trailer into Port of Bremerhaven holding area.[28]

Mode Performance[29]

The deployment of the USAREUR forces to Southwest Asia was a history-making event made possible only by the logisticians of the U.S. military, the cooperation of our allies, the "can do" spirit of the American soldier, and the resources of the United States.

USAREUR deployed 38,800 pieces of equipment (including 4,600 tracked combat vehicles) from 308 separate units or increments of units, the equivalent of slightly over 78 battalions worth of equipment. Included in these figures are about 23,7000 short tons of unit basic load ammunition.[30] Equipment was transported to three ports of debarkation. Bremerhaven received the 2d Armored Cavalry Regiment, the 1st Armored Division and the 2d Armored Division (Forward) consisting of about 39% of the equipment

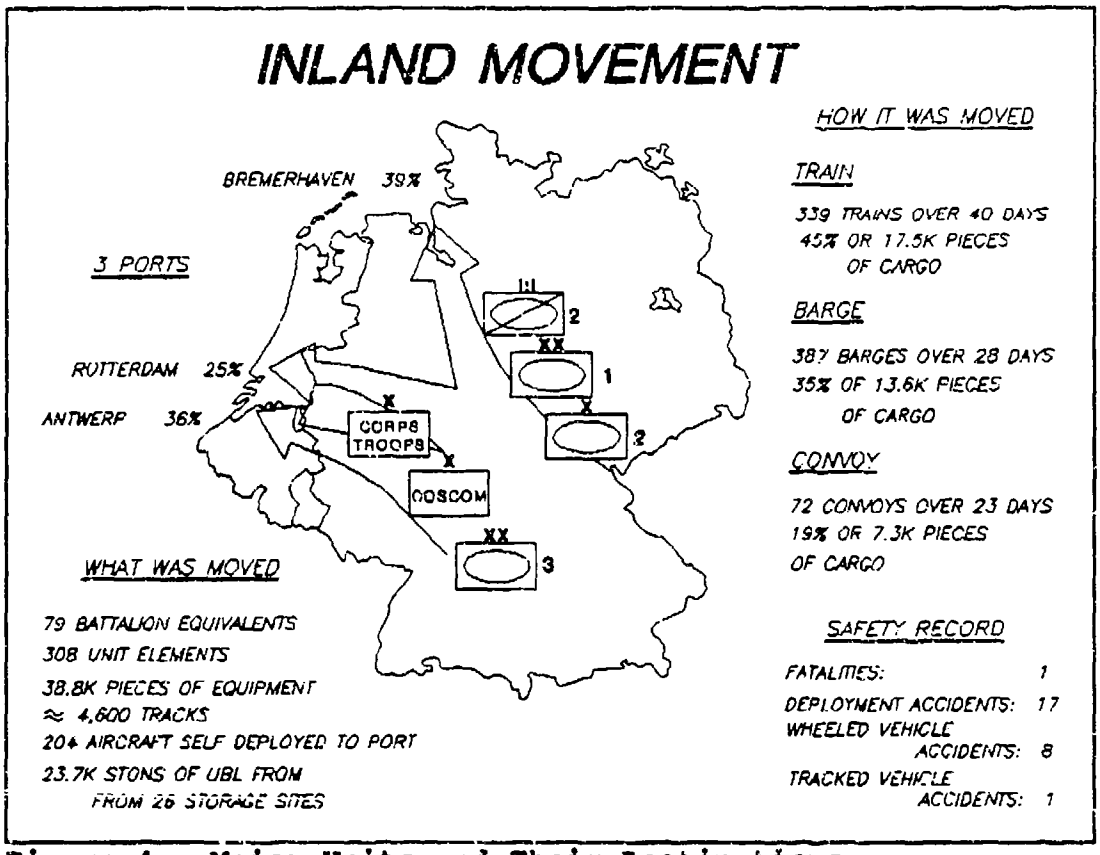

Figure 4. Major Units and Their Destinations.

deployed. Rotterdam and Antwerp received the corps troops, 2d COSCOM units, and the 3d Armored Division. Rotterdam received about 25% of the total equipment shipped to port while Antwerp handled about 36%.[31]

Rail. As mentioned earlier, immediately following the Presidential announcement that VII Corps would deploy, LTG Shalikashvili, MG Laposata and representatives of the 1st TMCA met with the Deutsches Bundesbahn Board of Directors and the DB promised total support.

An initial problem with rail production was repairing and minimizing the damage VII, V, and III Corps had created by not centrally managing rail movements. Units had haphazardly requested trains and either ordered too many or too few cars with little regard for the deployment schedule. Rail assets became scarce. The operational deployment sequence break down was further compounded by a disruption in unit integrity as partial units were loaded on ships to alleviate the port congestion caused by out-of-sequence arrivals.

Another problem that dogged the rail deployment was that agreements between DB and US executives were not always supported by DB mid-management and the working level. No formal agreement was made with the DB and details were left to the "experts." The experts could not always shake off the peacetime requirement of having all train data in four days in advance. This was hard for VII Corps units who had never done rail planning before or who could not make up their minds about what to take. Consequently, short notice goals could not be maintained, and friction was generated between the US and DB working levels.

MG Laposata and COL Salyer centrally managed ordering of trains by sending "SWAT" teams from the 1st TMCA (Forward) Operations Division to the divisions to meet with division transportation officers and other members of the staff. "SWAT" team were experienced and took a systematic

approach to estimate the numb r of trains required to move the unit's equipment. Using the commander's unit movement priorities and a fairly solid equipment list, a flow schedule was developed from which a schedule of convoys and trains was created. All trains for a division were requested early and use of limited railheads, engines, rail workers, cars and other resources were maximized. The SWAT team then provided the information back to 1st TMCA operations to be integrated and synchronized into the overall deployment scheme. This was updated daily in the form of a priority listing and provided to the Bundesbahn as far out as possible.

In 38 days (14 November through 22 December), 339 trains pulled 41.8 percent of the total requirement (or 14,255 pieces of equipment, including unit equipment and unit basic load containers) from various rail heads around Germany to the ports of Rotterdam, Amsterdam and Bremerhaven.[32]

The Bundesbahn's normal commercial traffic was significantly disrupted. Herr Weidemann, Director of Operations for the DB, had said they could conduct the deployment even though it would occur during the holiday season when rail traffic would be increasing. A comparison between Bundesbahn's ability to meet customer requirements was made for December 1989 and December 1990. In 1989, the Bundesbahn's production could not support 450 rail car

requests made by its commercial customers. In 1990, that figure was about 5,000 rail cars.[33]

While the Deutsches Bundesbahn support caused considerable slowdown of regular commercial traffic, at no time was it able to provide more than 18 trains per day and averaged 9.3.[34] As earlier mentioned, the DB worker level and mid-management could not react to requests less than four days in advance. The DB was also supporting the sustainment operation and the British Army of the Rhine with its deployment. Additionally, rail cars, especially ammunition cars, were constantly short. The Bundesbahn borrowed cars from other European rail systems to get enough to support the unit basic load and sustainment ammunition car requirement. This shortage of cars and trains was not a war stopper, however, because other factors, such as the time to load trains, the limited number of rail heads available, the lack of resources to load multiple trains concurrently, limited the amount of trains that could be used per day.

Barge Operations. The MTMC-E worked wonders with their tenders and getting the required barge traffic and to move the VII Corps. Originally, two barge loading sites were considered, Aschaffenburg on the Main River and Mannheim on the Rhine. Because of heavy rains and snows, however, the Main River was near flood stage and this did not allow enough clearance under the river's bridges.

Only wheeled vehicles were loaded on barges. Units with tracks railed the tracks and convoyed the wheeled vehicles to the barge for transit. As high priority containers were identified, they were moved to the barge sites as well. Transit time to Rotterdam ran 55 to 60 hours and 67 to 72 to Antwerp. With port operations running around the clock as many as 750 vehicles could be loaded per day.

Some 387 barge loads of equipment (equivalent to 139.5 trains) were shipped from the three loading sites at Mannheim. Barges not only eliminated the need for 139.5 trains, but also the need for blocking, bracing, and tie-down equipment. 12,588 pieces of equipment were moved during a 28 day period from 19 November through 16 December.[35]

Highway Operations. As previously mentioned, convoy operations to the sea ports originally were not to be conducted. However after the first week it was apparent that if they were not conducted, the time lines would not have been met. Convoy routes, based on those traditionally used for REFORGERs, had been previously coordinated by 1st TMCA with the German, Belgium and Dutch armies. Within 24 hours of the approval to start convoy operations, the 29th Area Support Group from 21st TAACOM, V Corps military communities, the police and the German, Belgium and Dutch armies had opened up the lines of communication (LOCs).[36]

Seventy two convoys (equivalent to 109.9 trains) moved 7,257 pieces of equipment in 23 days during the period 22 November through 20 December.[37]

AIR. The VII Corps deployed 487 of its helicopters to the port of Rotterdam. There they were prepared for shipping and loaded on the ships. In addition, 1.6 train equivalents worth of equipment (about 96 pieces of equipment) were directly air shipped to Saudi Arabia. These were all units required to be in theater before the build up of the VII Corps started. These units included the 11th Chemical Company and elements of the 800th Corps Materiel Management Center, 229th Corps Movement Control Center, 7th Support Group, 30th Medical Group and the 26th Signal Battalion.

Seventeen deployment accidents and one U.S. fatality were recorded during the deployment.[38] This is remarkable when one considers the inherent danger in preparing large amounts of heavy machinery for movement, then conducting convoy, rail, and barge loading operations.

The deployment is even more noteworthy because while deploying the corps, USAREUR continued to return units to the continental United States or deactivate units as part of the drawdown of forces. USAREUR continued to conduct around the clock sustainment operation for forces already in Saudi Arabia and deployed additional units to Saudi Arabia that were not part of VII Corps.

The VII Corps deployed its corps troops, corps support command, an armored cavalry regiment, an armored brigade, and two task organized armored divisions over 11,800 miles in 110 days. In Saudi Arabia, it assumed command and control of additional US and allied units, conducted individual, crew and unit training, and prepared to engage the enemy.

CHAPTER 5

CONCLUSIONS

Introduction

Contingency deployments are complex. Equipment and personnel are scheduled to arrive together at a point in time and space and in a certain condition in order to accomplish a mission. Often, due to the very nature of contingencies, there is little time for in-depth, deliberate planning. Multiple transportation modes using many routes requiring varying lengths of time may be required to be used. Multiple departure locations and times are the norm.

The commander, operations planner, logistician planner, mode operators (military and civil), transportation planners, terminal operators, law enforcement and national agencies in all countries involved are only a few of the participants. Doctrine establishes a way of thinking about deployments and brings some order to the many variables. To make doctrine work more effectively and efficiently, the operator and logistician must pay particular attention to operations planning and execution management.

The VII corps deployment provides evidence that doctrine works . . . when it is followed. It also provides evidence for the argument that principles such as unity of

effort, coordination, planning, and central management require a greater detail of attention during deployment. This deployment also provides examples of more lessons to be learned that should have been mastered before. Finally, the VII Corps deployment points towards changes that should be made in technology and organizational equipment.

The reader should not think VII Corps would have failed in its mission to deploy itself and the only reason they did not was that the USAREUR staff rescued them. American soldiers have a knack for accomplishing the mission in spite of themselves. How long it would have taken, in what condition the force would have been in, and how long after arrival in SWA would they have been ready to fight are questions to which the answers can only be guessed.

VII Corps made many mistakes, but mistakes were made at higher echelons as well. The VII Corps should never have been given this mission to accomplish alone. They were not equipped or staffed to accomplish it and doctrinally it was not their mission.[1] VII Corps compounded the problem, however, by not coordinating and/or requesting assistance. Perhaps pride compelled them to try to do the planning by themselves, or maybe it was misunderstanding of doctrine, capability, or commander's intent. 2d COSCOM added its share of mistakes, too. It failed to properly supervise the CMCC's plan, and then allowed the CMCC to deploy too early.

The theater army (USAREUR & 7th Army) did have the tools, the organization, and the mission to manage and supervise the deployment.[2] Further, they followed the existing doctrine as amended by their experience with large movements during the previous twelve months.[3] Simply, they were the organization with the job and they did it.

Doctrine

Current transportation planning and management doctrine works well. Theaters, or their equivalent, doctrinally manage corps moves.[4] But, VII Corps was given the mission to move themselves and problems occurred. Transportation doctrine is grounded in the concept of centralized management and decentralized execution. VII Corps' concept of central management was to publish a movement plan and tell the subordinate units to execute it. This works when the movements of subordinate units are within their area of operation and within their capabilities or when resources are unlimited and synchronization is not important. However, when any of these elements change, central management becomes critical.

To provide central management, a corps, doctrinally, has a movement control center to serve as the interface between the corps commander and his planners and the transportation mode operator. They turn the commander's intent into prioritized transportation taskings.[5] When the

VII Corps deployed the 229th CMCC in the first week, it effectively eliminated its own management capability. When the theater staff was directed to control the unit and equipment deployments, the first thing they did was to return to doctrine. The TMCA performed the CMCC's mission. The DCSLOG, with the TMCA, provided centralized management.

Deployment Principles

Unity of Effort

Unity of effort ties together coordination, central management/decentralized execution, knowing one's role, planning and execution. As in combat operations, players and resources must be coordinated and synchronized in time and space to accomplish the commander's intent. The importance of unity of effort is demonstrated very well by the VII Corps deployment. In the planning phase a lack of unity of effort existed as the USAREUR staff and MTMC-E could not coordinate with the VII corps. Regardless of the cause, coordination was required and should have been made immediately following issuance of the tasking. The lack of coordination resulted in the USAREUR staff relying on planning factors rather than solid requirements.[6]

There are several positive examples of unity of effort as well. One of the best examples is the ties among USAREUR, USEUCOM, the ambassadors, agencies such as MTMC-E and MSC, and the military attaches at the embassies and

ministries. Through coordination, all parties worked toward a common goal of attaining cooperation and obtaining waivers, resources and assistance when and where it was needed. STANAGs expedited the deployment process. However, the coordinated efforts of the military and diplomatic corps of all nations working to achieve clearly defined objectives were required to activate the STANAGs.

MTMC and MSC worked closely together and with USAREUR. MSC developed the SMESA contract to expedite container contracting.[7] The staffers made every effort to ensure it was as "user friendly" as possible. MTMC fielded TC-ACCIS to USAREUR early. With the hardware and software, they also fielded program office and contractor support to help achieve success.

Allied countries and commercial partnerships were equally important. Each country and organization understood, through coordination, the objective of the deployment. They accepted it as their own, applied resources, and did things above and beyond the normal routine. These partnerships were absolutely essential to the success of the deployment. The rail schedules of three countries were coordinated to route military trains; sovereign countries' customs and security requirements were negotiated; and highway routings and allied civil and military assistance were requested.

Unity of effort must be more than just a buzz word. Someone must be in charge. The remaining parties must form a partnership, assume the same objectives and work in a coordinated manner to achieve the objective.

Planning

The commander must decide early his force structure and deployment priority. In contingency planning the best possible situation is to have an existing plan that approximates the chosen course of action, force structure and priority of movement. Deployment can start and minor changes can be made as the deployment is conducted.[8] The worst possible contingency situation is to have to start planning from scratch as VII Corps did. Initial courses of action, force structure and deployment priority planning must occur quickly and simultaneously. Once the course of action is decided upon, an "80 percent solution" deployment priority list should be constructed and deployments begin. The remaining twenty percent can be worked in.

In the beginning of the VII Corps deployment the Corps lost several days by quibbling over these type issues. Despite having an "80+ percent solution" no one in authority would approve the unit movement list. The result was that units were left to their own devices to figure out if they should begin to move "now" or wait. Some units jumped the gun while others fell behind.

Coordination

Coordination, and sometimes the lack of it, had a significant impact on VII Corps' deployment. During the planning phase, many attempts were made to meet with the Corps to coordinate planning efforts. Because coordination was not made, the USAREUR staff and other outside agencies were not privy to requirements and the commander's intent. Perhaps, too, if this coordination was made, the theater would have been able to note shortfalls in the Corps' planning effort. Conversely, the USAREUR staff coordinated with all the principle agencies and activities that it could to develop a plan of action. But, without the VII Corps Commander's intent and planning guidance, more assumptions than facts were used. In this case, the assumptions were close to fact because of prior experiences and good estimates of what VII Corps requirements might be.

Previous coordination with the European countries involved in the deployment resulted in Standard NATO Agreements. The STANAGS provided a "standard operating procedure" for conducting administrative operations and obtaining support and waivers. Further coordination with the Dutch, Belgians, and Germans allowed USAREUR to move main battle tanks through the Netherlands for the first time and to move equipment loaded with ammunition. Coordination with the Deutsches Bundesbahn and Sealand Vans also created "partnerships" essential to mission accomplishment.

Centralized Management/Decentralized Execution

The VII Corps deployment is rich in examples for the need to centrally manage contingency deployments. When the CMCC deployed, divisions, the COSCOM and separated units began to de-centrally request their own trains. Without a central manager to prioritize movements, mode operators responded on a first come-first served basis. The deployment became dissynchronized.

When the USAREUR staff became the executive agent for the deployment, the TMCA and DCSLOG assumed the management mission they should have had from the beginning as well as the responsibilities of the deployed CMCC. TMCA coordinated with the VII Corps Deployment Action Cell to determine unit deployment priorities. Next, it coordinated with the mode operators to ensure priorities were properly followed. To increase optimization of resources, TMCA sent teams to the divisions to centrally manage train requirement determination.

In another case, MG Laposata determined the deployment was behind schedule and another transportation mode was required. When looked at by unit, there was only a very small problem. When looked at from the central managers perspective, the roll-up effect of each units' small problems became a major problem for the Corps.

Impact of Lessons Learned

The VII Corps deployment verified the lessons learned from REFORGER '90, Desert Shield sustainment operations, the 12th CAB deployment, and the combat vehicle retrograde. In some cases, lessons had been learned and were used to enhance the deployment. The need for containers had been identified, was addressed in USAREUR planning and MSC was prepared to support the requirement through the SMESA agreement. While requirements were greater than expected, the initial problem was foreseen and a plan developed. The cooperation of allies and use of STANAGs were sought from the beginning and before planning was completed coordination through military and diplomatic channels was conducted.

In the area of transportation, MTMC-E had learned how to make the most effective use of opportune shipping. The lack of US strategic shipping (civil and military) caused them to go after anything that floated to move forces to Saudi Arabia.[9] Another lesson used was the ability to coordinate and synchronize multiple transportation modes (highway, rail, air, and inland waterway) to move equipment in speedy, steady, efficient and effective flow to port.

Not all the lessons were heeded however. The primary lesson that a corps has neither the capability or should have the mission to deploy itself "out of sector" without appropriate theater level augmentation was lost.

Next, a scheme of maneuver and early coordination was not only a deployment lesson, but is fundamental to any operation. However, the corps p. .ned in a vacuum. The USAREUR staff and theater support were not coordinated with prior to announcement and poorly afterwards.

Central management/decentralized execution is fundamental transportation doctrine. The corps deployed its central manager at the very beginning of the deployment and completely circumventing the "right way" of managing the deployment. Reestablishing central management, both at the theater level and having the TMCA perform the role of the CMCC, was required to put the deployment back on track.

Finally, the problem of commanders not being able to decide who and how much of what to take was repeated. Whereas 12th CAB was just a brigade, VII Corps added units, deleted units, and added deleted units. Despite having a solid 80 percent solution, the Corps would not publish a movement plan that would allow its units to plan and execute. The problem was perpetuated down to the lowest levels with units unable to decide what to take.

Things That Need To Be Changed

The first problems VII Corps faced was developing a deployment plan and troop list. VII Corps was forward deployed and did not have an on-the-shelf contingency plan. If they had, the planning cycle could have been shorter as

transportation requirement information would have existed and much of the guess work would have been eliminated.

Joint Operations, Planning and Execution System (JOPES) must be improved.[10] All units in the military, whether forward deployed or not, should establish generic deployment contingency plans. Basic information as contained in US Army Forces Command's Computerized Movements Planning and Status Systems (COMPASS) should be entered in JOPES. At lower levels, plans might be fairly simple and contain information regarding equipment to be taken depending on the climate and season of the location to which they are deploying. Obviously, the higher organizations' plans would necessarily be more complex involving various task organizations for different generic missions in different parts of the world. While this may initially require a large amount of work, if it is done and maintained it will provide great benefit in shortening deployment planning in the future.

The transportation community must continue to improve command, control, communications and information systems. Systems must be able to "talk" to one another to quickly and accurately transmit information between users. TC-ACCIS is a step in the right direction, but as seen it does have limitations. In-transit visibility is another system that must be developed and fielded as soon as possible.[11] The commercial sector has such systems and

one carrier brags that he can locate a package within a matter of minutes.

Containers are required and must be planned for and provided. Units do not have the lift to move all their equipment and supplies when they deploy to another theater. A major lesson learned by USAREUR is that units really do require containers.[12] They now stock contingency containers and appoint a theater container manager.

Summary

This paper's goal is to answer the question: how important is transportation planning and management doctrine to deployment operations? Its purpose is to provide commanders, combat planners, logistics planners, and transportation managers a deployment case study from which to draw lessons to improve deployments in the future.

By 1997, 80 percent of the Army will be stationed in the United States. Unless national goals and objectives change radically, the Army will continue to be a national policy tool that may be used in other parts of the world. Speed of deployment will be increasingly important to quickly resolve crises. The Army's goal is to have the capability to deploy a complete five division corps in 75 days. This goal cannot be met today.[13]

Transportation planning and management doctrine was one of the most important elements of the VII Corps deployment in support of Operation Desert Storm. When it

was not followed, deployment was slow to start and became confused. It appears that the Corps might not have gotten to ports in time to meet the 15 January deadline imposed by President Bush. It may also have required considerable time to reorganize and prepare to fight because of lost unit integrity. After the USAREUR staff assumed responsibility for the deployment, execution was based on doctrinal planning. This resulted in the deployment being put back on track and all unit equipment arriving at the ports of embarkation before the deadline. Unit integrity was better than it appeared to be under the VII Corps management. Many units, even though they did not roll off the ships ready to fight, required little time to reorganize.

As resources become more constrained and force projection speed and timing becomes increasingly critical, transportation planning and management doctrine will play an even more important role. After air and sea lift is made available for deployment, it must be used wisely. Air and sea lift cannot be left waiting idle at port while units try to figure out how and in what order to get to port. The combatant commander cannot wait for units to sort themselves out in the theater of operations because they did not provide units for strategic lift in complete packages or according to a logical flow.

Solid transportation planning and execution in accordance with doctrine, provides combat forces to the

theater commander in the right condition, order and time. The VII Corps deployment illustrates what happens when doctrinal planning and execution are not properly employed. Planners and commanders must employ transportation planning and execution doctrine before the next contingency arises. Future contingencies will not allow doctrine to be ignored.

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[31]Data developed by author from orignal research of MTMC shipping data.

[32]This data was developed by the author and MAJ(P) Steven B. Howard during and after the deployment.

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APPENDIX A

VII CORPS TASK ORGANIZATION

The VII Corps that fought in Southewest Asia was not the same as the USAREUR VII Corps. In USAREUR, the VII Corps consisted of the 3d Infantry Division, the 1st Armored Division, the brigade-sized 1st Infantry Division (Forward), and the 2d Armored Cavalry Regiment.

Upon arrival in the KTO, VII Corps was task organized from the three USAREUR Corps (III Corps (Forward), V Corps and VII Corps) and the 1st Infantry Division (-) from Forces Command to make it an armor heavy corps. The following chart shows the organization of the VII Corps. Most of the units were organic to the VII Corps with the following exceptions:

1st Armored Division was reorganized to include a brigade of the 3d Infantry Division in lieu of 1st AD's organic infantry brigade who had not yet been upgraded from M113 armored personnel carriers to the Bradley fighting vehicle.

3d Armored Division came from the V Corps. It was reorganized to include several battalions of the 8th Infantry Division to make up for units that had been deactivated under the CFE treaty.

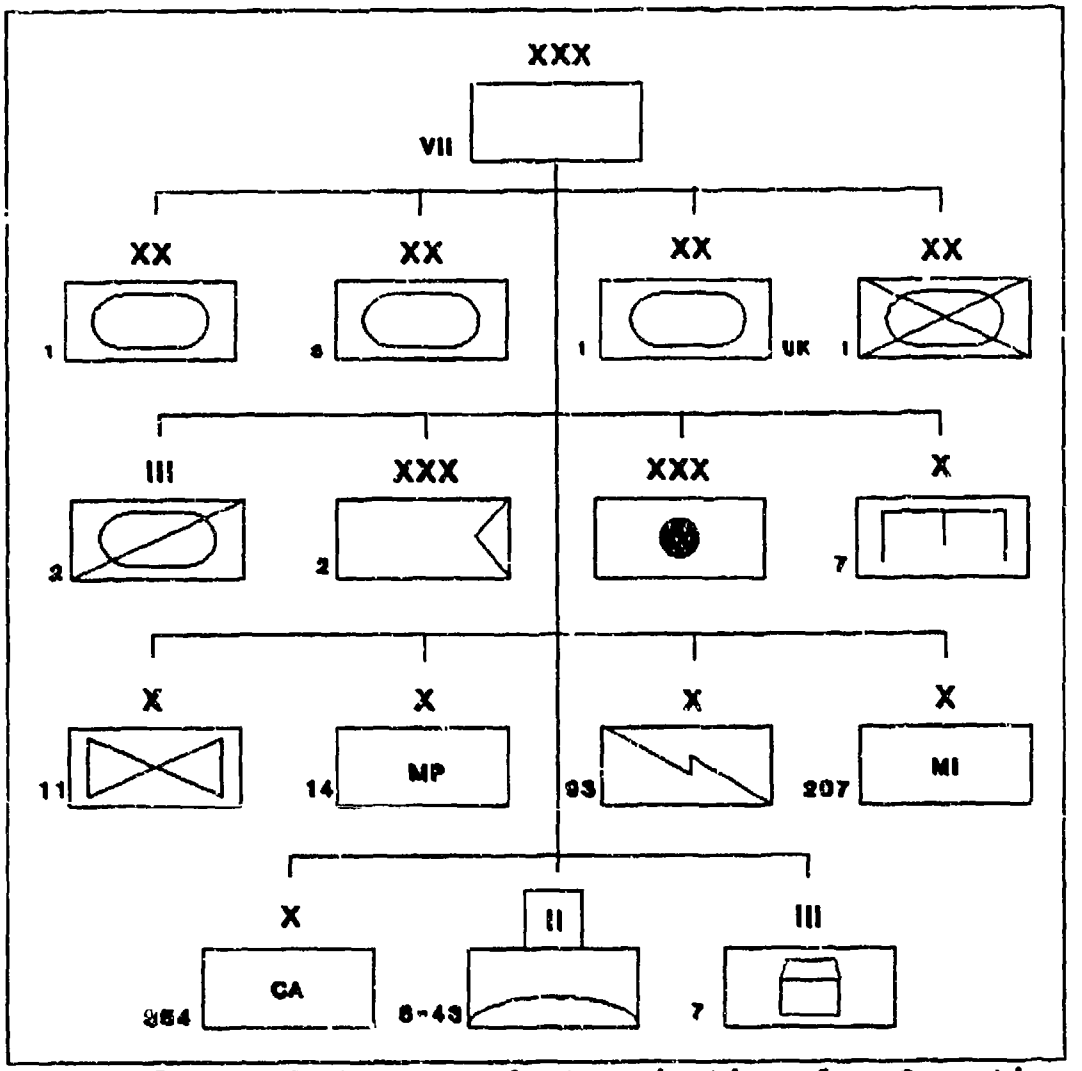


FIGURE 5. VII Corps Task Organization for Operation Desert Storm.

1st Infantry Division (-) became a "full-up" three brigade division with the addition of the 2d Armored Division (Forward) (a separate brigade complete with support slice) from 3d Corps (Forward).

ANNEX B

MANAGEMENT CHARTS

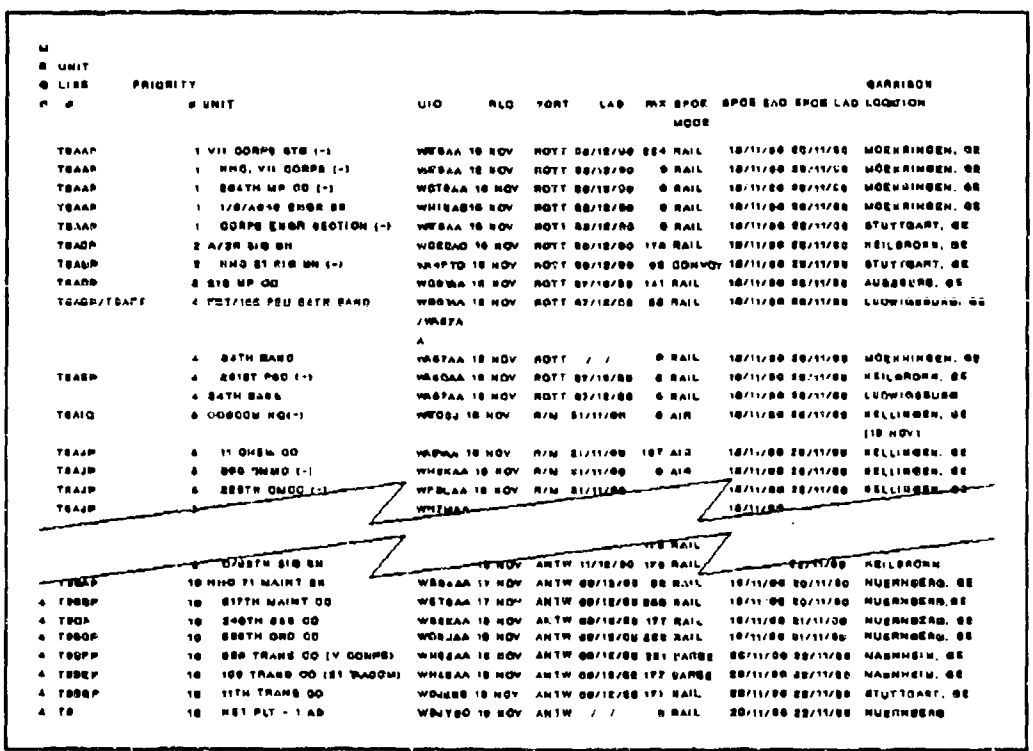
This annex illustrates the charts, work sheets and reports that MG Laposata and his executive officer used during their tenure in Stuttgart deploying the VII Corps. They are presented to illustrate reports that could be used in future deployments. The charts are designed visually; they can be interpreted quickly by looking at shapes, sizes, and graph lines. These charts were done originally by hand using grease pencil, pens, acetate, and graph paper. However, they could be automated as the author has done for the purpose of this paper. This could save time and provide additional management information.

It would have been impossible to track performance by individual vehicles, numbers of airplanes, barges, convoys, serials, train cars and so on. An equivalent measuring device was developed and called the train equivalent. Train equivalents became the standard unit of measure developed to equate convoys with unlimited number of pieces of equipment to barges, with capacities of numbers of equipment based on the size of each piece of equipment, to real trains. The 1st TMCA transporters had determined an average train load of military equipment consisted 35 pieces of major type

equipment. A tank, 5 ton truck with a water trailer and 2 tents in the cargo bed, and 1 1/4 ton trailer containing three 15 kw generators counts as 3 pieces of equipment.

Planned Unit Movement Chart

This chart was actually developed by the VII Corps DAT. This was the movement plan that LTG Shalikashvili approved for publication. The plan contains a great deal of



M S UNIT C LISS	PRIORITY	UNIT	UIC	RLD	PORT	LAD	MX	SPOE MODE	SPOE EAD	SPOE LAD	GARRISON LOCATION
TSAAP	1	VII CORPS STB (-)	WE5AA	16 NOV	ROTT	06/12/90	554	RAIL	18/11/90	02/11/90	MOERFINGEN, GE
TSAAP	1	HHC, VII CORPS (-)	WF5AA	16 NOV	ROTT	06/12/90	9	RAIL	18/11/90	30/11/90	MÖERFINGEN, GE
TSAAP	1	554TH MP CO (-)	WGTSAA	16 NOV	ROTT	06/12/90	6	RAIL	18/11/90	02/11/90	MOERFINGEN, GE
TSAAP	1	1/6/A616 ENGR BN	WHIEA616	NOV	ROTT	06/12/90	0	RAIL	18/11/90	02/11/90	MOERFINGEN, GE
TSAAP	1	CORPS ENGR SECTION (-)	WF5AA	16 NOV	ROTT	06/12/90	0	RAIL	18/11/90	02/11/90	STUTTGART, GE
TSAAP	2	A/3R 5IB BN	WGEDAO	16 NOV	ROTT	06/12/90	178	RAIL	18/11/90	02/11/90	HEILBRONN, GE
TSAAP	2	HHD 51 RIB BN (-)	WA4PTO	16 NOV	ROTT	06/12/90	98	CONVOY	18/11/90	22/11/90	STUTTGART, GE
TSAAP	2	518 MP CO	WG8WA	16 NOV	ROTT	07/12/90	141	RAIL	18/11/90	02/11/90	AUGSBURG, GE
TSAGP/TSAFF	4	FET/16S PEU 54TH BAND	WBGWA /WA5TA A	16 NOV	ROTT	07/12/90	58	RAIL	18/11/90	02/11/90	LUDWIGSBURG, GE
	4	54TH BAND	WA5TAA	16 NOV	ROTT	/ /	0	RAIL	18/11/90	02/11/90	MOERFINGEN, GE
TSAEP	4	261ST POD (-)	WA5QAA	16 NOV	ROTT	07/12/90	6	RAIL	18/11/90	30/11/90	HEILBRONN, GE
	4	54TH BAND	WA5TAA	16 NOV	ROTT	07/12/90	6	RAIL	18/11/90	02/11/90	LUDWIGSBURG
TSAIQ	4	CODCOM HQ(-)	WFC5J	16 NOV	R/N	31/11/90	0	AIR	18/11/90	02/11/90	HELLINGEN, GE (18 NOV)
TSAJP	4	11 CMBL CO	WAPAA	16 NOV	R/N	31/11/90	197	AIR	18/11/90	28/11/90	HELLINGEN, GE
TSAJP	4	999 TMMD (-)	WH5KAA	16 NOV	R/N	31/11/90	0	AIR	18/11/90	28/11/90	HELLINGEN, GE
TSAJP	4	285TH CMCD (-)	WF5LAA	16 NOV	R/N	31/11/90			18/11/90	28/11/90	HELLINGEN, GE
TSAJP	4		WH5MAA						18/11/90		
	4	57/85TH SIB BN		16 NOV	ANTW	11/12/90	178	RAIL		02/11/90	HEILBRONN
TSGAP	10	HHC 71 MAINT BN	WB5AAA	17 NOV	ANTW	08/12/90	98	RAIL	18/11/90	30/11/90	NUERNBERG, GE
4 TSGBP	10	517TH MAINT CO	WE7BAA	17 NOV	ANTW	08/12/90	558	RAIL	18/11/90	30/11/90	NUERNBERG, GE
4 TSGA	10	240TH QSB CO	WB5EAA	16 NOV	ANTW	08/12/90	197	RAIL	18/11/90	01/11/90	NUERNBERG, GE
4 TSGGP	10	588TH QMD CO	WD8JAA	16 NOV	ANTW	08/12/90	288	RAIL	18/11/90	01/11/90	NUERNBERG, GE
4 TSGPP	10	559 TRANS CO (V CORPS)	WH5EAA	16 NOV	ANTW	08/12/90	281	CARGO	02/11/90	22/11/90	NAGHHEIM, GE
4 TSGEP	10	109 TRANS CO (21 TAACOM)	WH5EAA	16 NOV	ANTW	08/12/90	197	CARGO	22/11/90	22/11/90	NAGHHEIM, GE
4 TSGGP	10	11TH TRANS CO	WD4EE8	16 NOV	ANTW	08/12/90	171	RAIL	22/11/90	22/11/90	STUTTGART, GE
4 TS	10	HST PLT - 1 AD	WB4Y50	19 NOV	ANTW	/ /	0	RAIL	20/11/90	22/11/90	NUERNBERG

Figure 6. Planned Unit Movement Chart.

the required information. But it contained too much information for management at the senior officer decision level. We used the information to develop a Master Unit

Flow chart shown below. Near the bottom of the chart the reader will note the deployment dates for the 229th Corps Movement Control Center.

Master Unit Flow Chart

This chart shows all the units in the deployment flow. It was derived from the VII Corps' Planned Unit Movements chart. It shows much of the same information that the

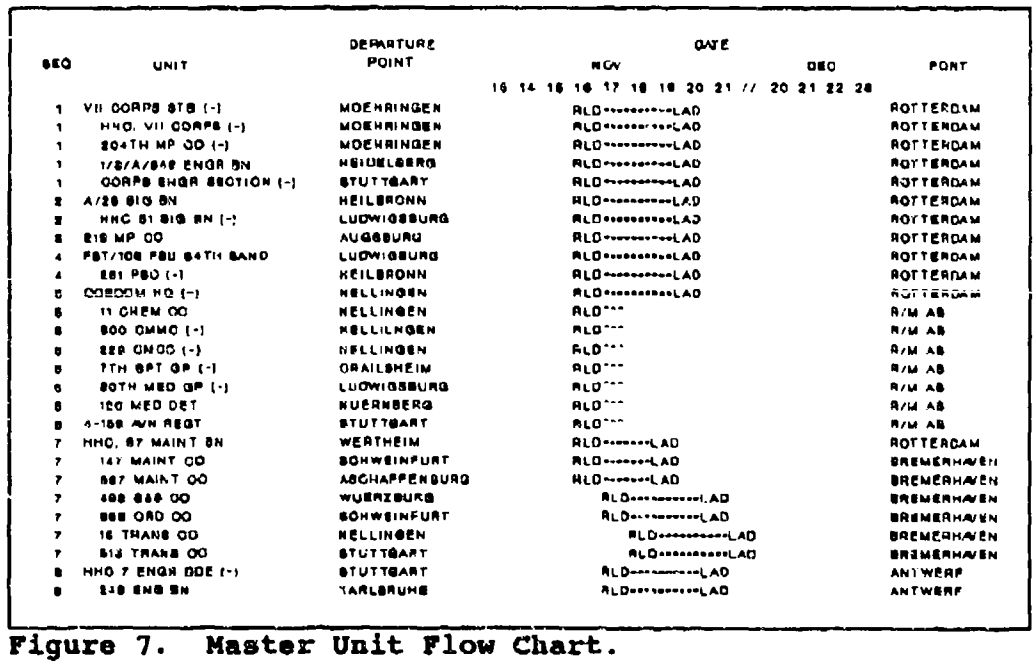


Figure 7. Master Unit Flow Chart.

Planned Unit Movement chart shows, but does it more graphically. It was generated using a Lotus spreadsheet program. When the last vehicle of a unit departed its home station (i.e., was loaded on a train or convoyed to the

barge or sea port) it was highlighted. This served to show off those units that had missed their latest arrival date at port or had jumped ahead of their earliest arrival date. The chart was rerun several times each week to keep up with changes made by the DAT.

Remaining Units Chart

This chart was used after about 70 percent of all the units or increments had been deployed. It allowed easier and more detailed tracking of those units and gives and indication of when the unit was expected to have completed it move. In this case, the 59th FSU had a latest arrival

REMAINING UNITS
(AS OF 171600 DEC 90)

SEQ#	UNIT	DATE RAIL	DATE BARGE	DATE CONVOY	EAD/LAD
	(2AD FWD)				
82	2-66 AR BN	12 DEC		18 DEC	11/18 DEC
82	498 SPT BN			20 DEC	11/20 DEC
82	HHC BDE			19 DEC	11/19 DEC
82	D-17 ENG	12 DEC		19 DEC	12/198 DEC
82	3-66 AR	14 DEC		18 DEC	12/18 DEC
82	1-41 INF	14/17 DEC		19 DEC	13/19 DEC
82	4-3 FA BN	17 DEC		18 DEC	13/18 DEC
82	HHC BDE			20 DEC	13/20 DEC
82	TRAIL 498			20 DEC	13/20 DEC
82	29TH G-TAB			18 DEC	13/18 DEC
	(NON DIV)				
80	59 FSU			19 DEC	06/20 DEC

Figure 8. Remaining Units Chart.

date at the port of 12 December (the last date in the right hand column), but for some reason did not make it. The dates under rail, barge, and convoy were confirmed dates. That is, the unit was called to confirm that they were going to make the date indicated. Looking at our example, the 59th FSU indicated they would be able to convoy on 19 December. Looking through the records, the author found this unit did convoy on that date. When the unit was confirmed having moved, the chart was annotated by hand in the margin with the date of movement.

Performance/History Charts

This chart was developed to track the previous, current and next day's planned and executed train, barge and convoy performance. Barge and convoy planned figures came from information supplied by the DAT and was based on their

	5 DEC	6 DEC		7 DEC
	EXECUTED	PLANNED	EXECUTED	PLANNED
TRAIN	18	10	15	10
BARGE	8.1	4	5.4	2
CONVOY	4.6	3	3.5	5.9
AIR	0	0	0	0
TOTAL	30.7	17	23.9	17.9

Figure 9. Performance/History Charts.

plans and as confirmed by the units. Train projections came from the TMCA who was in contact with the Deutsches Bundesbahn and the units that were loading trains. Figures were based on the amount of cars that were spotted at rail heads and how well the unit was doing loading them. Executed convoy numbers came from the DAT and executed barges numbers came directly from the MTMC-E operations officer at the Mannheim Barge Port Facility. The charts were updated each evening at 1800, but final counts were not available until about 1000 the following morning.

Daily Performance Chart

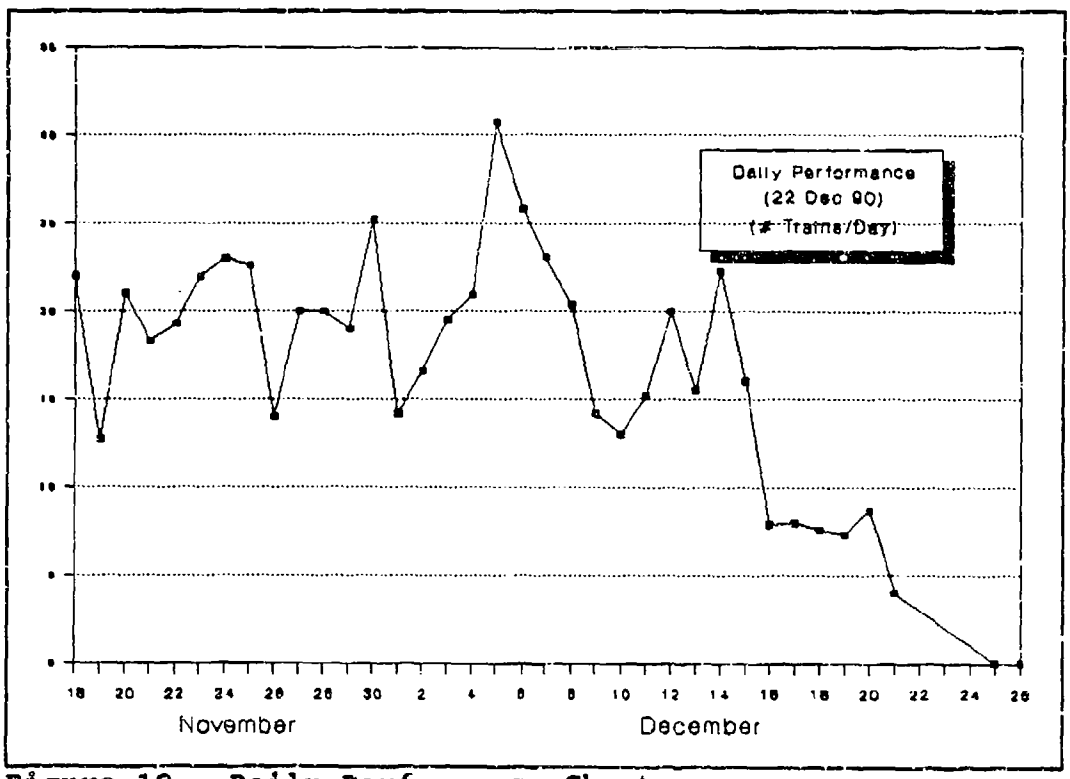


Figure 10. Daily Performance Chart.

Once the hard count of train equivalents was known, this chart was updated. It shows the number of train equivalents executed each day. It was most useful in determining trend data and determining the amount of equipment flowing to port as compared to the latest arrival dates determined by MTMC-E. If all units had been equal in size and equipment and had been on schedule, peaks and valleys in this chart would have preceded peaks and valleys in the next chart, the Unit LAD Profile chart. If they did not match up, the manager would have been alerted that a potential problem existed. An investigation would then have been conducted to locate any problems and how they might effect MTMC-E call forward of ships, port work loading and congestion.

Unit LAD Profile Chart

This chart shows the relationship between the number of increments of units and the latest arrival date (LAD) as determined by MTMC-E. This particular chart is a roll-up of all three ports. The daily performance chart did not correspond with this chart because this chart reflects increments of issues rather than amount of equipment. One day may have five increments, but those might be all battalion sized maneuver units. Another day may have 15 increments listed to arrive, but may consist of parts of company sized command and control or staff elements. The DCSLOG continually worked with MTMC-E and TMCA to develop

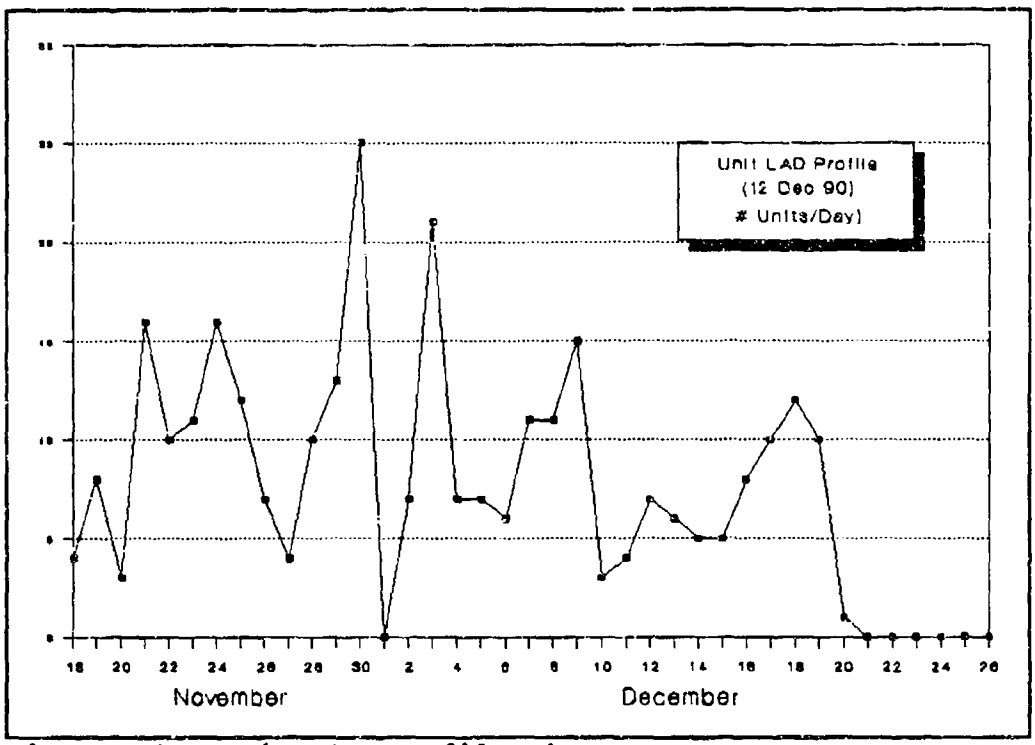


Figure 11. Unit LAD Profile Chart.

accurate data about amounts of equipment belonging to units. The purpose was to try to reduce the peaks and flows and maintain a steady flow of equipment to the port. This would be optimum for the inland transportation phase because it would optimize resource usage. As it was, one day was a surge requirement, while another required hardly any resources.

Unit Flow Chart

This chart shows the number of units that have had LADs on the current or previous dates. It also shows the number of units completed to date, and the units, both

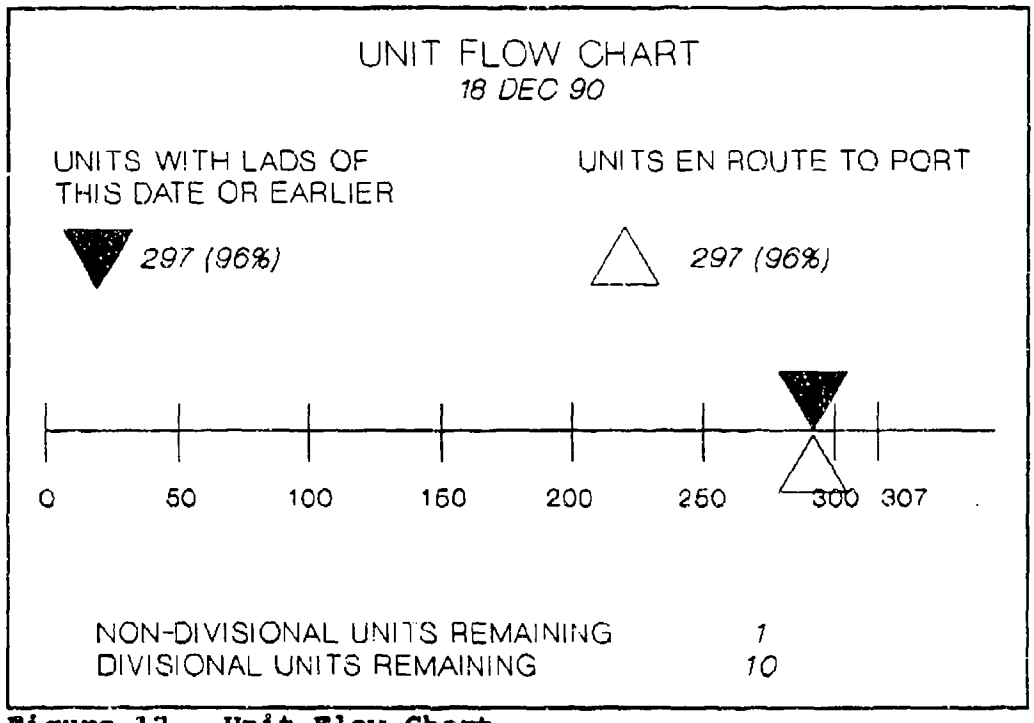


Figure 12. Unit Flow Chart.

divisional and non-divisional, remaining. It was updated from the Master Unit Flow chart discussed above. The purpose again was to provide a quick visual check of how well the flow matching the schedule. This chart reflects information during the lull in late December caused by the bad weather. It shows that 96 percent of the units have arrived in port and no additional units were en route. In most cases, additional units would be en route and this would reflect a higher percentage. The distinction between divisional and non-divisional units was done to ensure that non-divisional units were receiving their share of resources and staff attention. Often the non-divisional units had little or no

experience uploading and railing or convoying. They needed special attention and assistance.

Unit Deployment Status Chart

This chart used the bar on the left to represent the number of units to be deployed and the percentage of that number that had LADs of the date of the report or earlier.

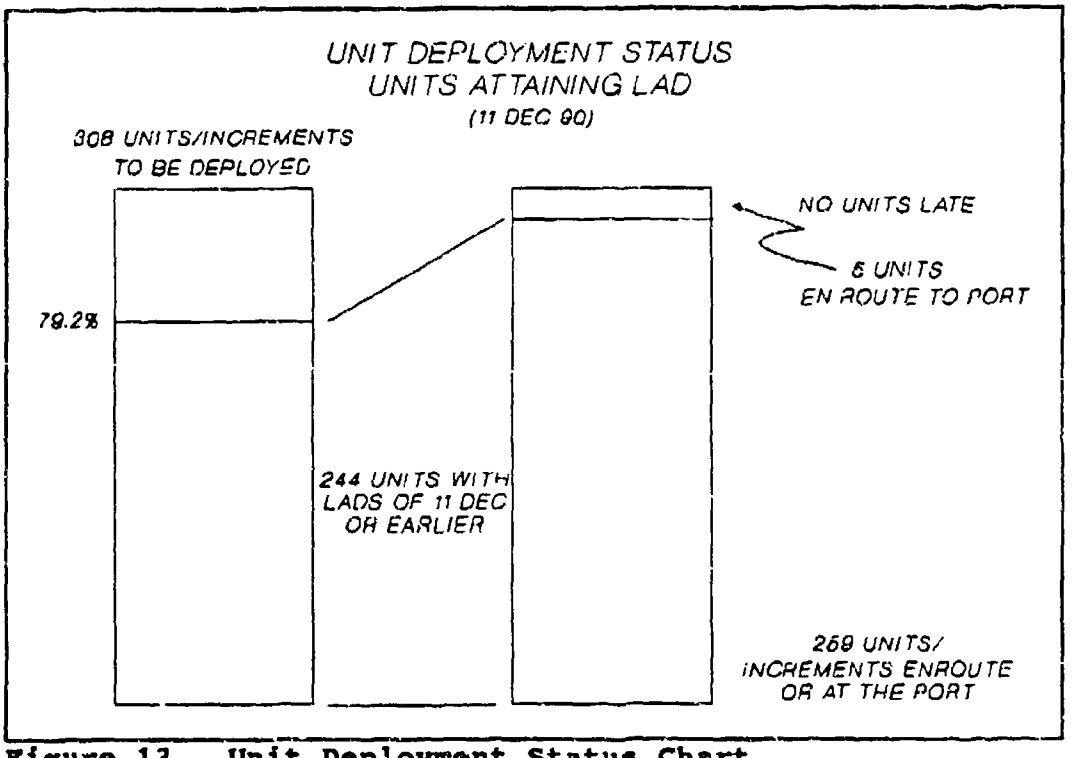


Figure 13. Unit Deployment Status Chart.

The bar on the right is an "exploded" version of that portion of the left bar. This bar was usually divided into three parts. The top portion reflected the number of units who had not completed their vehicle move from home station.

The second division represented those unit's that had moved from home station, but were carried by MTMC as not meeting their LADS. This was done because the MTMC data was usually inaccurate. It often showed units had missed their LAD even though the unit's LAD was extended or the unit deployed early. If the unit was not reflected on a ship's manifest, it hadn't arrived. Small units commonly lost their identities when railed with larger ones. The third division of the bar represented the unit that had not deployed from home station and were reported at the port. The last entry on this chart represents the total number of units that had deployed.

Transport Mode Status Chart

This chart illustrated the percentage of complete requirement (in train equivalents) by day to include a projection for the following day. The straight line is a model line stretching from the first day of planned operations to the last day of planned operations. The chart also showed current status of management areas (trains, containers, etc.) using the a green, amber red system. The chart provides an overall assessment and provides notes and comments of items of command interest.

All assessments were made by the DCSLOG. He also wrote the Transport Mode Summary. The planned and executed numbers came from the 1800 status meeting. Note that the "executed" number was an approximation of what was actually

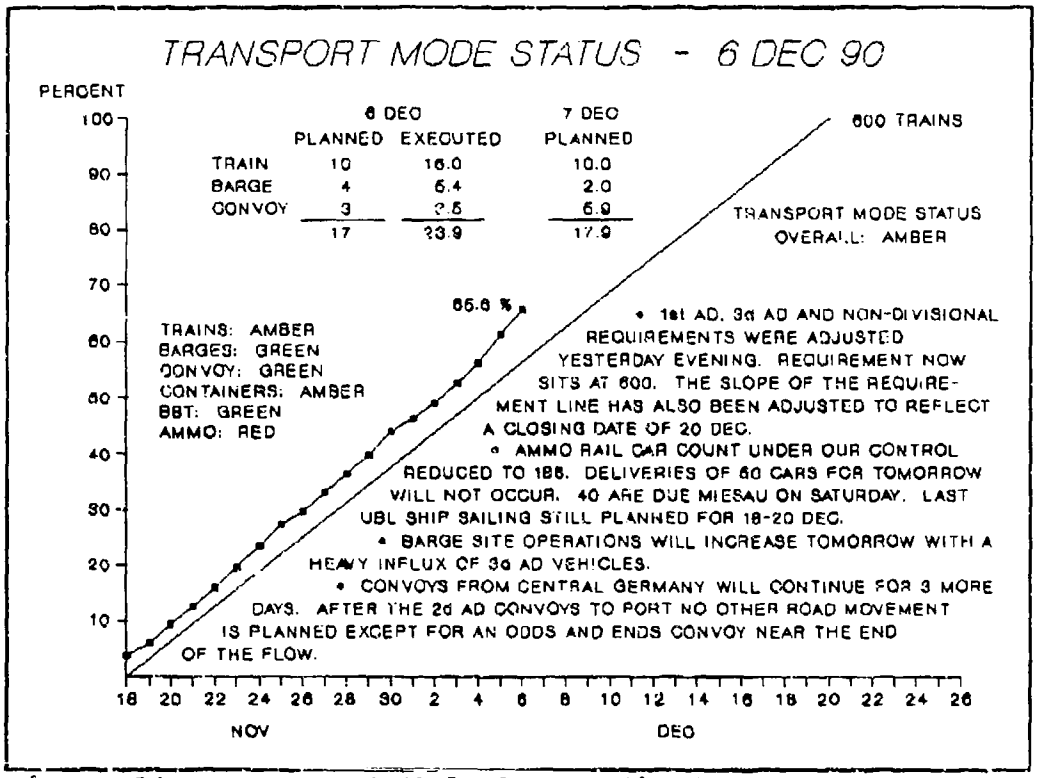


Figure 14. Transport Mode Status Chart.

execu[illegible] because the real train number was not received until the following morning.

The performance line shows the calculated cumulative percentages of the requirement. This percentage would change based on the total number of train equivalents expected to be used. In this example, estimates of the total requirement had gone up from 585 trains to 600.

As information became available about what had gone, Laposata could compare that with estimates of what was left. Improved forecasts allowed for better estimates of the number of trains and number and type of special rail cars

required. Better forecast requirement estimates combined with accurate reporting of accomplishments also allowed him to determine performance and the level of effort that had to be expended. This was accomplished in this manner.

During the pre-planning phase the pile of equipment was estimated. Later, with the mission start date and the "to be completed by" date an average number of trains required per day could be estimated. The baseline performance chart, therefore said 15.4 train equivalents per day had to be pulled by port to have the estimated 585 trains at port by 26 December.

Each day reports on the number of vehicles and pulled trailers per convoy were received and converted into train equivalents. This was also done with the number of barges and these two figures were added to the actual trains pulled since the last report period. The result was added to the previous total to determine the total train equivalents pulled to date and added to the production curve. This was compared to the straight requirements line to determine mission performance. If production was above the goal, there was slack in the event our original estimate of the requirements was low. If the production line dipped below the curve, Laposata would then look harder for ways to increase production (get more train equivalents in route to port) as soon as possible.

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