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AN ANALYSIS OF THE SUPPORT CAPABILITIES OF THE FORWARD DEPLOYED--ETC(U)
JUN 79 G K JOHNSON

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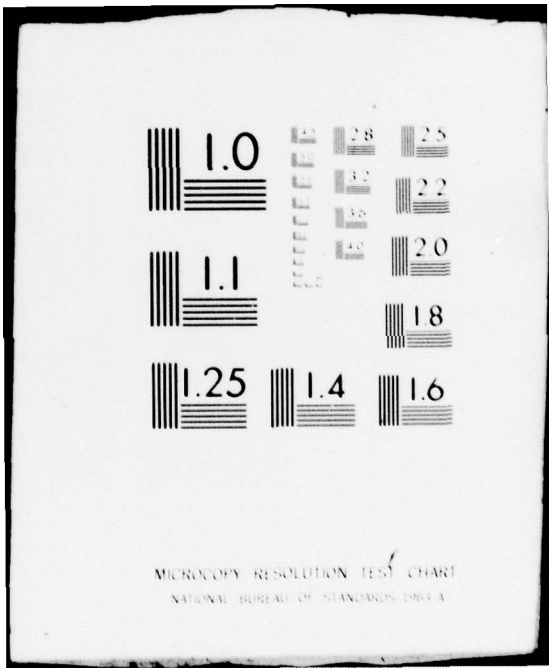
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This study, through use of a model corps, attempts to analyze the capability of the forward deployed corps to sustain itself in combat the first 5 days of a "come as you are" war in Europe. The analysis is performed in the assumed environment of the anticipated OPFOR capabilities and tactics, the US "active defense" response, and the logistics requirements generated by that response. It attempts to determine: if the COSCOM, formulated under the "austere support" principle, is adequate to

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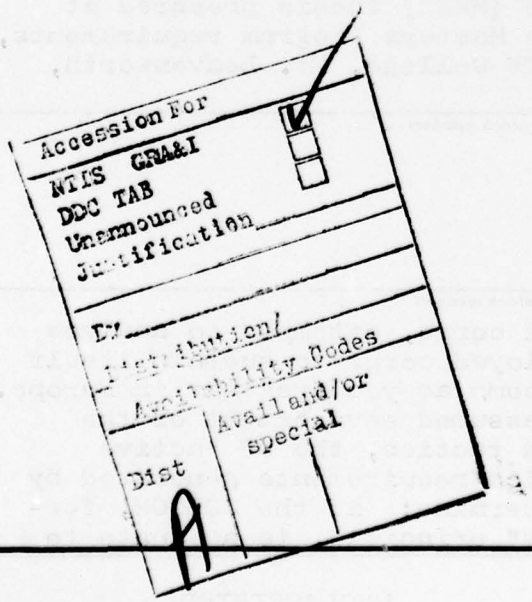
support the Corps until augmentation can be effected; if the combat service support structure detracts from the corps' combat power; and what changes in the COSCOM's employment can be made to improve combat service support.

The analysis indicates an organic transportation capability far less than that required which impacts on support available throughout the logistics services spectrum. Further, support plans presently in effect assume host nation support will provide logistics sufficiency. These assumptions are made although formal agreements have not been concluded, legislative difficulties exist, and requirements have not been quantified.

Recommendations of the analysis include quantification of host nation support requirements, a reorganization of the COSCOM battalions and further more detailed analysis in several logistics areas.



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AN ANALYSIS OF THE SUPPORT CAPABILITIES OF THE FORWARD DEPLOYED CORPS'

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

GERALD K. JOHNSON, MAJ, USA
Henry Rutgers Scholar, 1971
B.A., Rutgers College, 1971

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Approved by:

_____, Research Advisor

_____, Member, Graduate Faculty

_____, Member, Graduate Faculty

_____, Member, Consulting Faculty

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AN ANALYSIS OF THE SUPPORT CAPABILITIES OF THE FORWARD DEPLOYED CORPS' by Major Gerald K. Johnson, USA, 140 pages.

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This study, through use of model corps, attempts to analyze the capability of the forward deployed corps to sustain itself in combat the first 5 days of a "come as you are" war in Europe. The analysis is performed in the assumed environment of the anticipated OPFOR capabilities and tactics, the United States "active defense" response, and the logistics requirements generated by that response. It attempts to determine: if the COSCOM, formulated under the "austere support" principle, is adequate to support the corps until augmentation can be effected; if the combat service support structure detracts from the corps' combat power; and what changes in the COSCOMs employment can be made to improve combat service support.

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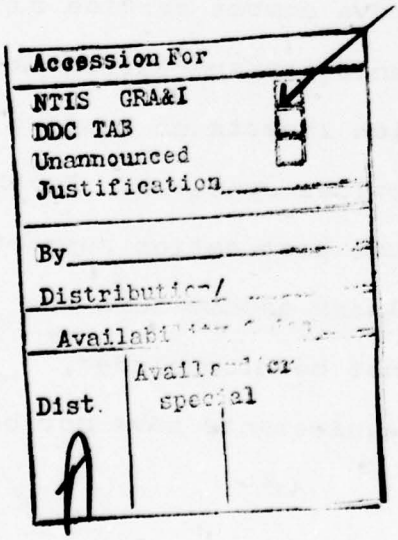

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CHAPTER I

INTRODUCTION

PREFACE

The combat ability of any force is directly proportional to its readiness and its ability to sustain itself in combat. This sustainability and to a large extent the readiness, is dependent upon the logistics support allocated to the force. The logistics effort allocated is a result of a combination resulting from the national interests, politics, national strategy and tactics, and can be called the sustainability of the force. Over the past few years, the logistics assets allocated to U.S. Army forces in Europe have been continually reduced. This has occurred during a period wherein the Warsaw Pact has added 100,000 men to its force, increased its tanks by 40 percent and its artillery pieces by 50-100 percent. The Soviet Union has made dramatic improvements in its land and air mobility and changed the character of the Soviet air arm to an offensive striking power with the range to attack targets deep in Western territory.[1]

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[1]Opinion expressed by General Alexander M. Haig in an address given at the Royal United Services Institute.

Today, in compliance with its commitments to the North Atlantic Treaty Organization (NATO) the United States has deployed two Corps in Central Europe. It is these Corps that are the most directly affected by the Warsaw Pact threat. Present studies and scenarios of Warsaw Pact attack possibilities have led to the firm belief that such an attack would be sudden, massive, and aimed at decisive success within a few days.

The war may well begin with a conventional phase in which neither side would employ nuclear weapons. W. Gordon Welchman, consultant to the Mitre Corporation, who studied the problem for the Air Force concluded that it would be a war based on speed which would call for a speedy response by NATO forces.[2] The attacker's objectives would probably be limited. Therefore, time for mobilization and reinforcement of inplace forces would also be limited. The forward deployed corps would have to respond with what they have on hand plus additional resources that could be provided on short notice.

This thesis is an analysis of the ability of the forward deployed corps to support itself during such a response.

BACKGROUND OF THE PROBLEM

The Chairman of the Joint Chiefs of Staff, when

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23 March 1977, published in RUSI, Sep 77, pp. 18-22.

[2]W. Gordon Welchman, "An Integrated Approach to the Defense of West Germany," RUSI, Sep 74, pp. 48-52.

addressing the Congressional Armed Services Committee in January 1978, stated:

> . . . in nearly every area of military strength there has been a relative decline over the years in relation to the Soviet Union, our principal potential adversary . . .. In light of the extensive growth, in the military capabilities of the Soviet Union, it is questionable whether what has been done is enough to assure the security and well-being of our country in the coming years.[3]

Strategic force trends for the period 1967-77 show the United States ahead in six of eight categories in 1967; but only in one, the number of bombers, in 1977. In general purpose forces, the Soviet Union has larger forces than the United States, develops more new systems, and produces more weapons and equipment for its forces. Moreover, the trends indicate a continuation, and in many areas, an increase in these disparities. The Soviet Ground Forces outnumber those of the United States in virtually every category: Divisions (10:1); tanks (5:1); artillery pieces (4:1); personnel carriers (2.5:1); and heavy mortars (2.5:1). The United States holds a significant advantage only in helicopters (3:1) which is now being seriously challenged by the Soviets building program.

Dr. Percy A. Pierre, Assistant Secretary of the Army for Research Development and Acquisition, in a presentation to the House Armed Services Committee, stated that the United

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[3]George S. Brown, General, USAF, Statement to the Congress on the Defense Posture of the United States for FY 1970, 20 Jan 78, p. 1.

States has lost its lead in attack helicopters to the Soviets. The Soviet Hind assault helicopter carries considerably more armament than the TOW-Cobra and has an air-to-air attack capability.[5] Comparing the forces of the United States and USSR in isolation is somewhat unrealistic since the real adversary relationship is the Warsaw Pact versus NATO. The NATO-Warsaw Pact ground force balance is not as disparate; but it is still unfavorable and reverses no significant disparity favoring the Soviets.

The most significant variable for both sides is mobilization. Although it is not the most likely course of action, the Warsaw Pact can attack in Europe without waiting for reinforcements from the USSR. Such an eventuality would seriously shorten the warning time for NATO mobilization and would place the NATO forces at a distinct disadvantage, since it would reduce reinforcement and barrier construction even further. More likely, in the event of a decision to attack, is full mobilization by both sides. In this situation, the Warsaw Pact forces would significantly outnumber those of NATO. Reinforcement of inplace forces would be required throughout NATO. The most significant of these reinforcements is the deployment of U.S. forces from the Continental United States; which has been planned upon since the founding of NATO. These reinforcements would depend on airlift (for

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[5]Gene Famigletti, "Official View Army Equipment 'Second Rate'," Army Times, 12 March 1979.

responsiveness) and sealift (for capacity). These factors contribute to making U.S. force readiness, mobility assets and control of the Atlantic critical. If the Soviet Union makes a maximum effort to interdict the lines of communication, heavy attrition of early United States reinforcements can be expected.[6]

General Alexander Haig, Supreme Allied Commander Europe, has stated that the net direction of all the conflicting readiness and equipment trends is toward a reduced warning cushion for NATO of a Warsaw Pact attack.[7] Despite the demonstrated ability to move dual based aircraft and REFORGER[8] units quickly, a short warning scenario may well constrain NATO to initially defend, with the forces already deployed, augmented at best with some portion of the redeploying units. "Air mobility assets are heavily committed in the early days of reinforcement. Low stockage levels in Europe will require early over ocean resupply; sealift assets are sufficient, but early losses are expected to be high."

A serious shortcoming in US military posture, and of NATO generally, is lack of the sustaining capability for extended conventional conflict.[9] Present readiness of the

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[6]Brown, p. 10-16. [7]Haig, RUSI, Sep 77, p. 20.

[8]Acronym for Return of Forces to Germany.

[9]Brown, p. 16.

active forces is relatively high, but there are U.S. reserve component units which have to be activated and deployed for the full effectiveness of the combat force already deployed to be realized. The Secretary and the Chief of Staff of the Army, in testimony before the House Armed Services Committee, stated that the reserves are presently completely inadequate for the first 30 days of War and that manpower is inadequate in reserve units scheduled for deployment prior to M+30.[10]

The effect of these developments and the decisions made during peacetime; the airlifting of repair parts, the virtual elimination of theater army type organizational assets from Europe, the reduction in the sustaining base as a trade off for the "sixteen division" force; means that the preponderance of the combat service support forces required are in the organized Reserves and must be mobilized and transported to Europe. Presently the most serious shortcoming in U.S. military posture and of NATO forces generally, is the lack of the sustaining capability. Sustainability and combat capability are prerequisites of success in a war in Europe and for the achievement of United States and NATO objectives.

The current tactical doctrine, developed to solve the problem of numerical inferiority, is known as the Active Defense. This doctrine attempts to defeat a numerically

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[10]Larry Carney, "XM-1 Tank Program Running Low on Cash," Army Times, 19 Feb 79, p. 4.

superior enemy through knowledge of his tactics. It works by applying the enemy's doctrine, positions and capabilities to the terrain to determine his future actions far enough in advance to allow the countering of the attack by positioning and repositioning units. This enables the commander to thicken the defenses in critical areas at the proper time to blunt an enemy's thrust. The defense fights a significant battle forward of the main battle area with a covering force designed to reveal the enemy's organization, disposition, and strengths and to give some indication of his intentions. The covering force withdraws, passing the battle off to the brigades of the main battle area who then focus on destruction of the attacking force's main thrust. The brigades utilize predefined battle areas with prepared battle positions; thickening the defense by taking risks in areas where an enemy approach is unlikely, and enhancing their strength through the use of combat multipliers (enhanced operational systems, new technology, use of combat engineers to augment employment of weapons systems or degrade enemy weapons systems capabilities, etc.) and maneuver.

In summary, the espoused doctrine is a tactical response characterized by movement. Implicit in this response is a corresponding reliance on the CSS elements to either move with the combat units as they respond to the attacker or to rely on the predisposition of critical logistics elements in areas where resupply and refitting is anticipated.

The present logistics system grew out of the experiences of World War II. With the adoption of the active defense, the Army made fundamental changes in the way it conducts operations without a clear analysis of the effect of those changes on the operational capability of the logistics base or development of additional logistics doctrine. During the period since 1968 Army manpower levels, both military and civilian, have steadily declined. Military strength in FY 78 was 58 percent of the 1968 total, yet the number of divisions differed by only 2 percent (16-1/3 to 16).[11] Combat formations in Europe closely approximate the number there were prior to the Vietnam era with the drastic reductions in manpower. The difference in the numbers has come from the reduction of support forces. This reduction has been accomplished by reduced headquarters and support units; by greatly reduced theater depots and supporting Europe, supply wise, by implementation of the Direct Supply Support (DSS) and Air Line of Communication (ALOC) systems. Under these systems Continental United States depots support European supply and maintenance units with direct shipment. The ALOC system allows for air movement of Class IX (repair parts), except for overweight items--routinely, and any part on an emergency basis. Combat service support units were further reduced as a result of the Department of Defense Appropriations Act, 1975, PL 93-365,

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[11] DOD Annual Report, FY 79, dated 2 February 1978, pp. A-2 and B-3.

88 statute 399, section 302, commonly referred to as the Nunn Amendment.

Senator Nunn reported that major studies of the United States' European deployed forces concluded that U.S. forces were structured to operate as an expeditionary force. That is to say, they were configured with all the logistics support that would have been required for them to conduct independent operations. Secondly, he reported the U.S. forces were structured to fight a longer war than either the other NATO allies or the Warsaw Pact forces. The conclusion reached by Senator Nunn was that provided U.S. forces relied on the host nation for some of their support considerable savings in support troops and combat service support could be realized by bringing United States planning in line. He pointed out that this decision would require a major policy change and partial loss of the capability to operate independently.

The Defense appropriation Act for FY 75 read:

> Sec. 302. (a). The United States military forces in Europe can reduce headquarters and noncombat military personnel located in Europe. Therefore, except in the event of imminent hostilities in Europe, the noncombat component of the total United States military strength in Europe authorized as of June 30, 1974, shall be reduced by 18,000 . . .. The Secretary of Defense is authorized to increase the combat components strength of United States forces in Europe by the amount of any such reduction made in noncombat personnel . . ..[12]

It further stated that combat component meant combat arms

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[12]U.S. Congress, Senate Armed Services Committee, Policy Troops and the NATO Alliance, report by Sam Nunn, Committee Print, Washington, 1974, pp. 6-9.

units of battalion or smaller size. The passage of the appropriation act and the subsequent implementation of its provisions amplify the following important factors which have not been properly addressed and still present a basic problem today:

a. Detailed host nation agreements are required before planning based on host nation support can reasonably be done.

b. The forfeiture of much of the overseas theater's support package represents a major change to policy with far reaching implications.

c. The Communications zone implications are fairly obvious; but the implications for the Corps support command and its ability to support needs to be examined minutely.

d. The reliance on civilians for combat essential support requires careful evaluation because of the possibilities of mass civilian movement, the German government's "stay out" policy to the contrary notwithstanding.

e. Host nation support is essential and is not without cost. The most obvious of these costs being risks due to loss of independent operating capability.

Until the Host nation support issue, along with doctrinal guidance on reliance upon it is resolved, there can be no coherent doctrine for echelons above the Corps or definitive COSCOM guidance for Corps wide services.[13]

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[13]Warren K. Rees, LTC, Host Nation Support: Relying

The U.S. Army Deputy Chief of Staff for Logistics published a set of concepts to be utilized in logistics planning, policy, doctrine and training.[14] These concepts which were the conclusions of the Phase II Study, which was "initiated as a result of the existence of voids in current logistics concepts, policy, doctrine and planning" were adopted as the Department of the Army "frame of reference" for logistics planning and doctrine development.[15] Concept 22, concerning Host nation support was superceded by a Department of the Army policy letter; subject: Host Nation Support (HNS). This letter states, in part: "Host nation support is the preferred means of meeting valid but otherwise unsatisfied support requirements. . . . Where HNS is impractical, Reserve Component (RC) units will be programmed to satisfy the requirement . . . (when they) could be expected to meet the necessary deployment schedule. If neither HNS nor . . . RC units is feasible, additional active support units will be programmed (sic) against the requirement, within projected resources.

"j. Adjustments to U.S. force structure and

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on NATO Host Nations for traditional MP missions(U), unpublished U.S. Army War College group study project, 22 May 78.

[14]Office of the Deputy Chief of Staff for Logistics, Logistics Concepts for use in Policy, Doctrine, Planning Training, June 1978 (mimeographed).

[15]Logistics Concepts, p. 1.

deployment plans will follow rather than anticipate the availability of Host nation support."[16]

Thus, Host nation support, by our present doctrine, is the preferred method for alleviating shortfalls in the communications zone (COMMZ). Important inferences can be drawn from this concept but it seems clear that the doctrinal void concerning HNS at the Corps level still exists.

The effect of planning for utilization of the reserve components as the combat service support forces filling the gap between peacetime capability and war time necessity in the corps has been drawn into serious question recently with testimony and statements about the fill rate of the reserve units, their experience, and mobilization capability. It appears obvious that the direct result of the readiness of the reserves is without question. The greater the delay in mobilization to be expected, the larger and more sustainable the forces in the forward deployed Corps will have to be.

STATEMENT OF THE PROBLEM

This thesis applies existing logistics doctrine and planning data to a model forward deployed Corps to analyze its ability to support itself for the first five days of a conventional short warning war in Europe. The nature of the

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[16]HQDA Letter 550-78-1 dated 31 May 1978.

war is such that although tensions had been building and first indications of imminent attack became apparent at D-14, the decision to mobilize the NATO nations, and move forces into their wartime positions, is not made until seven days prior to the expected attack. The corps being analyzed is reinforced with a mechanized infantry division prior to the initiation of hostilities. No additional corps logistics units are received and none are projected prior to D+5.

This study departs from this point to draw inferences about the logistical capabilities of the present COSCOM structure and functions in the forward deployed corps.

QUESTIONS TO BE ANSWERED BY RESEARCH

As researched and formulated by this thesis, conclusions are to be drawn about the corps and the support rendered it by the COSCOM. The first question to be answered is whether the COSCOM, formulated under the austere support concept, is adequate to meet the needs of the corps until it can be augmented. A decision will be made as to whether the CSS structure restricts or detracts from the combat power of the corps in any way. Lastly, the employment of the COSCOM assets will be analyzed to determine if there are changes that can be made to improve support.

ASSUMPTIONS

The assumptions made to facilitate this analysis are: First, that the threat and balance of power in Europe will remain relatively stable. Further, the model corps is assumed to be representative enough of existing forward deployed corps to allow a reasonable analysis. The computational factors for situationally dependent combat planning in Chapter VII, FM 101-10-1 are reasonably representative of expected experiences fighting the active defense. Lastly, the COSCOM assets of the corps could be reasonably expected to be augmented by D+5 in all but the most extreme cases.

SCOPE

This dissertation analyzes key functional logistic support areas of the COSCOM. These areas are all classes of supply, maintenance, field services, health services, personnel replacement, and transportation. The dissertation analyzes requirements versus assets at the wholesale level.

METHODOLOGY

The methodology of this investigation is to model a forward deployed corps and its COSCOM representative of those presently deployed in Europe. The assets and requirements of this corps will be analyzed by present doctrine and shortcomings and excesses identified. Various methods will be

proposed to overcome any deficiencies developed and conclusions drawn as to their efficacy, all to the purpose of determining the viability of the present COSCOM structure supporting the active defense.

In Chapter II the intrinsic value of logistics is explored through a review of the literature. Using examples from other wars of coalition, an appreciation of the magnitude of required logistics support as well as its importance as an element of combat power is given. The importance is further reinforced by a sampling of the published statements of military historians, technicians, and politicians on logistics and the effects of logistics on the battle.

Chapter III is the model of the forward deployed corps. In this chapter the organization and function of the corps' maneuver elements and support units are explored. The model is completed by calculating and analyzing the capabilities of the COSCOM units by function.

Chapter IV presents the support requirements of the corps as it is presently organized. The organization and functioning of each aspect of support is examined and required support, by presently accepted planning guidance, is calculated. The requirements and capabilities of each function judged significant to the first five days of battle are critically explored.

In Chapter V, other analyses of the logistics system in Europe are reviewed for supporting and conflicting

conclusions and the shortcomings of the corps logistics sustainability are discussed objectively. The adverse effects of organizational, doctrinal or employment policies on the support calculated to be available are discussed and ideas to preclude or reduce the effects are discussed.

The summary of the study as well as conclusions are presented in Chapter VI, requirements for the support of the corps for the first five days are totaled and conclusions on the effectiveness of COSCOM support by functional type is drawn. Recommendations for specific courses of action to enhance support are made and areas that require additional research are pointed out.

CHAPTER II

LOGISTICS - THE UNEXAMINED KEY

This chapter is a short survey of the key elements of the modern battlefield, their interrelationships, and those things on which an army depends for success. A brief overview of other wars of coalition is made to bring to the discussion an appreciation of the lessons of history and the insight of past leaders as regards: the efficacy of plans, the effects of technology, and the magnitude of support required to field an army.

The active defense, reduced to its most basic, has as its crux, knowledge of the enemy's capabilities and tactics. This knowledge is combined with intelligence on his strength, location, and dispositions then "templated" on the applicable terrain to interpret his movements and thrusts to predict the location and direction of his main attack. Once this is done, the defending commander modifies his battle plans to meet the thrusts and to defeat the main effort by moving combat formations from areas where attack appears unlikely to favorable positions on the enemy's main avenues of approach.

With the above as the basic requirements for success with the active defense, several key elements become apparent: intelligence, communications and mobility.

Intelligence is required for the commander to have knowledge of the enemy's strength and disposition so that he can apply this knowledge in an effort to determine: where the attack will occur, when, and what the opposing commander's objectives are.

Communications are required first to transmit the intelligence information from the collecting source to the tactical operations center or the commander so that it can be interpreted and applied. Secondly, communications (of some type) are required to transmit the directions deploying the defenders as the commander desires. Lastly, the commander needs communication to receive the results of his actions, and to give further directions or call for support, as required. The aspects of mobility that make it key are evident prima facie. Without mobility and the attendent mobility enhancing support (bridging, etc.) there can be no massing of units to meet the threat.

The requirements of the key elements of the active defense are being met in the forward deployed corps in the following manner: The requirement for improved intelligence gathering facilities and equipment is met by the reorganization of intelligence assets into communications electronics warfare intelligence (CEWI) battalions and groups, utilization of national intelligence sattelite assets, employment of battlefield radars, reconnaissance aircraft, and extensively improved signals intelligence. Communications requirements are being

met through deployment of product improved tactical radios, wider application of signal security devices, utilization of tactical microwave and automatic switching equipment and improved training. New and product improved combat vehicles and artillery weapons will reduce the time required to mass and increase the accuracy of massed firepower. The ability to move entire combat formations from point to point on the battlefield is commonplace and often being taken for granted.

There is one other element of the defense that has not yet been introduced here, logistics. Without efficient, effective logistics support there can be no battle. Martin Van Creveld, in his book Supplying War, defines logistics as "the practical art of moving armies and keeping them supplied."[1] He made the point of the chapter in his preface where he stated:

> Before a commander can even start thinking of giving battle, of . . . penetrating, enveloping, encircling, of annihilating or wearing down, . . . he has - or ought - to make sure of his ability to supply his soldiers . . ., those 3,000 calories a day required . . ., - that roads to carry them to the right place at the right time are available and . . . not be impeded by either a shortage or superabundance of transport.[2]

Throughout the research for this dissertation the importance of maintaining the forces of war, on the strategic as well as the tactical level kept recurring in the words of

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[1]Martin Van Creveld, Supplying War, Cambridge University Press, Cambridge, 1977, p. 1.

[2]Ibid., p. 3.

high level leaders and historians. Harold Brown, Secretary of Defense stated:

> Our need for general purpose forces obviously is dictated by much more than the strategic concept of supplementing our allies. We will have satisfied the need only if we have provided for . . . the maintenance of forward defenses for at least as long as any enemy could sustain his attack. Which includes replenishing that force by providing replacements, reinforcements and sustaining supplies.[3]

Throughout his study of the effect of logistics on war through history, Van Creveld points out the criticality of sustainability of forces and admonishes:

> . . . on the pages of military history books, armies frequently seem capable of moving in any direction at almost any speed and to almost any distance once their commanders have made up their minds to do so. In reality they cannot and failure to take cognizance of the fact has probably led to many more campaigns being ruined than ever were by enemy action.[4]

A statement by General Malin Craig, Chief of Staff of the Army from October 1935 to August 1939, leads one to the belief that the adoption of the active defense without detailed consideration is not unique. He stated that when he took office, army war plans had a decided lack of realism. He continued: they "comprehended many paper units, conjectural supply and a disregard of the time element which forms the main pillar of any planning structure."[5] His statement indicates his

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[3]Harold Brown, "How to Measure the Balance of Power," Command, Vol. 1, No. 3, Sep 78, p.2.

[4]Van Creveld, p. 2.

[5]Mark Skinner Watson, "Prewar Sentiment and its Effect on the Army," USC&GSC Course Book, P-611, Applied Military History, p. 5-15.

appreciation of the importance of the logistics element. Key general officers after the allied victory of World War II all, in their after-action reports, or in their memoirs, testified to the crucial role the services of supply served. A.C.P. Wavell, of British Army fame, said it best in 1946 when he wrote:

> The more I see of war, the more I realize how it all depends on administration and transportation . . .. It takes little skill or imagination to see where you would like your Army to be and when; it takes much knowledge and hard work to know where you can place your forces and whether you can maintain them there. A real knowledge of supply and movement factors must be the basis of every leaders plan; only then can he know how and when to take risks with those factors, and battles are won only by taking risks.[6]

Winning the first battle of the next war is crucial. The problem facing the NATO allies is one of masses of armor larger than anyone has ever put on a battlefield before. They will be fighting an enemy who believes numbers can win. To defeat the masses of armor will take the active defense, novel approaches and an unprecedented logistics effort.[7] This logistics effort not only must be stronger, providing more support per man than ever before in history, but it must also be smarter because of the tremendous variety and complexity of equipment that will be maneuvering and firing as never before.

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[6]A.C.P. Wavell, Speaking Generally (London, 1946), pp. 78-9, quoted in Van Creveld, p. 231-2.

[7]General Donn A. Starrey, Interview in "Sunday Magazine," Kansas City Star, 15 Aug 75.

The requirements of the next war defy comprehension and boggles the imagination. A short survey of past coalition warfare logistics requirements follows to aid the placing of logistics required to support an army in perspective.

When the allies went ashore at Normandy, the mechanization of armies came of age. This mechanization caused a rapid expansion of logistics requirements to support it. The actual assault was made by 176,475 men coming ashore from an armada of four thousand ships, covered by an air umbrella of eleven thousand planes, riding in 1,500 tanks and 20,111 vehicles of more than 14 basic types. Never before had armies struck with such sustained speed. Never before had the striking power and velocity of combat been so completely regulated by the ability of supply forces to cope with unprecedented burdens. The American Army in the European Theater of Operations (ETO) had a combination of firepower mobility and armored might never before seen in warfare. There were more than a half million vehicles, more than three and a quarter million small arms and fifty thousand artillery pieces.[8]

Transportation was acute. With all available transport moving around the clock and with commanders . . . applying the most stringent economies, the supply demands of the armies could not be met following the catapult like advance from Normandy. Overshadowing everything was a critical shortage of gasoline.

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[8] The American Heritage Picture History of World War II, pp. 482-8.

Eisenhower's armies, needing one million gallon per day, were receiving only a fraction of that amount. Red Ball vehicles started out with 5,400 vehicles and hauled an average daily tonnage of 5,088 tons over the 81 days it operated, with its peak day being 12,342 tons. From D-Day to the end of February (79 days) 2,352,875 tons of bulk oil was used and all except that used locally (by the servicing units) had to be transported by truck at least once.[9]

In 1945 only about 30 percent of the air and ground forces were in combat units. The rest of the force was engaged in overhead operations or services of supply (SOS.)[10] Another source reports SOS on D-Day being 31 percent of the entire army of the European Theater of Operations, not including those organic to the divisions. This ratio approximated the ratio of SOS to combat troops in the American Expeditionary Force at the close of World War I 1-2, although nearly six times as much material per man was needed in the Second World War. The number of vehicles outnumbered WWI by 58:1, three times the vehicle tonnage owned in WWI was lost in WWII. During the assault on Metz a single corps expended more than 1,000 tons of ammunition daily for ten days. In another fight, gunners of a 155 battalion fired 7,043 rounds in two days, an average

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[9]Randolph Leigh, LTC, 48 Million Tons to Eisenhower, The Infantry Journal, 1945, p. 70.

[10]Kent Roberts Greenfield, The Historian and the Army, Rutgers University Press, New Brunswick.

of one round every 25 seconds.[11] In 1918 the artillery of the AEF firing one round per gun could throw 102 tons. The ETO's artillery in 1945 could throw more than four times as much. Today's corps alone can throw one-fourth as much.[12]

In comparing the two wars, nearly six times as much materiel was needed per man in the second World War as in the first. WWII was also more mechanical and heavier and the materiel, although bulkier, was more delicate. The cubic footage of the average WWI ton was 63 cubic feet. In World War II it had increased to 99 cubic feet, a 57 percent increase in space required each time a ton was moved.

The trend continues: The amount of supplies required per man per day continues to increase in an exponential fashion; but the technological improvements causing the growth of requirements can be and are, also applied to the support effort. This would appear to be why the proportion of support personnel has not varied 5 percent in fifty years. Huston, in The Sinews of War discussing the impact of the mechanical revolution states that the revolution in warfare did not come until the revolution in transportation had spread

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[11] Leigh, p. 71.

[12] A division has 54, 155mm tubes and 12 8" tubes with round weights of 135.74 and 262.52 lbs respectively. The Corps structure being analyzed is 3 divisions plus corps artillery. To get the corps figure the formula is (# Divisions X 155 weight X # tubes) + (# Divisions + # Corps Artillery Battalions) (8" round weight # of tubes) = 3X135.74X54) + (3 X 7)(262.52 X 12) = 26.746 tons or approximately 26% WWI throw weight.

through military operations completely. The revolution came with the widespread use of the airplane, the motor truck, the railroad.[13] This suggests that the technological breakthrough cannot be fully exploited for combat application until wider adaptation is accomplished. The same phenomenon probably explains why the support units have been able to support evolving technology without having an increasing share of the total effort.

Recently the proportion of service forces to combat troops has again come under fire. The "tooth-to-tail" ratio is being used as a measurement of the efficiency of an army. A low service portion, or small tail, is being perceived as being more desirable. "But this is to misunderstand the relation of service to combat units . . . the aim of a military organization is not to make do with the smallest number of supporting troops but to produce the greatest possible fighting power."[14] In every account of the planning for the early phases of World War II it is seen that the forces required for logistics were under estimated. This happened although the same problem had existed during World War I. The World War I experience was that initially the French and English had to help, then combat units had to be turned into port battalions to keep the supplies moving.[15]

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[13]Huston, The Sinews of War, Government Printing Office, 1965, p. 679.

[14]Van Creveld, Supplying War, p. 235.

[15]Huston, p. 336.

In today's environment, planners seem to be heading for the same mistake. The assumption that combat strength can be increased by arbitrary reductions in logistics forces is false economy. This delusion is based upon a failure to understand the nature and magnitude of the logistics base on which modern combat forces must rest before they can effectively fight. It is imperative, in the current outnumbered position of NATO forces, where machines are being substituted for men, that every military professional have a clear idea of the effect of various deficiencies on the combat strength.[16] Because of the strategy of defeating the opposing forces (OPFOR) with the striking power of tanks, artillery, and attack helicopters, maneuvering to attack from favorable positions at maximum ranges, the loss of any piece of equipment because of the outnumbered position is a multiple loss in combat power. The problem is multiplied by minimum stock logistical procedures which make the risk of down equipment and thus reduced combat power greater. These procedures have developed over time and are a result of:

a. Doctrinal decisions to minimize stocks for most cost effective repair support.

b. Direct supply support procedures which support European units from CONUS.

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[16]Henry E. Eccles, Logistics in the National Defense, The Stockpole Company, Harrisburg, 1959, p. 321.

c. The reduction of vehicles in support units which reduced the ability of the supporting unit to carry expanded lines on a fluid battlefield. Analyzing the situation and the effects it appears that the "combat power of the Army depends on the spare parts supply and distribution system."[17] Maintenance of equipment has become of paramount importance. Considering that armored and mechanized units are expected to win outnumbered three to one; and at best a unit can expect to achieve 90 percent availability of equipment; for every percentage point below the optimum a unit falls, its combat effectiveness is reduced by a factor of three (the three to one he is outnumbered). Hence, a 5 percent drop in availability drops his combat effectiveness 15 percent. The effects can be shown with equipment other than combat vehicles but not as dramatically.

The active defense is a doctrine of movement: forward, backwards, laterally and mounting an occasional counterattack. Disregarding for the moment the confusion, communications problems, enemy actions, normal equipment failures, misrouted convoys, missed rendevous, etc.; a brief examination of two supply classes will give some orientation on the magnitude of active defense operations in a forward deployed corps.

The Class III requirement for a Division fighting the active defense can be estimated for planning purposes in the

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[17]M.G. John G. Hill, "Have We Enough Spare Parts to Win a War," Army, Feb 79.

following manner: The Division base (assume a Mechanized Infantry Division) requires 64 gallons of MOGAS (MO) and 182 gallons of diesel fuel (DI) for each kilometer it moves along a road; movement across country increases the requirement by $2\frac{1}{2}$ times. Fighting the active defense, this division moves its headquarters at least 15 kilometers (km) when it displaces, and displaces it at least once a day. It is estimated that this move will take on the average about four hours to complete. The division base is estimated to operate all its equipment an average of twenty hours a day minus the move time. This unit then requires 960 gallons of MOGAS and 2,730 gallons of diesel for its average move. Stationary operations the other 16 hours require 16,672 gallons MOGAS and 12,160 more gallons diesel for a total daily requirement of 17,600 MO and 14,900 diesel for the Division Base.[18] The division will have at least three Brigades of four Battalions each plus the Cavalry Squadron which will displace four to five times each day moving four to five km each move, across country, moving about 10-12 kilometers per hour. These units then, spend about $2\frac{1}{2}$ hours per day moving, and use 5,444 gallons of MOGAS and 16,331 gallons diesel just for displacing. The battalions because of the movement time, would only be able to operate their equipment about 12 hours a day, resulting in a 6,100 MOGAS and 4,368 gallons diesel requirement. The

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[18]US Army Field Manual 101-10-1, Staff Officers' Field Manual, Organizational, Technical and Logistic Data, July 1976, p. 3-29.

Division's aircraft consume 3,586 gallons of JP-4 per hour and it is estimated that they will fly 12 hours daily for a daily requirement of 43,032 gallons of JP-4. The total Division's daily requirements add up to 29,000 gallons MOGAS; 36,000 gallons diesel and 43,000 gallons JP-4. This requirement has to be analyzed in view of distances fuel has to be transported, storage capability within the division, number of trucks to make distribution, distance to the distribution point, and dispensing time. It becomes apparent that the capacity of the Division, which prima-facie is enough to carry the daily requirement, might in fact be inadequate for the active defense.

Looking at the Class V requirements in the same manner, all the consumption figures of FM 101-10-1 must be modified to reflect the effects of the new tactics. What will be the effect of attempting to engage all armor targets initially at maximum range with TOW missiles? Will precision guided munitions decrease artillery ammunition requirements? Can the COSCOM transport the required amount of ammunition to the forward ASPs? Can the division keep its basic load uploaded and still resupply itself given today's expenditure rates? An armored division's basic load is 2,275 short tons. In position defense it expends an average of 1,800 tons per day.[19] It follows that one must ask if the battalions can both maneuver and resupply themselves given their present

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[19]Ibid., p. 3-73.

structure? Consider, approximately half of the division's basic load is carried in the combat load of the vehicles. That leaves approximately 1,100 tons to be carried. The division has 132 8 ton trucks and 110 5 ton trucks authorized.[20] At first glance this appears to be quite enough capacity for ammunition carrying. The residual of the basic load would require all of the 8 ton trucks to carry it. When other cargo truck requirements are considered, travel times to supply points, queing times, etc., the capability to leave that ammunition uploaded does not appear to be available. The unloading and uploading of this ammunition will be a serious hinderance as the combat trains try to keep up with the maneuvering battalions.

Non-divisional units, which includes the corps' cavalry regiment, engineer brigade, artillery units, etc., are supported directly by the COSCOM. These units are deployed across the sector as far forward as the battalion rear and during covering force operations in front of the forward edge of the main battle area.

Present doctrine and planning guidance states that the "Corps General Support (GS) Base transitions to war with a minimum of 10 days of theater PWRMS (prepositioned war reserve materiel) on hand. This allows the Corps to fight with

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[20] FM 101-10-1, p. 2-125.

its own battle-oriented resources for at least 10 days until outside support can be brought to bear.[21] This materiel includes tanks, armored personnel carriers, guntubes and artillery. There should be 14 days of supply stockage at the direct support unit (DSU) levels with visibility from the materiel management center (MMC). The items of the combat stockage lists are from the peacetime lists and with the exception of fire control and armament should be based on exercise experience as well as the best judgment of the planners.

In summary, the corps support command (COSCOM) is an austere organization built to support the peacetime force deployed in Europe in the most economical and cost effective manner possible. It is less than 50 percent mobile, is organized at authorized levels of organization (ALO) below these of the units it supports and is structured to support a position defense. Its communications are inadequate in amount and capability at a time when it is being planned upon for the largest most diversified logistics effort for a COSCOM in history. A review of logistics history shows that the same miscalculations and mistakes in logistics planning that have been made in the past are again being made. Logistics units have been cut to provide additional combat soldiers, support units are not filled and are not equipped in a manner comparable

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[21] ODCSLOG, Logistics Concepts, Jun 78, Concept One, p. 1.

to the units they support. These units are handicapped from the beginning and the corps will pay for their ineffectiveness in reduced combat power.

CHAPTER III

STRUCTURE OF THE CORPS

The corps being constructed, although entirely non-existent and constructed utilizing only readily available unclassified data, is modeled on the forward deployed corps of Europe. Its organization and functions as well as capabilities and relationships are an amalgamation of those existing in the forward deployed Corps today. The objective of creating a corps rather than utilizing an existing one as the model is to avoid the restrictions of examination caused by particular characteristics of either corps or its area of operations, and further, to preclude production of a classified thesis. The ultimate objective of the examination is served by manipulation of the model and drawing parallels to reality from the conclusions.

The examined phenomenon is the ability of the corps to support itself during the first five days of a short notice war in Europe. Short notice is defined here as any period of warning of imminent attack of fourteen or fewer days. Other assumptions implicit in the designation froward deployed are: employed in an established theater before the outbreak of hostilities, well established logistics facilities, firm missions, defined areas of responsibility, established command relationships, host country agreements, and plan for reinforcing forces.

The number and types of combat and combat support units to be employed in a given operation are determined by the mission the force has been assigned; the nature, disposition and capabilities of the enemy force; the characteristics of the area of operations and the availability of transportation, supplies and equipment. The definition of "characteristics of the area" includes: terrain, climate, population, natural resources and manmade works. When the combat force has been decided upon, the logistics support activity can be constructed using standardized factors.

For purposes of analysis our corps is a three division heavy corps with combat, combat support and combat service support units assigned simulating the constraints presently experienced by the corps in Europe. The maneuver units of this model are one armored and two mechanized infantry divisions along with one armored cavalry regiment. The organization chart of the corps is Figure 3-1.[1]

The corps' organization for combat is a total of thirty-seven battalions organized and equipped for ground combat; three combat aviation battalions plus the cavalry regiment's air cavalry troop.[2] The battalions are organized

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[1]U.S. Army, Field Manual 101-10-1, Staff Officers' Field Manual Organizational, Technical and Logistic Data, July 1976, para 2-7a.

[2]Totals are arrived at in the following manner: each mechanized infantry division has six mechanized and four armor battalions plus a divisional cavalry squadron; the armor division has five mechanized and six armor battalions plus the divisional cavalry squadron; the ACR has three squadrons--a total of 37 battalions or their equivalent.

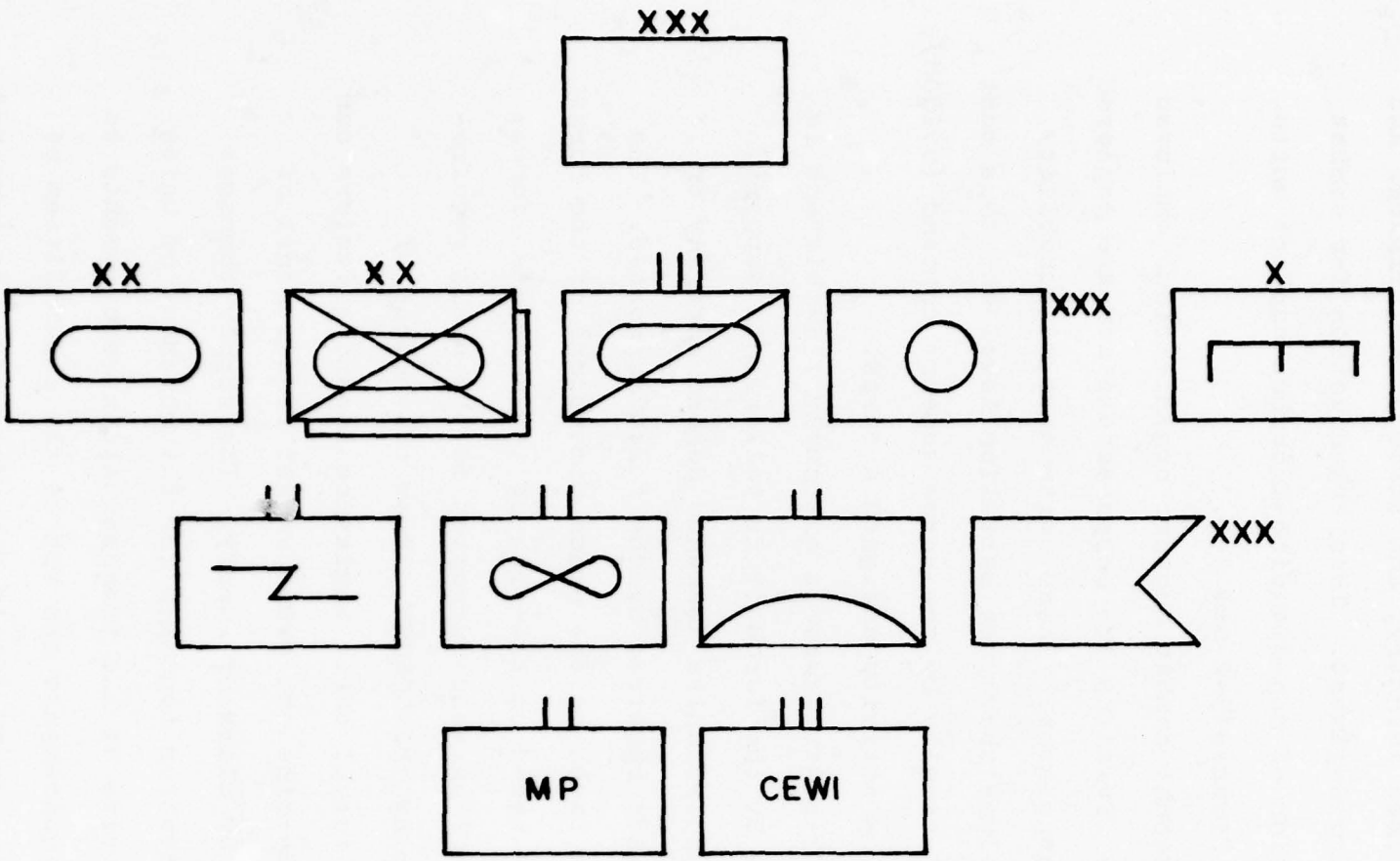

Figure 3-1. Corps Organization

into eight mechanized infantry, and three armor brigades and the Armored Cavalry Regiment. This organization for combat and the organization of non-divisional combat support units are displayed at Figures 3-2 and 3-3.

Non-divisional combat support organizations employed in support of the divisions are corps assets and are employed throughout the corps area. These units have no capability to support themselves above the battalion level and thus must be supported logistically by the corps support command (COSCOM), the basic logistics activity assigned a corps.

The COSCOM's structure is extremely flexible and is determined solely by the force it is tailored to support. Combat service support units assigned depend entirely on quantative workloads required by the force supported. The quantification is based on the gross dimensions of the corps and are initiated based on the size of the supported force; i.e., the number of persons supported is the basic requirement for structuring the COSCOM. From the number of personnel in the force, basic logistics planning factors can be applied to determine the gross weight requirements of supplies per day by class of supply. The supply tonnages along with augmentation tonnages for the movement of units are applied to arrive at the transportation requirements to be met. These requirements are fit to the capabilities of various units given in FM 101-10-2 to determine the type and number of transportation units required. Further

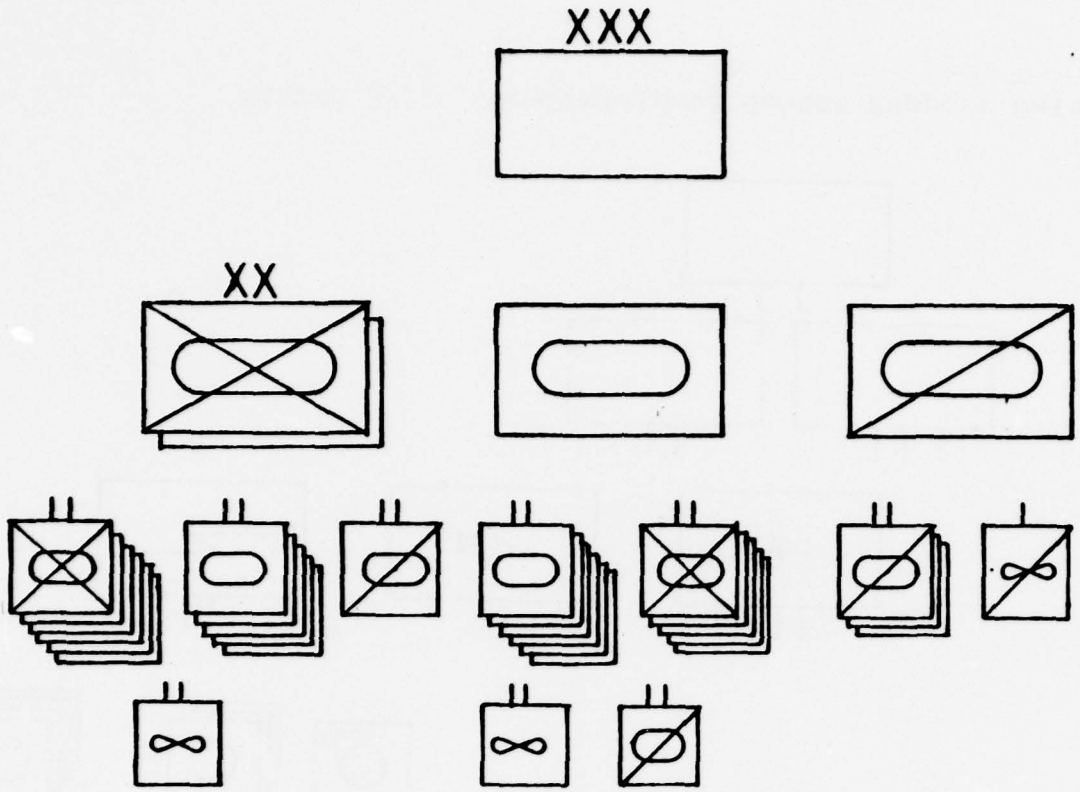

Figure 3-2. Corps Organization for Combat

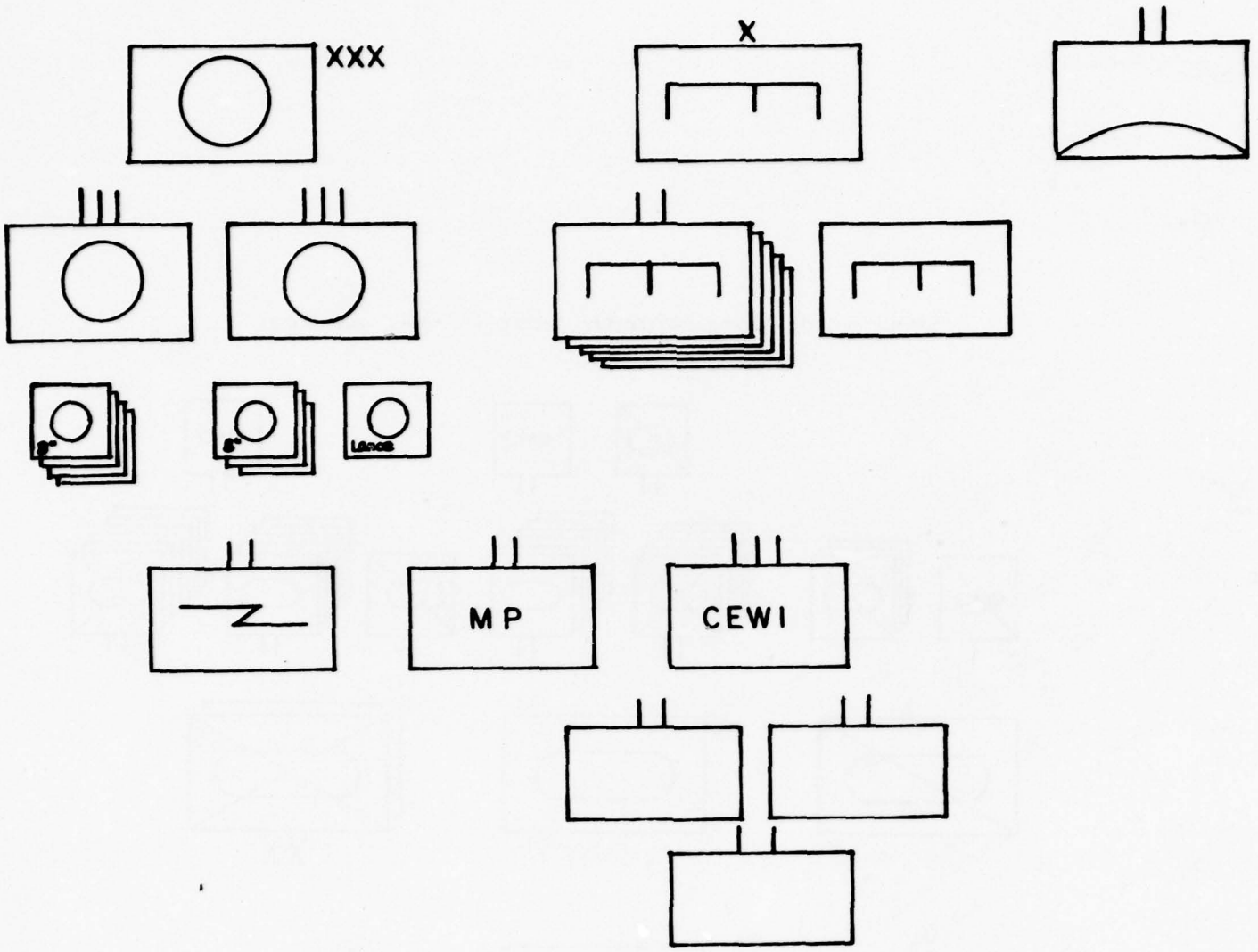

Figure 3-3. Non-Divisional Combat Support Units

quantification of equipment to be maintained, casualties to be evacuated, troops to be transported etc., are used to arrive at other unit requirements for the structuring of the COSCOM.

The COSCOM organization is structured to support a larger or smaller corps by the addition or deletion of company, detachment or team sized combat service support (CSS) elements.[3] The CSS units of the subject corps, because of the requirement to be constrained by the organization of the forward deployed corps were not determined by the above structuring methods. However, because the COSCOMs of the forward deployed corps were constructed in this manner, its organization should be similar except for one obvious difference. An additional mechanized infantry division has been added to the corps without additional increases in combat support or combat service support activities. This addition, without changing the COSCOM structure, is entirely realistic. Because of the demonstrated ability of the U.S. Army to reinforce its European units with combat formations within a short period of time, it follows that within the M-day to D+5 period an additional division could, and probably would, deploy without concurrent reinforcing of the receiving corps' logistics command. In fact, the inherent capability of increasing CSS effort by the addition of company sized

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[3]U.S. Army, Field Manual 54-9, Corps Support Command, April 1976, para. 1-5b(1).

building blocks, coupled with the separate unit organization of the reserves, lends itself to the employment of CSS units individually as they become available and are required.

The corps' combat service support (CSS) assets are normally divided into two categories: divisional and non-divisional. Divisional CSS assets include that logistics capability extant in the combat units and the assets of the divisional support command (DISCOM). Non-divisional CSS is all other logistics capability in the Corps, other than that organic to the non-divisional battalions, and is that of the COSCOM. The COSCOM supports the Corps in its entirety and may perform personnel and administrative, finance, maintenance, transportation, supply and field services, ammunition, civil affairs, health services, communications-electronics, military police, rear area protection and explosive ordnance demolition services. This support is divided between two types of major subordinate elements: corps wide service organizations and support groups/brigades. Corps wide services usually include ammunition and petroleum supply, personnel and administration services, transportation and civil affairs activities. Support groups (or brigades) provide supply, maintenance, and field services on an area basis to non-divisional units in the Corps rear area.[4] Those support groups positioned forward also

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[4]Ibid., p. 3-8.

provide general support and backup direct support to the divisional combat service support units.

Figure 3-4 shows the organization of the CSS elements of the COSCOM. Three maintenance and supply battalions provide all supply and maintenance for the corps units except Classes V, some Class VII, VIII (medical) and marine, railway and aviation peculiar repair parts. Aviation maintenance and supply are provided by the Aviation Intermediate Maintenance (AVIM) Battalion. The labor service battalion which began as an expedient that has its roots in the utilization of displaced persons in labor battalions during World War II is an officially organized unit with its own TO&E. The units of this battalion augment each of the other battalions (except AVIM) and special troops with a company or detachment each. The special troops battalion consists of a data processing unit, one field service company, and two additional transportation units, one a control headquarters and the other administrative transportation.

Combat service support, because of the organization of the COSCOM, lends itself to discussion by function. Functional support activities cut across organizational lines and levels, making compartmentalized examination impractical. Therefore, each function is examined as it exists, non-divisionally, for the direct support of non-divisional units, how it supports the divisions, and where the systems have interplay or a common source.

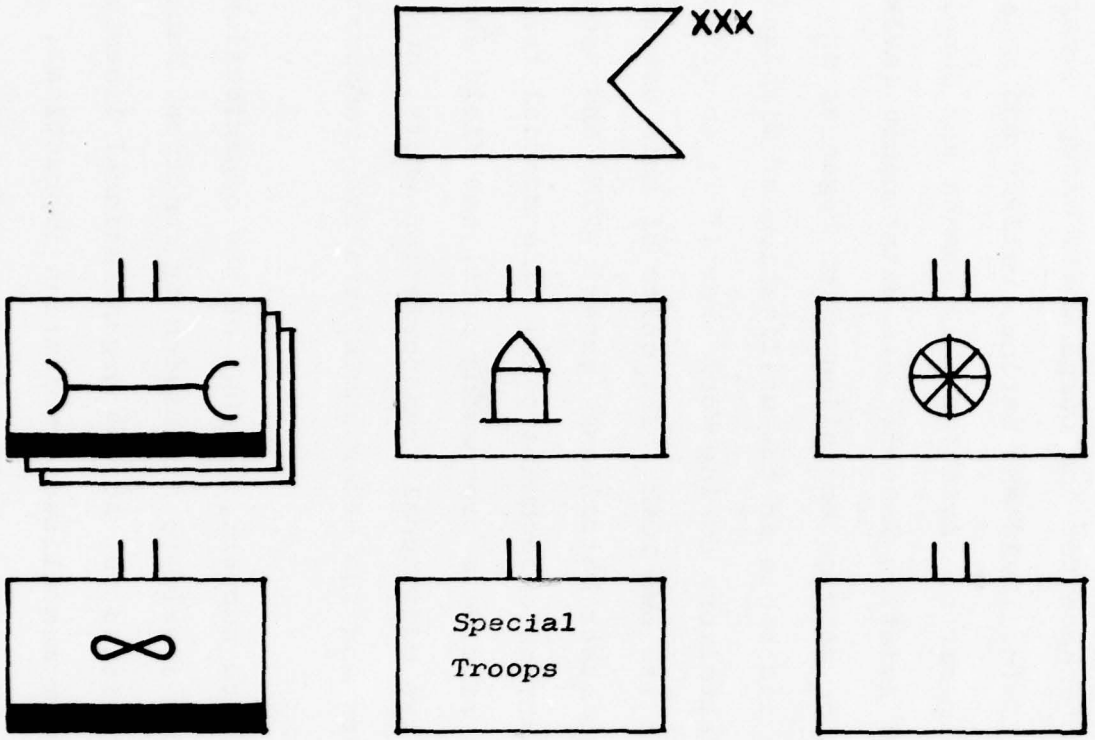

Figure 3-4. Organization of the COSCOM.

[19]Ibid., p. 3-73.

The COSCOM supports the corps through corps wide services, which is the general support (GS); or wholesale level and through support groups providing direct support (DS) on an area basis; which can be viewed as retail services. The support groups are organized and allocated resources based on population and densities of equipment expected in the supported area. Figure 3-5 is an illustration of a corps area logistic layout. The COSCOM support groups are positioned to support the non-divisional units which are employed spread from the covering force area past the brigade rear boundaries. The support groups also provide backup DS and emergency GS to the DISCOM when required.

The assets to perform this CSS in the corps by function are as follows:

Personnel replacement. Divisionally, personnel replenishment functions will be handled by the Adjutant General company of the DISCOM which implements the policies and priorities of the G-1. Non-divisional personnel replenishment is handled through the Corps Personnel and Administration Battalion, which may or may not be a subordinate unit of the COSCOM. This battalion centralizes personnel actions and implements the policies of the supported non-divisional commanders.[5] Both units report requirements directly to the theater army personnel command (PERSCOM) and serve to monitor

[5]FM 54-9, p. 4-1, 4-2.

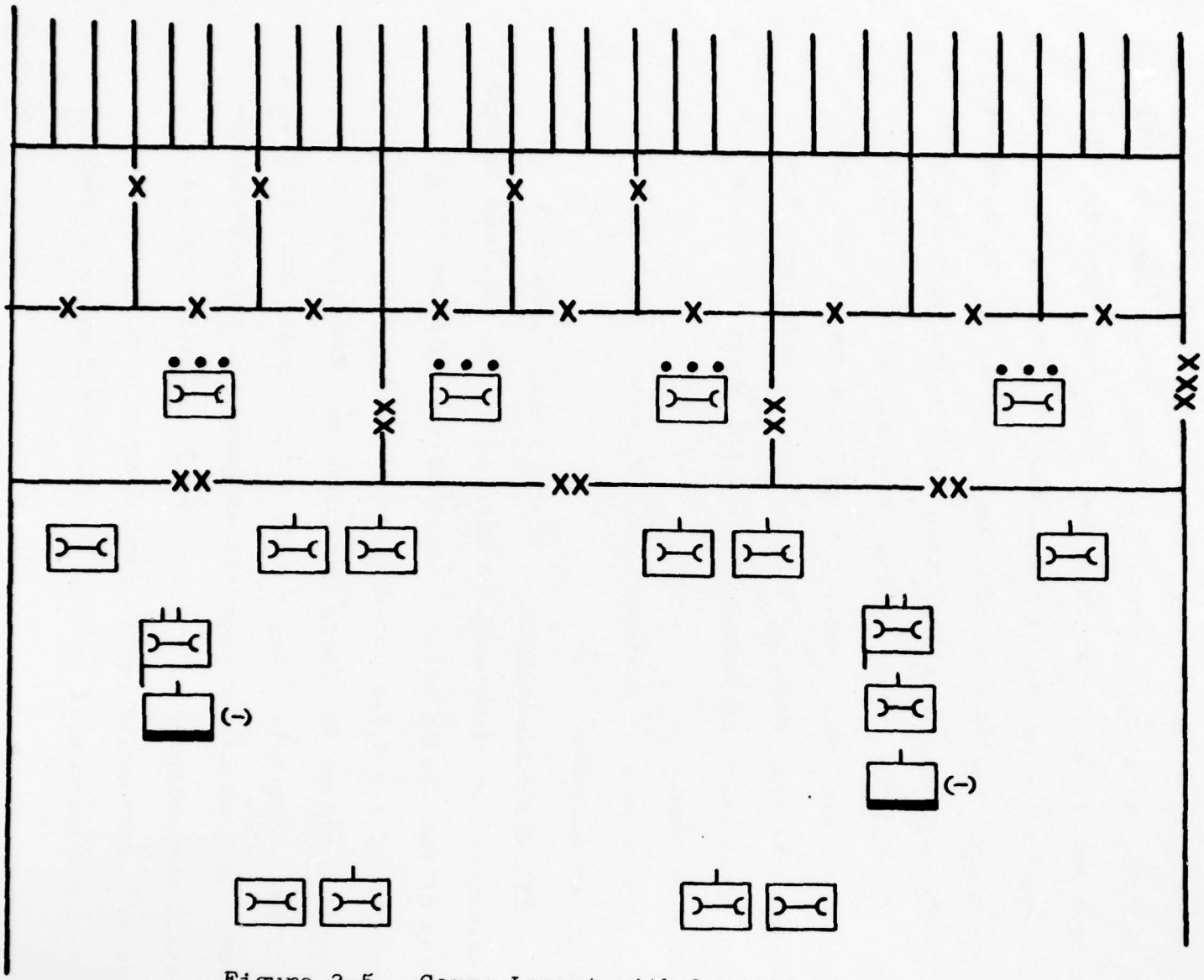

Figure 3-5. Corps Layout with Logistic Areas Posted

and assist replacements to their unit of assignment. The AG company when authorized, has a replacement detachment which gives it the capability to process up to 300 individuals at any given time. The P&A Battalion monitors its assets through personnel regulating detachments. The replacements are received through the actions of the personnel actions center (PAC) of the theater's personnel command PERSCOM and are based initially on the units preplanned casualty estimates and shortage reporting through SIDPERS (Standard Installation and Division Personnel Reporting System) system.

Further analysis requires some amplification on the organization of the COSCOM in order to surface assets and preclude misunderstanding (see Figure 3-6). The supply activities, other than ammunition and medical, are located in the maintenance battalions and have the characteristics shown in Figure 3-7.

Supply. The three Supply and Service Companies each have the following capabilities:

a. Supply and service for approximately 8,000 non-divisional troops.[6]

(1) Requisitioning, receiving, storing and issuing Class I, II, IV, and VII supplies (except COMSEC, air, rail and marine peculiar items.

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[6]U.S. Army, Field Manual 101-10-2, Staff Officers Field Manual Organizational, Technical, and Logistic Data Extracts of Non-divisional Tables of Organization and Equipment, 15 July 1977, p. 17-20-21.

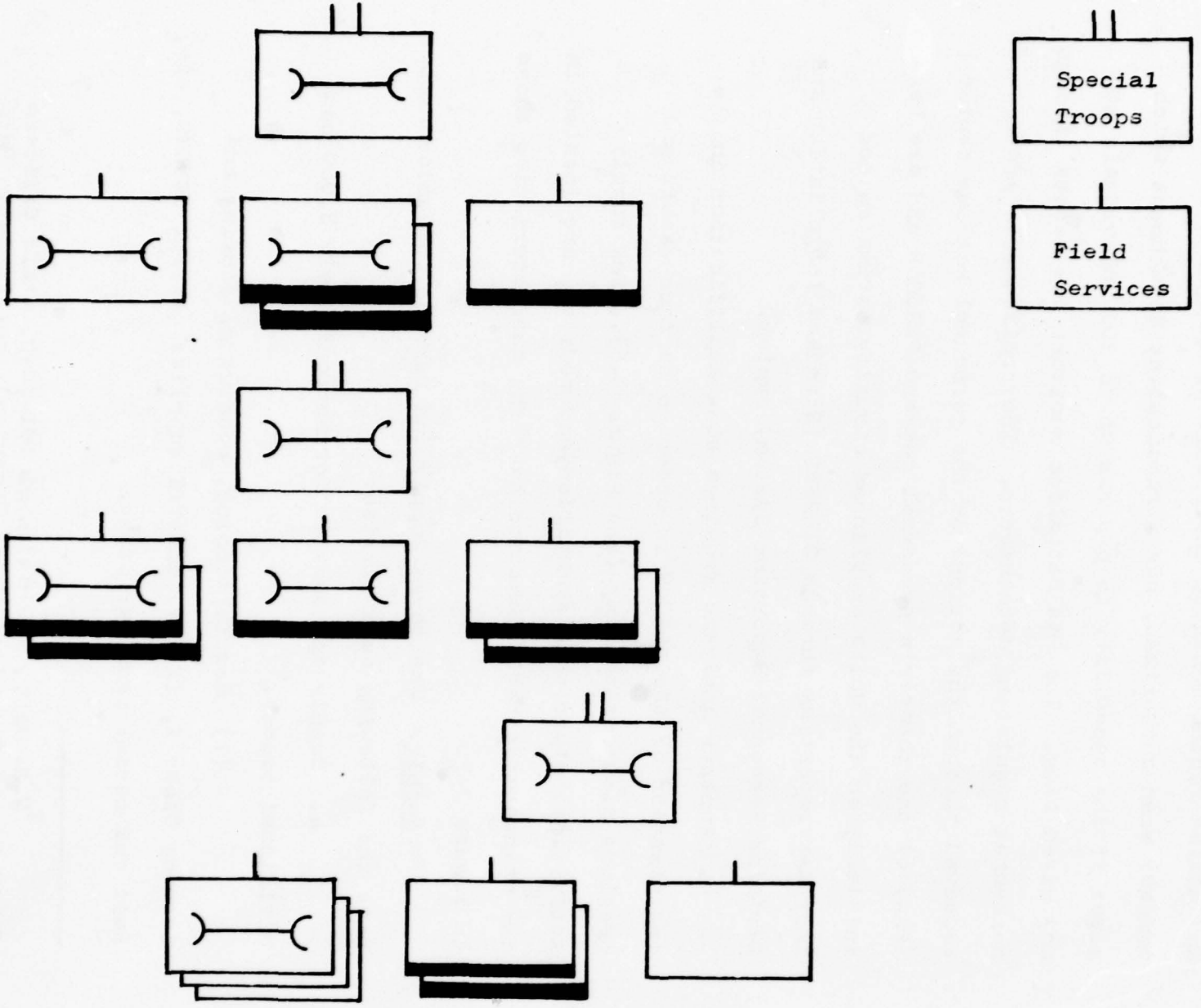

Figure 3-6. Supply Activities in the COSCOM

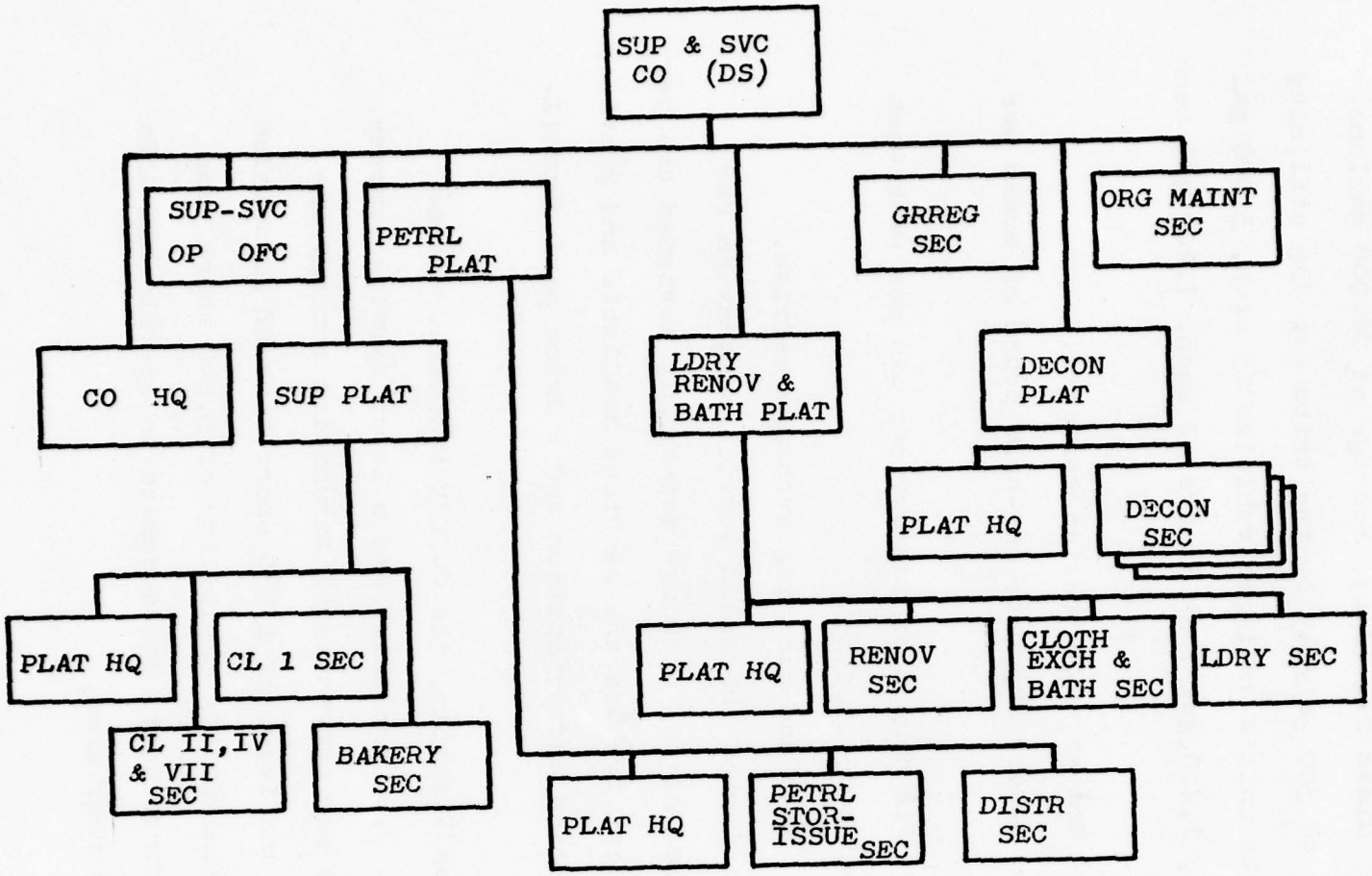

Figure 3-7. Organization of the Supply and Service Company

(2) Class III (POL); storage of 70,000 gallons, distribution of 46,500 gal/day by two trips per day utilizing 75 percent of the unit's assigned vehicles (5 each, 5,000 gal tankers, 3 each, 1,200 gal tank trucks, 2 each, 1,200 gal tank and pump units).

(3) Graves registration services.

(4) Bakery support; one-half pound of bread per man per day.

(5) Six pounds of laundry per man per week when operating two ten hour shifts.

(6) Bath and clothing exchange service.

The addition of the field service company in the special troops battalion, although ostensibly assigned one per supported division, trebles the services available and provides a salvage collection and evacuation and a labor pool capability.[7]

For Class V supply, the COSCOM has one Ordnance Battalion of two U.S. companies and a labor service company. The capabilities per conventional ammunition company are receipt storage and issue of 1,680 short tons of ammunition per day for a total COSCOM capability of 5,040 short tons daily.[8] These three units can separate to operate six ASPs across the corps rear area.

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[7] FM 54-9, p. 8-24.

[8] FM 101-10-2, p. 7-2.

The COSCOM Class IX (repair parts) capability is also found in the Maintenance Battalions. Each maintenance company has a repair parts supply capability, but general support (GS) companies have the capability for internal resupply only. They do not resupply customer units nor provide backup stocks in peacetime but are required to do so in war. The COSCOM organization includes twelve maintenance companies: three light equipment maintenance (GS), three heavy equipment maintenance (GS), and six direct support companies (four forward and two rear).

Maintenance. Forward direct support maintenance companies are positioned forward in the support group area of responsibility and provide non-divisional forces direct support maintenance through the use of on site and contact repair teams. These units have the capability of providing 777 repair man hours daily; of which 51 percent and 32 percent are automotive and engineer repair respectively. The forward DS Company also has the capacity to receive, store, and issue 5,000 repair part line items, and provides direct exchange for selected items.[9]

The direct support companies (rear) that are assigned provide 1,080 repair man hours per day, each at level 2, of which 22 percent is automotive, 31.5 percent is engineer and 5 percent is armament equipment effort. This unit has the

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[9]Ibid., p. 17-25, 283,500 man hours annually plus 365 days equal 777 man hours per unit per day.

capability of supporting 7,000 repair parts line items and provides backup to the forward maintenance companies for maintenance effort as well as supplies.[10]

The General Support Maintenance Companies, light equipment, provide repair capability at the GS level for those items of equipment beyond the capability of the DS companies, divisional and non-divisional, and provide them backup for overflow. They provide 976 repair man hours daily of which 34 percent is power generation equipment; 34 percent is dedicated to communications equipment and electrical devices. These companies have a supply activity of considerable size but provide repair parts only for internal use. They do not provide backup supplies for the user nor the direct support companies.[11]

The heavy equipment maintenance company was organized to provide repaired components for return to the supply system utilizing fixed shop assembly line methods. They provide a total of 925 repairman hours daily each; of which 60 percent is automotive, 10 percent is armament and 2 percent is fire control instrument repair. This unit too has a supply activity which is capable of handling up to 5,000 lines of repair parts but like the LEM Company it supports only its organic shops.[12]

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[10]Ibid., p. 17-26, 394,200 divided by 365 days.

[11]Ibid., p. 17-16, 356,400 divided by 365 days.

[12]Ibid., p. 17-18, 337,500 divided by 365 days.

Transportation. The transportation assets of the Corps are one truck battalion of three companies, an aviation intermediate maintenance battalion; and a car company and movements control company in the special troops battalion. Transport capability of the medium truck company, utilizing the generally accepted planning formula: 75 percent availability of its 60 semi-trailer combinations, making two round trips per shift local or one round trip line haul gives a 2,160 short ton per day local or 1,080 short ton capability line haul.

The light-medium companies are comprised of 60 each $2\frac{1}{2}$-ton and 10 5-ton tractor trailer combinations. Capabilities of these units are 276 short tons each on a one time lift. They can manage to transport 1,104 short tons per day local haul and 552 short tons each line haul.[13]

Medical. Corps medical units prescribed in doctrine have recently been assigned to the COSCOMs in Europe where they were previously directly subordinate to the MEDCOM, a theater army activity. The medical unit is organized on a functional basis structured to meet the requirements of the troop density supported. It provides evacuation, hospitalization, medical supply and maintenance, medical regulating, optometric, dental, veterinary, laboratory and preventive medicine services. The size of the medical unit in a COSCOM

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[13]Ibid., p. 27-9.

ranges from a brigade to a group. In a corps of the size being examined here, the medical activity would be a group with an organization as shown in Figure 3-8.[14] The headquarters medical group operates the medical system throughout the corps area except those organic to divisions and other tactical units. The primary means of hospitalization in the corps are the 200 bed combat support and 400 bed evacuation hospitals. With the medical group arrangement shown at Figure 3-8, the evacuation policy of the corps is critically important. This importance relates not only to bed space, but because the corps' medical units are responsible for the evacuation of patients from the tactical unit clearing stations ambulance units must be allocated.[15]

The total CSS capabilities of the COSCOM as presently organized are as follows:

a. Personnel replacement:

(1) Each division adjutant general company has the capability to process 300 replacements at any one time when authorized a replacement detachment.

(2) Non-divisionally the personnel and administration battalion, through the use of personnel regulating detachments can monitor from one to four hundred replacements daily.

b. Supply (other than Class VIII, and air, marine and railway transport peculiar):

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[14] FM 54-9, p. 11-1. [15] Ibid., p. 11-2.

The assets of the COSCOM are the supply and service companies attached to the maintenance battalions. It was determined that these organizations have the capability to provide supplies for approximately 24,000 non-divisional soldiers when operating as direct support companies.

(1) Class I: The three supply and service (S&S) companies possess the capability to receive, store and issue more than 72,000 meals per day plus maintenance of a reserve stock.[16] In the divisions the supply and transport (S&T) battalions have the personnel authorized to give them the capability to handle the number of meals required for the division. The non-divisional S&S companies and the divisional S&T battalions both receive their replenishment from the nearest COSCOM bulk Class I point. Given the present configuration of the COSCOM, one company, augmented, would be providing corps wide support operating a class I railhead supporting the other two units which would be providing DS in the support groups, and the division support command.

(2) Class II: These are secondary items of supply authorized in allowance tables and authorization documents. The class includes expendables and consumables; e.g., clothing, tentage, administrative supplies, and housekeeping supplies and equipment. The supply platoons of the S&S

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[16] If each unit is capable of supporting 8,000 troops then 3 units times 3 meals x 8,000 equals the 72,000 meals the maintenance of safety levels is assumed when the units are configured to support this number. Seventy-two thousand meals per day is conservative given the method of computation.

companies are capable of hardling up to 5,000 lines of these supplies. At the estimated rate of Class II requirement in FM 101-10-1, 3.26 pounds per man per day, the corps S&S Company supply platoon is capable of handling in excess of 39 tons of Classes II and IV per day.

(3) Class III (POL): The COSCOM has the capability to store, in 10,000 gallon bladders, 210,000 gallons of POL products. Further, by utilizing 75 percent of the units' assigned POL carrying assets for two trips per day the POL platoons have the capability of distributing 139,500 gallons per day. The S&T Battalion of each AIM (Armored, Infantry, Mechanized) Division can store 73,500 gallons and distribute to ground vehicles, utilizing their assets for two trips, from 197,000 to 225,000 gallons per day.[17] Each aviation battalion has the organic capability to dispense 85,500 gallons per day.

(4) Class IV: Barrier and construction material. The COSCOM supply units can support 8,000 troops each. This results in a capability of handling 24,000 times the estimated usage per man per day, 8.5 pounds or a capability of handling 122 short tons per day. This class of supply, because of its critically in combat and ease of diversion during peacetime is controlled through command channels. The great majority of the tonnage is handled through engineer channels and transported from GS to user utilizing organic engineer transportation

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[17] Computed a 75 percent availability, two troops each for the armored division's 30 5,000 gallon tankers, and the mechanized infantry's 25 5,000 gallon tankers.

assets.

(5) Class V: The Corps has one ammunition battalion composed of three conventional ammunition companies with a combined capacity to receive, store and issue, at up to six ammunition supply points, a total of 5,040 short tons per day. Because of the cumulative handling effects, the 5,040 tons per day in the worse case (whereby each pallet of ammunition must be unloaded, stocked, rewarehoused and subsequently picked for issue) capability would be reduced to 1,680 tons per day given 75 percent availability of materials handling equipment (MHE). Increased MHE utilization of 83 percent for the maximum sustained capability, and use of troops to manhandle ammunition would increase the capability of each unit to a minimum of 2,000 tons per day. In the best of cases, the ammunition would be handled but once and the full 5,500 tons capacity could be utilized.

(6) Class VI would be handled in the Class I channels and presents no problem divisionally nor non-divisionally.

(7) Class VII has been dismissed preemptorially within and without the divisions. This occurs because of the controlled nature of major end items and the fact that direct support supply units habitually only physically move the paper pertaining to the transaction. The receiving units goes back to a railhead or a general support activity to physically obtain the item. The heavy equipment maintenance companies have the capability to receive and issue the Class VII on an

area basis. Since these units won't be supporting the supply system, especially in the first five days, their supply platoons have more than enough capability to handle the Class VII. Also the possibility of utilizing these units to deprocess end items should not be overlooked.

(8) Class VIII is handled and transported in medical channels and is not a responsibility of the COSCOM supply or transportation system per se. The operative assumption is, the MEDCOM and medical group authorized capability is adequate for the task.

(9) Class IX, repair parts, are the responsibility of the supply platoons of the maintenance companies. The four forward direct support companies have the capability of receiving, storing and issuing 5,000 repair parts lines. They are backed up by two rear maintenance companies with the capability of handling 7,000 lines for the non-divisional units. All Class IX requirements will be supported by ALOC, cannabilization and drawing on the stocks of the GSU's which support the equipment type.

c. Maintenance: Non-divisional units are supported by twelve maintenance companies, nine of which are direct support. They repair and return equipment to the customer. Repairs will be made on site at the customers location, as much as possible, utilizing maintenance contact teams. For jobs requiring more extensive work or time, contact teams from the general support units will be called forward or the

equipment evacuated to the general support unit. The GSUs will be organized into commodity centers to maximize support effort equipment and capabilities. The commodity center concept will be carried over from peacetime intact providing an operation for every commodity with the repair parts, special tools and experience base required. The six DS maintenance companies provide a total of 5,740 productive man days annually, 478 repair days each day. With a mean time to repair of ten hours per job and no dehabilative effects, i.e., travel time, efforts lost to attacks, etc., the COSCOM DS units could perform 2,870 repair jobs in the first five days of the war. The GS companies provide additional capability for backup and overflow of 7,990 repair man days during the period an additional possible 2,388 jobs.[18] These COSCOM Companies also are available to backup the divisional maintenance battalions should the need arise.

d. Transportation assets of the COSCOM are one battalion plus one company with a total lift capability short haul of 4,368 short tons per day or line haul 2,184 short tons per day.[19] The tonnage capability of the car company is not

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[18]DS capability is computed at 478 days time 12 hour day times 5 days equals 28,680. At 10 hours per job the DSUs can perform 2,868 jobs during the period. The DSUs have a total of 1,990 man days during the period computed by 81 man days per day in each LEM Company and 77 man days per day in the HEM Companies times the 5 days of the period. The number of possible jobs is computed by multiplying the repair man days by 12, the length of the day and dividing by 10 the mean time to repair (MTTR).

[19]Medium truck company capacity 2,160 tons/day plus

included because of its assignment as an administrative support rather than a mission unit.

e. Medical support groups have recently been assigned the corps and provide it with two evacuation hospitals and a combat support hospital. These hospitals provide the capability for intensive care of 80 patients and, at level 2, minimal care for a total of 360 additional patients in the Corps area.[20]

All of the above capabilities and limitations must be analyzed in light of the corp's area of defense. The corps is deployed in a highly industrialized country with excellent lines of communications, superb railways and, in every town and village, structures and areas suitable for locating CSS elements. The population is friendly and a skilled labor force; some of which would be available for employment at logistic support tasks and this increases the support capability for every class of supply and service by some degree.

In logistics traffic, passenger traffic and communications systems, the German system is one of the most advanced and densest in Europe. In 1972 the total goods shipped by railways, inland shipping, long distance road haulage and pipelines was more than 850 million tons. Of that total, 42 percent was shipped by rail and 22 percent by truck traffic.

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light trucks 1,440 plus medium trucks 768 equals 4,368 ST local haul daily.

[20]FM 101-10-2, p. 6-3 and 6-16.

As of 1973 Germany had 29,022 kilometers (18,033 miles) or railways of which 9,523 kilometers were suitable for electric trains. The German railway carries more than 388 million tons of freight annually. There are more than 4,393 kilometers of navigable waterways on which more than 5,800 cargo vessels carry in excess of 223 million tons annually. The communications network is rounded out with over 166,670 kilometers of classified roads of which 5,260 kilometers are high speed autobahns. The host country has electronic communications facilities that permit communication via sattellites to include direct dialing to the United States and 95,000 data transmission connectors, 93 percent of which are self-dialed. Germany's Federal Post teleprinter network is the densest in the world and covers a quarter of all telex subscribers in the world.[21] Each requirement for logistics support must be analyzed in light of available or expected host nation support before judgment can be made on shortfalls.

The corps built here is not unrealistic and its CSS organization is representative of today's COSCOM organizations. It is austere, stretched to its limits and structured for peacetime support. In the next chapter the combat service support requirements of this organization will be computed and compared with the capabilities cited above to determine if this corps' organization for combat service support is a combat multiplier or divisor.

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[21]Federal Republic of Germany, Press and Information Office, Facts about Germany, Bonn, FRG, 1975, pp. 250-263.

CHAPTER IV

CORPS SUPPORT REQUIREMENTS

> "The initial period of any war in Europe would be of unprecedented intensity, probably far more severe than that witnessed in the Middle East in 1973."
>
> Hollingsworth Report[1]

The corps' support requirements and subsequent size of the COSCOM could and probably should, differ greatly for a corps deployed in an industrialized country and one deployed in an undeveloped or lesser developed country as an expeditionary force. The determinant factors of the type, size and composition of any force should be its mission, characteristics of the enemy, area of operations and the availability of required facilities and equipment. The determinant of its support forces are its requirements. No conclusions can or should be drawn from the numbers of the force or the distribution of personnel in combat, combat support or service functions.

The computation of requirements utilizing gross planning data requires that parameters be set and some assumptions made. The corps being analyzed has the following characteristics: Its total strength is approximately 75,000;

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[1]"Conventional War Fighting Capability and Potential of the U.S. Army in Central Europe," rewritten unclassified

52,100 in maneuver units, 12,700 in combat support and 10,000 in combat service support (rounded to the nearest hundred), a 70:17:13 ratio. This figure is of particular importance in this analysis because the COSCOM must provide direct support, as well as general support, supply, maintenance and services, for these non-divisional units which are deployed across the width and throughout the depth of the corps area. The normal configuration and layout of a COSCOM is displayed in Figure 4-1. The non-divisional units of the Corps range from the cavalry regiment and elements of the combat support battalions a distance up to 200 kilometers beyond the FEBA (forward edge of the battle area) to the units in general support at the corps rear boundary. On covering force operations, the cavalry regiment plus other elements assigned to assist in the covering force mission, are deployed 20 to 40 kilometers beyond the FEBA and must be supported. How much support they require depends upon the length of the mission, the size of the force, and the intensity of combat they are expected to experience. Non-divisional forces assigned for combat support would include a representative slice of corps artillery, and anti-aircraft artillery, as well as engineers, signal and intelligence assets. Combat service support of these units would of necessity be taken from the COSCOM. It must be remembered that this force's

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abridgement of the 30 June 1976 "Hollingsworth Report(U)" submitted by LTG J. F. Hollingsworth, USA, p. 2.

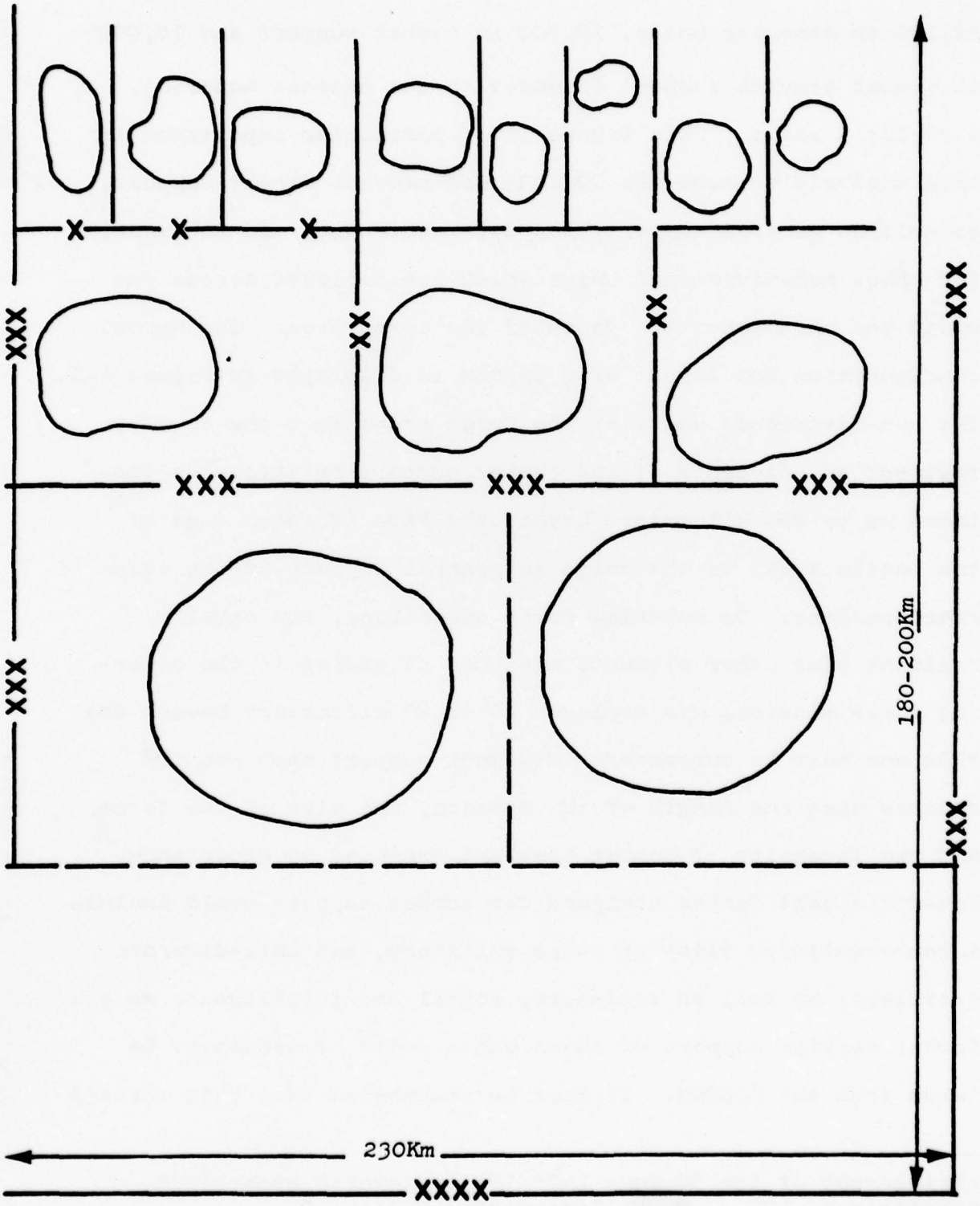

Figure 4-1. COSCOM Configuration

characteristics require it to be highly mobile, elusive, and to maximize its combat power through the efficient use of combat multipliers. Its combat signature should be representative of that of the entire corps. Further, its counter mobility assets employment should deny the enemy favorable fighting positions and conditions and should deceive him as to the location of the main battle area (MBA). Given the doctrinal employment of heavy covering forces initiating hostilities 20-40 kilometers in front of the FEBA, COSCOM units, spread from the corps rear boundary to the covering force area, service a 180-200 kilometer corps depth. Using a representative corps front width of 200-250 kilometers, the non-divisional direct support-mission magnitude is to support more than 20 different types of units over a 36,000 square kilometer area for supply, maintenance, and services.

The factors for the computation of the corps combat support requirements are of two types, standard historical base: data and the recently added situtationally dependent combat planning factors. The source data cutoff for inclusion into the situational tables of FM 101-10-1 was 1 November 1976. Usage instructions have the caveat that consumption rates should be modified considering the mission, weather, and level of operation. Actual experience should be incorporated as it is gained. The instructions further caution the user of potential effects of force size on planning factors and gives a short lecture on austerity in planning. This is the extent of official planning factors and these are the only ones

available to the general planning community that purport to have incorporated experience data gained since the Korean War. More importantly, the situationally dependent variables are the only ones that have been developed since the evolution of the active defense doctrine.[2]

The following definitions and background are required for computation of the corps' gross requirements:

a. The corps operates over an area 36,000 square kilometers or more.

b. The covering force, because of the extended distances, is divisionally controlled and is supported, in each division, by corps artillery, engineers, air defense artillery, intelligence and communications units.

c. The level of conflict examined (as defined in FM 101-10-1) is mid-intensity: belligerents employ the most modern technology and all resources except nuclear, chemical and biological warfare to achieve limited objectives under definite policy limitations as to the extent of destructive power to be employed or geographic area to be involved.

d. The level of operation is heavy; which means that more than 60 percent of the maneuver units and 100 percent of the fire support units are committed in all out combat with "commitment of the reserves of higher headquarters being probable."[3]

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[2]U.S. Army Field Manual 101-10-1 w/Change 1, Staff Officers Field Manual Organizational, Technical and Logistic Data (Unclassified Data), July 1976, para 2-7a and b.

[3]Ibid., p. 7-2.

e. The corps is operating at 99-100 percent strength and starts out initially with 100 percent of its authorized equipment.

f. All units have their basic load on hand and permission to consume up to 50 percent without coordination has been given.

g. Initially only the area from the FEBA to the corps rear area is defined as the combat zone. As the war progresses all of the Federal Republic of Germany, because of its size, will be considered the combat zone.[4]

h. The calculations made will be made under the assumption that support is austere.

The supply support planning of the corps is based on the concept that the COSCOM transitions to war with a minimum of 10 days of theater prepositioned war reserve materiel (PWRMS) on hand. According to the rationale for the concept, this provides the corps the capability to fight with its own resources until outside support can be brought to bear.[5] This computation of requirements analyzes the delivery of this

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[4]U.S.-German Logistics Planning Staff, Combat Logistics Support System Plan Phase II, MAAG, Germany, 30 Jun 65. This assumption has important implications for host nations support legalities.

[5]Office of the Deputy Chief of Staff for Logistics, Logistics Concepts, June 1978, p. 1.

support in the active defense environment. The basic premise is to challenge the assumption of logistics sufficiency in order to test the total system's capacity.

For non-ALOC (air line of communication[6]) items, i.e., Classes I-VII and high tonnage Class IX, the COSCOM will be the DSU source of supply. The corps source of supply "will be the COMMZ (communication zone) base, initially theater PWRMS and later CONUS PWRMS/preplanned resupply which has been called forward by the theater MMC (materiel management center)."[7] This concept requires the COSCOM area resupply assets to be utilized for general supply support which further reduces the COSCOM area direct support capability. The logistics concept standard for days of supply on hand in the COSCOM is shown at Table 4-1. The corps Class I (subsistance) requirements are straightforward and simple since in the first five days all ration issues will be MCI (meal combat, individual or C rations) to replace those consumed out of the basic load. The meal requirement is simply three times the personnel strength of the unit per day. Tonnage figures are arrived at by utilizing the consumption rate table figure of 6.7 lbs per man per day multiplied by the strength, a total of 251.25 tons per day.

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[6]ALOC is the concept that resulted in the elimination of theater Army repair parts depot's in Europe with the advent of the jet cargo aircraft and the capability of the C-5A. Repair parts requirements will be shipped from CONUS by air routinely along with emergency supplies of other classes.

[7]ODCSLOG, Logistics Concepts, p. 3.

TABLE 4-1

LOGISTICS CONCEPTS DAYS OF SUPPLY REQUIREMENTS

Class of Supply	Days of Supply*
I	5-7
II	4-7
III Bulk	3-4
III Package	7-10
IV	As Required
V	5-7
VII	1 (Battle losses)
**IX	30***

*Excludes DSU and stocks at user levels.

**Class IX should not exceed 15-20,000 lines including combat demand items.

***ALDC items, non-ALOC, 15 DOS

Source: Office of the DCSLOG, "Logistics Concepts," p. 9.

Since Class VI, personal demand items, are calculated in the same manner and handled in Class I channels they can be discussed here. The Class VI ration supplement sundries pack, is issued as a supplement to B rations issued before PX facilities are available. This package is not normally issued with MCI. Corps policy is to initially issue only C rations, thus the Class VI requirement can be dismissed.

Class II, clothing, individual equipment, tentage, tool sets, administrative and housekeeping supplies; is basically items other than principal items of equipment (major end items) that are prescribed in authorization documents. This category includes some items that are components of equipment and are normally thought of as repair parts, e.g., straps and batteries. The consumption rate for planning Class II is 3.26 pounds per man per day or 122 tons per day.[8] The criticality of this class as a whole during the first five days of the war could be questioned. However, some Class II items are critical, particularly those included as air line of communications (ALOC) items with the repair parts. It is important that the stocks move and are set up initially so that they are available for re-equipping casualties returning to duty, replacements without complete issue, and individual battle damage and losses. Those selected items to be handled with Class IX stocks will be included in the discussion of Class IX.

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[8] 3.26 lbs x 75,000 ÷ 2,000 lbs per ton = 122.25 tons per day.

The Class III, petroleum, oil and lubricants (POL), planning consumption figure is 47.8 pounds per man per day, 1,792 tons per day for the corps. Table 4-2, taken from FM 101-10-1, is a situationally dependent combat vehicle POL consumption planning guide. The table is based on computerized war gaming of the present tactics with the Scenario-Oriented Recurring Evaluation System (SCORES). Note that the gallon per day difference for light and heavy levels of operation do not give the differences in the consumption rate that might be expected given the great disparity in the levels of operation indicated in the definitions. Although the difference in the maneuver elements commitment percentage, distance travelled and time maneuvering is more than twice as great during heavy than during light operational levels, the POL consumption increases by only 32 percent. With the size of a corps and the ratio of tactical to combat vehicle population and subsequent POL consumption, it would appear prudent to utilize the non-situationally dependent planning figures without change. The confidence level in making this decision is further increased considering the differences in figures based on FM 101-10-1 and SCORES simulation of POL consumption for a M60 series tank and those submitted by headquarters USAREUR in response to a Logistics Evaluation Agency request. FM 101-10-1 and SCORES calculate a tank will operate approximately 20 hours and will require 317 gallons of diesel fuel per day; idling 3.12 hours and maneuvering 7.92 hours requiring

TABLE 4-2

COMBAT VEHICLE POL PLANNING FACTORS

Part a. Non-situationally Dependent

	M60	M113
Fuel consumption on hard-surfaced road (GPK)	0,769	0,250
Fuel consumption cross country (GPK)	1,920	0,625
Combat-idle fuel consumption (GPH)	2,800	0,640
Hours of operation per day of combat	20	21
Average speed per hour of combat (KMPH)	10	10

Part b. By Level of Operation

Combat vehicle	Level of operation	Distance (km)	Moving (hours)	Idling (hours)	Fuel (gal/hr)	Fuel (gal/day)
Tank: M60	Heavy	64	6.5	13.5	8.0	161
	Moderate	48	4.8	15.2	6.7	135
	Light	32	3.2	16.8	5.4	109
Carrier: M113	Heavy	93	9.3	11.5	3.1	65
	Moderate	85	8.5	11.5	2.9	61
	Light	56	5.6	14.4	2.0	44

223.9 gallons of fuel per day.[9]

Class IV; construction, fortification and barrier materials, is normally command controlled due to its essentiality for the battlefield and multiplicity of uses in peacetime. Although planned for in the normal supply system and handled (in part) by the supply and service companies, gross amounts of construction material are normally throughput to the using units from theater army engineer command. This type of handling eliminates the requirement for the corps units to handle or transport a large percentage of the required Class IV supplies. The total corps requirements for barrier material are not affected. The planning factor for Class IV usage is 8.5 pounds per man per day, which totals 318.75 tons per day. Making the assumption that two-thirds of the Class IV tonnage is normally required for construction material, which is being supplied and transported through construction engineer channels, the requirement for the corps to transport and supply barrier material is then 106 short tons per day. Analyzing the situation further, barrier materiel is a particularly defensive requirement. Experience figures from World War II and Korea, would more likely be on the low side rather than high, given the offensive characteristics of those operations and today's defensive scenario. In the days between M-day and D+5 the

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[9]U.S. Army Logistics Evaluation Agency. Total Logistics Readiness/Sustainability Analysis, Washington, D.C., 3 Apr 78.

corps engineer units would be emplacing and building more barriers than are likely to be seen at any other phase of the battle. Generally, accepted planning procedures multiply the daily requirement by some factor, for units of corps or larger size, for the first six months to account for required buildup of materials for base development. This development will not be of concern here because of the short time frame of the analysis. Considering the planning factor pros and cons for this class of supply, the initial 101-10-1 figure, of 318 tons per day is more reasonable and will be used.

The corps engineer units will draw their initial loads of materials, as part of their contingency planning, from the facilities engineer activities they have normally been supported by in peacetime. Once deployed, these battalions will draw available support from the supply and service companies. Other materials will be throughput from the engineer command, which will have taken over the facilities engineer assets throughout the theater, by direction through command channels.

Class V, ammunition and munitions, will be supplied based on intense combat rates and will be the highest tonnage and probably the most highly visible class of supply. Planning data for ammunition can be done by any of three different means: By the gross requirements of pounds per man per day; by utilizing the situationally dependent factors to accumulate division sized element tonnage requirements; by utilizing

two tables to accumulate tonnage per unit type by method of employment. The weaknesses of the more exact models is the requirement to plan the tactical employment of units. These models while based on the gross requirements model have been modified through the experiences of a brigade based army and computer simulations. Planners at the corps level can and should retreat to the safety of the gross requirements tonnages and the maximum number of line items. For example, an armored division requires twenty-eight different types of ammunition cartridges. Further differences between types of rounds of the same caliber, brings the number of line items to be planned for to well over one hundred with three divisions to plan for. For corps level planning, it is best to calculate based on gross requirements, although situationally dependent factors and tactical element employment must be considered.

The emerging tactical doctrine has required tremendous changes to the munitions system support structure because of large increases in required tonnages. The divisional sustaining rate has increased from approximately 600 short tons per day to well over 2,000. It is estimated by the MS3 study that during the period D-to-D+15 the division sector can be expected to expend approximately 3,400 short tons per day.[10]

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[10] Missile and Munitions Center and School, Munitions System Support Structure, Volume I, April 1978, p. XIV.

Utilizing FM 101-10-1 non-situationally dependent planning factors for intense combat of 50.9 pounds per man per day, the 75,000 man corps will require some 1,900 short tons per day.[11] This figure is not a part of the recent change to the planning manual and is based on World War II and Korean experience data. It is situationally dependent in the sense that it is prescribed for use if sufficient information is available to determine periods of intense combat. The chapter seven figures taken from the table for all types of divisions at the heavy commitment rate when multiplied for three divisions calculates out at less than 300 tons of ammunition per day. Requirements calculation and subsequent planning of ammunition resupply have to be seriously questioned when such great disparities exist when the planning factors are applied.

The planning factor for Class VII resupply of 4.27 pounds per man per day indicates a requirement for major end item replacement of 160 short tons per day when applied to the corps. Like Class IV, the resupply of major end items (tanks, trucks, weapons, etc.), is controlled through command channels. The supply of these items will be throughput to the direct support level from the port or COMMZ storage sites as a matter of policy. Unit pickup of a major end item entails the crew coming back to the DSU location to receive and de-process the system. The physical handling of the items by

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[11] 50.9 x 75,000 ÷ 2,000 lbs = 1908.75 tons per day.

the DSU personnel is minimal and consequently the tonnages of this equipment, if used as a determinant of COSCOM workload is not meaningful. Further, the credibility of the end item requirements for an entire corps averaging less than the tonnage of four tanks is highly suspect. Because of the procedure for handling Class VII equipment, the incredibility of the calculated tonnage figures, and the improbability of full employment of Class VII assets in the short time frame of this examination, the tonnages for the class will not be included as a COSCOM lift requirement.

Class IIX, medical supply, is totally handled in medical channels. The requirements computations, requisitioning, transporting and handling are all done in medical command channels. Although the medical group is a part of the COSCOM its logistics assets are totally segregated and assumedly adequate to the purpose. Since the supply transportation requirements do not tax the remainder of the COSCOM no Class IIX requirements will be computed.

Repair parts comprise Class IX and are estimated to be required at a rate of 57 tons per day for the corps.[12] This class of supply is supported from CONUS by the air line of communication (ALOC) program whereby in peace and war repair parts requirements are supported from depots in CONUS.

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[12] 75,000 men x 1.52 lbs/man/day ÷ 2,000 lbs = 57 tons/day.

Figure 4-2 is a graphic display from the CDCSLOG Logistics Concepts of the method of the system. The corps first five day requirements should be a part of the direct support unit's (DSU's) combat authorized supply list (ASL). This ASL is based on national maintenance point engineering estimates, demand experience and exercise experience of the units. According to the concept, 80 percent of all items demanded for combat should be on the DSU's combat ASL, in a quantity that is 45 times the daily required rate plus the number of days of experienced order ship time delay. Any requisition that cannot be filled at the DSU is sent to the general support unit commodity center. If it cannot be filled there, it is transceived to CONUS where it is filled and shipped via ALOC to the DSU. It is estimated that 20 percent of the non-stockage list items will be received this way. The remainder of the items not on hand at the DSU are expected to be supplied by the GSU that supports that commodity group, although repair parts backup is not a part of the peacetime GSU mission on other than a high priority basis.

The workload driver for Class IX is not tonnage but number of line items handled. A divisional DSU has a standardized brigade to support with units having duplicative lines of equipment. This characteristic of divisional support should facilitate reduction of the divisional ASLs to a number that will enhance the supply platoon's efficiency. The corps DSUs, supporting on an area basis, and subsequently repairing

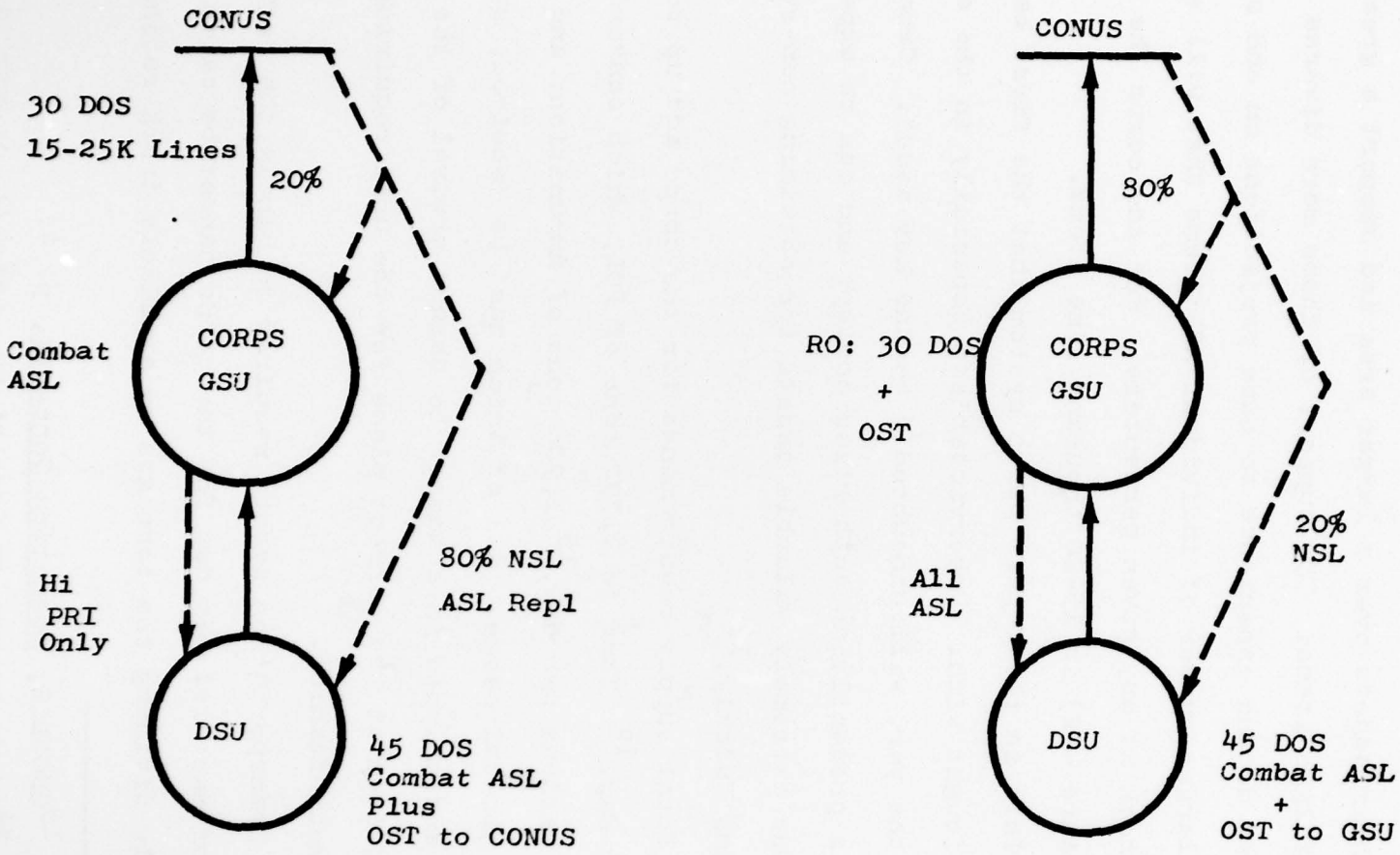

Figure 4-2. ALOC Class IX and Selected Class II

a wider array of equipment, further dispersed, will have to spread their assets over a larger area and support a greater number of line items. The support of these more diverse lines means less demand experience to base projections on and a subsequent larger number of individual ASL items that will show out of stock at any given percentage. For the corps the estimate (Figure 4-2) is 15-20 thousand line items.

This is the repair parts system that the first battle will be fought with. Unserviceables, especially in the early days of the war, will undoubtedly be the key asset. Cannabilization is presently an authorized concept and can be expected to provide extremely valuable assets for obtaining non-stockage list items quickly.[13]

Total supply requirements for the corps add up to 4,449 tons per day.[14] That is 1,792 tons of POL, which converts to 588,403 gallons per day,[15] 1,908 tons of ammunition, and 748 tons of general cargo. All of which must be received, stored, handled and shipped in a manner to assure arrival of the required item at the correct place for the unit requiring it in a timely fashion.

Transportation assets required to handle the required volume of materiel per day for the corps cannot be calculated by simply dividing the tonnages by available truck ratings.

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[13] ODCSLOG, Logistics Concepts, p. 4.

[14] Class I, 251.25 t/d, CL II, 122 t/d, CL III, 1,792 t/d, CL IV, 318 t/d, CL V, 1908.75 t/d, CL VI, Ø, CL VII, Ø, CL IIX, Ø, CL IX, 57 t/d, total 4,449 t/d.

[15] The average of an all product conversion, tons to gallons, is 328.35 gallons per ton per table G-13, FM 101-10-1.

First of all, given the characteristics of todays cargo, other than when carrying ammunition, trucks generally are filled to their volumetric capacity long before the maximum tonnage is reached which increases truck or trip requirements. In transporting petroleum products, the ability to load and discharge into suitable containers is a considerable constraint. The organic mobility and frequency of required movement of the COSCOM units is an extremely important variable; not only for the amount of transportation augmentation required, but also because of the debilitative effect of relocation on combat service support capabilities. A CSS unit that is moving has reduced its ability to support by some large percentage during the time of the move even given good advance planning. Ironically, given adequate transportation, units could preplan and displace in stages reducing the effects of the move by spreading it over a longer period of time. The additional cost of this increase in capability to support while moving is a reduction in the units ability to move itself because of the transportation requirements of the mission.

The corps transportation requirement is further increased by the requirement to support divisions when they displace. Considering that division main headquarters in the active defense will be displacing, on an average, every day, the subordinate combat and combat support units will be obliged to move at least that often. Units in the division support area will probably be required to move at least every

third day. The intelligence and targeting capability of the enemy along with his doctrine and capability for desant[16] operations require a constantly changing rear area. Present doctrine leads one to discount static organizational structures as well as positions within the combat zone.

Table 4-3 gives the non-divisional vehicle augumentation requirements to move the divisions of the corps. These gross figures indicate a tremendous requirement just for the shifting of divisional assets; 610 mixed truckloads without considering the heavy equipment transporter requirements. These vehicles will augment the DISCOM's transport capability and be used for units that are not 100 percent mobile and for supplies and equipment that cannot be carried with organic equipment, largely the unit's basic load.

Basic loads are determined in war by the nature of the enemy, the mission, engagement intensity, availability of resupply transportation, and availability of supplies. They are designed to meet combat needs until resupply can be established and are a tradeoff considering the adequacy of organic transportation, and the intensity of combat. Fluid situations with a high intensity air threat, which can be expected in the early days of the war, dictate a large basic load.[17] The corps GS base (COSCOM) also may be required to move often and on short notice at risk of permanent loss of

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[16] Desant is a French word which the Russians use to describe their concept of rear area operations by highly mobile large units.

[17] FM 101-10-1, p. 3-42.

TABLE 4-3

NONDIVISIONAL VEHICLES REQUIRED FOR UNIT MOVES

UNITS	LT TRUCK $2\frac{1}{2}$T	LT TRUCK 5-T	MEDIUM TRUCK 12-T, S&P	HEAVY TRUCK 52 $\frac{1}{2}$-T
ARMORED DIVISION	104	37	56	52
MECHANIZED DIVISION	105	37	59	44
MECHANIZED DIVISION	111	40	61	13
INFANTRY DIVISION	94	36	49	0

[1]Vehicle allocation is as follows:

(1) Passengers move by $2\frac{1}{2}$-ton truck.

(2) One-fourth of cargo moves by $2\frac{1}{2}$-ton truck.

(3) One-fourth of cargo moves by 5-ton truck.

(4) One-half of cargo moves by 12-ton stake and platform (S&P).

supplies and equipment. Transportation is crucial because throughout the corps, units must be prepared to use, move or lose any asset they have.[18]

Continuing transportation requirements after initial movement to general deployment positions are divisional support, unit repositioning augmentation and resupply of CSS units; predominately ammunition and POL. Divisional support requirements after initial deployment will decrease from the figures shown because prudent planning and combat requirements will preclude the entire division moving simultaneously in one lift. A much more likely scenario is some portion of the division constantly repositioning; which is a situation much more in keeping with the DISCOM's capabilities.

Ammunition haul from the corps rear area (CRA) railhead and ports to the ammunition supply points (ASPs) is the largest continuing transportation requirement. Ammunition resupply will be effected using ASPs in a "leapfrog" fashion. The forward ASP will be positioned as close to the brigade rear areas as possible, hopefully precluding more than a 90 minute trip from the brigade trains to the ASP. The ASP will be located at a railhead wherever possible to preclude trucking ammunition from the railhead to the ASP. The second ASP operated by the same unit would be some 30-40 kilometers to the rear at another railhead. When the forward ASP has to relocate, its stocks will be drawn down through issues. It relocates 30-40 kilometers to the rear of the second ASP

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[18] Logistics Concepts, p. 9.

and starts receiving stocks. The second ASP then becomes the forward ASP (See Figure 4-3).

POL resupply will be handled in much the same manner, maximizing utilization of alternate modes of transportation to truck and tanker. Plans for moving POL forward by railcar near the forward support areas just behind the division boundaries have to be made. The divisions, customers of the COSCOM, have many times the tanker capability that is available in the supply and service companies, and are organized and equipped to pick their fuel up from the GS supply point. All of the capacity of the S&S companies will be required to operate the retail sites to support the corps rear area and non-divisional units in the division areas. The GS units will be supporting from railheads or terminal stations of existing pipelines.

Total transportation requirements far outweigh the organic capability of the COSCOM. Given the foregoing constraints and allowances, transportation will be required to support the supply system for 4,449 tons daily. With ASPs and POL points at railheads convenient enough to preclude trucking to the general support sites, POL still has to be trucked to the retail sites to support non-divisional troops whether forward or rear.[19] Railhead ASPs mean that the total

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[19] 16,166 x 47.8 ÷ 2,000 = 386 tons/day x 328.35 = 126,863 gallons/day. This is 26 5,000 gallon tanker loads per day (disregarding mix) to support the non-divisional troops.

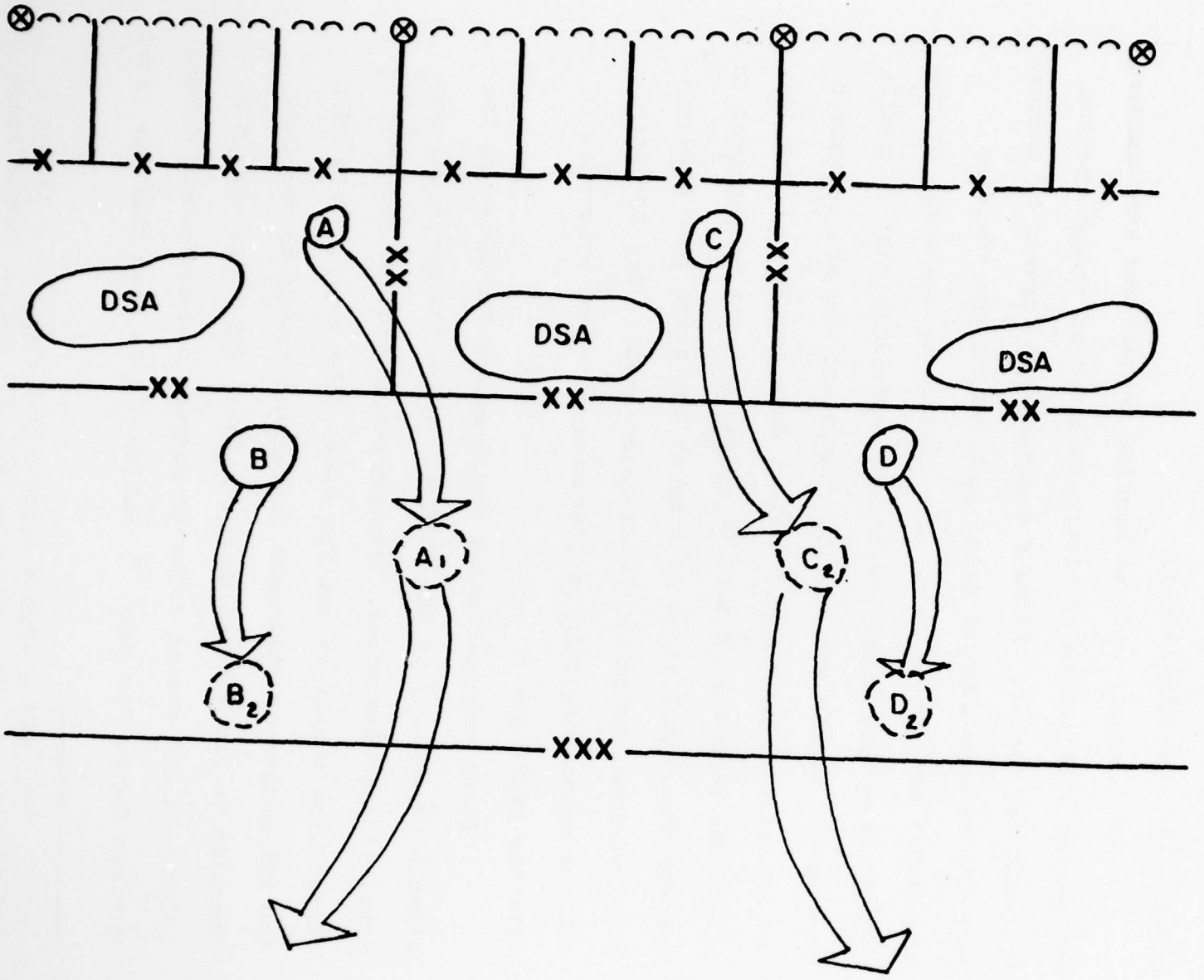

Figure 4-3. Ammunition Unit Leapfrog Concept

ammunition lift requirement, while still 1,900 tons, is not multiplied by the requirement to truck supplies from the pre-positioned sites and ports to the ASPs. The 1,900 tons of ammunition is transported further forward primarily by the using unit's organic vehicles. Table 4-4 gives anticipated corps movement distances (except ammunition) for the anticipated defense. Although ammunition haul distances is not included here, these distances assist in giving dimensions to the CRA. The forward ASPs will be located in or forward of the division support area so that distances traveled for ammunition pickup will be shorter than those from the brigade trains to the DISCOM area; not more than 35 kilometers. The covering force will have taken its ammunition out with it and would reload when it falls back through the FEBA to reconstitute. If requirements exceed the estimate by a large amount, any force will be resupplied by extraordinary means; e.g., ammunition pushed forward for air resupply.

The POL requirements of 567,715 gallons per day converts to 113.5 5,000 gallon tanker, or 29 railcar carloads per day for the corps. The real requirement for the COSCOM is to run at least one general support railhead with the capacity to handle 30 railcars and service at least 114 tankers per day. On the direct support side the requirement is for a minimum of two forward POL points to provide the non-divisional unit assets a cumulative total of 144,000 gallons per day.[20] Each

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[20]Computed by: 16,160 non-divisional combat support troop plus 1/2 the COSCOM troops x gallons per man per day.

TABLE 4-4

DISTANCES BETWEEN UNITS

FROM	TO	SURFACE DISTANCES
COSCOM GS UNITS	ARMORED DISCOM	75 km
	MECHANIZED DISCOM	85 km
	MECHANIZED DISCOM	120 km
	COVERING FORCES (ARMD CAV REGT)	90 km
ARMORED DISCOM	1ST BDE TRAINS	31 km
	2D BDE TRAINS	23 km
	3D BDE TRAINS	22 km
MECHANIZED DISCOM	1ST BDE TRAINS	33 km
	2D BDE TRAINS	29 km
	3D BDE TRAINS	35 km
MECHANIZED DISCOM	1ST BDE TRAINS	23 km
	2D BDE TRAINS	43 km
	3D BDE TRAINS	23 km

Source: FM 101-10-1, p. 7-18.

AD-A076 189 ARMY COMMAND AND GENERAL STAFF COLL FORT LEAVENWORTH KS F/G 5/1
AN ANALYSIS OF THE SUPPORT CAPABILITIES OF THE FORWARD DEPLOYED--ETC(U)
JUN 79 G K JOHNSON

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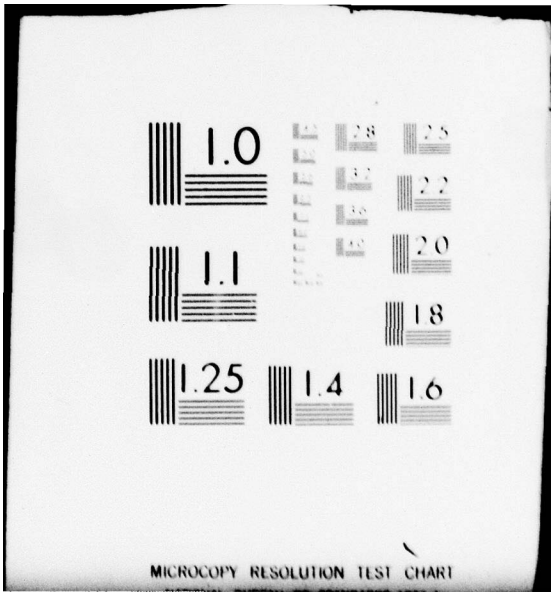
1.0
1.1
1.25
1.4
1.6
18
20
22
25
MICROCOPY RESOLUTION TEST CHART

POL point will need the capacity to service a maximum of 60 1,200 gallon retail fuel units per day. The number of units to be serviced will be reduced by the number of 5,000 gallon tank trailers in the non-divisional units. At the maximum this requirement calculates out to 5 trucks per hour queing for a mix of three separate products, not an overwhelming requirement provided the rail capability for the wholesale input is available.

The supply and service companies have a total capacity of bulk storage of 210,000 gallons in collapsable tanks and the ability to distribute utilizing organic assets 139,500 gallons per day. By organizing with one company's petroleum platoon operating the GS railhead and the other two operating a forward point each, the POL requirements can be met with some capability for each point to provide some retain service at each point.[21]

With Classes III and V removed from the everyday truck transport requirement, the total lift tonnage for the corps supply system is reduced to 748.25 tons per day. The COSCOM transportation battalion has a total lift capacity of 3,600 short tons per day local haul at 75 percent availability. Maximization of effort, available only over the short run,

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16,160 + 4,976 = 21,135 x 6.8 gal per man per day = 144,473 gallons per day.

[21] FM 101-10-2, p. 17-20.

would increase vehicle availability to 83 percent which would result in a 4,000 ST per day capability.[22] The distances involved from the GS to the direct support units, while not extraordinary in a peacetime sense (See Table 4-4), would be unlikely to allow more than one local haul round trip per day. Considering the magnitude of movements required of all types of units, the air attack threat, and the repositioning of units required by the active defense, traffic congestion will be an extreme problem. This would have the probable effect of halving available lift tonnages to 2,000 short tons per day. There would then be, given the assumptions, 1,200 short tons of lift capacity per day available for support requirements other than supply. It is when the requirement to augment the assets of the divisions is considered that the transportation capability bubble bursts. Even when the requirements of Table 4-4 are caveated by the assumption that the table requirements would not be felt in full except upon initial deployment; or by the assumption that at least one-third of each division would be moving at any given time, the requirements are still greatly exceeding capability.

To move one-third of each division, the augmentation requirement each day will require more than 200 mixed tactical

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[22] Ibid., p. 7-9. Vehicle available for total task vehicle maximum sustained effort is 83 percent. To compute the increase capability: 3600 is to .75 as the incurred capability as to .83. $\frac{3600}{.75} = \frac{X}{.83} = 3984$ st/d.

trucks per day. The corps transportation battalion has a total of 175 trucks (120 2½ ton and 55 12 ton tractor-trailer combinations). It is only when the highly unlikely assumption that each truck will be able to make two trips per shift is made, that the existing capability even comes close to meeting the requirement.[23] Additional requirements that cannot be overlooked are the movement augmentation ton equivalents required for the non-divisional units. Even when accomplished in multiple lifts, the vehicle requirements cannot possibly be met with organic transportation.

The problems to be overcome in the transportation area are simple and straightforward. How can the lift capacity of the corps transportation assets be made adequate to the task? The intutively obvious answer is the contracting, borrowing or conscripting of trucks from the host nation. West Germany has more than a million trucks which the Hollingsworth Study, and most others addressing the problem, assumes to be adequate and available for U.S. purposes.[24] Of course, there will be

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[23]The requirement for augmenting the divisions totals up to almost 3,483 ton equivalents. When a 2½ ton truck is utilized to transport 20 personnel and their baggage and that truckload is a 2½ ton equivalent. Total required tonnage is calculated in the following manner: Truck capacity x required number of trucks = ton equivalents (te) to be moved. The armored division requires 1,117 te per move. The mechanized division requires 1,183 te per move. The total daily requirement (R_d) in ton equivalents given one-third of the division always on the move: $R_d = \sum te_i \div 3$. With 3 divisions that is multiplied by 3. it results in 1,161 te per day.

[24]Hollingsworth Report, p. 24.

trucks that would otherwise be idle to augment transportation assets available in an industrialized country. This idle capacity cannot be considered a panacea because of unanswered questions about the employment of civilians in the combat zone, control, rear area security considerations and traffic control problems.

Maintenance efforts in a corps of this size and complexity require close examination; for maintenance of machines has become paramount in our effort to fight outnumbered. The maintenance requirements of a heavy corps are astronomical and require a more detailed treatment than can be given here for a finite analysis. This analysis, made on a broad scale, assumes the accuracy of the MACRIT data of AR 570-2 and its application to "normal" corps situations as prescribed by field manuals 101-10-1 and -2.[25] The divisional maintenance requirements are addressed through the criteria which established the divisional structure and are presently being addressed through the divisional restructuring study (DRS). Present philosophy of the DRS, which is almost diametrically opposed to the structuring philosophy which led to todays organizations, is to design the forces by starting with the

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[25]U.S. Army Regulation 570-2, Manpower and Equipment Control Organization and Equipment Authorization Tables-Personnel, 15 September 1969 with changes 1-9. MACRT is the operative acronymn for Manpower authorization criteria.

weapons systems and their capabilities and organize the force structure to support the systems. "Integration is first done with the weapons to maximize killing power and range, and only then are the tactical, support, and service support units and functions introduced where they can each best support the weapon system integration."[26] This study and its results will take care of the division's maintenance of its organic equipment. Some of the effects are already being felt in the H-series authorization documents. The most readily apparent change is the authorization of the majors in the DISCOM that are required to command the forward support elements supporting each brigade.

Given the present doctrinal organization per the references, a four division corps can be expected to have in its COSCOM, ten forward DS maintenance companies and, five rear DS maintenance companies. For general support maintenance ten light equipment maintenance and twenty heavy equipment maintenance companies per five division corps would be expected.[27] Each type of maintenance unit contains a myriad

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[26]Daniel M. Smith, "Logistics Impact of the Division Restructuring Study-Arm, Fuel and Maintain Forward," Army Logistician, March-April 1978.

[27]FM 101-10-2, TO&E Number 29-134H, 29-137H, 29-207H and 24-273H. All estimates given contain the caveat that the final determination and adjustment of the numbers of units and their levels would depend on the exact composition of the corps.

of military occupational specialties which give it repair capabilities across the equipment spectrum. This analysis of capability will be restricted to the four most critical maintenance areas, automotive; engineer (to include power generation), communications and electronic devices, and armament. At level two, the four types of units being examined have the capabilities shown in Table 4-5, a total of 2.5 million productive manhours annually,[28] compared with the "recommended" capability of almost 8 million manhours for a corps of this size, 31.5 percent.[29]

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[28]Calculated by the repair capabilities in the four subject areas times the number of units.

(DS(Fwd) x 4) + (DS(Rear) x 2) + (LEM x 3) + (HEM x 2)= (283,500 x 4) + (286,200 x 2) + (248,400 x 3) + (270,000 x 2) = 2,991,200 manhour/year = 249,266 man days/year = 683 man days of productive maintenance per day.

[29]For a four division corps, ten forward and five DS companies are usual. For a five division corps one can expect ten LEM and twenty HEM companies. To equate the figures, the analyzed corps would compare with three-fourths of the expected corps DS strength, and three-fifths of its GS strength:

Maintenance manhours = [3/4(DS(Fwd) x 10 + (DS(Rear) x 5)] + [3/5 (LEM x 10 + (HEM x 20)] = (2,126,250 + 1,073,250) + (1,490,400 + 3,240,000) = 7,929,900 annual manhours. The present COSCOM is organized at 31.5 percent of that capability.

TABLE 4-5

PRODUCTIVE ANNUAL MANHOURS AT LEVEL 2 BY UNIT PER FM 101-10-2

	DS Maint(fwd) 29-207H	DS Maint(rear) 29-208H	GSLEM Co 29-134H	GS HEM Co 29-137H
Automotive	145,800	89,100		205,200
Commd/Electronic Devices	16,200	56,700	126,900	
Engineer	91,800	124,200	121,500	24,300
Armament	29,700	16,200		40,500
This 4 area available	283,500	286,200	248,400	270,000
Unit total available	326,700	394,200	359,100	337,500

NOTE: All units are Catagory II units estimates are based on 2700 annual productive manhours per man.

The immediate assumption that two-thirds of the required mission maintenance will go undone would be arbitrary and premature. A corps with the maintenance units recommended would most likely configure the DS elements similarly to the manner shown in Figure 4-4. The GS units would be sprinkled liberally throughout the corps rear. The result is a truly well covered battlefield as far as the number of units are concerned. Reducing the expected numbers of units by factors of .75 and .6 for DS and GS respectively, gives an expected number of units for the examined corps (rounding down) of 7 DS (forward) and 3 DS (rear) along with 8 LEM and 12 HEM companies. The organization being examined is comprised of 57 percent of the DS (forward), 66 percent of the DS (rear), 37 percent of the LEM and 16 percent of the recommended HEM companies for a corps. This distribution is significant assuming that the number of corps maintenance units is a function of the number of divisions; and that this function is somewhat homogenous and positively sloped. The employment of the maintenance units on the corps battlefield would be as shown in Figure 4-5. Because of the organizational structure in response to the concept of fix forward, and a few other pertinent concepts, a discussion of which follows, the reduction in capability is not as catastrophic as it first appears.

The maintenance requirements of the European battlefield have been alluded to and described in various ways in recent studies. The common thread through all of the

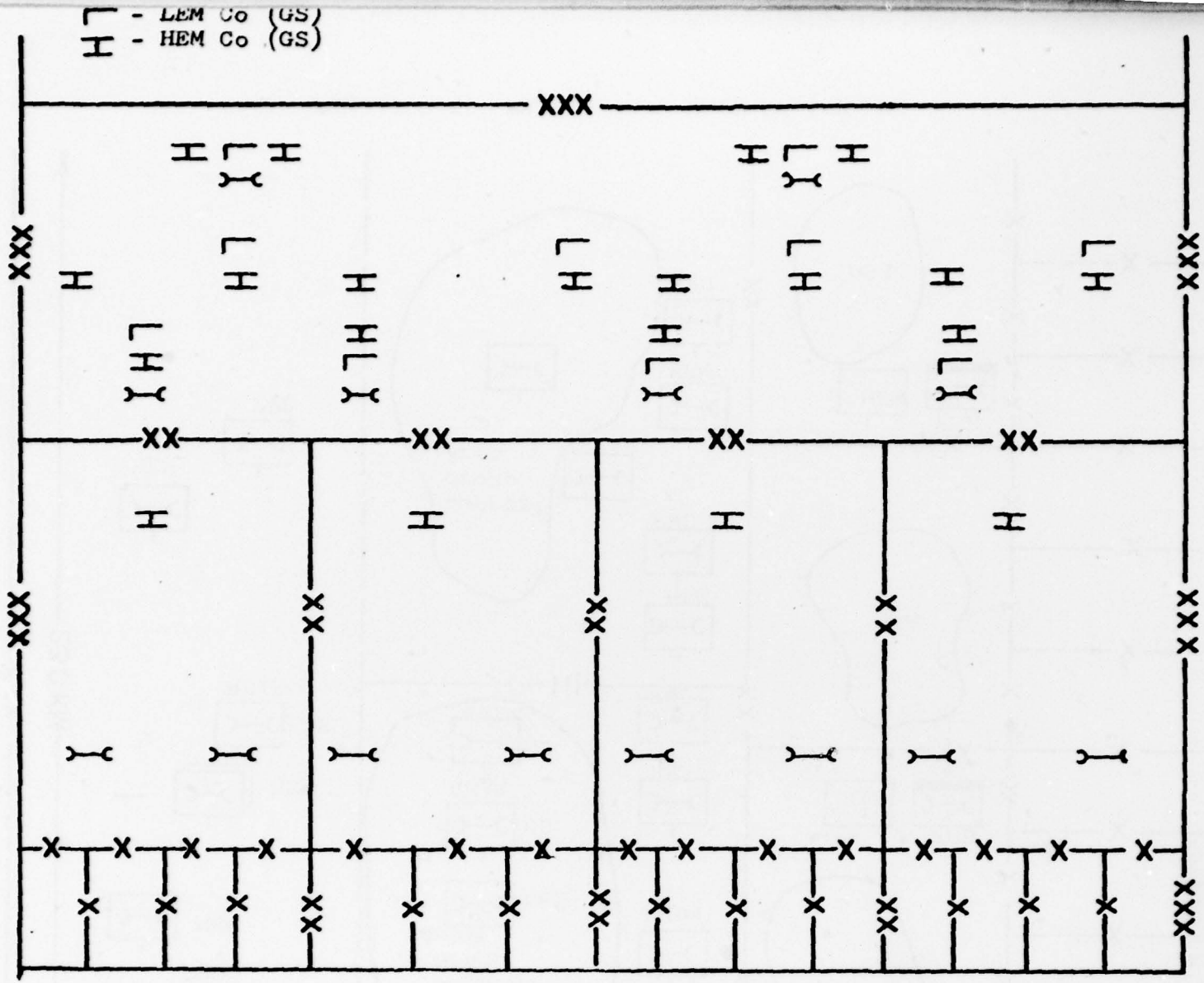

Figure 4-4. Employment of Maintenance Units in a Full COSCOM

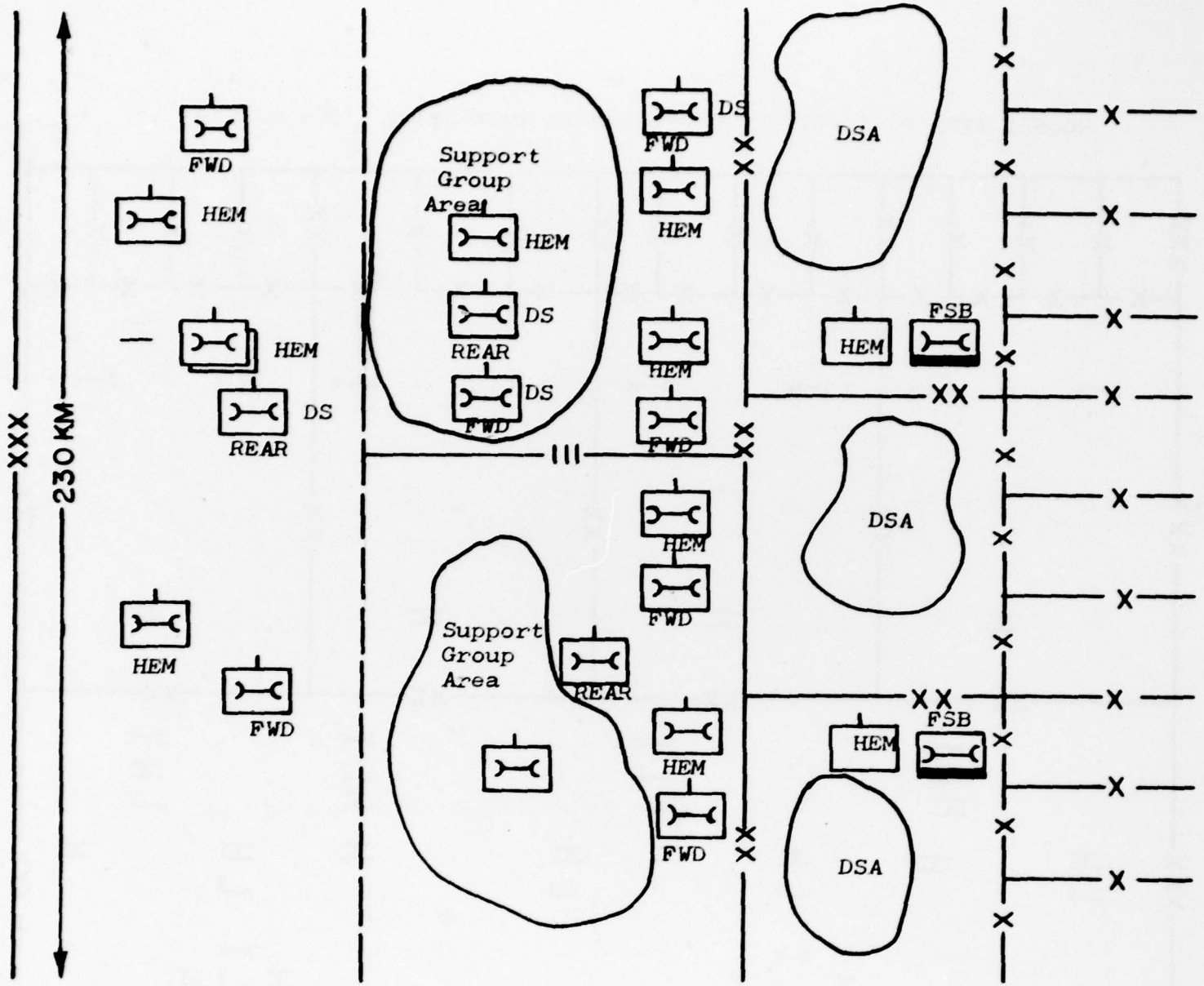

Figure 4-5. Maintenance Unit Employment

descriptions is that the initial period will be of unprecedented intensity. This would seem to infer that the number of weapons systems and vehicles requiring maintenance will be higher than ever before, either because of losses or because of intensity of operation and movement. Current tactical doctrine emphasizes the accumulation of combat power by maneuver and by the shifting of units forward, laterally and back--rapidly and frequently. Combat support units will also be shifted frequently to make their contributions to the weighing of the battle. None of which portends ease of combat service support. All of this movement will serve to complicate the requirements: the time available to repair a vehicle at or near its failure point is reduced; evacuation requirements are multiplied; many pieces of equipment will have to be abandoned that would not ordinarily be combat losses because the unit can neither recover them while disengaging nor lose the time to pick them up when engaging. For example, units of the covering force will be moving so fast, under so much pressure, that any maintenance of combat losses in the covering force area will more than likely be precluded and the damaged system abandoned.

Any total loss of assets is unfortunate because current doctrine and our transportation capabilities make mobility of the ASL in the DS[illegible] a critical requirement. The items stocked for combat requirements (the combat ASL), based on engineering estimates, exercise experience and best guesses,

are of necessity, because of the requirement to transport them, a fraction of the possibilities for each supported type of equipment. In the non-divisional arena, this problem is particularly acute because the units supported by the various DSUs differ by type and function and therefore have different equipment to be supported. There is a significantly better chance in the divisions that the DSU will habitually support the items required but the lines of repair parts stocked is still limited. Further, the order ship time standard for tonnage Class IX from the COMMZ to the unit is 5 days. Unless the DSU and the unit are static or at least move together, it is unlikely that the required part will find its way to the vehicle it was ordered for. This all serves to underscore the fact that unserviceables, especially in the early days of the war, will be vital assets. Sustained and rapid repair or cannibalization of these unserviceables must be achieved in order to assure adequate supply support.[30] In the COSCOM there is less of a chance that the DSU will habitually support the items and thus have on hand the repair part required. The implications are obvious: either greatly expand the stockage lists with the concomitant requirement for increasing the transportation requirements and investment; provide the capability for rapid parts resupply with its demands for both types of communications assurance; provide for maximum utilization of unserviceables for cannibalization and repair; or accept the accelerated degradation of combat power.

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[30] Logistics Concepts, p. 9, 22.

Studies of recent conflicts show that up to 80 percent of combat losses will turn out to be repairable at the organizational or DS level.[31] This means, of course, that purely mechanical failures will be repairable at the organizational and DS level, in at least that percentage, provided parts are available. The maintenance policy which has the most significant effect on the percentage repairable, as well as the percent serviceable, is the operational definition of combat serviceability that is agreed upon. It is readily acceptable to almost anyone that a truck missing a fender or a tank with a pitted road wheel is combat serviceable. But, the limits of combat serviceability need to be defined. Is an XM-1 without an operational ballistics computer serviceable? This definition along with the policy on the use of general support assets holds the key to the adequacy of the assigned COSCOM maintenance and supply activities and, to some related extent, transportation units.

Once the standards of combat serviceability have been established for all pieces of equipment, the unnecessary repair parts can be culled, leaving the combat ASL. The utilization of GS assets is important for two reasons: the availability of that large pool of repairmen and supply personnel as well as the availability of almost half of the COSCOM recovery assets. Recent doctrinal guidance states that

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[31]FM 101-10-1, Table 7-7, p. 7-16.

support of the supply system by GS maintenance units is no longer a valid concept. Although, some repair of assemblies might be required to support the need for highly critical items required to sustain the maximum number of weapon systems on the battlefield. When this occurs, the items to be repaired and the required number is directed by the corps materiel management center (MMC) and the repaired items are put in corps GS stocks.[32] Hence, this leaves the potential for, in this case, more than 3,700 additional man hours of automotive, armament and engineer item repair effort that can be applied to direct support forward in the first 5 days. Further, the personnel could be utilized to form battlefield damage assessment and recovery teams (BDART) that could make a real contribution by performing maintenance triage, evacuating repairable unserviceables and cannabilizing non-repairable hulks right where they were damaged. Such employment would further assist the effort by precluding expenditure of scarce recovery assets to move unrepairables that could be abandoned in place, at no loss, once parts in short supply and sensitive items were removed from them.

Some guidance on the cumulative effect of maintenance decisions and their subsequent effect on combat power ratios can be gained from a BDM Service Company maintenance model based on the SCORES war game using a three division heavy

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[32] Logistics Concepts, p. 7 and 8.

corps. The sensitivity analysis showed that of eight factors which showed some effect on the availability rate of equipment, the most significant were, in order, the failure rate of the equipment (to be expected), the size of the operational readiness float, and the repair parts availability. The remaining factors were: awaiting parts time, wash out rate, repair facility capability, evacuation policy (which they called balking criterion), and repair times. Suprisingly enough the evacuation of items and repair times were the least effective criterion.[33]

The failure rate of the equipment after a point cannot be controlled. A very effective manner of increasing equipment availability and thus the combat power is to reduce failures caused by those things that the commander can control. This includes expanding the definition of combat serviceable to reduce maintenance failures and vehicle non-availability for items that can be done without. Further, effective planning and judicious application of maintenance float vehicles increases readiness far out of proportion to its cost. The remaining lesson is twofold and is affected by the definition of combat serviceability. First, a well-planned and thought out combat ASL list makes the parts available to keep the equipment combat serviceable. Secondly, judicious employment

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[33]Evaluation of Maintenance Support Concepts under carrier study CELOGS (EMS CL CELOGS) Final Report, Executive Summary, BDM Services Company, Leavenworth, KS., 18 Feb 77.

of GS assets to augment the DS units and fix forward increases the effect of all of the above multipliers.

The traditionally thought of services of the COSCOM, laundry and bath, decontamination, graves registration and salvage, have received scant attention so far in this narration. The services themselves are as important as ever but, in the 5 day scenerio being developed, most services can be dismissed without any measurable effect on the combat power of the corps.

The undismissable, essential field service, regardless of the scenario, which has intangible effects on the corps, is graves registration. The corps presently has organic to it, the capabilities to support the graves registration and memorialization requirements of a 32,000 man force.[34] The required capacity is more than double this amount. With the fast moving fluid battle envisioned, units will be required to handle their own interments in hasty graves in all but the most static situations. The personnel of the graves registration activities will be required as cadre and supervisors for the handling of the more technical aspects of identification and effects handling.

The other "services" which must be addressed are those for evacuation of equipment and personnel. The equipment evacuation is a serious problem which cannot even begin to be

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[34]The capability is arrived at by adding the capabilities of the Field Services Co (16,000) and the two S&S Companies (8,000 each).

alleviated given the present configuration without application of the GS level assets to the problem. Recovery assets, a wrecker or VTR, is required for virtually every DS level repair. This heavy lift requirement is a serious constraint on the ability to field repair teams. Further, when repair contact teams are dispatched without wrecker support, and are dependent on the supported unit's organic lift capability, the chances of wasted repair manhours is greatly increased due to queing for the lift capability in the unit and the probability of the unit maneuvering during the estimated average of 10 hours for each job. The present concept for evacuation is that it occurs as dictated by the battle, environment, number of systems to be repaired in the forward area and the difficulty of the job. The logistics concepts specify that if a job is not DSU repairable within 24-36 hours, a GS contact team should be assigned to fix it forward or in the COSCOM area. Jobs which exceed 72-96 hours, should be evacuated to the communications zone.[35] With the estimate that eighty percent of the combat and mechanical vehicle losses can be repaired at the organizational or DSU level with a mean time to repair of ten hours, the fix forward concept not only appears feasible but extremely necessary since the services capacity does not exist for the COSCOM to perform the required evacuations and concurrently provide the lift requirements of the repair crews.

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[35] Logistics Concepts, p. 6.

Medical services requirements in the corps are of two types: evacuation and hospitalization. These requirements are most sensitive to the theater evacuation policy, which impacts directly on the number and types of medical units in the COSCOM and COMMZ; the requirement for medical materiel; hospital construction and engineer support; transportation volume and type; and personnel replacement requirements. The shorter the time of the theater evacuation policy, the fewer hospitals required in the theater. The policy is further reduced to days that a patient may be held in the combat zone in a non-effective status. The short time policy also increases demand for ambulance assets in the combat zone (as well as the rest of the theater), reduces the percentage of patients returned to duty and increases the requirements for replacements.[36]

Corps medical assets are functionally organized to meet the requirements of the number of troops supported. Assigned assets in the corps are a medical group with two evacuation hospitals which have the capacity to support 80,000 troops and two combat support hospitals which are allocated one per 20,000 troops supported. With only one ambulance company assigned the group, the first significant shortfall occurs. Ambulance companies are allocated, by doctrine, on the basis of one per division supported. This means that

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[36]FM 101-10-1, Chapter 5.

COSCOM only has one-third of the ambulance capacity required. This evacuation capability problem will be intensified by the short theater evacuation policy caused by the lack of hospitals in the COMMZ in the initial period of the war. Since medical evacuation policy is that corps medical units are responsible for evacuating patients from the divisional and non-divisional clearing stations to the hospitals, a serious shortfall exists. The ambulance shortage will affect not only initial evacuation but routine evacuation of patients between facilities. It will also seriously affect the medical regulating system because it adds a transportation constraint to a system designed to insure patient distribution constrained only by the availability of beds.[37]

In summary, the requirements of the corps for the first 5 days seriously exceed the capability of the COSCOM. The principal shortage is of transportation both mission and organic. The effects of this shortfall are felt in the supply of ammunition and POL, the fielding of maintenance teams, the evacuation of unserviceables, the evacuation of casualties, and constraints on the movement of the division bases. The other shortages can either be accepted or made up from other sources, but without additional transportation assets the corps will be able to perform its mission neither during the first 5 days nor subsequently.

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[37]FM 54-9, Chapter II.

CHAPTER V

SUSTAINABILITY OF THE CORPS

> Rarely in modern war has the side with logistical inferiority prevailed. However, superior the generalship or however brilliant the strategy and tactics, ultimate victory generally has gone to the side having . . . the greater logistical potential.
>
> Huston[1]

The requirements of the corps during the first five days can be summarized as the logistical assets necessary to sustain the corps until the total force can be brought to bear. This "sustainability" describes the integration of all aspects of the corps logistic elements once it is deployed. It includes the personnel, the force structure and the equipment authorized. Three extremely important studies, in terms of the European theater and force sustainability have been completed.

The Phase II Study, "Logistic Operations in the Communications Zone," initiated by the Office of the Deputy Chief of Staff for Logistics, addresses the voids that exist in current logistics concepts, policy, doctrine and planning in the supply, maintenance, and transportation

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[1]James A. Huston, The Sinews of War: Army Logistics 1775-1953, Office of the Chief of Military History, Washington, D.C., 1966.

support of the Army in the NATO environment. The study develops the doctrinal interface between CSS units of the corps and the COMMZ, and host/allied nation logistics systems and resulted in the approval of 21 logistics concepts for use in the development of logistic plans and doctrine.[2]

The "Total Logistics Readiness/Sustainability (TLR/S) Analysis" is an annual effort by the Logistics Evaluation Agency to analyze the U.S. Army's capability to deploy and sustain combat forces. Two TLR/S are conducted annually TLR/S OMNIBUS, based on projected conditions and capabilities at the end of the fiscal year preceding the first year of the current Program Objective Memorandum (POM) and TLR/S-TAA which is based on conditions, doctrine, and programs projected for the end of the last fiscal year of the forthcoming POM. For example, the analyses presently being made focus on the support of the force as of 30 September 80 and 86.[3] The first TLR/S analysis was made of only 10 of 232 combat essential items but was extremely significant in terms of lessons learned and the development of the various aspects of these studies.[4]

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[2]U.S. Army, Office of the Deputy Chief of Staff for Logistics, Logistics Concepts, June 1978.

[3]U.S. Army Regulation 700-5, Total Logistics Readiness/ Sustainability (TLR/S) Analysis, 3 April 1978.

[4]U.S. Army, Logistics Evaluation Agency, "Total Logistics Readiness/Sustainability Analysis FY 72-84(U), (SECRET), 3 April 1978.

The Munitions System Support Structure (MS3) Study, was done by the Missile and Munitions Center and School to analyze the impact of anticipated increases in tonnages to be handled caused by consumption rate increases resulting from new weapons and tactics. The study also considered the effect of the increased use of containers for the shipment/distribution of ammunition on the organizational structure, staffing and equipment of munitions support units.[5]

A common thread through all three studies was that new concepts adopted, in some cases for periods of over ten years, by the tactical community, had not been incorporated into logistics doctrine. Further, many changes had been made in the support system or its assets without concurrent or even follow on analysis of the effects or benefits. And lastly, the economic and logistic implications of materiel procurement has been ignored to a great degree. Items were not procured in quantities geared to providing balanced sustainability for each weapons system.[6]

In the supply planning area, the Logistics Evaluation Agency (LEA) found that many equipment related logistics factors utilized for operations planning and force structuring have not been updated. With the increased density of

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[5]U.S. Army, Missile and Munitions Center and School, Munitions Systems Support Structure, (Short Title: MS3), Volume I, Final Draft, April 1978.

[6]TLR/S, p. 2-3.

equipment, miscalculations could lead to misinterpretation of sustainability of the force and an under estimation of strategic lift requirements. POL planning factors in use may well be obsolete which may mean that USAREUR's war reserve diesel fuel stocks are inadequate.[7] The MSJ Study concluded that current ammunition doctrine and organizational support units are inadequate to meet user requirements. The two primary reasons given were operational units not manned or equipped for efficient and cost effective operation, and no present DA standardized ammunition management information system at corps and below to effectively manage modern day tonnage requirements. The conclusion continued, the tactical requirements for ammunition resupply to extend forward into the brigade rear areas was ajudged necessary as was new measures of effectiveness for depicting the capabilities of an ASP. The ammunition unit's short ton lift capability figure requires expanding to include additional criteria: e.g., number of vehicles that can be processed in an hour; the number of pallets or units of issue handled, the rapidity with which the unit can relocate, or the capacity to handle containerized shipments. These elements were deemed important because "current units are not equipped for timely movement of men and materiels handling equipment (MHE) to support the new tactics.

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[7]Ibid., p. 3-2.

The utilization of corps transportation for such movements does not produce the responsiveness required."[8]

The TLR/S Study reported that manpower criteria (MACRIT) factors for the ammunition company were increased by only 14 percent when 11 additional pieces of MHE were added to the unit. The probable impact of the observation is that we have obsolete MACRIT data. This means that logistic unit requirements throughout current plans are probably calculated incorrectly and, hence sustainability is unpredictable.[9]

The logistics concepts on corps ASL stockage requires: all items not directly related to wartime consumption be stripped out and not planned for resupply; that umbrella support of Class IX be assured for the DSUs because they are restricted to 5,000 line items; that the ALOC repair parts system continue in wartime with 45 days of stockage in the DSUs and 30 days in the GSUs; and that some intermediate sustaining supply capability behind corps provide non-ALOC items for sustaining combat operations.[10] The NICPs will push repair parts, initially through reserve packages, without guidance, based on anticipated combat damage and failure rates because that is what the NICP's war reserves computations are based on. LEA found that many planning

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[8]MS3, p. xxiii, xv, and xvi.

[9]TLR/S, p. 3-2.

[10]Logistics Concepts, p. 9.

factors used by the NICPs are based on the original engineering specifications for the equipment. There is no link between the combat ASL compiled by the DSU and the NICP or NMP to verify, validate or correlate these lists. The projected impact of this failing is that critical repair parts required to repair combat damage or failures common only to high usage rates will not be procured or stocked in sufficient quantity and will result in premature equipment failures, along with unnecessary expenditure of maintenance effort for evacuation and cannibalization when it can be least afforded. Conversely, overstockage of parts that may never be required may occur which costs scarce resources sorely required elsewhere.[11]

The fluidity and intensity of battle in the corps area in the first days leads to some significant questions about initial supplies in general and ALOC in particular. The initial shipments of non-ALOC items forward to the DSUs from the theater reserves will begin almost immediately, surely within the first 5 days. ALOC items previously ordered (not necessarily combat ASL items) will come flooding in to fill stocks and to preclude shortages caused by interdiction of the lines of communication. All the available supply handling capability of the COSCOM will be forward in the support

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[11] TLR/S, p. 3-2.

areas or working past full capacity trying to handle corps wide support in the corps rear area. As shown in Figure 5-1 the supply elements of the COSCOM will be fully extended. There are elements of each of the companies in direct support forward in the forward support bases (FSB) providing Class I, limited II and IV, and III to the non-divisional units. The locations of DSU's will be uncertain and not well established. How, then, will these supplies coming into the corps area get to the proper location? How and where will frustrated shipments be handled? The supply platoons of the maintenance GSUs may be able to provide some capability but they will be in a state of flux also.

As other logistics units arrive, in the theater, they will duplicate the experiences of Vietnam and for the same basic reasons: a very fluid tactical situation with the resultant changes of in-country deployment of combat units which will make it impossible to develop equipment densities of units to be supported with any accuracy. Without that information, ASL cannot be prepared.[12] The only immediately effective employment of these units would be as additions to the corps wide service units or to process the influx of Class IX supplies.

Part of the rationale for logistics concept 2 is the concept that "dedicated US ground transportation should be used for delivery of ALOC items and a first destination

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[12]LTG Joseph M. Heiser, Jr., Logistic Support, Vietnam Studies Series, Department of the Army, Washington, 1974.

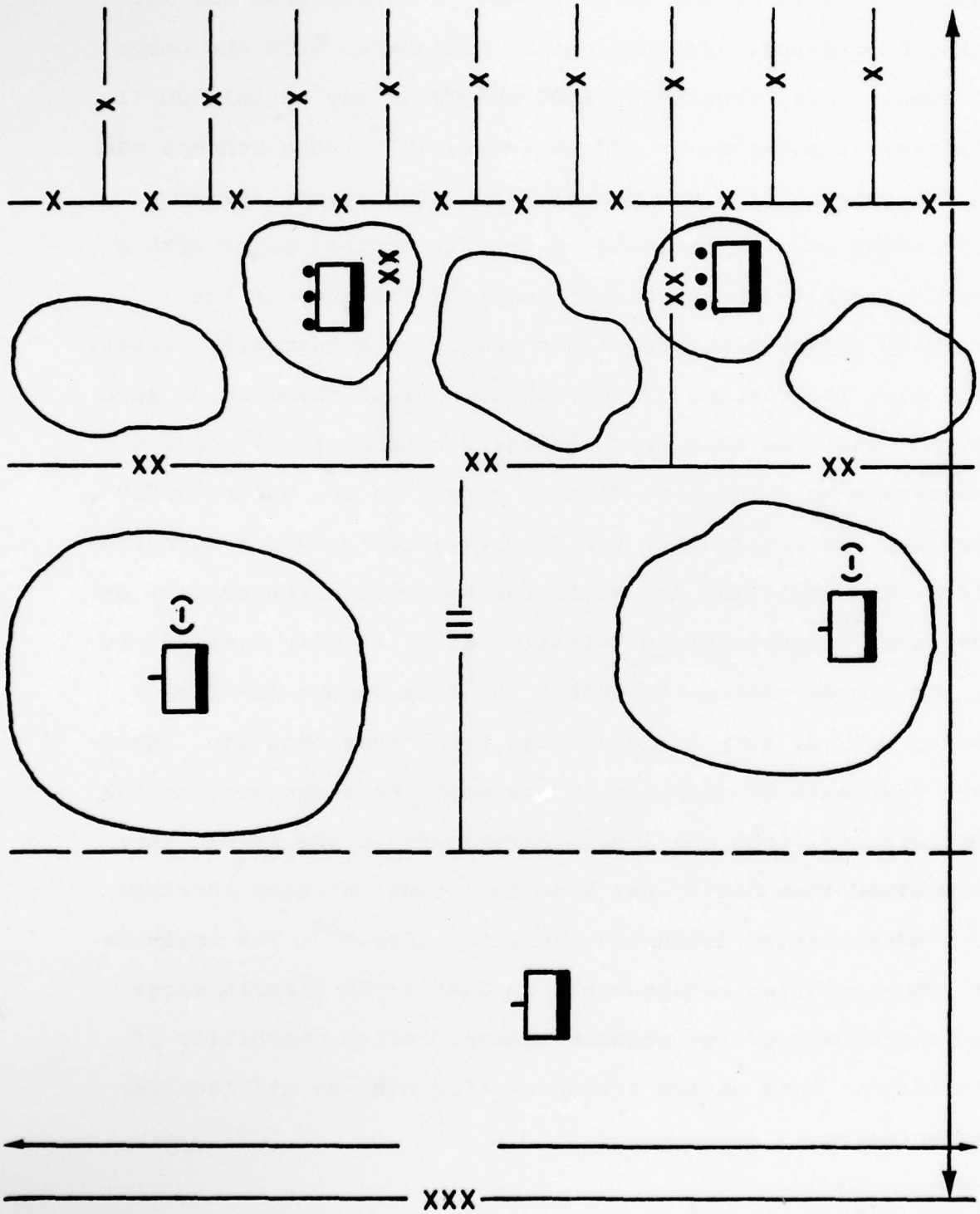

Figure 5-1. COSCOM Supply Unit Employment

reporting point in the corps should be established for all corps addressees. At this point, collocated with the corps GS supply base, frustrated ALOC shipments may be held until delivery is possible or DSU is located."[13] This concept can be the genesis of a new unrealistic requirement. First, colocating what is basically a traffic control point with a supply activity unnecessarily congests the area of the activity and contributes to the making of a lucrative target. Secondly, the concept is very unclear since there is no such single entity as the corps GS base for this single point to colocate with. The term GS base refers to the entire COSCOM. Further, the requirement for "dedicated GS ground transportation" is unrealistic and would further reduce the ability of the corps transportation battalion to meet daily commitments of the combat units. "Probably the most common limiting factor in U.S. Army Logistics has been transportation. Whenever shortages of supplies or equipment have appeared at the battlefronts, from the Revolutionary War to the Korean War, more often than not it has been the result of some shortage of transportation somewhere along the line."[14] The analysis of transportation requirements in Chapter IV clearly shows the inadequacy of the organic transportation capability of the corps. Host nation transportation must be utilized for augmentation.

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[13] Logistics Concepts, p. 2.

[14] James A. Huston, The Sinews of War: Army Logistics 1775-1953, Office of the Chief of Military History, Washington, D.C., 1966, p. 669.

Prior to dismissing all transportation requirement problems with the assumption of host nation truck availability some basic questions must be addressed. The most basic, before any planning can be done, is where and at what level can civilian trucks and truckers be utilized. The Geneva Convention and German law preclude augmentation of type B units with host nation civilians. The utilization of truckers and how far forward they can be employed must be clarified.[15]

Assuming, since the trucker's home may well be in the combat zone, that host nation transportation can be utilized as far forward as the division rear boundry, application of host nation assets will have the following beneficial effects: It will allow dedication of military transportation assets to the support of the tactical units. The probability of adequate transportation support for the supply system will be greatly enhanced. The requirement for utilization of logistic unit organic transportation for evacuation of unserviceables will be reduced. Additionally, and most importantly it precludes the inflexibility that was imposed upon Class III and V resupply by using only rail for their transport. Another beneficial effect will be the reallocation of COMMZ military transportation assets to the corps for utilization forward of the corps rear area.

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[15]TLR/S, p. 52.

This desirable augmentation for civilian assets will require accurate forecasting of requirements, peacetime contractual agreements, contingency plans and plans for exercising the contingency plans, and agreements on the commitment of funds for maintenance of the host nation vehicles during their utilization as well as the compensation of truckers for the potential usage of their trucks.

In the maintenance area, the logistic concept is that GS maintenance in the corps is oriented to support forward with the user and DS units repairing those items that can be fixed rapidly, leaving the more time consuming jobs to the GS contact teams who are regularly in the DSU and user area.[16] With the application of the GS assets forward, there is adequate maintenance capability for the corps requirements during the first 5 days. However, a restriction in the maintenance area not to be overlooked may well be Class IX supply. As previously discussed inadequate planning of combat ASL would have a greatly detrimental effect on the maintenance effort because of the inordinate amount of maintenance time that would have to be expended locating and cannabalizing critical parts.

Present planning for host nation support assumes that type B and notional units can be filled by host nation equipment technicians recruited and trained in time to influence

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[16] Logistics Concepts, p. 6.

the battle. It is unlikely that host nation personnel can be found to fill hard skill, e.g., tank turret or fire control instrument repairman, vacancies. That planning, the concept of GS maintenance support forward, and lack of a coherent policy on the employment of local nationals, has the projected impact of an overestimated capability to sustain equipment and a failure to recognize and resolve critical shortfalls. The effect most likely will not be felt in the first 5 days but the ensuing effect may well be that equipment with combat damage requiring GS level repair may not be returned to the battlefield for lack of repairmen.[17]

An examination of Table 5-1 reveals the heavy reliance being placed on type B units in the planning for the omnibus force. Without early clarification of the utilization of civilians and the employment of type B units as well as the other myriad host nation support questions, 57 percent of the logistics units planned for the support of the force cannot be relied upon. This, coupled with the Chief of Staff's assessment that the reserves are completely inadequate for the first 30 days of the war, and his statement that a significant effort will be made to increase the manning of combat service support units needed within the first 30 days of a mobilization, indicates that the COSCOM on the ground may be all there is

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[17]TLR/S, p. 3-2 and 3-3.

TABLE 5-1

LOGISTICS UNITS (Host Nation Personnel Requirement)

UNIT DESCRIPTION	IN OMNIBUS FORCE	TYPE UNITS NUMBER	TYPE UNITS % OF TOTAL	TOTAL HOST NATION REQUIREMENT
AMMO CONVL CO DS GS	37 (23 CADRE)	7	19	721
PETROLEUM OPNS CO	5	4	80	208
PETROLEUM SUPPLY CO	19	17	89	1,428
AIR DELIVERY CO	2	2	100	172
AIR DROP EQUIP REPAIR CO	3	2	67	40
GENERAL SUPPLY CO GS	37	24	65	2,616
REPAIR PARTS SUPPLY CO GS	19	16	84	608
FIELD SERVICE CO GS	3	3	100	444
HEAVY MAT SUP CO GS	11	10	91	530
ACFT & MISSILE REPAIR PARTS CO GS	4	2	50	334
LIGHT EQUIP MAINT CO GS	16	8	50	976
HEAVY EQUIP MAINT CO GS	47	31	66	4,092
COLL CLAS - SALVAGE CO	4	4	100	452
SUPPLY & SERVICE CO DS	35	25	71	2,250
MEDIUM TRUCK CO	86	45	52	3,915
HEAVY TRUCK CO	12	8	67	728
LIGHT MEDIUM TRUCK CO	62	15	24	885
TERMINAL SERVICE CO	14	12	86	2,700
TERMINAL TRANSFER CO	9	7	78	952
TOTALS	425	242	57	24,051

to support the corps for a period significantly longer than 5 days.[18]

With the constant requirement for maximum logistical effort, on a widely dispersed fluid battlefield, the communications assets of the COSCOM are of critical importance for command and control as well as logistics information flow. The MS3 study concluded that the current mix of communications equipment in ammunition units does not provide for the adequate command and control net required to coordinate the critical flow of ammunition to the user.[19] The availability of radios and telecommunications links in the maintenance units are no better. Each battalion of the COSCOM has one radio teletype (RATT) rig that gives it a capability of long distance transmissions. This net would be used for data transmission between the battalion Headquarters and the support group. The supply and maintenance companies only have two FM radios each. That only gives the unit the capability of netting with the battalion and at best monitoring the corps administrative/logistics net for customer units transmitting in the area. The companies have no capability of controlling, by radio, those teams deployed forward, the recovery assets out, nor the contact teams performing on site repairs.

The concept for ordering supplies is to transmit the

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[18]Lacey Carney, "XM-1 Tank Program Running Low on Cash, Army Times, 19 February 1979, p. 4.

[19]MS3, p. xxiv.

data from the DSU's through the GSU's to CONUS for ALOC and to theater Army units for non-ALOC supplies. There is no data link between the DSU computers and the materiel management center (MMC) at COSCOM headquarters. Further, the requirements are transmitted by punched cards carried back to the MMC by courier. Figure 5-2 is an schematic diagram of the flow of repair parts requisitions. When discussing distances of 30 to 100 kilometers between units, the lack of proper communications facilities becomes extremely significant.

Additional distractors that will seriously degrade the available logistics support effort are the problems language will impose on the application of available host nation support, and the OPFOR's capability of desant operations and air interdiction. Language difficulties will magnify the confusion and disorganization that can always be expected in large scale operations. Misunderstood requirements, misinterpretation of directions, missed convoys, and reluctance to enter areas previously hit by enemy aircraft or artillery fire will characterize the problems to be overcome.

The effects of desant operations on availability of support will be catastrophic given the present inadequacy of organic transportation and communications equipment in support units. Adding the scarcity of crew served weapons and the extremely inexperienced crews available to man them and

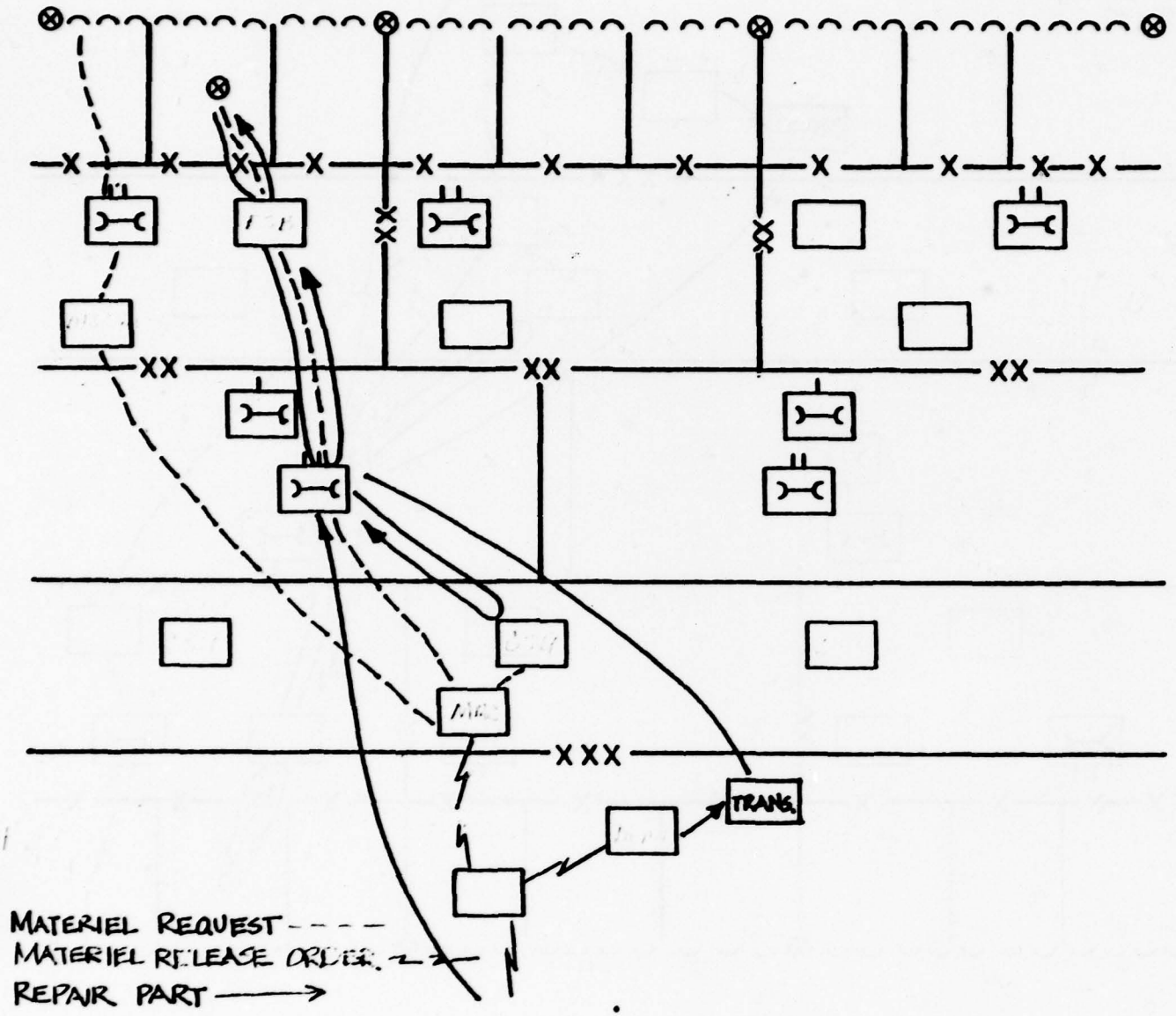

Fig. 3-2 Division Parts Flow

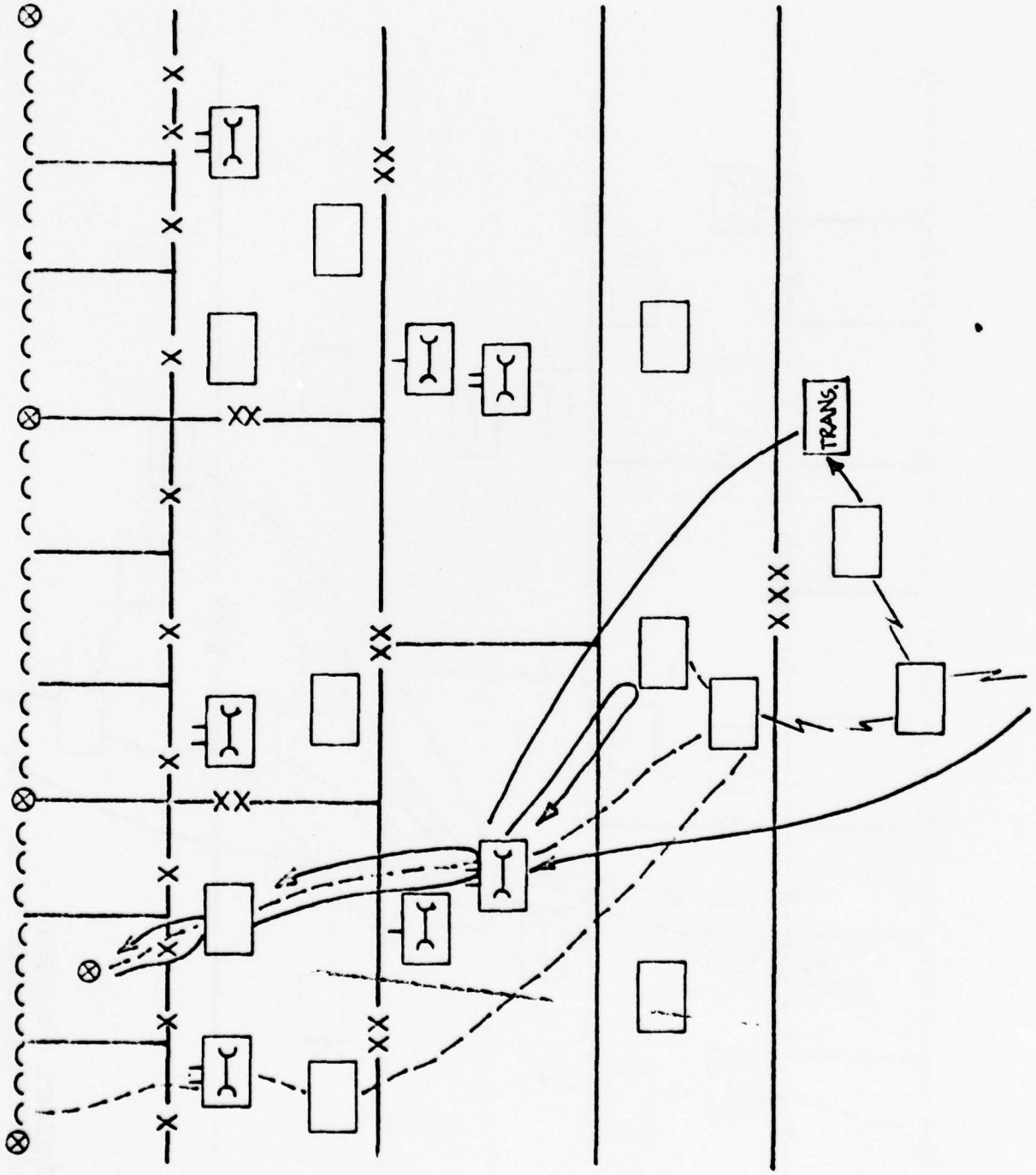

Figure 5-2. Repair Parts Flow

considering the dispersal of logistics units and elements within the units, there is nothing in the combat service support structure that can give serious challenge to a motorized rifle company or larger unit airlifted into the corps rear. This is probably the most profound shortcoming of present tactical doctrine. No other facet of Soviet doctrine has the potential for such a lethal blow to the viability of the active defense. With the scenario being analyzed, units outnumbered, widespread, and highly mobile concentrating on countering enemy thrusts it seems unlikely that combat formations will be diverted for counter desant operations. With the disasterous effects of desant operations on logistics support, this may well be necessary and desirable.

The German Army in World War II gave their rear area security to support troops when they fought against the Russians. That was not effective policy. At times they had entire divisions cut off from their supply base. Their experience clearly shows that a passive defense based on scattered security strong points will not be sufficient, regardless of how well such a defense is organized.[20]

The threat of such an attack, along with the implications of an elastic FEBA will have serious effects on the availability of CSS if the units are expected to protect themselves. The possibility of limited breakthroughs allowed

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[20]LTC M. Mooradian, "Rear Area Security With an Elastic FEBA," Military Review, September 1978, p. 43.

by maneuvering units will affect decisions on the degree operations can be supported forward. Just the threat of attack will reduce the availability of contact teams, slow convoys, increase the requirements for military police check points, and increase guard requirements throughout the corps rear. All calculations of support required have been made without regard to interdicted lines of communications or rear area defense. Due to the complexity and density of good lines of communication in Germany, total interdiction is highly unlikely, however any interdiction or attack will have considerable debilitative effects on the CSS available.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

> Preparation for the proservation of our freedom must come in peacetime, and we must pay for it in money and inconvenience. The alternative . . . is payment in blood and extinction.
>
> General Brehon Somervel
> Commander Army Services
> Forces World War II

This thesis resulted from a concern about the effects on the logistics structure of recent strategic concept changes and the resultant tactical doctrine of the Army which shifted emphasis from a protracted nuclear exchange to that of a short war that is initiated with a conventional phase. Much of the concern was brought about by the fact that the doctrinal shift occurred during the latter stages of a period when economic considerations caused great cutbacks in the equipment posture of the Army while concern over combat to support unit ratios had resulted in an increase of the combat forces at the expense of organic combat service support forces.

As a result of actions taken during that time, during the first 30 days of mobilization for war in Europe more than 2.5 million short tons of supplies and unit equipment has to be shipped from U.S. air and seaports. During that same time, almost all active army and air force units will be moving overseas while more than 5,000 reserve units move to their

mobilization stations. Equipment left behind by units falling in on prepositioned stocks in Europe will have to be redistributed to units forming or shipped to Europe as replacements. Units in place in Europe will have to carry the battle until these actions, the largest of which is the orchestration of the movement of the required $2\frac{1}{2}$ million truckloads, can be accomplished.[1]

This thesis examined the capability of the present logistics forces available in a forward deployed corps to accomplish the support mission required until additional forces can be brought to bear. It was important that this examination be made since 80 percent of the Army Reserves, individual and units, are assigned to combat support or combat service support functions. Further, the medical units of the reserves comprise 47 percent of the Army's deployable medical units.[2]

With the advent of a new tactical thrust, the examination of our ability to support it should be made for history is replete with examples of logistic insufficiency causing defeat. Richelieu wrote: "History knows many more armies ruined by want and disorder than by the efforts of their

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[1]Charles W. Duncan, Jr., Deputy Secretary of Defense "Mobilization and Transportation," Translog, February 1979, p. 7.

[2]"Total Army," Commanders Call, DA Pamphlet 360-84, Sep-Oct 78.

enemies; and I have witnessed how all the enterprises which were embarked on in my day were lacking for that reason alone."[3]

The Hollingsworth Report in 1976 stated that "organization for combat and operational planning must be based on a 'ready for war now basis not a transition to war' . . .. Initial reinforcement plans must be based on combat essentials for a decisive initial battle followed by a sustaining capability . . ." This, essentially, has not been done.[4]

CONCLUSIONS

The COSCOM of the forward deployed corps, organized under the concept of "austere" support, is lacking in the ability to support the corps. It has the capability to substantially support the corps only when augmented with host nation transportation assets.

Without transportation augmentation the corps is hopelessly immobile and cannot support itself past moving to its general defensive positions. It also has only a third of the ambulance capacity required for the evacuation of casualties, and even less of the required capability for the handling of remains. Once the transportation is augmented,

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[3]Martin Van Creveld (trans.), L. Andre, ed., Le. Testament Politique du Cardinal de Richelieu, Paris 1947, p. 480, quoted in Supplying War, p. 17.

[4]Hollingsworth Study Abridgement, p. 3.

the COSCOM can support the corps until reinforced; but with severe provisios. The provisios vary from the policy for employment of GS maintenance units, to the definition of combat serviceability, to utilization of railheads for POL and ammunition supply points.

The corps can support itself for Classes I, II and IV, VI, VII and IIX during the first few days without any real problem. The difficulties are encountered in the high volume classes: III and V. Class IX will also present a problem if combat ASL planning requirements are not met. The basic problem in supporting Classes III and V, although the units are inadequately organized and will be short of people and equipment, is transportation.

While the COSCOM is capable of meeting the maintenance requirements up to the direct support level, with the reorganized general support concept, general support and evacuation services cannot be accomplished without host nation or reserve unit augmentation.

None of the above should be surprising nor should it be disconcerting given the requirements, assumptions, and presumptions of the Nunn Amendment, the Hollingsworth Report, and the Department of the Army Logistics Concepts. The crux of the Nunn Amendment is that the forward deployed corps, because they are deployed in an industrialized country do not require the ability to be self-sufficient. All of these studies presuppose that support assets are available in the

local economy, and having these assets in the COSCOM and/or within the theater army is unnecessary. The Hollingsworth Study stated that "host nation support must become a norm in peace as well as war" and went as far as to recommend that army trucks and sedans in Europe be of German manufacture and maintained commercially on the German economy.

With host nation transportation augmentation all supply requirements of the corps can be met. However, because of present uncertainties on the employment of host nation assets and personnel in the combat zone, complete transportation requirement fulfillment and maintenance at the general support level remain in doubt. To maximize support asset employment, questions concerning the employment of host nation civilians require clarification. Once that is accomplished, the COSCOM and COMMZ support forces will require reorganization. This reorganization required will not only be for maximization of support forward but for organizing COSCOM units into lean, self-supporting, easily tailorable organizations that place the maximum percentage of the military personnel in the support forces forward. Envisioned in this reorganization would be the virtual elimination of pure military units in the COMMZ. Those military units would be used forward and they would be replaced in the COMMZ by contract transportation, maintenance, engineer, supply and services activities.

The OMNIBUS force logistics element is comprised of 57 percent type B and notional units which are more than 70 percent host nation civilians. With the Chief of Staff's analysis of the posture of the reserve CSS units and the present restrictions on type B units, the COSCOM may well be all the support the corps has for a period significantly longer than 5 days.

Analyzed effects of German mobilization on United States Army Europe and Central Army Group stress the fact that rear area requirements that arise after M-day may be expected to meet significant competition from German civil requirements. Further, the North Atlantic Treaty Organization rules for recourse to local resources are inadequate for planning because identified requirements are merely filed for post M-day determination.[5] Legislation is required to insure that host nation, DA civilian, and contract personnel can remain on their jobs during hostilities. Also, Federal Republic of Germany draft exemption is required for host nation employees that have military reserve commitments. Until the host nation support issue is resolved and decisions made as to the extent it can be relied upon, there can be no coherent doctrine for the echelons above corps and much of the CSS doctrine for the COSCOM remains in question.[6]

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[5]CENTAC letter, subject: German Mobilization (U)(S), dated 19 December 1977.

[6]Warren K. Rees, Host Nation Support.

RECOMMENDATIONS

Since this analysis points out the criticality of host nation support to the adequacy of the support of the forward deployed corps, it is recommended that, detailed planning for host nation support requirements be begun immediately. This planning should have as its ultimate result, transportation requirements by type, capacity, control method and desired report location. It should include the step by step procedure envisioned for computation of personnel requirements. Plans recruitment and placement of host nation personnel need to be made now so the type B organizations can be formed and tested. Most importantly, procedures for changing the rules for employment of host nation civilians forward of the COMMZ require immediate initation.

All required planning should be geared to the PPBS budget cycle to preclude conclusions based on false assumptions and to facilitate orderly requirements generation. This would also allow for the budgeting of requirements as plans are approved.

Alternative methods of evacuating casualties or converting other vehicles and units to ambulance companies requires serious study. The present inadequacy of casuality evacuation capability places the corps commander in an untenable situation. The focus of the recommended study should be the disposition and capacity of the present

transportation motor pool (TMP) commercial vehicles, particularly ambulances, that are presently supporting the Military Communities and station hospitals. The most potentially promising study readily apparent is the feasibility of utilizing TMP busses for this mission. It is possible that the busses could be modified, to allow for the securing of strechers over the seats or on the floor, during routine maintenance without great expense or inconvience.

Legal and highest level governmental policy decisions are required on the employment parameters for host nation civilians. United States contingency planners have based force structuring decisions on the formation of notional and type B units which are entirely civilian except for the cadres. Neither the Geneva Convention nor Federal Republic of Germany law allows such mixing of civilians into military units.[7] The result is that planned utilization of 24,000 host nation civilians, 57 percent of the logistics units in the OMNIBUS forces is precluded. If the prohibition persists, immediate action to increase the force structure for support needs to be undertaken.

The security of the corps rear area has been identified as a significant problem that has not been properly addressed in planning particularly since the Soviets have made no secret of their plans to airlift heavy combat units into the rear areas to disrupt operations. This potential

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[7]TLR/S Study, p. 52.

action proposes a myriad of problems, ranging from the effects of utilization of logistics personnel for security on the support mission to the availability of military police units for security missions. An excellent study on the availability of host nation support for Military Police Missions has been done as a war college study project.[8] The present lack of doctrine on rear area security shows that the benefits of the lessons the Germans learned, quite expensively, in World War II have been lost upon us. The Germans learned, against an enemy far less well equipped, trained and organized for rear area operations, that halfway measures are wholly inappropriate for rear area defense. "The unequivocal conclusions drawn by the German Army was that regular combat forces should be used in RAS if any degree of success is expected."[9]

All of the indications above point up the need to look toward the restructuring of the COSCOM and its units. Today, as well as on the battlefield of the future, with the emphasis on tailoring of combat forces, mobility and speed; logistics units that are flexible, mobile and capable of

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[8]LTC Warren K. Rees, Host Nation Support: Relying on Host Nations for Traditional MP Missions(U)(SECRET), unpublished U.S. Army War College Study Project, 22 May 1978.

[9]Moorad Mooradian, "Rear Area Security With an "Elastic FEBA," Military Review, September 1978, p. 48.

independent action are required. Without the large stable formations of yesteryear the need for large single purpose logistics units has disappeared. In the divisions this is evidenced by the requirements for the DISCOM battalions reorganization into forward area support teams (FAST) for combat. In the COSCOM some organization similar in composition and function to the FAST is formed and placed up near the brigade rear boundaries to support the non-divisional units. The divisional H series TO&E have legitimized and standardized the organization for combat by authorizing the majors to command the FAST teams. This practice of reorganizing for combat, in both the division and corps, has the effect of removing the assets from those men best qualified to manage the mission in combat, the support battalion commanders. With the logistics units all tailored up and parceled out in area support under the command of majors, the battalion commanders span of control and mission is greatly reduced, and may well be eliminated.

The COSCOM battalions are neither organized nor equipped for tailoring into elements capable of efficient independent operation. They lack the vehicles, communications equipment and shop sets and special equipment required. The COSCOM units require a reorganization study that will operate in a manner similar to that of the Division Restructuring Study (DRS). The DRS rather than attempting to incorporate

new doctrine and weapons systems into the existing force structure has reversed the chain by beginning with the weapons systems and their capabilities then organizing the force structure around the systems. The COSCOM study needs to begin by studying the systems and tactics that have to be supported. Then the logistics tools and systems to provide the support should be applied. As the final step, the organization to support a base corps should be built around those systems. The present practice of modifying units by augmenting the base with teams is still practical and should not be abandoned. However, FM 101-10-2 would require complete reworking.

This thesis has been an attempt to contribute insight to the requirements of the new tactics and warning of the folly of assuming logistics sufficiency. War cannot be regarded as a temporary condition foreign to the Army's purpose. Logistics planning is impossible to tie to a specific strategic or tactical plan. The support resources must be developed in a manner that will provide the greatest possible flexibility. The way to become lean and streamlined and highly mobile is not, as so often has been assumed, to reduce the proportion of service troops. The more likely way to develop a fast moving, hard hitting force is to give it enough service support.[10] For no matter how superbly trained the force or how sophisticated the equipment, its combat capability is only potential until it is adequately supplied and maintained.

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[10]James A. Huston, Sinews of War, pp. 665-667.

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