REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 074-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	22 May 1965	Master's Thesis August 1964 - May 1965

4. TITLE AND SUBTITLE
AN ANALYSIS OF COMMAND AND CONTROL IN THE ROAD DIVISION SUPPORT COMMAND HEADQUARTERS

5. FUNDING NUMBERS

6. AUTHOR(S)
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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

U.S. Army Command and General Staff College
1 Reynolds Ave.
Fort Leavenworth, KS 66027

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for public release; distribution is unlimited.

12b. DISTRIBUTION CODE
A

13. ABSTRACT ***(Maximum 200 Words)***

The mission of the ROAD division Support Command is "to provide division level supply, field maintenance, medical service and miscellaneous services for all elements of the division assigned or attached." The objective of this study is to analyze the adequacy of the support command headquarters to accomplish its missions. A questionnaire was sent to each of the active Army division support commands, except airborne; eleven of fourteen responded. The overall conclusion is that the capability of the headquarters is generally adequate, but that command and control would be improved substantially if certain modifications in communication equipment, operating procedures, and organization were implemented.

14. SUBJECT TERMS
ROAD division; Command and control; Army; Divisional operations

15. NUMBER OF PAGES
160

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
U	U	U	A

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18
298-102

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

MASTER OF MILITARY ART AND SCIENCE

by
William C. Glisson, Major, U. S. Army

Fort Leavenworth, Kansas
1965

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U. S. ARMY COMMAND AND GENERAL STAFF COLLEGE

(Abstract Approval Page)

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Title of Thesis An Analysis of Command and Control in the ROAD Division Support Command Headquarters (U)

Accepted for Publication by:

B D Owen, Research and Thesis Monitor

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Charles R Covell, Member, Graduate Faculty

Date 22 May 1965

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

The mission of the ROAD division support command is "to provide division level supply, field maintenance, medical service and miscellaneous services for all elements of the division assigned or attached."[1] The mission of the support command headquarters is "to provide command and control of division support command organic and attached units. . . ."[2] The objective of this study is to analyze the adequacy of the support command headquarters to accomplish its mission.

As part of the research for this study, a questionnaire was prepared and sent to each of the active Army division support commands, except those in the two airborne divisions. Fourteen divisions were queried and eleven responded. The results of the questionnaire form a major part of this study.

The study is divided into two parts. Part I considers the development of the ROAD division logistical organization, presents an account of the development of centralization and functionalization of logistical support in the U. S. Army since 1943, and concludes with a fundamental discussion of the employment of the support command. Part II is an analysis of the control exercised by the support command headquarters.

In the analysis, five aspects of control are examined: communications for command and control; control of supply (less ammunition),

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[1]U.S. Department of the Army. Table of Organization and Equipment 29-11E, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[2]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

medical, and maintenance operations; control of the forward support elements operating in the brigade trains areas, control of ammunition supply, and transportation planning and movement control.

The methodology employed in this study was to analyze each aspect of control, present the data obtained from the field, and then, based on the analysis and field experience, to evaluate the adequacy of the headquarters to exercise control.

The criteria used to analyze the headquarters' capability to exercise control were the adequacy of communication and personnel resources, and the suitability of the methods that may be employed by the headquarters to control supply (except ammunition), medical, and maintenance operations.

The examination of communications for command and control considers both internal and external communications required by the support command headquarters. By and large, the communication resources are adequate to provide the headquarters with the necessary communication capability to exercise command and control. Two limitations exist in the area of internal communications. Additional field wire and an additional FM radio are needed to completely satisfy the requirements for internal communications.

Control of supply (less ammunition), medical, and maintenance operations is analyzed by considering the methods which the support command commander may use to exercise control. Doctrinally, there are two methods: the traditional method and the operations center method. The traditional method employs the unit staff in the conventional manner; the operations center method employs elements of the unit staff along with representatives from the support command battalions to establish a logistical operations center. The conclusions reached are that the

operations center method is the better method of exercising control of support command operations, and that this method should be adopted as a standing operating procedure.

The investigation of the control of forward support elements also considers the methods which can be used to exercise control of this aspect of support command operations. Two methods are evaluated: the parent battalion method and the forward control element method. Current doctrine is reflected in the parent battalion method and the conclusion reached is that current doctrine is valid--the forward support elements should be controlled by their parent battalions.

With regard to ammunition supply, it is concluded that the division ammunition section provides the support command headquarters with the capability to control effectively ammunition supply for the division and attached units.

The division transportation section is considered to be adequate to perform its functions, but the evaluation indicates that it should be assigned to the division headquarters rather than the support command headquarters.

The overall conclusion resulting from this research into the adequacy of the support command headquarters to exercise command and control is that the capability of the headquarters is generally adequate, but that command and control would be improved substantially if the following modifications in communication equipment, operating procedures, and organization were implemented:

(1) An additional radio and additional wire are authorized for internal communications.

(2) The logistical operations center method is adopted as a standing operating procedure within the support command headquarters.

(3) The composition of the logistical operations center is modified to include the entire S3 and S4 staff sections, and the support command battalions are authorized TOE spaces for their representatives who operate in the logistical operations center.

(4) The division transportation section is assigned to the division headquarters rather than to the support command headquarters.

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UNCLASSIFIED

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

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1965

[redacted]

UNCLASSIFIED

U. S. ARMY COMMAND AND GENERAL STAFF COLLEGE

(Thesis Approval Page)

Name of Candidate William C. Glisson

Title of Thesis An Analysis of Command and Control in the ROAD Division Support Command Headquarters (U)

Accepted by:

R D Swan, Research and Thesis Monitor

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Date 22 May 1965

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

PREFACE

Command and control are important functions to every military unit, regardless of its size and mission. It is through effective command and control that direction is provided, coordination effected, and military operations executed. "Command is the authority an individual in the Military Service lawfully exercises over subordinates by virtue of his rank and assignment. It carries with it responsibility for planning, organizing, directing, coordinating, and controlling military forces to accomplish assigned, implied, or inherent missions. . . ."[1] "Controlling is the action taken by a commander to insure that plans, orders, directives, and policies are being complied with in such a manner that the objective will be attained."[2]

When command and control are mentioned, the thoughts of most people immediately turn to the combat commander--the battalion commander, the brigade commander, and the division commander. Command and control are no less important to the combat service support commander.

The ROAD division support command is responsible for providing the division with logistical support--one of the major fields of combat service support. The mission of the support command is "to provide division level supply, field maintenance, medical service and miscellaneous services for

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[1] U.S. Army Command and General Staff College. "Instructional Problem A1010, Management," (Fort Leavenworth, Kan.: FY 65).

[2] Ibid.

all elements of the division assigned or attached."[3] The mission of the support command headquarters is "to provide command and control of division support command organic and attached units. . . ."[4] The objective of this paper is to analyze the adequacy of the support command headquarters to exercise command and control.

The support command of the mechanized infantry division is the vehicle which has been used for this study. The approach used in analyzing command and control was to examine the adequacy of communication and personnel resources available to the support command commander, and to evaluate the methods that may be employed by the headquarters to control supply, medical, and maintenance operations.

This study is divided into two parts. Part I, consisting of Chapters I and II, provides a background for the subsequent discussion of command and control. Part II, which contains the remaining chapters, is an analysis of the control exercised by the support command headquarters and also includes the conclusions of this paper.

Chapter I considers the development of the ROAD division and presents an account of the logistical systems employed in the U.S. Army since 1943, with emphasis on the centralization and functionalization of logistical support. Chapter II is a fundamental discussion of the employment of the support command.

In the analysis, five aspects of control are examined; communications, control of supply (less ammunition), medical, and maintenance

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[3]U.S. Department of the Army. Table of Organization and Equipment 29-11E, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[4]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

operations, control of forward support elements operating in the brigade trains areas, control of ammunition supply, and transportation planning and movement control. These aspects of control, except communications and control of the forward support elements, are exercised through the four control elements in the support command headquarters--the command headquarters, headquarters section, division ammunition section, and division transportation section.

Chapter III considers communications for command and control. In Chapter IV, control of supply (except ammunition), medical, and maintenance operations as exercised by the command headquarters and the headquarters section is examined. Chapter V is an analysis of control of the support command elements operating in the forward areas.[5] Chapter VI takes up the subject of ammunition supply through an analysis of the division ammunition section. Transportation planning and movement control is examined in Chapter VII by evaluating the division transportation section. Chapter VIII contains the conclusions of this study.

To obtain firsthand information, a questionnaire was prepared and sent to each of the active Army division support commands, except those in the two airborne divisions. Appendix I contains a copy of the questionnaire. Of the fourteen divisions queried, eleven responded. The responses by type division were as follows: five infantry, three mechanized infantry, and three armored. The results obtained from the questionnaire have been a major consideration in this analysis of command and control. The table of organization and equipment for the mechanized

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[5]This subject, control of forward support elements, has been included in this study because a method of control is being employed by some units that is significantly different from current doctrine, which suggests some doubt exists as to the validity of the doctrine.

infantry division support command headquarters is applicable to the support command headquarters in the infantry and armored divisions also. Thus, even though the mechanized infantry division support command has been used for analysis, the responses from the infantry and armored division support commands have the same validity as those of the mechanized infantry division support commands.

In the conduct of the research, the preparation of the questionnaire, and the writing of the paper, a number of people have provided invaluable assistance. I am deeply grateful to Lt Colonel Robert D. Dwan, my principal monitor, for the encouragement, help, and advice given throughout this period. To Major Dean R. Paquette, my personal appreciation is extended for the willing and valuable aid given at a critical juncture in the preparation of this paper. The assistance rendered by Major Paul E. Riese, Captain William F. Dunkelberger, and others too numerous to mention is sincerely appreciated. To the commanders of the support commands that answered the questionnaire, I am indebted; without their support, this study could not have included the firsthand experience of personnel in the field. Last, but certainly not least, the help provided by the personnel in the College Library Archives must be acknowledged and I am most grateful.

W. C. G.

Fort Leavenworth, Kansas
May, 1965

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PART I

AN INTRODUCTION TO THE ROAD DIVISION, AN HISTORICAL ACCOUNT OF LOGISTICAL SYSTEMS EMPLOYED IN THE U. S. ARMY SINCE 1943, AND A FUNDAMENTAL DISCUSSION OF THE EMPLOYMENT OF THE SUPPORT COMMAND

CHAPTER I

INTRODUCTION

The United States Army Division of 1965 had its beginning in 1960 via a letter from the Army Vice Chief of Staff to the Commanding General, United States Continental Army Command. The Vice Chief of Staff stated:

> 1. A need exists for review of the Army's divisional organizations to determine their adequacy to meet the requirements of the coming decade. In a broad sense, this need stems from continual changes in the world situation, in the nature of modern warfare, and in the equipment made available by modern technology. The following additional considerations further attest to the need for action at this time:
>
> . . . . . .
>
> d. In order to enhance battlefield mobility and afford a greater degree of protection for our personnel on the atomic battlefield, serious consideration should be given to the creation of a mechanized division. Its organization and equipment should be compatible with those of the infantry and armored divisions.
>
> 2. In view of the above, it is directed that a study be undertaken as a matter of priority to develop the optimum infantry, mechanized, and armored division organizations for the 1961-1965 period. The study and recommendations stemming therefrom will be submitted to the Chief of Staff by 1 March 1961. . . .
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> . . . . . .
>
> 3. The study and recommendations will adhere to sound and proven principles of organizing, equipping, and employing land combat forces for modern warfare. The organizations for 1961-1965 will be compatible with those to be developed for the 1965-1970 period under guidance to be furnished by separate correspondence. . . .[1]

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[1] U.S. Army Command and General Staff College, "Division Organization" (Ltr), (Fort Leavenworth, Kan.: 27 December 1960), Incl 1 to Incl 1, SECRET.

From that moment on the study to reorganize the army division, which was to be titled, Reorganization of the Army Division or ROAD, was underway and the ROAD division rapidly began to take shape and form. The first division to effect the change to the organization resulting from this study was the 24th Infantry Division, redesignated as the 24th Infantry Division (Mechanized); this change occurred in February 1963.[2] Except for the airborne divisions, the reorganization of all active army divisions was completed in January 1964 when the 1st Infantry Division reorganized.[3]

At this time there exists approximately two years of experience with the ROAD division. This experience will be used in investigating and analyzing the adequacy of the support command headquarters to provide for command and control. As noted in the preface, the mechanized infantry division support command will be used as the basis for this study.

Logistical Support Under the ROAD Concept

The designers of the ROAD division formulated certain organizational principles to be used as guideposts in developing the new division. The principles laid down for the development of combat service support units for the ROAD division and a discussion of these principles as they apply to the ROAD division are stated below:

> 14. Administrative support units of the division are organized to provide support sections for independent operations of major division elements.
>
> Discussion: In the event that the requirement for an independent or semi-independent tactical or strategic operation of a brigade-sized unit exists, the ROAD-65 organization is designed to be able to fragment

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2U.S. Department of the Army. "Implementing Directive For Reorganization of Army Units Under ROAD in FY 63 and FY 64", (Washington, D.C.: 18 January 1963), SECRET

3Ibid.

its administrative support to make the brigade an administratively self-sufficient organization for relatively short periods.

15. Within the division, administrative support is organized on a functional basis.

Discussion: ROAD-65 divisions have, as a major subordinate unit, a division support command. This command is an operational echelon. The division support command is organized on the basis of functions that must be performed, i.e., administration, medical support, maintenance and supply.

16. Administrative support functions are retained to a maximum degree at levels above the division to allow division and lower echelon commanders to devote maximum attention to tactical operations.

Discussion: The ROAD-65 study assumed that the organization of echelons above the division would remain substantially as they exist today. This guideline simply indicates that our 1961 concept of logistical support generally will be retained for the time period under consideration for ROAD-65.[4]

These principles give some insight into the considerations used in developing the support command organization of the ROAD division. Of especial significance are the principles which state that support is organized on a functional basis and that it is capable of being fragmented. These principles and the discussion thereto introduces functionalized logistical support and acknowledges the requirement for fragmentation of this support on a functional basis.

Since grouping of combat service support units on a functional basis represents a major change from previous divisional organizations, it is appropriate to consider the meaning of the words function, functional, functionalize, and functionalization. Webster's Third New International Dictionary was consulted and the following definitions were obtained.

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[4]U.S. Continental Army Command. "Reorganization Objective Army Divisions 1965", (Fort Monroe, Va.: 1 March 1961), Annex C, p. C-4, SECRET.

Function:	an organizational unit performing a group of related acts and processes.
Functional:	carrying out or consisting of a group of related activities; performing a specialized task.
Functionalize:	to cause to be functional; to organize into units performing specialized tasks.
Functionalization:	the quality or state of being functionalized.[5]

All of these definitions convey the idea of grouping related or common tasks together to be performed by a single type unit. The support command of the ROAD division is so organized. There are certain exceptions, which shall be identified later, but for the most part all supply functions are performed by one unit, all medical functions by another, and all maintenance functions by a third unit. This fact, then, represents the implementation of functionalized logistical support.

The advent of the support command as a major element of the division not only provided for functionalized logistical support, but also made centralization of this support complete, for the support command commander is the logistical operator of the division.[6] Command responsibility for logistical support has now been fixed at an echelon below the division headquarters. This fact does not change the division commander's responsibility in any way, but it does mean that he now has a commander to direct and supervise the execution of division level logistical support operations.

Logistical Support Under the Triangular Concept

Under the triangular organizational concept, logistical support

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[5] G & C Merriam Company. Webster's Third New International Dictionary, (Springfield, Mass.: 1961), p. 921.

[6] U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, (Washington, D.C.: 1961), p. 28.

was not functionalized and, in the infantry division, was not centralized either. The infantry division of 1943, organized under the triangular concept, contained the following logistical elements: medical battalion, ordnance light maintenance company and a quartermaster company.[7] The armored division of 1943, also organized under the triangular concept, received its logistical support from a division quartermaster section, medical battalion, and an ordnance maintenance battalion.[8] Additionally, the armored division had a division trains headquarters, which provided a limited degree of centralization of logistical elements.[9] The armored division trains included the ordnance maintenance battalion and the medical battalion, but did not include the division quartermaster section; the function of the trains headquarters was to exercise tactical control over its organic units, which consisted primarily of logistical elements.[10] In both divisions, however, the technical functions of the logistical units were supervised directly by the division G4.[11] From this review of divisions organized under the triangular concept, it is apparent that the G4 was not only a planner but also a logistical operator. This method of operating remained in effect, though there were some modifications in the logistical elements organic to these divisions, until the reorganization under the pentomic concept.

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[7]U.S. War Department. "Reorganization of Infantry Divisions" (Ltr), (Washington, D.C.: 2 August 1943).

[8]U.S. War Department. "Reorganization of Armored Divisions" (Ltr), (Washington, D.C.: 15 September 1943).

[9]Ibid.

[10]U.S. War Department. Field Manual 17-50, Supply, Evacuation, and Trains, (Washington, D.C.: 1945), p. 63 and 64.

[11]U.S. War Department. Field Manual 101-5, Staff Officers' Field Manual, (Washington, D.C.: 1940), p. 15.

Logistical Support Under the Pentomic Concept

The pentomic concept was no panacea. Infantry divisions were reorganized under this concept beginning in 1957.[12] The pentomic concept did provide some degree of centralization of logistical support. The infantry division as well as the armored division now had a division trains headquarters.[13] This headquarters had essentially the same function as the trains headquarters of the 1943 armored division, one of tactical control of division logistical elements.[14] Direction for logistical support, however, still flowed from the G4 and division special staff officers direct to the logistical units.[15]

The armored division also was undergoing organizational changes during this period; however, the changes were minimal. In a letter on this subject, the United States Continental Army Command Headquarters stated: "Basically, the over-all structure of the revised armored division remains unchanged since it has been determined that the overall structure is well suited to conditions of modern warfare."[16] The division trains commander, as before, exercised tactical control over logistical elements, but, as in the infantry division, direction for

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[12]U.S. Continental Army Command. "Phased Time Schedule for the Reorganization of the Active Army Combat Divisions of the United States Army" (Ltr), (Fort Monroe, Va.: 8 December 1956).

[13]U.S. Continental Army Command. "Reorganization of Current Infantry Division" (Ltr), (Fort Monroe, Va.: 2 October 1956), Incl 2, para 21, SECRET.

[14]U.S. Department of the Army. Field Manual 7-100, Infantry Division, (Washington, D.C.: 1960), p. 72.

[15]Ibid.

[16]U.S. Continental Army Command. "New Divisional Organization" (Ltr), (Fort Monroe, Va.: 19 December 1956), Incl 2, para 2.

logistical support operations still flowed from the G4 and special staff officers direct to logistical units.[17]

While the pentomic concept did provide some centralization of logistical support elements in the infantry division, it did not provide for functionalized logistical support.[18] The changes in the armored division organization did not provide for functionalized support either.[19]

Development of Centralization and Functionalization

Centralization of logistical support has developed evolutionally, beginning with the World War II armored division trains headquarters. Functionalization of this support, however, is relatively new and has actually been implemented in a final TOE only under the ROAD concept.

Organizing logistical units on a functionalized basis results in efficiency and economy of operation. Functionalization takes advantage of the fact that many skills have a common basis. An individual trained in supply procedures can prepare requisitions and maintain accounts for all types of supplies. Likewise, an individual trained in welding or repairing gasoline engines can apply his skill to any piece of equipment, whether it be ordnance, engineer, or signal. As an example, a mechanic trained in maintenance of gasoline engines can maintain the engines in engineer power generation equipment, ordnance trucks, and quartermaster bath units.

The grouping of logistical units in a single command, such as the support command, provides for centralization of control; organizing these

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[17]U.S. Department of the Army. Field Manual 17-50, Armor Logistics, (Washington, D.C.: 1958), pp. 60 and 80.

[18]U.S. Department of the Army. Field Manual 7-100, Infantry Division, p. 68.

[19]U.S. Department of the Army. Field Manual 17-50, Armor Logistics, pp. 65 and 70.

units on a functionalized basis provides for centralization of effort and, thus, makes centralization of logistical support operations complete in every respect.

This brief resume of logistical support under the division organizational concepts employed in the U.S. Army during the past twenty years has illustrated the evolutionary process of centralization of logistical support. The discussion of the ROAD organization has identified the introduction of functionalization of logistical support. Having seen the development of centralization and functionalization, which is the foundation of logistical support in the ROAD organization, attention now will be focused on the specific organization of this study.

The Mechanized Infantry Division Support Command

The mechanized infantry division support command (Figure 1) consists of a headquarters, headquarters company and band; administration company; medical battalion; supply and transport battalion; and a maintenance battalion. The support command is a major unit of the division and the support command commander, for the most part, has complete command of his unit. The following doctrinal statements from Field Manual 54-2 make these facts incontrovertible:

> The division support command is a major subordinate unit at the same echelon as the brigades and division artillery.
>
> . . . . . .
>
> The support command commander has normal command authority over all subordinate units of his command except the administration company. The support command commander has tactical control of the administration company, but is not responsible for its operations. The functions of the administration company are performed under the general staff supervision of the G1.[20]

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[20]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p.4.

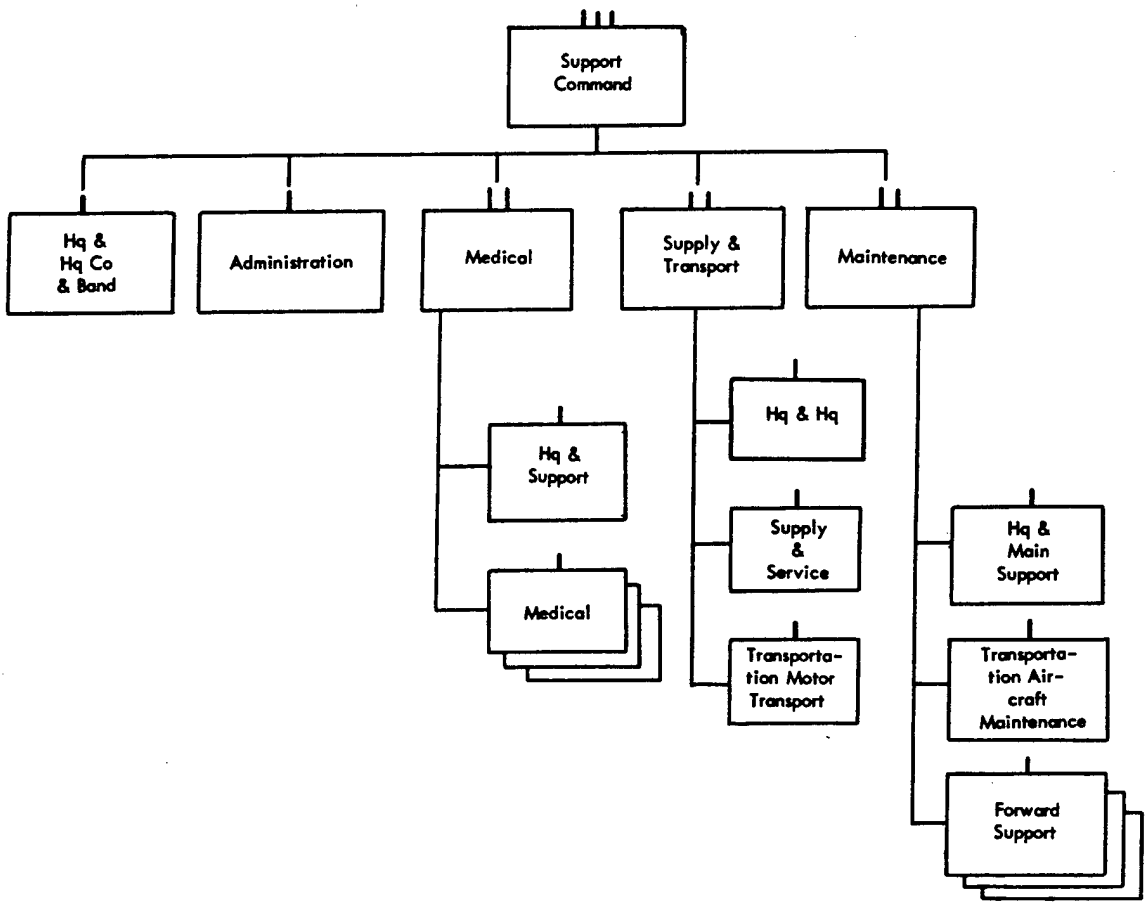

Fig. 1.--Division Support Command.

The logistical functions of the support command are readily apparent from the type of units organic to the command. These functions are supply, medical, and maintenance support for the division; the headquarters element of course has the function of directing and supervising these functions to provide coordinated, responsive logistical support to the division.

The capabilities of the support command, as enumerated in the table of organization and equipment, are as follows:

(1) Provides division level logistical support to include mobile intransit storage and distribution of Class I and III, II and IV supplies and control of Class V supplies.

(2) Provides third echelon direct support maintenance support, except for medical and cryptographic items.

(3) Provides division level medical service including evacuation, establishment and operation of clearing stations, emergency dental treatment and medical supply.

(4) A limited capability to carry division reserve supplies on independent or semi-independent division mission.

(5) Provides staff advice to the division commander on quartermaster and ordnance operations, on all supply and maintenance matters except water supply and maintenance of medical and cryptographic materiel, and on transportation matters pertaining to the operations of the support command.

(6) Furnishes music for division functions and performs such combat duties as the exigencies of the service might demand.[21]

With this presentation of centralization and functionalization of logistical support and the introduction of the mechanized infantry division support command as a foundation, the next chapter will be an examination of the employment of the support command. With Chapters I and II as a background, the remainder of this paper will be devoted to analyzing command and control in the support command headquarters.

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[21]U.S. Department of the Army. Table of Organization and Equipment 29-11E, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963). [redacted]

CHAPTER II

EMPLOYMENT OF THE SUPPORT COMMAND

Normal employment of the support command finds its logistical units operating in two areas, involving as many as five locations. The areas are the forward area, which is occupied by the brigades, and the division rear area where the division support area is located.[1] The division support area serves as a base of operation for the support command and is the location at which the majority of its assigned or attached units are located.[2] The units of the support command habitually found at this location are the headquarters, headquarters company and band; medical battalion headquarters and support company; maintenance battalion headquarters and main support company; and most of the elements of the supply and transport battalion.[3] Each of the battalions provides forward support elements to the brigades, their attached units, and to other units in the vicinity; these forward support elements operate in the three brigade trains areas.[4] Normally, the brigade trains area is located within the brigade's area of responsibility, i.e., forward of

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[1]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, (Washington, D.C.: 1961), p. 30.

[2]Ibid.

[3]U.S. Army Infantry School. Combat Logistics Handbook, (Fort Benning, Ga.: 1st Edition, FY 65), p. 32.

[4]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, pp. 35 and 36.

the brigade rear boundary; however, the exact location depends on the tactical situation, terrain, and security requirements.[5] The fifth location at which elements of the support command may be located is the division airfield. This installation is in the division rear area and may be collocated with the division support area or in the vicinity of the division main command post. The elements found at this location are from the transportation aircraft maintenance company of the maintenance battalion.[6]

This introductory discussion on employment has identified elements of the support command as being in the division support area, the three brigade trains areas, and at the division airfield. The significance of this fact is that the support command is employed over a large part of the division area. The distance involved may range from twenty to fifty kilometers, with the exact distance depending on the tactical situation and the terrain available for establishing logistical support areas. With this general discussion of employment as a frame of reference, a more detailed examination of the employment of the support command will be presented by considering the employment of the individual units.

Headquarters, Headquarters Company and Band

The elements of this organization (Figure 2) are the command headquarters, headquarters section, division ammunition section, division

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[5]U.S. Army Infantry School. Combat Logistics Handbook, p. 32.

[6]U.S. Department of the Army. Field Manual 9-30, Maintenance Battalion, Division Support Command, (Washington, D.C.: 1961), p. 45.

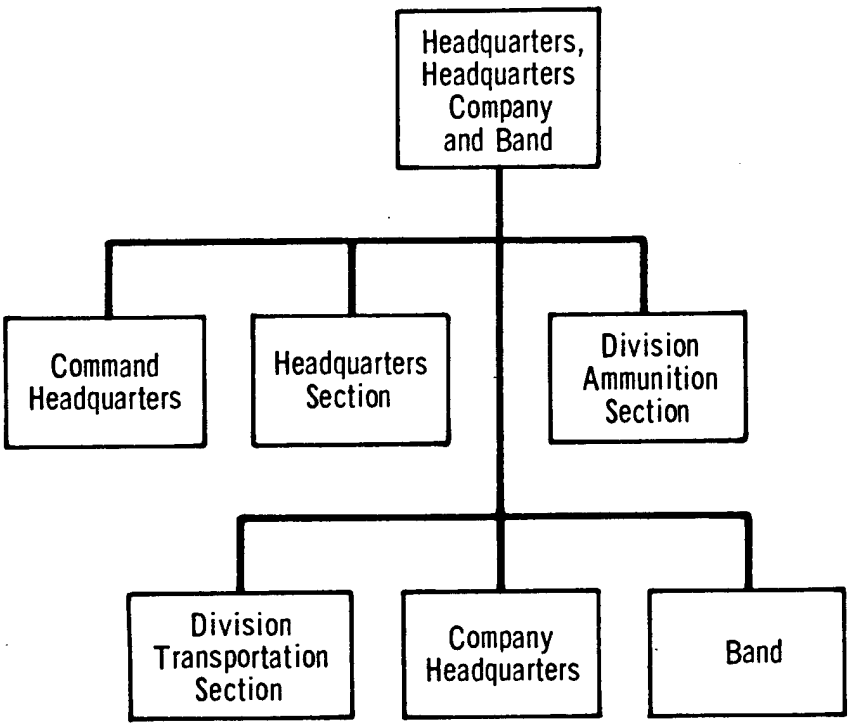

Fig. 2.--Headquarters, Headquarters Company and Band

ammunition section, division transportation section, company headquarters, and the band.[7]

The command headquarters provides the command supervision and staff planning of division logistical operations.[8] The headquarters section contains a chemical officer, who is a special staff officer, and the enlisted personnel who support the operation of the command headquarters.[9] The command headquarters operates from the support command command post, which is located in the division support area.[10]

The division ammunition section has the function of exercising technical and administrative control of Class V supply for the division.[11] Employment of this section finds the division ammunition officer in the division support area, in rear of it where main supply routes converge, or as far back as the army ammunition supply point.[12] The significant point about the employment of this section is that it must be located at a place that is convenient to units going to the army ammunition supply point for ammunition resupply.[13]

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[7]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[8]Ibid.

[9]Ibid.

[10]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, pp. 30 and 31.

[11]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized).

[12]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 53.

[13]Ibid.

The division transportation section is responsible for planning and supervising transportation operations and exercising technical supervision over transportation activities of the division.[14] In regard to the employment of this section, no definitive doctrine has been published as of this time. However, an examination of the draft and final tables of organization and equipment for the mechanized infantry division provides a basis for considering probable employment. The draft table of organization and equipment of the mechanized infantry division headquarters and headquarters company, which was undated, reflected a transportation officer and three assistants as an organic element of the division G4 section.[15] In the final tables of organization and equipment for the mechanized infantry division, published 15 July 1963, a transportation officer and three assistants are shown as a transportation section in the headquarters, headquarters company and band of the support command, and the division headquarters and headquarters company does not reflect any transportation personnel. Based on this change in assignment and the responsibilities of this section, which have been stated above, it is reasonable to conclude that the section is employed in much the same manner as when it was organic to the G4 section. However, it is obvious that its location in the support command requires much liaison between the division command post and the support command command post.

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[14]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized).

[15]U.S. Department of the Army. Table of Organization and Equipment 37-4E (Draft), Mechanized Division Headquarters and Headquarters Company, (Washington, D.C.: undated), pp. 7 and 8.

"The company headquarters . . . provides . . . internal command and administrative support for the support command headquarters company and band."[16] It is located in the division support area.[17]

The method of employing the band is apparent from these statements in Field Manual 54-2.

> The primary mission of the division band is to provide military and recreational music under operational control of the division adjutant general. It may also be employed in appropriate security and combat duties and to provide guards, supply handlers, litter bearers, guides, messengers, and labor details as directed by the support command commander.[18]

Medical Battalion

The medical battalion (Figure 3) is organized with a headquarters and support company and three medical companies.[19] The mission of the medical battalion is to provide the division with division level medical service.[20]

The headquarters and support company is employed in the division support area and consists of two elements: the battalion headquarters and the support company.[21] The "battalion headquarters provides command, planning, and logistical support to the medical battalion and medical supply and medical equipment maintenance

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[16]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 20.

[17]Ibid, p. 31. [18]Ibid, p. 21.

[19]U.S. Department of the Army. Table of Organization and Equipment 8-35E, Medical Battalion, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[20]Ibid.

[21]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 63.

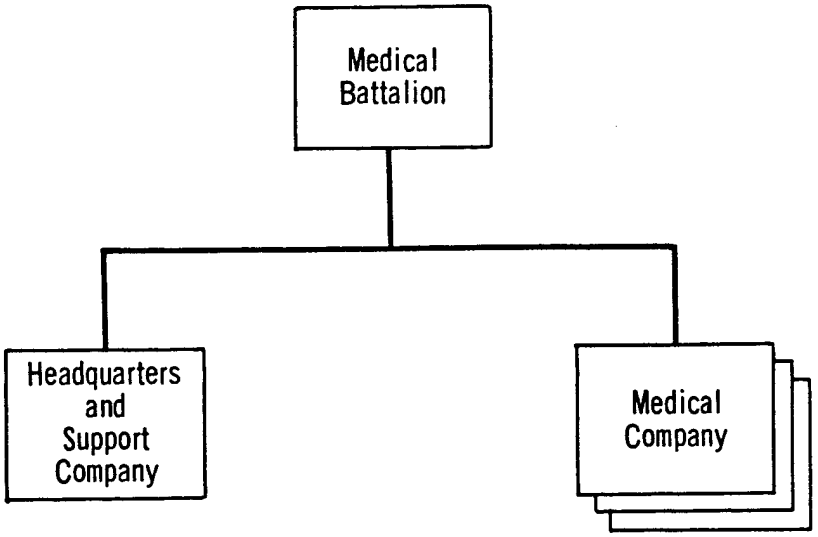

Fig. 3.--Medical Battalion

support to the entire division."[22] The support company establishes a clearing station and provides medical support to divisional and attached units located in the division rear area.[23] The support company contains a clearing platoon and an ambulance platoon and is identical in organization to the medical companies.[24]

The medical companies are employed forward in the brigade trains areas.[25] The functions of these companies employed in the forward area is succinctly covered in Field Manual 8-15, which states:

> Each company provides division level medical service to units organic or attached to the brigade or operating within the brigade area; provides unit medical service on an area basis to those units which have no organic medical element and reinforces unit medical service of supported units as required.[26]

Supply and Transport Battalion

This battalion (Figure 4) has a headquarters and headquarters company, supply and service company, and a transportation motor

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[22]U.S. Department of the Army. Field Manual 8-15, Division Medical Service, Infantry, Airborne, Mechanized, and Armored Divisions, (Washington, D.C.: 1961), p. 11.

[23]U.S. Department of the Army. Table of Organization and Equipment 8-36E, Headquarters and Support Company, Medical Battalion, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[24]U.S. Department of the Army. Field Manual 8-15, Division Medical Service, Infantry, Airborne, Mechanized, and Armored Divisions, p. 15.

[25]U.S. Department of the Army. Table of Organization and Equipment 8-37E, Medical Company, Medical Battalion, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[26]U.S. Department of the Army. Field Manual 8-15, Division Medical Service, Infantry, Airborne, Mechanized, and Armored Divisions, p. 15.

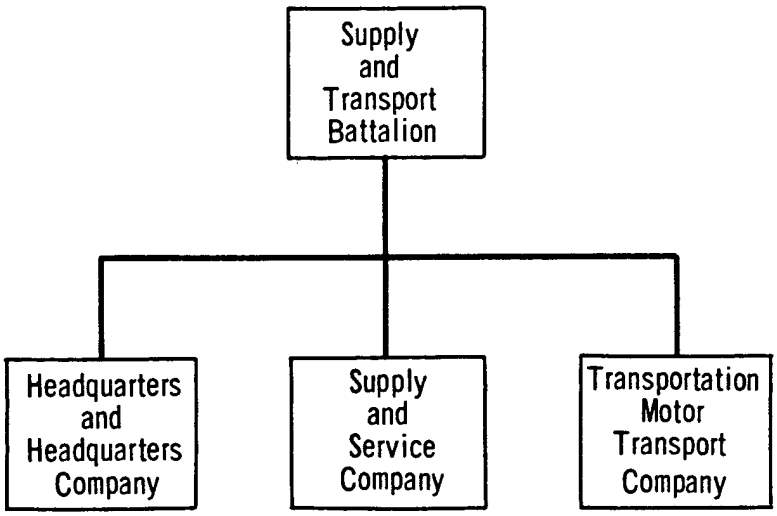

Fig. 4.--Supply and Transport Battalion

transport company.[27] "The supply and transport battalion is responsible for supplying the division and its attachments with all items of supply except class V, medical, aircraft parts and supplies [,] cryptographic, and repair parts."[28] Essentially, the battalion operates within the division area, though some of its transport elements do operate between the division support area and army supply facilities.[29] The employment of this battalion can be described most clearly by considering the employment of the individual companies.

The headquarters and headquarters company contains the command and control elements of the battalion.[30] Its normal employment is in the division support area.[31]

The supply and service company operates the division main Class I, II and IV, and III distributing points and forward Class I and III distributing points; when augmented with a graves registration platoon and a bath section, it also operates the division main and forward graves registration collecting points and provides bath teams to operate bath points in the division area.[32] In performing these functions, the

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[27]U.S. Department of the Army. Table of Organization and Equipment 29-65E, Supply and Transport Battalion, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[28]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 23.

[29]U.S. Department of the Army. Field Manual 10-50, Supply and Transport Battalion, Division Support Command, (Washington, D.C.: 1961), p. 84.

[30]Ibid. p. 15.

[31]U.S. Army Quartermaster School. Division Support Command Concept and Division Supply, Service, and Transport Operations (Lesson Plan, Section III), (Fort Lee, Va: August 1964), p. 6.

[32]U.S. Department of the Army. Field Manual 10-50, Supply and Transport Battalion, Division Support Command, pp. 28, 29, 90, 91, and 94.

majority of the company is employed in the division support area and elements--the forward supply sections, graves registration collecting and evacuation sections, and bath teams--are employed in the brigade trains areas.[33]

The main missions of the transportation motor transport company are to provide transportation for distribution of all classes of supply, except Class V, and to transport the division reserve of supplies for which the supply and transport battalion is responsible.[34] Regarding the employment of this company, Field Manual 10-50 states:

> It is neither practicable nor feasible to prescribe detailed employment for the vehicles of the company. These vehicles represent the transportation assets of the supply and transport battalion and must be managed to maintain the operational flexibility essential to the accomplishment of the battalion missions.[35]

Maintenance Battalion

The division maintenance battalion (Figure 5) consists of a headquarters and main support company, three forward support companies, and a transportation aircraft maintenance company.[36] The functions of the maintenance battalion are as stated in Field Manual 9-30.

> The maintenance battalion . . . provides direct support maintenance for all types of maintainable division materiel, except

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[33] Ibid, pp. 30, 36, 37, 38, and 39.

[34] U.S. Department of the Army. Table of Organization and Equipment 55-87E, Transportation Motor Transport Company, Supply and Transport Battalion, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[35] U.S. Department of the Army. Field Manual 10-50, Supply and Transport Battalion, Division Support Command, p. 47.

[36] U.S. Department of the Army. Table of Organization and Equipment 29-25E, Maintenance Battalion, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963.

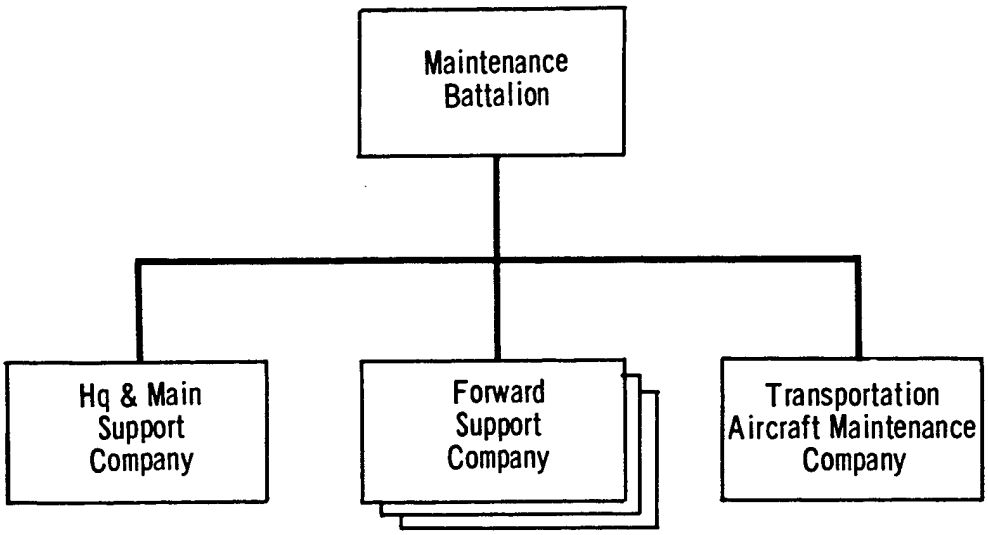

Fig. 5.--Maintenance Battalion

> medical, cryptographic, EAM [electrical accounting machine], and quartermaster-air equipment. It also provides repair parts, other maintenance supplies required in maintenance operations, and a maintenance float of selected end items for the equipment it supports.[37]

"The headquarters and main support company operates in the division support area. . . ."[38] Like the headquarters and support company of the medical battalion, the headquarters and main support company consists of two distinct elements, one being the battalion headquarters and the other the main support company.[39]

> The battalion headquarters . . . provides command, administration, and technical supervision of the division maintenance battalion. The main support company provides direct support maintenance service for those elements of the division located in the division rear area that are not supported by the forward support companies; serves as a base of supply for the forward support companies; and provides supplementary support for the aircraft maintenance company and the three forward support companies.[40]

The forward support companies normally are employed in the brigade trains areas.[41] Each forward support company supports a brigade, the units attached to the brigade, and other units located in the vicinity of the brigade area.[42] The functions of this company

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[37]U.S. Department of the Army. Field Manual 9-30, Maintenance Battalion, Division Support Command, p. 10.

[38]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 25.

[39]U.S. Department of the Army. Table of Organization and Equipment 29-26E, Headquarters and Main Support Company, Maintenance Battalion, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[40]U.S. Department of the Army. Field Manual 9-30, Maintenance Battalion, Division Support Command, p. 12.

[41]Ibid, p. 7.

[42]U.S. Department of the Army. Table of Organization and Equipment 29-27E, Forward Support Company, Maintenance Battalion, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

are "to provide direct support maintenance service for engineer, ordnance and signal equipment, except photographic and cryptographic, . . ." to the units it is supporting, and to assist "in the performance of maintenance which is beyond the capacity of the supported unit."[43]

Normally, all of the elements of the transportation aircraft maintenance company, except the forward support platoon, are employed in the vicinity of the division base airfield.[44] From this location, these elements "provide area support to division aircraft and drones, backup support to the forward support platoon, recovery of aircraft, and evacuation of aircraft to supporting maintenance facilities when repair cannot be accomplished within the division.[45] The forward support platoon is employed at several locations. "The platoon headquarters and the fixed wing section normally are located on the fixed wing airfield . . . in the vicinity of the division headquarters."[46] The four rotary wing sections provide support on an area basis and are employed to support best their area of responsibility; one "may be located in the vicinity of each forward support company, and one . . . should be oriented on the location of the cavalry squadron."[47] The function of the forward support platoon is to provide on-site direct support maintenance for unflyable aircraft which do not require evacuation.[48]

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[43] Ibid.

[44] U.S. Department of the Army. Field Manual 9-30, Maintenance Battalion, Division Support Command, pp. 7 and 9.

[45] Ibid.

[46] Ibid, p. 9. [47] Ibid. [48] Ibid.

Summary

The mission of the division support command is "to provide division level supply, field maintenance, medical service and miscellaneous services for all elements of the division assigned or attached."[49] This examination of the employment of the support command brings into focus the magnitude of the support command's task. As stated previously, the support command has elements employed in the division support area, the three brigade trains areas, and at the division airfield. Being employed in this manner, the complexities of providing logistical support, and the size of the area involved requires effective command and control if the support command is to accomplish its mission. The following chapter analyzes an important part of command and control--communications.

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[49]U.S. Department of the Army. Table of Organization and Equipment 29-11E, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

PART II

AN ANALYSIS OF COMMAND AND CONTROL IN THE SUPPORT COMMAND HEADQUARTERS

CHAPTER III

COMMUNICATIONS FOR COMMAND AND CONTROL

Communications are a vital aspect of command and control. Without adequate communication resources, the support command commander cannot control his units properly. Without adequate communication resources, the logistical system cannot be responsive to the needs of supported units.

The support command commander's requirements for communication fall into two areas -- internal and external communications. His requirement for internal communication is to be able to communicate with the subordinate units of his command. The external communication requirement is actually a three-fold requirement; he must have communication with field army, division headquarters, and supported units.[1]

The suitability of communication resources to support command and control in the support command headquarters will be examined from the standpoint of both internal and external communications. First, through, it is necessary to determine what resources are available to the support command headquarters.

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[1]The requirement for communication with field army stems from the fact that division deals directly with field army on most combat service support matters. This doctrinal position is stated in paragraph 3.18 of Field Manual 100-10, Field Service Regulations, Administration, dated July 1963. The support command commander, as the logistical operator of the division, is responsible for informing field army of the specific logistical requirements of the division.

Communication Resources

The radio communication resources available to the support command headquarters for exercising control of operations are summarized in Figure 6.[2]

For Communication With	Headquarters, Headquarters Company and Band	Support Command Operations Platoon
Field Army (Army Logistical Net)		AN/GRC-26
Supported Units (Division Administrative- Logistics Net)		AN/GRC-46
Supported Units (Division General Purpose Net)		AN/GRC-46
Supported Units (Radio-Wire Integration)		AN/MRC-69
Subordinate Units	AN/VRC-47 (1 each) AN/VRC-46 (5 each) AN/PRC-25 (2 each)	

Fig. 6.--Communication Resources[3]

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[2]The communication resources shown in Figure 6 include those provided to the support command by the support command operations platoon, which is organic to Table of Organization and Equipment 11-39E, Signal Support Operations Company, Signal Battalion, Infantry Division (Mechanized), dated 15 July 1963. The support command operations platoon provides communication support to the support command headquarters and to other units operating in the vicinity of the division support area. An elaboration, with documentation, on the mission of this platoon and the equipment depicted in Figure 6 is presented later in this chapter under the heading of external communications. The communication resources shown as organic to the support command are in the headquarters section as listed in Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized), dated 15 July 1963.

[3]The AN/GRC-26 and AN/GRC-46 radios are AM sets and do not net with the radios organic to the support command. The AN/MRC-69 is a radio relay terminal set employed in the division area communications system.

Internal Communications

As stated in Chapter II, the support command command post, the headquarters of the medical, supply and transport, and maintenance battalions, as well as many of the operating elements of these battalions, are located in the division support area. Communication between the support command command post and these units is by both field wire and radio means.

The field wire is provided by the support command operations platoon. It has the resources to lay fifteen miles or twenty-two and a half kilometers of wire.[4] The support command has the organic resources to establish an internal FM radio net. The radios available to the headquarters for use in this net are shown in Figure 6.

The radio net is used during displacement and as an additional means of communication in the division support area. A type internal FM net, which is based on experience of units in the field, is depicted in Figure 7.[5]

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[4]U.S. Department of the Army. Table of Organizetion and Equipment 11-39E, Signal Support Operations Company, Signal Battalion, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[5]The composition of the net is based on the nets established in the support commands of the 1st Infantry Division and the 5th Infantry Division (Mechanized) per telephonic interview with the executive officer of the 1st Infantry Division Support Command and the S3 of the 5th Infantry Division Support Command. The radio equipment shown in this net is authorized in the headquarters section of each of the following tables of organization and equipment: Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized), dated 15 July 1963; Table of Organization and Equipment 8-36E, Headquarters and Support Company, Medical Battalion, Infantry Division (Mechanized); Table of Organization and Equipment 29-6E, Headquarters and Headquarters Company, Supply and Transport Battalion, Infantry Division (Mechanized), dated 15 July 1963; and Table of Organization and Equipment 29-26E, Headquarters and Main Support Company, Maintenance

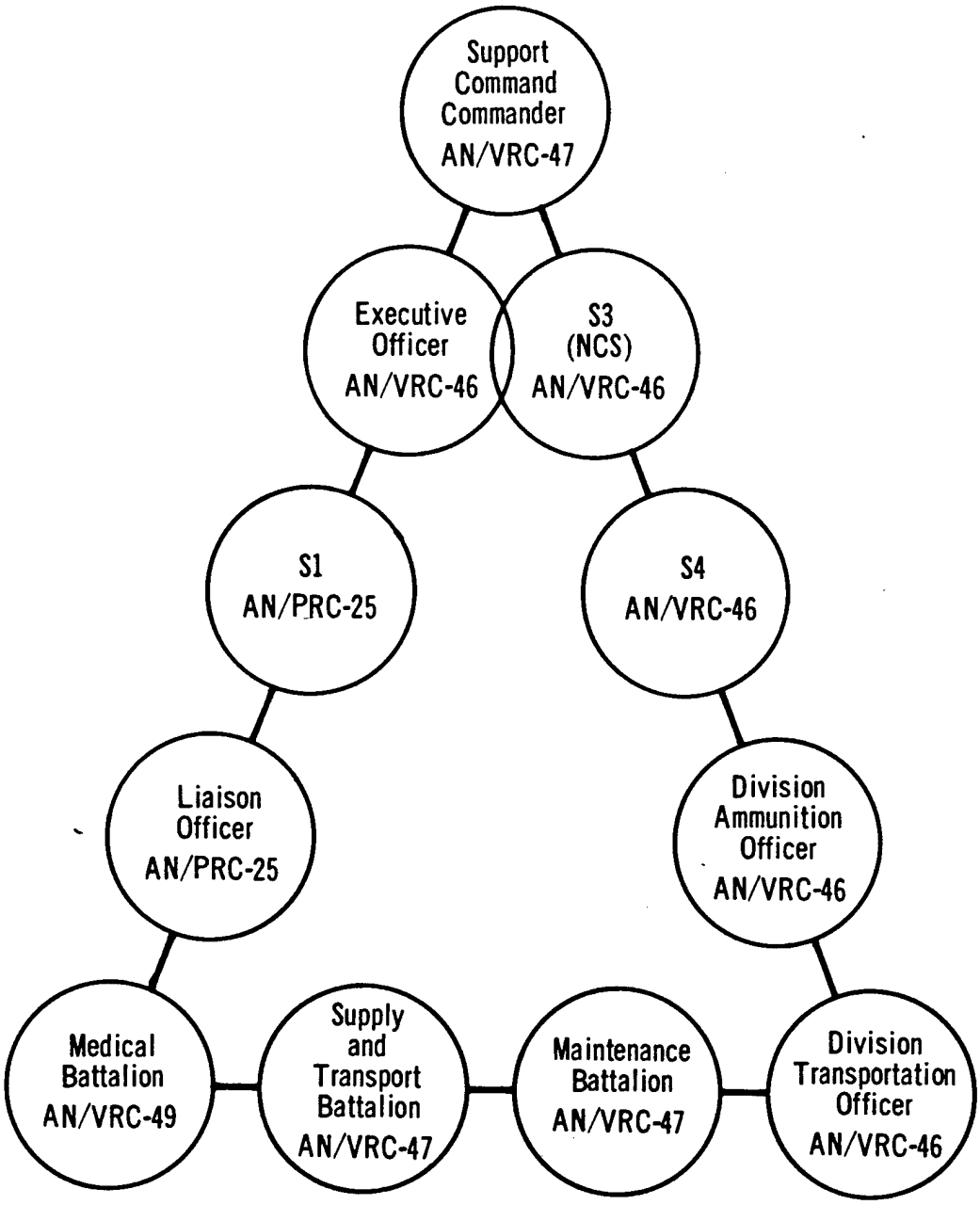

Fig. 7.--Support Command FM Net

External Communications

The support command operations platoon of the division signal battalion's signal support operations company provides the support command with the resources needed for external communication by radio-teletype, and radio-wire integration means.[6] This platoon operates stations in the Army Logistics Net, the Division Administration-Logistics Net, and the Division General Purpose Net.[7] Additionally, it provides the support command with entry into the division area communications system.[8]

The support command operations platoon has one AN/GRC-26 radio, five AN/GRC-46 radios, and three AN/MRC-69 radio terminal sets.[9] The AN/GRC-26 radio provides the link with the Army Logistics Net.[10] The five AN/GRC-46 radios are employed as follows: one is in the Division Administration-Logistics Net, one is in the Division General Purpose Net,

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Battalion, Infantry Division (Mechanized), dated 15 July 1963. It is noted that these tables of organization and equipment, except for the headquarters and main support company of the maintenance battalion, also are applicable to the infantry and armored division support command units.

[6]U.S. Department of the Army. Field Manual 11-50, Signal Battalion, Armored, Mechanized, and Infantry Divisions, (Washington, D.C.: 1961), pp. 17 and 33.

[7]U.S. Army Combat Developments Command. "High Frequency Radio-teletypewriter Nets in the ROAD Division" (Ltr), (Fort Belvoir, Va.: 22 November 1963).

[8]U.S. Department of the Army. Field Manual 11-50, Signal Battalion, Armored, Mechanized, and Infantry Divisions, p. 26.

[9]U.S. Department of the Army. Table of Organization and Equipment 11-39E, Signal Support Operations Company, Signal Battalion, Infantry Division (Mechanized).

[10]U.S. Army Combat Developments Command Communications-Electronics Agency. "Field Manual 11-50 (Draft), Signal Battalion, Armored, Mechanized, and Infantry Divisions," (Fort Monmouth, N.J.: September 1964, p. 26.

and the remaining three are used as required; they may be used as part of a displacement capability or they may be used to provide the supply and transport, medical, and maintenance battalions with entry into the Division General Purpose Net.[11] The three AN/MRC-69 radio terminal sets provide for entry into the division area communications system.[12]

To facilitate later evaluation of communication resources, the composition of the Division Administration-Logistics Net and the Division General Purpose Net are shown in Figures 8 and 9, respectively.[13]

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[11]U.S. Army Combat Developments Command. "High Frequency Radio-teletypewriter Nets in the ROAD Division" (Ltr).

[12]The division area communications system provides communication service to widely dispersed units, a high-quality communication system capable of operating at extended distances, and integration with the corps command communication system and the field army communication systems. The division area communication system consists of command and area signal centers, a multichannel multiaxis network of radio relay and wire carrier systems linking the signal centers and major subordinate elements of the division, and radio/wire integration stations capable of linking mobile FM radio stations with the telephone system at signal centers. (This information is contained in Field Manual 11-50, Signal Battalion, Armored, Mechanized, and Infantry Divisions.)

[13]U.S. Army Combat Developments Command. "High Frequency Radio-teletypewriter Nets in the ROAD Division" (Ltr).

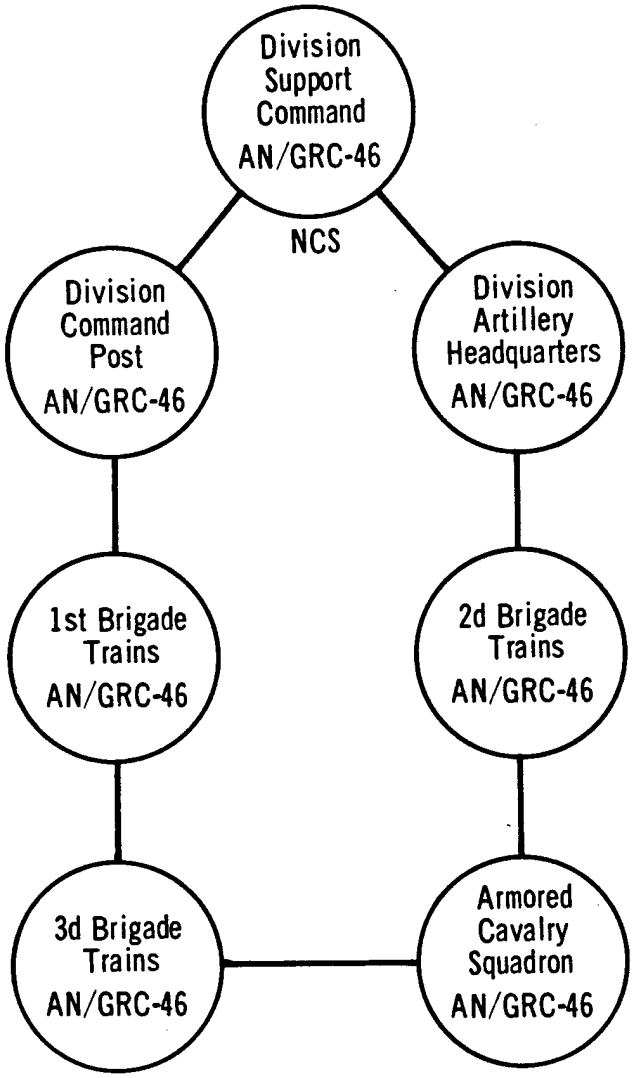

Fig. 8.--Division Administration--Logistics Net (RATT)

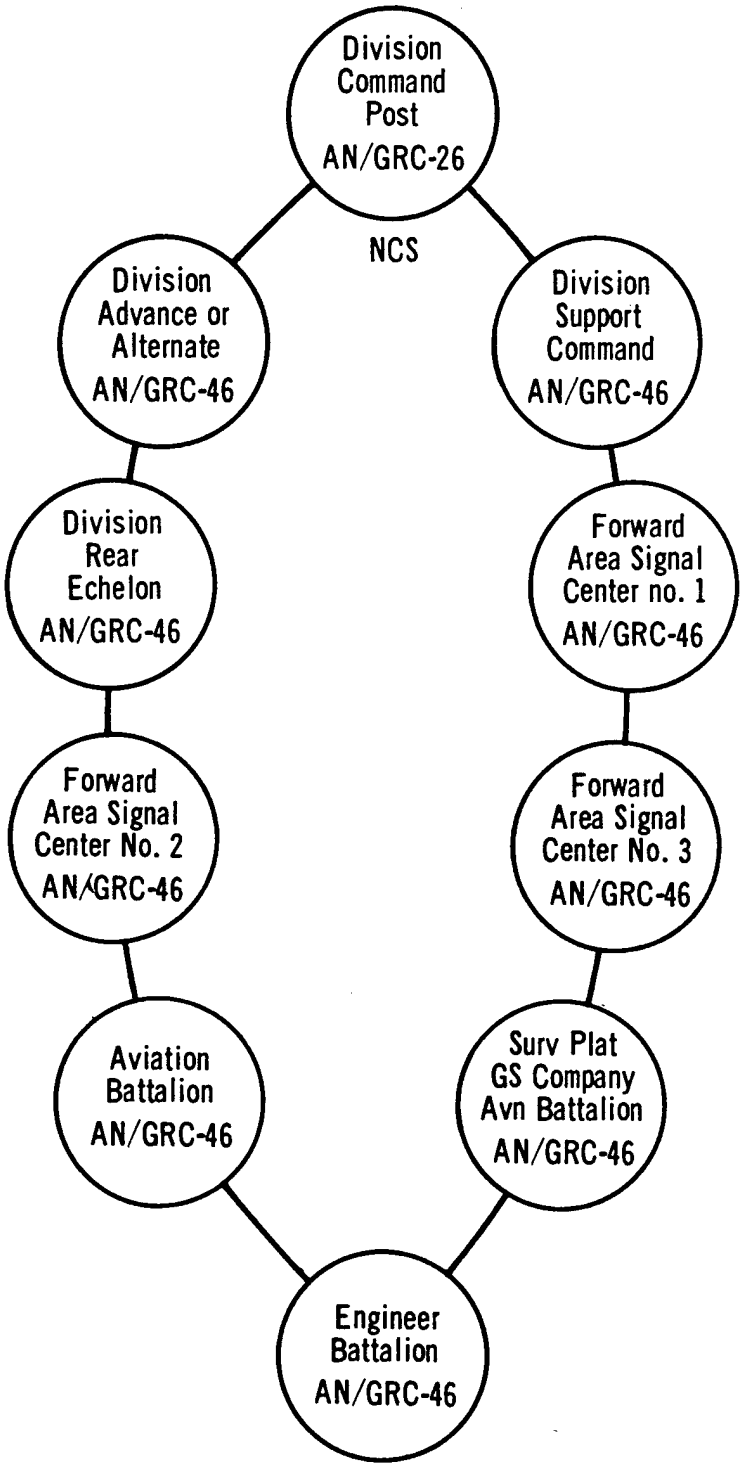

Fig. 9.--Division General Purpose Net (RATT)

Suitability of Communications

Communication resources, both internal and external, will be examined by analyzing the suitability of these resources for command and control, presenting the data obtained from the field, and evaluating the suitability based on the analysis and the field experience.

Analysis

Internal Communications

The size of the division support area and the requirement for communication during displacement of the support command are the major considerations in determining the suitability of internal communications.

Field Manual 54-2 indicates that an area of approximately thirty square kilometers is required to obtain the necessary dispersion for the installations normally located in the division support area.[14] In instructional material presented at the U.S. Army Command and General Staff College, it is not rare for the size of the division support area to be depicted as fifty and sixty square kilometers and, occasionally, it is shown as being an area of ninety square kilometers in size.[15]

In displacing the support area, the support command may have to move anywhere from thirty to seventy-five kilometers.[16] During displacement, the support command has elements closing the old area, enroute to, and located at the new area.

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[14]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, (Washington, D.C.: 1961), p. 79.

[15]U.S. Army Command and General Staff College. "Instructional Problems M6420, Armored Division Offensive Operations; M6425, Division in a Coordinated Attack; M6215, Infantry Division Defense Operations; and M6290, Division Defensive Operations," (Fort Leavenworth, Kan.: FY 65).

[16]Ibid.

Communications in the Support Area.--Both field wire and radio communication are employed in the division support area. Field wire communication in this area is, for the most part, reliable. Since the support area is in the division rear area, field wire is not as subject to destruction from vehicle damage or indirect fires as in the forward area. The radios in the support command FM net shown in Figure 7 have an operating range of thirty-two kilometers, except for the AN/PRC-25 radio; the latter radio has an operating range of eight kilometers.[17]

As noted earlier, the amount of wire available for field wire communication is twenty-two and a half kilometers. When the size of the area occupied by the support command approximates the lower limit of thirty square kilometers, it would seem that the available wire is adequate since the headquarters of the battalions would not likely be on the periphery of the area. However, when the size of the area approximates fifty to sixty square kilometers or greater, it would seem that the available wire is not adequate. From this discussion, it seems apparent that the adequacy of wire communication is a function of the size of the area occupied, and that, at times, wire communication may be adequate while at other times it may not.

In analyzing the suitability of radio equipment, there are two aspects to be considered: the technical capability of the radios in terms of operating range and the adequacy of the number of radios. Based on an operating range of thirty-two kilometers for the majority of the radios in the support command headquarters, the technical capability seems to be adequate. For example, when occupying an area of ten

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[17]U.S. Army Combat Developments Command Communications-Electronics Agency. "Characteristics of Signal Corps Communications-Electronics Equipment Within a Field Army," (Fort Monmouth, N.J.: November 1963), pp. 48, 50, and 51.

kilometers by seven, the technical capability of the radios is adequate, even for those with a range of eight kilometers.

The suitability of the number of radios will be analyzed based on the type internal radio net depicted in Figure 7. Inspection of Figures 6 and 7 indicates that all of the radios available to the headquarters for internal communication have been allocated to support command staff officers as shown in Figure 7. Analysis of the type internal support command net reveals the following: all principal staff officers, except the S2, have a radio and there is no radio for support command operations, i.e., radio located at the command post to handle traffic related to operational matters.

The S2 is concerned, in general, with developing intelligence. In tactical units, this function has significant impact on the operational mission. In the support command, because it is located in the division rear area and because its mission is logistical as opposed to tactical, the S2's function does not affect operations to the degree that it does in a tactical unit. The foregoing suggests that the S2 is not materially involved in operational matters or the control of support command operations and, therefore, it is not mandatory that he have a radio. The S2 is not without communication altogether as he has telephone communication with subordinate units; should he have to communicate by radio, it seems reasonable to believe that he would have access to one of the radios in the headquarters.

In the mechanized brigade headquarters, a control headquarters comparable to the support command headquarters, a radio is designated as the brigade operations radio and normally is located at the command post in the vicinity of the operations section.[18] The armored brigade

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[18]U.S. Army Infantry School. Infantry Communication Data, (Fort Benning, Ga.: January 1964), p. 252.

headquarters also has a brigade operations radio.[19] In both of these units, this radio is in addition to the radio provided for the S3. By having a radio for this purpose, continuous communication with subordinate units is provided at the command post. Without a radio for operational matters, there is little or no assurance of having radio communication at the command post at all times. The radios assigned to the staff officers are mounted in their vehicles; when they are away from the command post, the communication capability obviously goes with them. From this discussion, it would seem that not having a support command operations radio is a distinct disadvantage.

As will be seen in Chapter IV, the support command headquarters may establish a logistical operations center. If one is established, both wire and radio communication must be made available to support its operation. Wire communication appears not to be a problem. Certainly it would not require a large amount of wire to connect the operations center with the local switchboard. Once the necessary wire lines are in and the telephones provided, the operations center has the requisite wire communication with subordinate units.

In regard to radio communication for the operations center, there is a problem. Based on the present authorization for radios and the allocation in the type internal net under discussion, there is no radio available for the operations center. However, if a support command operations radio were available, it would meet the requirement to provide a radio for the operations center as well as provide for continuous communication at the command post. The fact that the support command headquarters may establish an operations center underscores the need for an operations radio.

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[19]U.S. Army Armor School. Communication for Armor, (Fort Knox, Ky.: May 1964), p. 127.

Communications During Displacement.--The internal radio net is the primary means of communicating with subordinate units during displacement. If communication between elements opening the new support area and those closing the old area is difficult or impossible due to the distance, a radio relay can be established or communication can be maintained through radio-wire integration via the division area communications system.

Summary.--The adequacy of wire communication appears to vary with the size of the division support area, which suggests that no firm conclusions should be formulated without consideration of field experience. From field experience, a norm could be established regarding the quantity of wire needed based on the size of the support area occupied most of the time. For those occasions when the size of the area necessitated additional wire, the wire would have to obtained as a Class IV item of supply.

Generally, internal radio communication appears to be marginally adequate. The reason it is marginally adequate is that in the type internal radio net shown in Figure 7 there is no provision for maintaining a communication facility at the command post at all times. If a radio were available for use as a support command operations radio, this disadvantage would be eliminated. A radio for this purpose also would provide for the requirement to establish radio communication for the logistical operations center when one is employed.

External Communications

For external communication, the support command must have communication with field army, division headquarters, and supported units if it is to control, coordinate, and regulate logistical support

operations. The support command operations platoon provides the resources to communicate with these organizations. Additionally, the support command commander should have direct radio communication with the division commander.

The requirement for communication with field army is met by the support command operations platoon operating a station in the Army Logistics Net with the AN/GRC-26 radio.

The Division Administration-Logistics Net is the primary means within the division for transmitting logistical information by radio-teletype. This net, having only seven operating stations, is very manageable and provides the support command with continuous communication with division headquarters, the major units of the division, and the armored cavalry squadron.

The Division General Purpose Net is somewhat larger, containing ten stations and possibly thirteen if the three support command battalions are placed in the net. This net serves two specific purposes for the support command. First, it provides for radio communication between the support command headquarters and the aviation and engineer battalions since these two units are not in the Division Administration-Logistics Net. Second, through the forward area signal centers which are in this net, it provides an additional means of communicating with the division headquarters, the brigades, and division artillery.

The division area communication system gives the support command still another means to communicate with divisional units. The support command has entry into the system through the AN/MRC-69 radio terminal sets provided by the support command operations platoon.

If a logistical operations center is established, it would have access to the support command station in the Division Administration-Logistics Net, the Division General Purpose Net, and the Army Logistics

Net. If the support command commander desires the operations center to have its own station in the divisional nets, one of the three AN/GRC-46 radios--which are available for use as required--could be allocated for this purpose.[20] The operations center also would have access to the division area communications system through the AN/MRC-69 radio terminal set.

Thus far it has been shown that the support command headquarters, through the resources of the support command operations platoon, has communication with field army, division headquarters, and the supported units. The only remaining requirement for external communication concerns the support command commander. As stated previously, he should have direct radio communication with the division commander. And this requirement is provided for by the Division Command FM Net. The support command commander operates in this net with his AN/VRC-47 radio.[21] The AN/VRC-47 radio contains a receiver-transmitter unit and an auxillary receiver. He uses the receiver-transmitter unit to operate in the Support Command FM Net and the auxillary receiver to monitor the Division Command FM Net. When it is necessary for him to transmit in the latter net, he changes the frequency on the transmitter unit. The fact that he can readily change frequencies gives him the capability to communicate effectively in both nets.

Field Experience

The information to follow was obtained from the questionnaire sent to the support commands of all active infantry, mechanized infantry, and armored divisions. Eleven of the fourteen divisions queried completed and returned the questionnaire. Appendix I contains a sample questionnaire.

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[20]The operations center cannot have its own radio in the Army Logistics Net because there is only one radio in the support command operations platoon for this purpose.

[21]U.S. Army Combat Developments Command Communications-Electronics Agency. "Field Manual 11-50 (Draft), Signal Battalion, Armored, Mechanized, and Infantry Divisions," p. 42.

The data obtained on internal communications will be presented first, and then the information on external communications will be considered.

Internal Communications

The questionnaire did not request information on field wire communication; however, three support commands considered the subject to be of such importance that they voluntarily commented on it. The commands who commented are those in the 1st Infantry Division, 3d Infantry Division, and the 2d Armored Division. They all indicated that the quantity of wire available to provide for field wire communication in the support area is unsatisfactory. Two reasons were given in support of this evaluation. First, it was stated that the amount of wire available restricted flexibility in locating units in the support area and, second, that the quantity of wire is insufficient to provide for adequate dispersion of units and still maintain a displacement capability.

The data on radio communications indicate that most of the support commands consider internal radio communications to be suitable to support the headquarters. A summary of the data is shown in Figure 10.[22]

Mostly Adequate	Mostly Inadequate	Totally Inadequate
7	3	1

Fig. 10.--Summary of Questionnaire Responses on Internal Radio Communications

Inspection of Figure 10 indicates that seven of the eleven support commands consider internal radio communications to be suitable to support their requirements. Three of the four commands who considered internal

[22]See appendix I for the definition of the adjectival ratings shown in Figure 10.

communications to be not suitable cited a need for additional FM radios; the other support command indicated a need for additional AM radios.

The three commands who recommended an increase in FM radios stated that the additional radios are required to provide for a support command operations radio, i.e., a radio at the command post to handle operational traffic, and to provide for an adequate communication displacement capability. The 8th Infantry Division Support Command and the 4th Armored Division Support Command, two of the units who recommended an increase in FM radios, are operating in Germany where the opportunity for field training is greater than in CONUS, Hawaii, or Korea. The 1st Armored Division Support Command was the third unit who recommended an increase, and this division was one of the first to organize under the ROAD concept. The experience factor of these divisions lends considerable credence to their recommendations.

The 25th Infantry Division Support Command cited a need for additional AM radios. The report from this command stated that each of the support command battalions needs an AN/GRC-46 radio. These radios are available from the support command operations platoon for use by the battalions.[23]

External Communications

All of the support commands considered external communications to be suitable to meet their requirements. The specific ratings are shown in Appendix I.

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[23]Refer to the discussion of external communications on pages 31 and 32 regarding the employment of the AN/GRC-46 radios provided by the support command operations platoon.

Evaluation

Internal Communications

The analysis of field wire communication illustrated that when the size of the area occupied by the support command is in the vicinity of thirty square kilometers, the quantity of wire authorized to provide for field wire communication is adequate. On the other hand, when the size of the area is sixty square kilometers or more, the amount of wire is not adequate.

On the basis of the analysis of internal radio communications, it would appear that an additional radio is required to handle operational traffic at the command post and provide a communication facility at the command post at all times. Additionally, this radio would provide communication for the logistical operations center when one is established.

The field experience of most units seems to indicate that internal communications are suitable to support the requirements of the headquarters; however, there were exceptions noted for both field wire and radio communications. Three support commands voluntarily commented on wire communications, recommending that the quantity presently authorized be increased. This fact suggests that there probably is a need to increase the amount of wire authorized. Likewise, three support commands recommended an increase in the number of FM radios. The reasons given for the recommended increase appear to be valid, and the experience of these particular support commands enhances the validity of their recommendations.

External Communications

The analysis indicates that external communications appear to be totally adequate to support the command and control requirements of the

headquarters. Similarly, field experience reflects that external communications are completely suitable.

Conclusions

From the analysis, field experience, and evaluation, it seems reasonable to conclude the following:

(1) Internal communications are marginally suitable to meet the requirements for command and control. Internal communications could be improved immeasurably by the following actions:

(a) Authorization of additional field wire and the increased authorization should be based on norms established from field experience; when requirements exceed the norms, the wire should be obtained as a Class IV item of supply.

(b) Authorization of an additional FM radio in the support command headquarters to provide a radio at the command post to handle operational traffic.

(2) External Communication is completely adequate to support command and control functions in the support command headquarters.

CHAPTER IV

CONTROL OF OPERATIONS

"Logistical operations are controlled, coordinated, and regulated by the support command."[1] This doctrinal statement leaves no doubt as to the support command's role in division level logistical matters. The support command is the division's operating agency in the field of logistics. Supply, medical service, maintenance, and service operations are the logistical operations performed by the support command.[2] And these are the operations the support command headquarters must control, coordinate, and regulate.

Additionally, the support command has a responsibility for transportation. The function of transportation was not included in the logistical operations performed by the support command for two reasons. First, the support command mission does not include providing transportation to the division.[3] Second, transportation, as an operational matter in the support command, is inherent in the distribution function of supply

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[1]U.S. Department of the Army. Field Manual 61-100, The Division, (Washington, D.C.: 1962), p. 2 of Change 1.

[2]The Service operations are graves registration, bath, salvage collection, and food service. To perform the first two services, the support command must be augmented because it does not have graves registration or bath units organic.

[3]U.S. Department of the Army. Table of Organization and Equipment 29-11E, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

operations. Broadly stated, the support command commander's responsibility for transportation is one of planning and supervising transportation operations.

An appropriate question at this point seems to be: How much control does the support command headquarters exercise over logistical operations? Before answering the question directly, the control exercised by the three support command battalions will be considered.

With the exception of Class V supply, the battalions exercise direct control of the logistical operations performed by the support command. Under guidance from and approval by the support command headquarters, they establish the detailed control procedures applicable to their area of responsibility.[4]

The supply and transport battalion effects the detailed control of supply operations by establishing the operational procedures used in requisitioning, procuring, storing, and distributing Class I, II and IV, and III supplies.[5] It also establishes the procedures used for salvage collection and food service and, when augmented, for bath and graves registration services as well.[6]

The medical battalion formulates the control procedures relating to medical holding, treatment, and evacuation operations, and supply of medical Class II and IV items.[7] Of course the procedures developed are

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[4]U.S. Army Command and General Staff College. "Special Text 101-5A, ROAD Supplement to FM 101-5," (Fort Leavenworth, Kan.: June 1963), p. 25.

[5]U.S. Department of the Army. Field Manual 10-50, Supply and Transport Battalion, Division Support Command, (Washington, D.C.: 1961), pp. 5, 11, and 15.

[6]Ibid, p. 16.

[7]U.S. Department of the Army. Field Manual 8-15, Division Medical Service, Infantry, Airborne, Mechanized, and Armored Divisions, (Washington D.C.: 1961), p. 11.

in consonance with broad policies established by division and higher headquarters.[8]

The maintenance battalion develops the detailed control procedures regarding repair, recovery and evacuation of equipment, and procurement and distribution of repair parts for the equipment it supports.[9] For example, the battalion headquarters establishes economic repair time limits for the forward support companies, i.e., when a given piece of equipment cannot be repaired within the time limits established, it is evacuated to the headquarters and main support company.[10] This control procedure has significant impact on the capability and mobility of the forward support companies, which in turn affects the maintenance support they can provide the forward units.

This discussion of the control exercised by the battalions has illustrated that direct control of supply (except for Class V) and service, medical, and maintenance operations is effected by the appropriate battalion. The control exercised over these logistical operations by the support command headquarters is a supervisory control to insure that the necessary logistical support is provided to the supported units at the right time and the right place.

Thus far the discussion has not identified who exercises control of ammunition supply, i.e., Class V supply, or transportation. Apparent from the foregoing discussion is that the support command battalions do not effect control in either of these areas.[11] Control of ammunition supply

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[8] Ibid.

[9] U.S. Department of the Army. Field Manual 9-30, Maintenance Battalion, Division Support Command, (Washington, D.C.: 1961), p. 14.

[10] Interview with Maj M. J. Dooley, Ordnance Corps, 22 March 1965.

[11] The supply and transport battalion does have transportation resources to support the distribution function of its supply operations and it does exercise direct control of these resources.

and transportation activities is exercised directly by the support command headquarters, and the support command commander has resources organic to the headquarters to assist him in exercising control over ammunition and transportation matters. Specifically, these resources are the division ammunition section and the division transportation section. To say that these functions are controlled directly by the headquarters is not enough, for the question well may be asked: Why are they controlled directly by the headquarters?

Regarding ammunition supply, the answer is that under present doctrine the support command--and specifically its supply agency, the supply and transport battalion--does not become involved in requisitioning, storing, or effecting the physical distribution of ammunition.[12] Current doctrine requires all battalions and separate companies to draw ammunition direct from army supply points.[13] Accordingly, as stated in Chapter II, the control exercised by the support command is one of administrative control. Since the support command does not have operational responsibility for ammunition, i.e., requisitioning, storing, etc., control is exercised by the headquarters through the division ammunition section.

In the case of transportation, the support command's responsibility is to plan and supervise transportation operations, to include providing advice to the division commander and staff, and to exercise

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[12]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, (Washington, D.C.: 1961), p. 23.

[13]Ibid, p. 53.

technical supervision over transportation activities of the division.[14] Inherent in this responsibility for transportation is the requirement to provide not only advice but also assistance to the division staff for transportation planning, including highway regulation, traffic circulation, and selection of supply routes.[15] Planning, advising, and supervising are typical staff activities. Additionally, these activities, as they relate to transportation, transcend the interests, responsibilities, and capabilities of the support command battalions. For these reasons, the transportation activities of the support command are performed by the headquarters through the division transportation section.

Because ammunition supply and transportation activities differ markedly from control of other logistical functions, these subjects will be treated separately. Control of ammunition supply will be examined in Chapter VI; transportation will be investigated in Chapter VII.

The analysis of how the support command commander exercises control of operations will be accomplished not by analyzing the detailed control procedures of supply, medical, and maintenance operations--which properly are established by the battalions, but rather by analyzing the methods which the commander may use to control these operations. A discussion of the methods will be presented and, thereafter, the suitability of the methods will be examined.

Methods of Operating

Essentially, there are two methods or operational procedures that

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[14]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[15]U.S. Army Command and General Staff College. "Special Text 101-5-1, Staff Organization and Procedures," (Fort Leavenworth, Kan.: June 1964), pp. 61, 118, and 125.

may be used in controlling the operations of the support command. One method is the traditional one wherein the headquarters relies completely on the established organizational structure and its inherent capabilities to control operations. The second method is one which employs the unit staff and representatives from subordinate and other units to establish a logistical operations center for the purpose of coordinating and controlling current logistical operations. In the discussion to follow, the personnel resources and the operating procedures will be considered for each method.

Traditional Method

Personnel Resources

The personnel resources available to the commander for this method of operating are found in the command headquarters and the headquarters section of the support command headquarters, headquarters company and band (Figure 2). These resources consist of the officers and enlisted personnel who comprise the unit staff and a chemical officer who is a special staff officer.[16]

"The staff of the division support command consists of an executive officer and S1, S2, S3, and S4 sections. The staff sections perform normal staff functions as described in FM 101-5."[17] The chemical officer,

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[16]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized).

[17]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 29.

as a special staff officer, provides advice on chemical supply and maintenance matters and assists the unit staff in area damage control planning.[18]

Since the support command is a new element in the divisional organization, a word about the relationship between its staff and the division staff is appropriate. Field Manual 54-2 states:

> The relationship between the division general staff and the support command commander and his staff is the same as that between the division general staff and any other major subordinate commander and staff. Although the mission of the support command is primarily logistical, the support command commander and his staff are subject to general staff supervision by all members of the general staff within their respective fields.[19]

Operating Procedures

In this method of controlling operations, the support command commander uses his personnel resources in the conventional manner. As previously noted, each staff officer performs his doctrinal functions.[20] The staff, under the direction of the executive officer, provides the commander with information, makes estimates and recommendations, prepares plans and orders, and assists the commander in supervising the execution of support command operations. To accomplish these functions, the staff must obtain and maintain data from several sources. These sources include field army support units, the division staff, supported units, and subordinate units. Much of the information obtained from supported units is provided by reports, such as the periodic logistics report and the

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[18]U.S. Army Command and General Staff College. "Special Text 101-5A, ROAD Supplement to FM 101-5," p. 25.

[19]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 29.

[20]The specific functions of each staff officer are a matter of general knowledge and, therefore, a detailed discussion of them will not be undertaken.

daily battle loss report. All of the information collected is used for but one purpose--to insure continuing logistical support to the division.

In order to provide continuous logistical support, the staff must concern itself with both current and future operations.[21]

Supervising current operations entails insuring adjustments are made in logistical support as dictated by changes in the tactical situation, to include meeting emergency supply, medical, and maintenance needs of supported units. Also, very much a part of current operations in the support command is the conduct of rear area security and area damage control measures. Though not logistical functions per se, they are of special significance to the support command. An attack from by-passed enemy units or by vertical envelopment can cause serious interruption in logistical support operations. Similarly, damage resulting from a nuclear detonation or a natural disaster may significantly impair the support command's ability to provide continuous logistical support. Both of these matters require thorough planning and preparation of detailed standing procedures to minimize interruption of logistical operations.

With regard to its responsibility for future logistical operations, the staff does have a planning function; it bases its planning on information provided by the division general staff, mainly that provided by the G4.

Logistical Operations Center Method

"To expedite logistical operations, the support command commander

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[21]This statement has application to all staff officers; however, it has significantly more impact on the S3 and S4 since they are the staff officers primarily concerned with control of operational matters, to include rear area security and area damage control. This statement regarding the responsibilities of the S3 and S4 is based on information contained in "Special Text 101-5A, ROAD Supplement to FM 101-5," prepared by the U.S. Army Command and General Staff College in June 1963

may establish an operations center."[22] This statement is the doctrinal basis for the existence of this method of operating. Before discussing the personnel resources and operating procedures, it is necessary to define the purpose of a logistical operations center and to consider its composition.

The logistical operations center is a staff facility of the support command headquarters. It is a--

> groupment of elements of those sections and operational units concerned with current logistical support operations, area damage control, and the rear area security missions of the support command. . . . Its purpose is to rapidly coordinate and act upon other than routine requirements. Its precise composition and organization is determined by the support command commander. The officer in charge . . . is designated by the support command commander.[23]

A type logistical operations center is shown in Figure 11.[24]

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[22]U.S. Department of the Army. Field Manual 61-100, The Division p. 2 of Change 1.

[23]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 32.

[24]Ibid, p. 33.

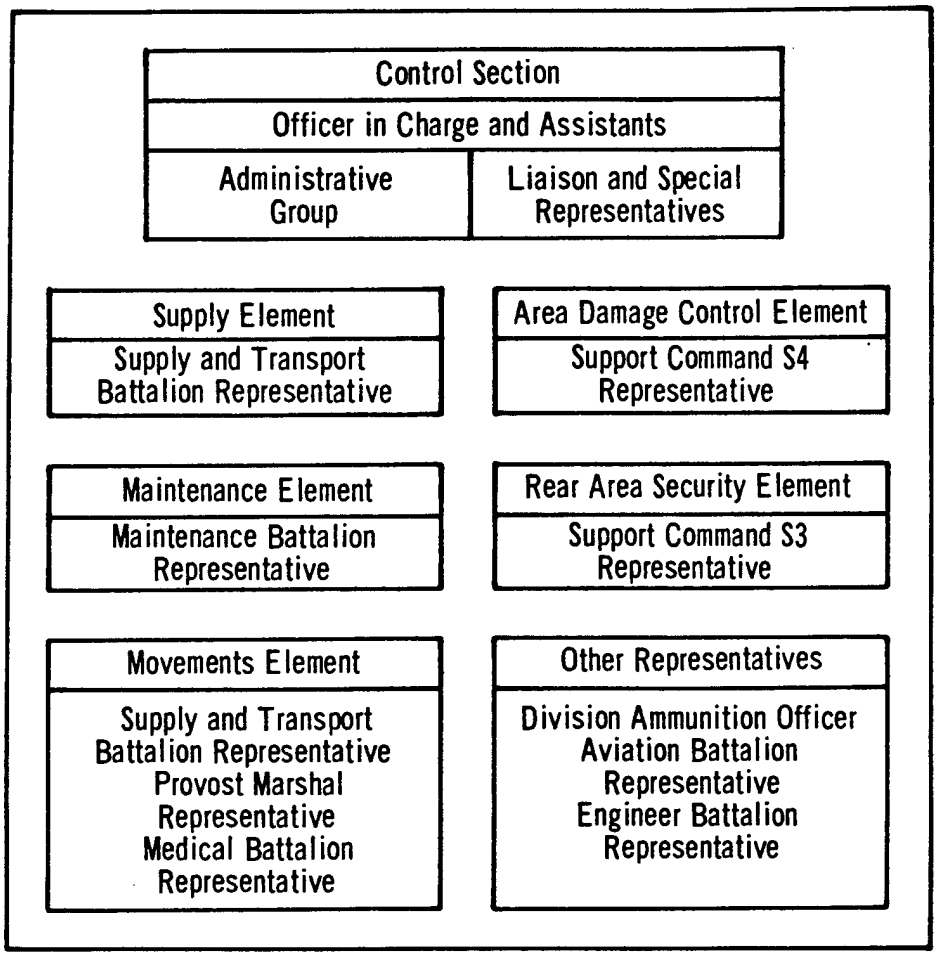

Fig. 11.--Logistical Operations Center

For clarity, the following information is presented concerning the components of the operations center.[25]

(1) The control section directs operations and coordinates and supervises the component elements.

(2) The supply, maintenance, movements, area damage control, and rear area security elements are the operating elements of the operations center; the representatives in each of these elements are aware of the policies and views of their parent units or sections and represent them in taking or recommending action.

(3) The division ammunition officer exercises administrative control over ammunition resupply. He may or may not be located with this

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[25]Ibid.

staff facility, depending on the location of the main supply routes and the army ammunition supply point.

(4) The provost marshal, aviation battalion, and engineer battalion provide representation in the logistical operations center only when they have units in support of or attached to the support command.

Personnel Resources

The support command commander has available the same resources described in the traditional method. But based on the organization of the logistical operations center depicted in Figure 11, it is apparent that he must have additional personnel. The organization of the logistical operations center requires specialists in the areas of supply, transportation, medical service, and maintenance.[26] Essentially, this means he must augment the headquarters. By and large, the source of personnel for this augmentation is the subordinate battalions.[27] The exact number of personnel furnished by each of the battalions is a matter of command policy within each support command. Logically, however, it would seem the operations center must be manned for twenty-four hour operation. This fact suggests that there should be at least three representatives each for the supply element and the maintenance element, assuming two would be on duty during the day and one at night. For the movements element, it would appear that the minimum number required would be two from the supply and transport battalion and one from the

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[26]The transportation specialists are required to control organic support command transportation used in distributing supplies. Transportation functions of the operations center should not be confused with the functions of the division transportation section.

[27]Other divisional units are not a basic source for augmentation of the headquarters. As previously noted, they provide representation to the operations center only when in support of or attached to the support command.

medical battalion. This number would provide one transportation specialist for the day shift and one for the night shift. The medical battalion representative probably would operate on an on-call status as he is concerned mainly with aerial medical evacuation matters.[28]

On the basis of this discussion, nine additional personnel would be required to man the operations center. This number is considered to be the minimum needed.

Operating Procedures

The principal staff officers perform their doctrinal functions, but they devote more attention to future operations than to current operations. This statement is not to imply that they are not concerned with supervising current operations, only that they do not become involved in the detailed considerations as they do in the traditional method. In this method of operating, the detailed considerations inherent in controlling, coordinating, and expediting current operations are the responsibility of the logistical operations center.

In discharging this responsibility, the operations center collects and displays data on the current tactical and logistical situations and, within parameters established by the commander, takes action on requirements and issues implementing instructions to subordinate units as necessary.[29] Each element of the operations center coordinates its actions with the other elements as required. Matters that cannot be resolved between elements are referred to the control section.[30]

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[28]U.S. Department of the Army. Field Manual 61-100, The Division, p. 372.

[29]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 34.

[30]Ibid.

The officer in charge of the control section, normally the support command executive officer, makes the decision or, if warranted, refers the matter with his recommendation to the support command commander.

Suitability of Methods

Suitability will be examined by analyzing each method to determine the advantages and disadvantages, presenting the data collected from the field, and evaluating the methods of operating.

Analysis

Traditional Method

Advantages.--In this method of operating, no special organizations are formed and superimposed on the established organizational structure of the headquarters. From this fact, the first advantage becomes apparent: Operations are controlled within the framework of the established organizational structure, i.e., the S1, S2, S3, and S4 staff structure.

By controlling operations in this manner, there is no division of responsibility within the headquarters for doctrinal functions and no division of authority regarding the control of personnel resources assigned to each of the staff sections. Thus, the second advantage would seem to be that each staff officer has complete responsibility for his doctrinal functions and exercises complete control of the resources assigned to his section.

The last advantage relates to the available personnel resources. Only those resources authorized in the command headquarters and the headquarters section of the table of organization and equipment are used by the headquarters in effecting supervisory control of supply (except Class V), medical, and maintenance operations. To state it another way, no

augmentation of the headquarters is required. This fact would seem to indicate, at least in theory, that this method provides for controlling operations with the authorized personnel resources.

Disadvantages.--As stated in the discussion of this method, each staff officer must plan for future operations and, simultaneously, attend to the control of current operations. Also, it was noted that the staff officers effected most by this requirement are the S3 and S4 as they are the staff officers most concerned with operational matters of the support command. Additionally, the S3 has staff responsibility for rear area security and the S4 for area damage control. The table of organization and equipment indicates that the S3 and S4 each are authorized one officer and two enlisted assistants.[31] It would seem that the requirements--discharging their responsibilities for current operations, with the associated matters of rear area security and area damage control, and planning for future operations--exceed the capabilities of the resources available to the S3 and S4. If the requirements do not exceed the capabilities of their resources, they, at best, would seem to be only marginally adequate.

During the discussion of the personnel resources available for this method of operating, no mention was made of supply, medical, and maintenance specialists. The fact is that an inspection of the table of organization and equipment reveals there is only one technical specialist included in the personnel resources available for this method of operating, and that one technical specialist is the chemical officer.[32] It appears, therefore, that the headquarters must control operations without having

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[31]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized).

[32]Ibid.

specialists available in the headquarters to provide advice on supply, medical, and maintenance matters.

Logistical Operations Center Method

Advantages.--The operations center provides a single facility for controlling and expediting current logistical operations, and this in itself would appear to be an advantage as it provides a focal point for divisional agencies and units to contact regarding logistical matters.

The organization of the type logistical operations center depicted in Figure 11 requires supply, medical, and maintenance specialists. The resulting advantage is that specialists are available within the headquarters to provide advice on supply, medical, and maintenance matters.

The establishment of an operations center would seem to facilitate coordination of operational matters and provide a high degree of responsiveness to the needs of supported units, especially with regard to emergency requirements. Emergency requests, whether they are for supply, medical, or maintenance support, obviously must be acted on rapidly. The operations center, with specialists to provide advice in these areas, has the capability to respond to such requests quickly.

Disadvantages.--This method of operating has two disadvantages. As previously noted, the type logistical operations center under discussion requires specialists. The type of specialities required make it evident that these personnel must come from the subordinate battalions. Moreover, the personnel representing these units must be knowledgeable about their unit's operations and capabilities, which suggests that they are most likely key personnel. Herein is the first disadvantage. Taking personnel from the subordinate battalions impairs their capability to accomplish their mission because TOE personnel authorizations are based on minimum

essential authorization consistent with the mission.[33]

In the discussion of the logistical operations center method, it was stated that the operations center is charged with the responsibility for controlling and expediting current operations, to include rear area security and area damage control. Yet, the S3 and S4 both have staff responsibility relating to current operations--the S3 for matters pertaining to missions of the command and for rear area security, and the S4 for matters concerning the logistical readiness of the command to accomplish its missions and for area damage control.[34] Neither the S3 nor S4 are members of the type operations center shown in Figure 11 but, as previously stated, they do not completely divorce themselves from current operations. The result of this situation is a division of responsibility for operational matters. Another matter which has an effect on the responsibilities of the S3 and S4 is that both must furnish representatives to the operations center. From this discussion, it appears that neither of these staff officers has complete responsibility for his doctrinal functions nor does he have complete control of the personnel resources assigned to his section.

Field Experience

A part of the questionnaire sent to the support commands was devoted to the subject of control of operations. An extract of the questions relating to the aspect of control being analyzed in this chapter is shown below.

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[33] U.S. Department of the Army. Army Regulation 310-31, Organization and Equipment Authorization Tables, (Washington, D.C.: February 1964), p. 2.

[34] U.S. Army Command and General Staff College. "Special Text 101-5A, ROAD Supplement to FM 101-5," p. 24.

Does the support command headquarters control operations by establishing a logistical operations center in the division support area?

YES_____ NO_____

If a logistical operations center is NOT established, what procedures are used by the support command headquarters to act on emergency requirements, such as resupply by land transport and by aerial means, medical evacuation by air, repair of equipment and provision of repair parts? Please read the additional questions below before answering.

a. Do requests for emergency support flow from the combat battalion to the support command headquarters, or do they flow from the combat battalion to the functional unit concerned (supply and transport battalion, maintenance battalion, etc.), or do they flow from the combat battalion to a division general staff or special staff officer? Do any requests for emergency support flow through the brigade S4?

b. Paragraph IIIDlc(2) of Appendix III (Sample Division SOP) in Change 1 to FM 61-100 states: "Requests for aeromedical evacuation to division surgeon by most expeditious means." Do requests for aeromedical evacuation follow this procedure in your division? If so, why? If not, what procedure do you use and why?

If a logistical operations center is established in the division support area, what is its organization? Please name the representatives by job title, grade, MOS, and unit. Additionally, request that you indicate how the operations center is organized to operate on a 24-hour basis by showing the organization in terms of a day shift and a night shift or by whatever organizational method you use.

The question on procedures for handling emergency requests did not require an answer if a logistical operations center was being used on the assumption that one of the functions of this facility is to handle emergency requests; however, all but one of the units did answer the question.

Figure 12 presents a summary of the answers to the questions concerning the establishment of an operations center and the procedures used for handling emergency requirements.

	CONTROL BY OPERATIONS CENTER	EMERGENCY REQUIREMENTS:		
		SUPPLY	MEDICAL	MAINTENANCE
1st Infantry Division	No	Combat Battalion to Division Supply Office	Combat Battalion to Medical Company	Combat Battalion to Forward Support Company
2d Infantry Division	No	Combat Battalion to OIC of Forward Support Elements	Combat Battalion to OIC of Forward Support Elements	Combat Battalion to OIC of Forward Support Elements
3d Infantry Division (Mechanized)	Yes	Brigade S4 to Operations Center	Brigade S4 to Operations Center	Brigade S4 to Operations Center
4th Infantry Division	Yes	Combat Battalion to Operations Center	Combat Battalion to Division Surgeon	Combat Battalion to Forward Support Company to Maintenance Battalion
5th Infantry Division (Mechanized)	No	Brigade to Support Command or Support Command Battalion	Brigade to Medical Officer at Aviation Battalion	Brigade to Forward Support Company or Support Command
7th Infantry Division	Yes	Brigade S4 to Operations Center	Combat Battalion to Medical Battalion	Combat Battalion to Forward Support Company
8th Infantry Division (Mechanized)	Yes			
25th Infantry Division	Yes	Combat Battalion to Operations Center	Combat Battalion to Operations Center to G3 to Aviation Battalion	Combat Battalion to Operations Center
1st Armored Division	Yes	Brigade to Operations Center	Brigade to G4	Brigade to Operations Center
2d Armored Division	Yes	Combat Battalion to Operations Center	Combat Battalion to Operations Center	Combat Battalion to Operations Center
4th Armored Division	Yes	Combat Battalion to Operations Center	Combat Battalion to Operations Center	Combat Battalion to Operations Center

Fig. 12.--Summary of Data on the Establishment of a Logistical Operations Center and Channels for Emergency Requests

Inspection of Figure 12 reveals that eight of the eleven support commands employ a logistical operations center to control operations. The data on the channels for emergency requests is equally conclusive. With a few exceptions in the medical and maintenance areas, emergency requests flow from supported units to the logistical operations center in seven of the eight commands employing this method of control. The 8th Infantry Division did not answer this question and, therefore, no data were shown for it.

The organization of the operations centers employed by these eight support commands is somewhat different in each case. Differences are to be expected because the specific organization is a matter of command policy; however, a trend in organization is clearly apparent. Figure 13 depicts the common organizational aspects as reported by four or more support commands.

Support Commands	S2 Section	S3 Section	S4 Section	Chemical Officer	Representatives From Support Command Battalions
3d Infantry Division (Mechanized)	X	X			X
4th Infantry Division	X	X	X	X	X
7th Infantry Division	X	X	X		X
8th Infantry Division (Mechanized)	X	X	X	X	
25th Infantry Division	X	X	X	X	
1st Armored Division		X	X	X	X
2d Armored Division		X	X		X
4th Armored Division	X	X	X		X
Total	6	8	7	4	6

Fig. 13.--Common Organizational Aspects of the Operations Center

From the data in Figure 13, it appears that the organizational trend is to include all of the resources of the S2, S3, and S4 sections in the operations center as well as including representatives from the battalions. Five of the eight support commands use all three of these staff sections, and three of the five also use representatives from the battalions. In seven support commands, the resources of the S3 and S4 sections are used and five of the seven include representatives from the battalions.

Six of the eight support commands employ representatives from the battalions in the operations center. The number of these personnel, as reported in the questionnaire, ranges from six to nine. Of the six commands using representatives from the battalions, only four reported the specific number being used. Two commands require each battalion to furnish two representatives. One command requires three representatives from each battalion, and one requires three from the maintenance battalion and four from the supply and transport battalion.

In summary, eight of the eleven support commands use a logistical operations center. Six of the eight commands require representatives from the battalions in addition to using the resources of two and, in some cases, three of the staff sections. This field experience indicates the following: first, most support commands apparently find it necessary to establish an operations center to efficiently control operations; second, it would seem that specialists from the battalions are definitely required in the operations center; and third, the experience suggests that, in addition to the representatives from the battalions, all of the personnel resources of at least two staff sections are required to provide for efficient operation of this facility.

Evaluation

Both methods of operating have merit. The traditional method provides for exercising control of operations within the established organizational structure. Operating in this manner provides clear cut lines of responsibility among the staff members. This method also, at least in theory, provides for effecting control with the personnel resources authorized in the TOE. As implied, however, there is some question as to the adequacy of the resources in the S3 and S4 sections. The

other disadvantage of this method is a significant one. There are no specialists in the headquarters to furnish advice in the areas of supply, medical, and maintenance operations.

The logistical operations center method overcomes the disadvantages of the traditional method. It does provide for specialists in the headquarters, specifically in the operations center. It also increases the personnel resources available to the commander for exercising control of current operations, thereby, alleviating the questionable area regarding the adequacy of the resources in the S3 and S4 sections. It, of course, has its disadvantages.

The major disadvantage is that it takes key personnel from the subordinate battalions, and this action deprives them of needed resources. If these personnel did not have a function in their units, there would not be spaces authorized for them in the TOE. As stated previously, personnel authorizations are based on minimum essential needs to accomplish the mission. The other disadvantage of this method--division of responsibility and division of authority concerning control of personnel resources--is not really significant in light of the field experience. This disadvantage is not apparent in the logistical operations centers being employed in the field because the S3 and S4 sections, including the principal staff officers, are a part of the operations center.

With respect to field experience, the fact that eight of the eleven support commands are employing a logistical operations center suggests that this method of operating is the most suitable for controlling the logistical operations performed by the support command. From the fact that six of these commands require the battalions to furnish representatives to the operations center, it would seem that specialists

are required in the headquarters to provide advice and recommendations in their respective areas. Moreover, these specialists provide the added benefit of increasing the personnel resources available for exercising control of operations. As regards the number of personnel required, the field experience suggests that two per battalion is the minimum requirement.

From the analysis and the field experience, it would appear the establishment of an operations center is the best method of controlling operations. It provides a focal point for all logistical matters relating to current operations, to include emergency requests. Within the operations center, specialists are available to provide technical advice and knowledge of their unit's status and capability. Requiring the battalions to furnish representatives is both an advantage and a disadvantage. It provides the technical expertise and increases the personnel resources available to the commander for effecting control, but it takes resources from the battalions.

To eliminate this deficiency, two courses of action seem feasible. The first course of action is to increase the TOE personnel authorization of the support command headquarters. Such action would provide the required technical expertise and the authorization for additional personnel resources. This action also would eliminate siphoning resources from the battalions. There is a distinct disadvantage to this course of action. It was stated previously that the representatives from the battalions must be aware of the policies and views of their parent units. The importance of this requirement was verified by a comment of the 7th Infantry Division Support Command Commander in the questionnaire received from that unit. He stated that the representatives from the battalions must have firsthand, up-to-date knowledge of their unit's status and capability.

In consideration of this requirement, this course of action seems unsatisfactory because specialists assigned to the headquarters would not have this knowledge.

The second course of action is to increase the personnel authorization of each battalion and continue to have the battalions furnish representatives to the operations center. This action would provide authorized spaces for these representatives and eliminate taking resources authorized for battalion tasks to serve as representatives. Further, this action has the effect of increasing the resources of the support command headquarters and, at the same time, providing specialists in the operations center who possess the required technical expertise and have firsthand knowledge of their unit's capability.

With regard to the number of personnel required from each battalion, the earlier discussion of this subject considered three to be the minimum. Field experience, though, suggests two per battalion. The organization of the operations centers established in the field includes the resources of at least two staff sections. The consideration for three personnel from each battalion was based on the organization of the type operations center shown in Field Manual 54-2, which includes only representatives from two staff sections. In view of the increased resources from the unit staff, two personnel per battalion would seem sufficient for twenty-four hour operation.

The analysis of the operations center method suggests a change in the organization of the type operations center depicted in Figure 11 of this study and Field Manual 54-2.[35] From the analysis, it appears there

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[35]The type logistical operations center in Field Manual 54-2 was used for analysis because this manual is the only published doctrinal source on the organization, function, and operation of a support command operations center.

is a division of responsibility for current operations and a division of authority pertaining to the control of the resources in the S3 and S4 sections. Further, the organization of the operations center as reported in the questionnaire and summarized in Figure 13, indicates the type operations center in Field Manual 54-2 does not meet the requirements of field operations.

Conclusions

The following conclusions seem to be warranted from the analysis, field experience, and evaluation:

(1) The support command headquarters requires additional personnel, whether it employs the traditional method or the logistical operations center method to control operations.

(2) The additional personnel are required to provide specialist advice on supply, medical, and maintenance operations, and to assist in exercising control of current operations.

(3) These specialists must possess knowledge of the status and capabilities of the support command battalions and, therefore, must be organic to the battalions.

(4) To preclude siphoning resources from the support command battalions, the TOE of each battalion headquarters should be modified to authorize two additional spaces, one officer space and one noncommissioned officer space.

(5) The logistical operations center is the better method of controlling operations.

(6) Current doctrine should be changed to indicate that the logistical operations center is the normal method of operating for the support command headquarters.

(7) The organization of the logistical operations center, as depicted in Field Manual 54-2, should be changed to include the entire S3 and S4 staff sections of the support command headquarters.

CHAPTER V

CONTROL OF FORWARD SUPPORT ELEMENTS

The discussion on employment of the support command in Chapter II illustrated that elements of the command are employed in the division forward area, specifically in the brigade trains areas. The mission of these elements is to furnish divisional units in the forward area with supply, medical, and maintenance support.

The supply and transport battalion furnishes a forward supply section to operate Class I and III forward distributing points; a graves registration collecting and evacuation section to process the dead for evacuation to the rear; and at least one bath team to provide bath service. The medical battalion employs a medical company in each of the brigade trains areas to establish a division clearing station and evacuate personnel from the combat battalion aid stations. The maintenance battalion habitually places a forward support company in the trains areas to perform direct support maintenance; additionally, it may employ a rotary wing section from the transportation aircraft maintenance company in each of the brigade trains areas to perform aircraft maintenance.

Normally, these elements are employed in a support role rather than attached to the brigades.[1] This fact means that control of their operations is retained by the support command. When these elements are

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[1]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, (Washington, D.C.: 1961), p. 36.

attached to the brigade, control is exercised by the brigade.[2]

The brigade does have responsibility for tactical control of the support command elements located in its area even though operational control is retained by the support command. This responsibility is one of coordinating security, specifying a location within the trains area for each element, and controlling displacement when these elements move with the brigade trains.[3]

The location of the brigade trains area varies with the tactical situation. In the attack, it may range from six to twenty kilometers behind the leading elements of the brigade; in the defense, it may be in the range of nine to twelve kilometers in rear of the forward edge of the battle area.[4]

In Chapter II, it was stated that the division support area is in the division rear area and is the location of the support command headquarters and the headquarters of the three battalions. Like the brigade trains area, the location of the division support area varies with the tactical situation. In offensive operations, the support area may be located from thirty to seventy-five kilometers behind leading elements of the division.[5] In defense, the support area may be from fifteen to thirty

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[2]Attachment, by definition in Army Regulation 320-5, authorizes and requires the receiving unit to exercise the same degree of command and control over the attached unit as over units organic to the command.

[3]U.S. Department of the Army. Field Manual 7-30, Infantry, Airborne, and Mechanized Division Brigades, (Washington, D.C.: 1962) p. 75.

[4]U.S. Army Infantry School. Combat Logistics Handbook, (Fort Benning, Ga.: 1st Edition, FY 65), p. 32.

[5]U.S. Army Command and General Staff College. "Instructional Problems M6420, Armored Division Offensive Operations, and M6425, Division in a Coordinated Attack," (Fort Leavenworth, Kan.: FY 65).

kilometers in rear of the forward edge of the battle area.[6]

From these considerations, it is apparent that the distance between the brigade trains areas and the division support area may range from six to twenty kilometers in the defense and twenty-five to fifty kilometers in offensive operations. With the support command separated from its forward elements by these distances, it seems apparent that control of these elements could be a problem.

There are in existence in the army two concepts or methods for controlling the forward support elements of the support command. One method is based on established doctrine. The other method has developed from experience gained in field operations. Examination of these methods will be accomplished by considering the salient features of each, and then investigating the suitability of each to control the forward support elements.

Methods of Operating

The two methods of operating can be described best in terms of the source of control. In the doctrinal method, control is exercised by the parent battalions. The other method of operating employs a control element in each of the brigade trains areas to exercise control over the forward support elements and hereafter shall be referred to as the forward control element.

The control effected over the forward elements consists of operational control and tactical control. The tactical control is exercised by the brigade in both methods and will not be further considered.

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[6]U.S. Army Command and General Staff College. "Instructional Problems M6215, Infantry Division Defense Operations, and M6290, Division Defensive Operations," (Fort Leavenworth, Kan.: FY 65).

Parent Battalion Method

In this method of operating, which is based on established doctrine, the forward support elements are controlled by their parent battalions.[7] The forward support elements report their workload, work progress, and need for additional support directly to their parent battalions. For example, the forward support company keeps the maintenance battalion headquarters informed of its workload and, when the workload exceeds its capability, the headquarters augments it with maintenance teams from the main support company or directs that part of the work be evacuated to the main support company in the division support area.[8]

The battalion commanders and their staffs have an inherent responsibility for supervising the operations of subordinate units. This supervision is accomplished by personal visits to these forward support elements and through the communication medium of radio. It is by these means that control of the operations of the forward support elements is effected.

The radio communications equipment available to the parent battalions and their forward elements is depicted in Figure 14.[9]

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[7]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 36.

[8]U.S. Department of the Army. Field Manual 9-30, Maintenance Battalion, Division Support Command, (Washington, D.C.: 1961), pp. 14 and 32.

[9]The equipment listed in Figure 14 was extracted from the tables of organization and equipment of the units shown in the figure.

Supply and Transport Battalion	
Battalion Headquarters Section, Headquarters and Headquarters Company	2 each AN/VRC-47 Radios
Division Supply Office, Headquarters and Headquarters Company	1 each AN/VRC-47 Radio 5 each AN/VRC-46 Radios
Forward Supply Section, Supply and Service Company	1 each AN/VRC-46 Radio
Medical Battalion	
Battalion Headquarters Section, Headquarters and Support Company	2 each AN/VRC-49 Radios 1 each AN/VRC-47 Radio
Medical Company	1 each AN/VRC-49 Radio 1 each AN/VRC-47 Radio
Maintenance Battalion	
Battalion Headquarters Section, Headquarters and Main Support Company	2 each AN/VRC-47 Radios 1 each AN/VRC-46 Radio
Forward Support Company	1 each AN/VRC-47 Radio 1 each AN/VRC-46 Radio

Fig. 14.--Organic Radio Equipment Available for Communication Between Parent Battalions and Forward Support Elements

All of the radios in Figure 14 have an operating range of thirty-two kilometers.[10] Since twenty kilometers is generally the upper limit between the brigade trains areas and the division support area in defensive operations, this equipment provides an adequate communication capability. During offensive operations, the upper limit is in the vicinity of fifty kilometers. It would seem, though, that separation by this distance would not exist for extensive periods because the support command would be displacing forward as the attack progressed. Doctrinally, the

[10]U.S. Army Combat Developments Command Communications-Electronics Agency. "Characteristics of Signal Corps Communications-Electronics Equipment Within a Field Army," (Fort Monmouth, N.J.: November 1963), pp. 50 and 51.

division support area is moved as required consistent with maintaining continuous logistical support to all division units.[11] For those periods when the distance does exceed the range of the communication equipment, radio relays can be established or communication can be maintained through the division area communications system.

Forward Control Element Method

In this method of operating, control of the forward support elements is exercised by establishing a control element in each of the brigade trains areas. The officer-in-charge (OIC) of the control element is a representative of the support command commander and reports directly to the support command headquarters.[12] The function of the control element is to coordinate, expedite, and direct the operations of the forward support elements in the brigade trains areas.[13] Requirements for additional support, whether it be in the supply, medical, or maintenance area, are reported to the support command headquarters. The headquarters then directs the appropriate battalion to take action on the matter. The same procedure is used for other aspects of the operations of the forward support elements. Current workload, work progress, status and capability of these elements is assessed by the control element and reported to the support command headquarters. The control element also serves as a focal point for supported units to contact to obtain support from the forward support elements.

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[11]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 30.

[12]Information obtained from questionnaire prepared as part of the research conducted for this study.

[13]Headquarters, 8th Infantry Division Support Command. "Special Topics of Interest to USACGSC" (Ltr), (APO 111, US Forces: 23 October 1963), p. 4.

The units using this method of operating obtain the personnel for the control element from within their own resources. Presently, these units are using the executive officers of the three support command battalions as the OIC of the control element.[14] The composition of the control element is as shown in Figure 15.[15]

GRADE	NUMBER	DESIGNATION
Major	1	OIC
Captain	1	Assistant OIC
E7	1	Logistics Sergeant
E6	1	Assistant Logistics Sergeant
E4	1	Clerk Typist
E3	2	Light Truck Driver

Fig. 15.--Composition of the Forward Control Element

As with personnel resources, communications equipment must come from within current resources. It would appear that the OIC of each control element would obtain a radio from his battalion. The communication resources of the forward support elements are the same as in the parent battalion method. If distance prohibits direct communication between the control element and the support command headquarters, communication would be maintained either by radio relay or the area communication system.

Suitability of Methods

In determining the suitability of these methods to control the

[14]Information obtained from questionnaire prepared as part of the research conducted for this study.

[15]Information obtained from questionnaire prepared as part of the research conducted for this study.

forward support elements, each method will be analyzed to identify the advantages and disadvantages, the data obtained from the field will be presented, and, based on the analysis and field experience, the methods will be evaluated.

Analysis

Parent Battalion Method

Advantages.--Each support command battalion has a mission, which, broadly stated, is to provide support in its functional area. Part of this support is provided through the forward support elements. As stated in the discussion of this method, control of these elements is effected by the parent battalions. The significance of this fact--and the advantage which seems inherent in it--is that control is exercised by the commander who is directly responsible for providing the support.

In this method, the line of communication from the forward support elements to the parent battalions is direct. With the line of communication being direct, exchange of information is continuous and the parent battalions are continually aware of the current status, capability, and workload of their forward support elements. This information would seem to be most important in consideration of requirements generated by any of the following actions: a nuclear strike on the supported unit, a sudden increase in casualties and damaged equipment from a penetration of a defensive position, or an attack in the brigade trains area by guerrillas or by-passed enemy forces.[16] Being constantly aware of the requirements of the forward support elements, the parent battalions can make adjustments.

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[16]The actions listed are intended only to be illustrative and not all inclusive of actions that would change the status, requirements, and capability of the forward support elements.

They can provide additional resources from the division support area or direct that part of the workload be shifted to the division support area. The advantage that would appear to follow from this discussion is one of responsiveness to the needs of the forward support elements and, in turn, to the needs of the supported units.

By definition this method does not require a control element in the forward area. The resulting advantage would seem to be that control of the forward support elements is effected within the existing control structure--the battalion commander and his staff--and within the TOE personnel authorization.

Disadvantages.--In this method there is neither provision for coordinating the collective effort of the forward support elements nor for providing an overall supervisor in the forward area. Assuming there is a requirement for these control measures, it would appear that these are disadvantages.

Forward Control Element Method

Advantages.--The presence of a forward control element in each of the brigade trains areas provides for centralized control of the forward support elements. The advantage which seems apparent from this fact is that provision is made for direct supervision and for coordination of the collective effort of the forward elements.

The forward control element furnishes up-to-date information on forward support operations direct to the support command headquarters. It provides a single facility for the supported units to contact to obtain support from the forward supply, medical, and maintenance elements. From these facts, the advantage that seems to accrue is that the forward

control element provides a focal point for the activities of the forward support elements.

Disadvantages.--The function of the forward control element is to coordinate, expedite, and direct the activities of the forward support elements. The establishment of this facility interposes a control element between each battalion commander and his forward support element and, thereby, disrupts unity of command. That this is a disadvantage seems evident.

Each of the combat battalions has a support, maintenance, and medical platoon.[17] Part of the support platoon and maintenance platoon are in the battalion field trains, which are in the brigade trains area.[18] Key personnel from these platoons normally establish direct working relationships with their counterparts among the forward support command elements. For example, the maintenance platoon leader from the combat battalion has frequent occasion to contact the maintenance platoon leader, shop officer and/or company commander of the forward support company on matters of vehicle evacuation, turn-in of equipment for direct support maintenance, procurement of repair parts, and requests for contact teams. The transportation section leader of the battalion support platoon has frequent contact with the Class III distributing point operated by the forward supply section. The medical platoon, though located in the battalion combat trains, effects coordination with the medical company regarding evacuation of patients and procurement of medical expendable supplies.

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[17]U.S. Army Infantry School. Combat Logistics Handbook, pp. 17-20.

[18]U.S. Department of the Army. Field Manual 7-30, Infantry, Airborne, and Mechanized Division Brigades, p. 75.

In a word, logistical support is functionalized in the combat battalions as well as in the support command, and functional elements deal with functional elements. This discussion suggests that there is no requirement for the supported units to direct their requests to or effect coordination with a forward control element. It would seem to follow that interposing a facility between the supported units and the forward support elements is undesirable and a disadvantage of this method.

As reported in the discussion of this method, the units employing a forward control element are using the executive officers of the support command battalions and other personnel from these battalions to man the forward control element. This fact in itself indicates that this method of operating requires additional personnel. Each of the individuals in the control element has an assignment and a function to perform in his unit. Diverting these personnel to perform a different function means that others must perform two functions. As an example, when the battalion executive officer is operating the forward control element, his duties must be performed by one or more of the other members of the staff or perhaps, in part, by the battalion commander. This discussion concerning the diversion of personnel from their primary assignments was presented only to illustrate that additional personnel definitely are required in this method of operating, and this would appear to be a disadvantage.

Field Experience

The information requested from the support commands relating to the control of forward support elements is as follows.

> How does the support command headquarters control its organic elements which are operating in the brigade trains areas?

a. Do these elements report their requirements, workload, work progress, need for additional support, etc., directly to the logistical operations center (if one is established) or to the support command headquarters (if a logistical operations center is not established)?

b. If the forward support elements do not report directly to the logistical operations center/support command headquarters, do they report to, and are they controlled by, their parent units?

c. Have you found that there is a requirement for some type of a forward support controller, i.e., a man who is physically present in the brigade trains area and controls the operations of the support command's forward supply, medical, and maintenance elements? If you have concluded that there is a requirement for a forward support controller, do you employ one?

(1) To whom does he report?

(2) Must this forward support controller have any special qualifications, i.e., can a maintenance officer control or supervise the operations of the supply and medical elements or, if the controller is a medical officer, can he supervise the operations of the supply and maintenance elements?

(3) If a forward support controller is used, do you obtain him from within organic resources? If so, from what unit(s)? Does this result in someone having to perform two jobs? Do you believe this position should be a TOE space? If so, to what unit or units do you think the space should be allocated?

d. Please answer the questions above and, if you do not use one of the procedures outlined above to control your forward elements, please explain what procedures you do use.

The units employing the forward control element method answered part a in the affirmative. The remaining units answered the question in the negative and, appropriately, answered part b in the affirmative. The answers given for part c are summarized in Figure 16.

Support Commands	Is there a requirement for a forward control element?	Do you employ a forward control element?
1st Infantry Division	No	No
2d Infantry Division	Yes	Yes
3d Infantry Division (Mechanized)	No	No
4th Infantry Division	No	No
5th Infantry Division (Mechanized)	No	No
7th Infantry Division	No	No
8th Infantry Division (Mechanized)	Yes	Yes
25th Infantry Division	No	No
1st Armored Division	No	No
2d Armored Division	No	No
4th Armored Division	No	No

Fig. 16.--Summary of Data of the Forward Control Element

Inspection of Figure 16 reveals that nine of eleven support commands believe there is neither a requirement for a forward control element nor do they employ one. As Figure 16 indicates, the 4th Infantry Division Support Command does not employ a forward control element. The response from this command, however, stated that the company commander of the maintenance forward support company is responsible for coordinating local security and movement for all of the forward support elements from the support command.

The subquestions of part c of the extract pertain only to those units who employ a forward control element. The answers to all of the subquestions, except those relating to qualifications of personnel and changes in the TOE, were presented in describing the forward control element method of operating. With respect to qualification, it was indicated that the OIC of the forward control element and his assistant should have a MOS of 4800, an ordnance maintenance officer. Regarding changes to the TOE, one of the units stated that the TOE should be modified to provide for three forward control elements, the composition of each being as shown in Figure 15. Additionally, this unit recommended the spaces be added to the support command headquarters TOE. The other unit indicated the spaces should be provided as an augmentation during combat operations and the spaces should be in the support command battalions.

Evaluation

The advantages identified in the parent battalion method are threefold. Each forward support element is controlled by the commander who is directly responsible for providing the support. The line of communication from the forward support elements is direct to their

parent battalions, which results in immediate responsiveness to the needs of the forward elements and supported units. Control of the forward support elements is effected by the existing control structure and without the requirement to increase personnel authorizations.

The disadvantage of this method is that it does not provide for an overall supervisor in the forward area to coordinate and direct the operations of the forward elements.

The advantages of the forward control element method overcome the deficiency of the parent battalion method. The forward control element provides, in each brigade trains area, an overall supervisor to coordinate, expedite, and direct the collective effort of the forward support command units. Additionally, it serves as a focal point for the support command headquarters and supported units to contact for information and support requirements.

On the disadvantage side, it interposes a control element between the battalion commanders and elements of their command. It interposes a facility between functional elements of the supported units and the functionalized forward support elements. Lastly, it requires additional personnel.

Basically, the difference in these two methods is decentralized versus centralized control. Control as effected by the parent battalion method is decentralized whereas control by the other method is centralized.

Interposing a control element between the battalion commanders and their forward support units disrupts unity of command and minimizes responsiveness. One of the functions of the forward control element is to expedite the operations of the forward support elements. It would seem to do the opposite since the line of communication is from the

control element to the support command headquarters, then to the appropriate support command battalion. In the parent battalion method, the line of communication is direct from a forward support element to its parent battalion.

The other functions of the control element are to coordinate and to direct the operations of the forward support elements. Each of the support command elements in the forward area is a functionalized entity and there is no operational relationship between the functions performed; therefore, no requirement exists to coordinate the logistical operations of one element with either of the other two. Moreover, the logistical elements of the combat battalions are organized on a functional basis. Having functionalized units in the combat battalion and support command facilitates support operations for both the supported units, and supporting units. Requiring the combat battalions to submit requests for support through the control element tends to reduce the value of functionalization. With respect to direction of operations, it is not apparent what the control element should or must direct, except possibly measures concerning local security and movement. Each of the forward support elements has a commander and each has ready access to its parent battalion for assistance in operational matters. If some degree of centralized control is required for security and displacement matters, the procedure employed by the 4th Infantry Division Support Command suggests that these matters can be coordinated by the commander of the forward support company.

From the preceding discussion, it would seem that centralized control of the forward support elements is neither desirable nor necessary.

The field experience indicates that nine of the eleven support commands have found decentralized control to be the better method of operating. The responses of the two commands who are employing centralized control clearly suggest that if the forward control element method is to be used on a continuning basis, as in combat, additional personnel are required.

Conclusions

The conclusions to be drawn from the analysis, field experience, and evaluation seem to be that decentralized control, as embodied in the parent battalion method, is the better method of operating; that no additional personnel are required to control forward support operations; and that the doctrine for control of these elements, as stated in Field Manual 54-2, is valid.

CHAPTER VI

CONTROL OF AMMUNITION SUPPLY

The support command commander is the division logistical operator and it follows that the support command battalions are operators in their respective functional areas. Further, as stated in Chapter IV, each of the support command battalions exercises direct control over its particular logistical operation. Ammunition supply, however, is not controlled by the supply operator--the supply and transport battalion.

Doctrinally, procedures for ammunition supply at division level are markedly different from procedures for other supplies. Current doctrine requires using units of the division to draw ammunition direct from army supply points.[1] The significance of this doctrine is that the support command does not become involved in the basic operations of supply--requisitioning, procurement, storage, and distribution. Since the support command does not have an operator responsibility for ammunition, its principal supply operator--the supply and transport battalion--does not become involved in control of ammunition supply. Instead, control is exercised directly by the support command headquarters. The control exercised by the headquarters over ammunition supply, as noted in Chapter II, is technical and administrative in nature.[2]

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[1]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, (Washington, D.C.: 1961), p. 53

[2]The substance of technical and administrative control is identified under the functions of the division ammunition section on page 92.

To assist the support command commander in discharging his responsibility for controlling ammunition supply, the TOE provides a division ammunition section in the support command headquarters.[3] This section is the support command commander's primary control instrument for ammunition supply and will be used as the basis for examining the support command headquarters' capability to control ammunition supply.

Investigation of this aspect of control will be conducted by considering the organization and operation of the division ammunition section, and then examing its adequacy to control ammunition supply.

Organization and Operation of the Division Ammunition Section

The following discussion will consider the organization, vehicular and communication equipment, functions, and employment of the division ammunition section.[4]

Organization and Equipment

The composition of the section is depicted in Figure 17; the vehicular and communication equipment authorized are reflected in Figure 18.[5]

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[3]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[4]The vehicular and communication equipment have been selected for analysis because, of the major items of equipment in the section, these are of singular importance to the operations of the section.

[5]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized).

Designation	MOS	Grade	Number Authorized
Division Ammunition Officer	4514	Major	1
Ammunition Supply Officer	4513	Captain	1
Chief Ammunition Clerk	41980	E8	1
Senior Ammunition Records Clerk	41120	E5	1
Ammunition Records Clerk	41120	E4	3
Light Truck Driver	71000	E3	1

Fig. 17.--Composition of Division Ammunition Section

Item	Number Authorized
Vehicles	
1/4 Ton Truck with Trailer	1
3/4 Ton Truck with Trailer	2
Communication Equipment	
AN/VRC-46 Radio Mounted in 1/4 Ton Truck	1
TA-312/PT Telephone Set	1

Fig. 18.--Vehicular and Communication Equipment of the Division Ammunition Section

Functions

In exercising technical and administrative control over ammunition supply, the division ammunition section performs the following functions:[6]

(1) Conducts advance planning to insure adequacy of ammunition supply.

(2) Authenticates transportation orders for ammunition required by using units.

(3) Maintains records on ammunition usage and the available supply rate.

(4) Assists in the preparation of the required supply rate.

(5) Recommends the number and location of army ammunition supply points required to support the division.

(6) Supervises ammunition supply activities in the division by inspecting ammunition and storage areas.

(7) Provides advice and technical assistance to units of the division for both conventional and nuclear ammunition matters.

Employment

> The division ammunition officer (DAO) is normally located at the support command command post. . . . However, the DAO or his representative is located conveniently to serve unit ammunition personnel. The location should be on or near the main supply route on a direct route between all using units and the supporting ammunition supply point in order to facilitate the authentication of transportation orders. If required by the road net or deployment of units, the location may be as far to the rear as the entrance to the supporting ammunition supply point.[7]

Adequacy of the Division Ammunition Section

The examination to follow will present an analysis of the division ammunition section, the data collected from the field, and an evaluation,

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[6]U.S. Department of the Army. Field Manual 9-5, Ordnance Ammunition Service, (Washington, D.C.: 1959), pp. 16 and 22.

[7]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 53.

based on the analysis and field experience, of the section's adequacy to control ammunition supply.

Analysis

Personnel

The functions of the division ammunition section establish the basic requirements for analyzing the qualifications of the personnel authorized. The functions and the employment of the section serve as a basis for determining the adequacy of the number of personnel authorized.

For simplicity of discussion, the functions of the section can be grouped into three categories: planning, maintaining records, and supervising. The planning function comprises planning to insure adequacy of ammunition supply to include assisting in the preparation of the required supply rate, and making recommendations relative to the number and location of army ammunition supply points required to support the division. Maintaining records embodies authenticating transportation orders and recording the information therefrom, and maintaining information on the available supply rate. The supervising function includes inspecting ammunition and storage areas, and providing technical advice and assistance on conventional and nuclear ammunition matters.

The duties and qualifications prescribed for the division ammunition officer include the following: directs and supervises personnel engaged in receipt, inspection, storage, maintenance, and distribution of ammunition; supervises preparation and upkeep of records; and requires thorough knowledge of ammunition production and packing methods, storage operations, safety procedures, and capabilities and limitations of ammunition in terms of tactical application.[8]

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[8]U.S. Department of the Army. Army Regulation 611-101, Personnel Selection and Classification: Manual of Commissioned Officer Military Occupational Specialities, (Washington, D.C.: 1960), p. 147.

The duties and qualifications of the ammunition supply officer are as follows: plans and directs supply of ammunition related to guided missiles and special weapons; conducts periodic technical inspection of guided missile and special weapons material; requires thorough knowledge of organization, mission, and capabilities of supported using units; and must be familiar with atomic demolition munitions and atomic military applications to conventional ordnance material.[9]

Based on the qualifications of these two officers, it would appear that there is an adequate capability in the section to provide for the planning function.

The duties and qualifications of the chief ammunition clerk, senior ammunition records clerk, and the three ammunition records clerks are essentially as indicated by their titles. The chief ammunition clerk supervises the enlisted personnel of the section, and performs the administrative functions of a unit first sergeant; on the technical side, he must know the Army ammunition supply and maintenance system, and procedures for ammunition inspection and technical assistance to include guided missiles and special weapons.[10] The senior ammunition records clerk and the three ammunition records clerks establish, post and maintain current ammunition records, and make visual inspections and inventories of ammunition in storage; to accomplish these duties, they must know characteristics of various types of ammunition and the components, techniques and procedures for establishing and maintaining records, procedures for documentation of ammunition supply activities, and ammunition

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[9] Ibid, p. 146.

[10] U.S. Department of the Army. Army Regulation 611-201, Personnel Selection and Classification: Manual of Enlisted Military Occupational Specialities, (Washington, D.C.: 1960), p. 393.

reporting procedures.[11] The MOS of the light truck driver, 71000, is somewhat misleading. The applicable regulation indicates the job title is that of a clerk; however, it seems obvious that he also must serve as a light truck driver. The duties for the MOS of 71000 are to post, code and file regulations, correspondence and other materials; the skills required include knowledge of supply clerical procedures, publications and directives concerning general administration, and the ability to type without a minimum speed requirement.[12] The qualification of these enlisted personnel would seem to provide an adequate capability to perform the record keeping function.

The last of the three general functions, supervising, involves inspecting ammunition and providing technical advice and assistance on conventional and nuclear ammunition. In regard to inspecting ammunition, certainly it would seem that the division ammunition officer and the ammunition supply officer are qualified to perform this task. Likewise, on the basis of the qualifications stated in the regulation, the chief ammunition clerk and all the ammunition records clerks also are qualified. The ammunition supply officer and the chief ammunition clerk have special qualifications in the special weapons area which provides the section with the capability to advise and render technical assistance on nuclear ammunition matters. In summary, it appears that the section is qualified to perform its supervisory function.

The discussion on employment indicated that, at times, it may be necessary for the section to operate at two locations: the support command command post and at a location to the rear, possibly as far to the rear as the entrance to the army ammunition supply point. The section has two officers and six enlisted men. When a requirement exists to

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[11] Ibid, p. 381. [12] Ibid, p. 733.

operate at two locations, the section readily can be divided into two groups of one officer and three enlisted men each. With four personnel in each group, it would seem that there is an adequate capability for twenty-four hour operation, which is a requirement as units frequently effect resupply during the hours of darkness. By having an officer and three enlisted men at each location, the technical qualifications of the section's personnel should be divided evenly; thus, even though its resources are split between two locations, the section should be able to accomplish its functions of planning and maintaining records. The capability to perform the supervisory function may be somewhat reduced because of the requirement to conduct twenty-four hour operation at two locations. On the whole, however, it appears that the number of personnel authorized is adequate to support the operations of the section.

Vehicular and Communication Equipment

The requirement for transportation and communication is related directly to the section's supervisory function and to its employment. It seems apparent that transportation is needed for the section to inspect ammunition in the hands of using units and to locate itself so as to be convenient to units going to the ammunition supply point. The section has three vehicles to support its operations. This number would appear to be adequate to support operations at two locations and to provide transportation for its supervisory function.

Inasmuch as all or part of the section may be located to the rear of the division support area, it requires a capability to communicate with the support command headquarters. The section has one AN/VRC-46 radio for this purpose. When the section is operating from the support area and a location farther to the rear, the organic radio would be used by

the element away from the support area and the other element would have access to a radio in the headquarters. If distance becomes a factor in communicating with the headquarters, the section would have to maintain contact through the field army area communications system, which operates similarly to the division system.

The telephone set provides the section with a capability to enter any local wire net, wherever it might be employed.

From this discussion, it would appear that the communications capability authorized the section is adequate, even in instances where the section must operate from the support area and another location.

Field Experience

The information requested from the support commands concerning the adequacy of the division ammunition section is shown below.

> The composition of the division ammunition section to provide for exercising administrative control over ammunition supply to the division and attached units is totally adequate, mostly adequate, adequate, mostly inadequate, or totally inadequate.[13]

The accompanying instructions requested that one of the five adjectival ratings be selected and, if a rating of adequate or lower was selected, to explain the reason for the choice made. A summary of the responses is reflected in Figure 19.

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[13]Refer to Appendix I, Questionnaire, for definition of the term "composition" as used in the questionnaire, and for definition of the adjectival ratings.

Totally Adequate	Mostly Adequate	Adequate
6	4	1

Fig. 19.--Summary of Data on the Adequacy of the Division Ammunition Section

Inspection of Figure 19 indicates that all but one of the eleven support commands considered the composition of the division ammunition section to be mostly or totally adequate to effect administrative control of ammunition supply. The 1st Infantry Division Support Command rated it as adequate; a detailed account of the reasons for the adequate rating was included with their response.[14] The main reasons relate to the military specialities, number of personnel, and radios required to accomplish the mission.

The report states that four specialities, not presently authorized in the section, are required. The specialities are 1723, Nuclear Weapons Officer; 43670, Nuclear Weapons Maintenance Adviser; 41970, Ammunition Inspector; and 71120, Clerk Typist. The report indicates the first two specialities listed are needed to provide the technical knowledge to advise on nuclear ammunition matters; the Ammunition Inspector is required to give the section the capability for inspecting conventional ammunition; and the Clerk Typist is needed to provide the section with an adequate clerical capability.

In regard to the number of personnel, the report proposes nine as compared with the present authorization of eight. The additional space is required for the Nuclear Weapons Maintenance Adviser, MOS 43670.

[14]This account, in the form of a staff study, contains information considered to be of value to anyone conducting research in this area and, therefore, a copy of the study has been included in this paper as Appendix II.

The other significant change in this proposal is the modification of the specialities of three TOE spaces.

As pertains to radio communication, the report states that often all or part of the section is employed away from the support command headquarters and requires two AN/VRC-46 radios as compared with the present authorization of one.

In summary, the fact that ten of the eleven support commands selected a rating of mostly adequate or higher suggests that the division ammunition section is capable of effecting control of ammunition supply.

Evaluation

The analysis of the division ammunition section suggests that the qualifications of the personnel provide the section with the capability to perform its doctrinal functions. Additionally, the analysis indicates that the number of personnel is adequate to support operations at two locations.

With respect to the vehicular and communication equipment, the analysis revealed that this equipment appears to provide the requisite capability for the section to operate at two locations simultaneously.

The data obtained from the field clearly indicates that the division ammunition section has the capability to effect control over ammunition supply. As noted in the discussion, the 1st Infantry Division Support Command was an exception to the consensus. While the reasons for its exception appear to be valid, they do not provide conclusive evidence that the section as organized cannot accomplish its mission.

Conclusions

From the analysis, field experience, and evaluation, it seems appropriate to conclude that the support command headquarters, through

the capability provided by the division ammunition section, can exercise control over ammunition supply for the division and attached units.

CHAPTER VII

TRANSPORTATION PLANNING AND MOVEMENT CONTROL

The support command commander's responsibility for transportation encompasses planning, supervising, and providing advice on transportation matters.[1] In Chapter IV, it was noted that inherent in this responsibility is the requirement to furnish planning assistance to the division staff. To assist the support command commander in discharging his responsibility for transportation, the TOE provides a division transportation section in the support command headquarters.[2]

The support command headquarters' capability to provide for planning, supervising, and furnishing advice and assistance on transportation matters will be examined by analyzing the capability of the division transportation section and considering how it is employed. This examination will consider, first, the organization and operation of the section and, then, its adequacy to perform the transportation functions.

Organization and Operation of the Division Transportation Section

This discussion on organization and operation will include the composition of the section, its communication equipment, functions and employment.

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[1]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[2]Ibid.

Organization and Equipment

The composition of the section is shown in Figure 20; the communication equipment authorized is depicted in Figure 21.[3]

Designation	MOS	Grade	Number Authorized
Division Transportation Officer	0692	Major	1
Movement Control Officer	0694	Captain	1
Movement Supervisor	71980	E8	1
Movement Specialist	71910	E4	1

Fig. 20.--Composition of Division Transportation Section

Item	Number Authorized
AN/VRC-46 Radio Mounted in 1/4 Ton Truck	1
TA-312/PT Telephone Set	1

Fig. 21.--Communication Equipment of the Division Transportation Section

Functions

In assisting the support command commander in the discharge of his responsibility for transportation, the division transportation section performs the following functions:[4]

[3]Ibid.

[4]These functions were obtained from Field Manual 55-37, Infantry Division Transportation Battalion and Transportation Tactical Carrier Units, dated July 1962. It is acknowledged that this manual was published to provide guidance for the operations of the ROCID infantry division transportation battalion; however, because the same general functions are listed in Special Text 101-5-1, Staff Organization and Procedures (which was published after the advent of ROAD), it seems reasonable to state that the transportation officer's staff transportation functions listed

(1) Prepares detailed plans for movement of troops and equipment by all means of transport.

> The strategic and tactical mobility of the division must be insured by careful planning for its movement by land, sea, and air. These plans will include approved loading plans for each element of the division. Specific requirements for transportation will be developed, utilizing means organic to the division and/or supporting transportation agencies.[5]

(2) Establishes and operates the division transportation service.

> The establishment of this service includes the planning and coordination necessary to provide optimum utilization of all transport means within the division under varying conditions. Transport vehicles organic to . . . divisional units should be considered in these plans, although their use for general transportation support may be limited to emergencies. The division transportation service supports the division tactically and administratively. Plans pertaining to the operation of this service will be based upon the employment of the division and its subordinate and attached units as a combat organization. Tactical requirements for transportation support in various types of situations should be predetermined so far as possible to allow development of plans for transport utilization. Administrative [sic] support plans should be developed in a similar manner. Tactical and administrative [sic] support plans will be coordinated with the division G3 and G4 to insure effective support by the division transportation service.[6]

(3) Prepares emergency transportation plans.

> The division transportation officer is responsible for the preparation of plans to support the division with other than organic transportation in emergencies. In any situation where requirements cannot be met by division transportation, additional support must be requested from higher headquarters. Prior planning at division level will assure the timely submission of accurate requirements and thus expedite the necessary support.[7]

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in Field Manual 55-37 are applicable to the ROAD division transportation officer. Field Manual 55-37, rather than Special Text 101-5-1, was used because it provides a detailed explanation of the functions. Moreover, an interview with Major Paul E. Riese, TC, who served for one year as the division transportation officer of the 3d Infantry Division (Mechanized), revealed that these functions are, in fact, the functions of the division transportation officer.

[5]U.S. Department of the Army. Field Manual, 55-37, Infantry Division Transportation Battalion and Transportation Tactical Carrier Units, (Washington, D.C.: 1962), pp. 5, 6, and 7.

[6]Ibid.

[7]Ibid.

(4) Develops plans and orders pertaining to road movement.

This function includes the preparation of the division traffic circulation plan, the transportation portion of the administrative plan or order, portions of operation orders for road movement, and plans and orders for highway regulation. Planning responsibilities include the preparation of pertinent sections of the division SOP. The division traffic headquarters is formed to assist in the performance of this function.[8]

(5) Exercises staff supervision of division transportation activities.

The division transportation officer exercises technical supervision over all transportation activities within the division. . . . He, through the traffic headquarters, insures coordination of movement plans and orders to minimize congestion and to promote effective use of the highway net within the division area.[9]

(6) Effects liaison.

The division transportation officer must maintain liaison with transportation agencies of higher headquarters and of supporting Navy, Air Force, and Allied commands; with civilian transportation agencies, as appropriate; and with general and special staff sections of the division. The importance of this function cannot be overemphasized since good liaison saves time, prevents misunderstanding and confusion, and reduces duplication of effort.[10]

Employment

The discussion in Chapter II, Employment of the Support Command, disclosed that no definitive doctrine on the employment of the transportation section has been published as of this time.

In the divisional organizations prior to ROAD, the transportation officer was a special staff officer at division level.[11] As noted in Chapter II, the draft TOE for the ROAD mechanized infantry division placed the transportation officer in the division G4 section. The final TOE, however, eliminated the transportation officer and his three assistants from the G4 section and placed them in the support command headquarters.

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[8] Ibid. [9] Ibid. [10] Ibid.

[11] In the ROCID infantry division, the division transportation officer also commanded the division transportation battalion; however, he had a division transportation section organic to the battalion to assist him in discharging his staff transportation responsibilities.

As a special staff officer and as a member of the G4 section, the transportation officer operated at the division main headquarters. Now, as a part of the division support command headquarters, a question arises as to the location at which the transportation officer should operate: the division main headquarters, the support command command post, or both.

One quasi doctrinal source states: "As a member of the support command headquarters, the division transportation officer functions under the direction of the support command commander in providing assistance in transportation planning to the division staff."[12] This statement illustrates the problem concerning the lack of definitive doctrine. It seems to suggest that the transportation officer may be located with the division staff since he provides planning assistance to it; on the other hand, it could be interpreted as simply a statement of command relationship between the support command commander and the transportation officer.

If the transportation officer is to provide assistance in transportation planning to the division staff, it seems he should be located where the planners are, and the planners are at the division main headquarters. However, since no definitive doctrine has been published on the subject, a specific statement cannot be made regarding the employment of the division transportation section.

Adequacy of the Division Transportation Section

The adequacy of the section will be examined by analyzing the personnel and communication resources, and the employment of the section; presenting the data from the field; and evaluating the section based on the analysis and field experience.

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[12]U.S. Army Command and General Staff College. "Special Text 101-5-1, Staff Organization and Procedures," (Fort Leavenworth, Kan.: June 1964), p. 61.

Analysis

Personnel

The functions of the division transportation section serve as a basis for analyzing the composition of the section.

To facilitate discussion, the functions of the section will be grouped into the following categories: planning for strategic moves, i.e., deployment of the division by land, sea, and/or air transport; contingency planning related to tactical operations, which encompasses planning and coordination to make maximum use of organic transport, and planning for use of nonorganic transport means; planning and supervising road movements, to include movement control considerations; and effecting liaison with transportation agencies of higher headquarters and supporting military services.

The duties and qualifications prescribed for the division transportation officer include the following:

> Prepares policies for and directs movement of troops and material. Advises commander and staff of extent of transportation support for strategic or tactical plans. . . . Coordinates preparation of transportation operational plans, and primary and supplemental traffic circulating plans and schedules. . . . Studies and determines capabilities, and coordinates employment of available rail, highway, air, . . . and water transport facilities. . . . Must be able to perform duties described above, and possess following special qualifications: Must have thorough knowledge of Transportation Corps organization, mission, and operating policies. Must have knowledge of commercial transportation procedures.[13]

The movement control officer's duties and qualifications involve the following:

> Controls personnel and supply movements. . . . Consolidates all movement requirements for command, and balances requirements with

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[13]U.S. Department of the Army. Army Regulation 611-101, Personnel Selection and Classification; Manual of Commissioned Officer Military Occupational Specialities, (Washington, D.C.: 1960), p. 29.

> capabilities. Determines modes of transportation to be employed in execution of movements and prepares movement plans. . . . Takes appropriate action to prevent congestion and assure uninterrupted movements of personnel and cargo. . . . Must be able to perform duties described above, and possess following special qualifications: Must know operational and administrative techniques employed in movement of military personnel and supplies by air, rail, highway, and water.[14]

The duties of the movement supervisor and movement specialist are to assist in planning, coordinating, and controlling movement of personnel and material by rail, water, highway, or air.[15] The specific skills listed for the movement supervisor include the following:

> Must know function and mission of transportation sections of division, and comparable level headquarters. Must be able to advise, explain, and instruct on technical problems related to movement activities.[16]

The skills required of the movement specialist involve the following:

> Must know operational administrative techniques employed in movement of military personnel and supplies by air, rail, highway, and water. Must know general capabilities and limitations of various modes of transportation.[17]

From the stated qualifications, it can be seen that all of the personnel have knowledge regarding movement of personnel and material by land, sea, and air modes of transport, with the division transportation officer having a specific responsibility for advising the commander and staff on transportation support for strategic plans. These qualifications would seem to provide an adequate capability for the function of planning for strategic moves.

In regard to the function of contingency planning related to tactical operations, the transportation officer has a specific

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[14] Ibid, pp. 29 and 30.

[15] U.S. Department of the Army. Army Regulation 611-201, Personnel Selection and Classification: Manual of Enlisted Military Occupational Specialities, (Washington, D.C.: 1960), p. 761.

[16] Ibid.

[17] Ibid.

responsibility for advising the commander and staff on transportation support for tactical plans. The movement control officer consolidates movement requirements and balances requirements with capabilities which should assure maximum use of organic transport and planning for use of nonorganic transport. The qualifications of these two officers appear to provide the capability needed to perform this function.

In connection with the function of planning and supervising road movements to include movement control, the transportation officer's qualification for coordinating the preparation of transportation operational plans and primary and supplementary traffic circulation plans provides a needed capability. The qualifications of the movement control officer and movement supervisor pertaining to their knowledge of operational and administrative techniques employed in movement activities also provide a needed capability. This brief discussion suggests that the section has an adequate capability to perform the function of planning and supervising road movements.

The last function--effecting liaison--would seem to require a knowledge of Transportation Corps organization, mission, and operating policies, and an understanding of the capabilities and limitations of the different modes of transportation. The stated qualifications of the personnel seems to indicate that all possess this knowledge. In any event, the qualifications of the transportation officer, movement control officer, and the movement supervisor, who is an E8, certainly appear to be adequate to perform this function.

The adequacy of the number of personnel in the section is difficult to analyze without specific knowledge of the workload involved. For example, if the tactical situation is fluid, involving fast-moving

operations, the workload is going to be heavier than a situation that is more or less static for extended periods. One requirement for combat or field operations seems apparent and that is to provide for twenty-four hour operation. The section would seem to have a capability to provide for this requirement on the basis of being able to establish two shifts, each consisting of one officer and one enlisted man; whether or not the capability is adequate depends on the workload.

In review, on the basis of qualifications only, it appears there is an adequate technical capability to perform the required functions. With respect to the adequacy of the number of personnel, it appears that analysis should be based on practical experience since the workload would seem to vary with the operational situation of the division. Field experience would provide workload norms which could be used to analyze the adequacy of the number of personnel in the section.

Communication Equipment

The requirement for radio communication is twofold. One requirement relates to the section's supervisory function of movement control, which is performed primarily through the traffic headquarters. By way of example, the transportation officer, when operating the traffic headquarters, must have communication with traffic control points to obtain data on the arrival and clearance of units or convoys at critical points, and to disseminate changes that might develop in regard to route priorities. The other requirement is to be able to communicate with the support command headquarters since the transportation section functions under the direction of the support command commander. As depicted in Figure 21, the section has one AN/VRC-46 radio, which has an operating range of thirty-two kilometers. The fact that the section does have a radio, and one that has a range of thirty-two kilometers or twenty miles,

appears to satisfy its requirements for radio communication. If and when distance becomes a limitation to communication, the section would have to rely on the division area communication system for communication.

The telephone set provides a capability to enter any local wire net, wherever the section is employed.

Employment

As noted in the earlier discussion, there is no definitive doctrine published at this time on the employment of the division transportation section. This analysis, therefore, will approach the subject of employment from the viewpoint of functions performed by the section.

A review of the functions will disclose that all but one are planning functions, and that the planning involved affects the entire division. The exception is the function of exercising staff supervision over division transportation activities and, for the most part, this involves the operation of the traffic headquarters. Doctrinally, the division staff, and primarily the G4, is responsible for planning logistical operations while the support command is responsible for executing logistical operations.[18] Since the planning functions of the division transportation section have application to the entire division, it would appear that the section should be located at the division main headquarters with the division staff. By operating at the division main headquarters, the members of the transportation section can effect personal coordination with the members of the division staff. The capability to conduct personal coordination is particularly important in relation to the transportation planning assistance provided to the G3 and G4. This requirement

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[18]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, (Washington, D.C.: 1961), pp. 28 and 29.

for coordination seems apparent in all of the functions, but it has special significance in regard to the function of developing plans and orders for road movement; this function involves the preparation of the division traffic circulation plan, the transportation portion of the administrative plan or order, portions of operation orders for road movement, and plans and orders for highway regulation.

If, in fact, the transportation section should operate at the division main headquarters, a question arises as to its assignment. Why is the transportation section assigned to the support command? This question precipitates another thought: What is the support command commander's interest in transportation planning and movement control?

In connection with the latter question, it seems significant that neither the support command TOE nor the support command headquarters TOE mission statement includes transportation as a function or responsibility of the support command. The support command's responsibility for transportation appears in the capability paragraphs of these documents.

In the support command TOE, the capabilities paragraph states: "Provides advice to the division commander . . . on transportation matters pertaining to the operations of the support command."[19] The capabilities paragraph of the support command headquarters TOE states: "Advises the division commander on . . . transportation operations. . . . Plans and supervises transportation operations and exercises technical supervision over transportation activities of the division."[20]

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[19]U.S. Department of the Army. Table of Organization and Equipment 29-11E, Support Command, Infantry Division (Mechanized), (Washington, D.C.: 15 July 1963).

[20]U.S. Department of the Army. Table of Organization and Equipment 29-2E, Headquarters, Headquarters Company and Band, Infantry Division (Mechanized).

The capability listed in the support command TOE suggests that the support command commander's responsibility for transportation is limited to transportation considerations associated with the command's mission of providing supply, medical, and maintenance support to the division. The capability in the support command headquarters TOE is not limiting; in fact, it extends the commander's consideration to transportation activities of the division.

It would seem that the support command commander's interests and responsibilities stem from three sources: the mission of the command; matters associated with the accomplishment of the mission, such as rear area security and area damage control; and the responsibilities inherent in command.

Based on the mission of the command, the support command commander's responsibility for and interest in transportation would seem to be related to transportation required for the distribution function of supply operations. He has, in the supply and transport battalion, the transportation resources for this function and the qualified personnel to supervise and coordinate the use of these resources.[21]

The area for which the support command commander has rear area security responsibility is the division support area.[22] His responsibility

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[21]Per TOE 29-6E, Headquarters and Headquarters Company, Supply and Transport Battalion, Infantry Division (Mechanized), there is a motor transportation plans officer and three movement specialists in the division supply office. Field Manual 10-50, Supply and Transport Battalion, Support Command, states that the function of these personnel is to advise ". . . the division supply officer and staff on employment of the transportation resources of the battalion," and to " . . . plan and coordinate provision of transportation required to pick up and make distribution of supplies and equipment."

[22]U.S. Department of the Army. Field Manual 61-100, The Division, (Washington, D.C.: 1962), Change 1, p. 79.

is mainly one of executing measures to reduce enemy ground interference with logistical operations.[23] Any transportation required in connection with these operations must come primarily from the resources in the supply and transport battalion. Transportation matters relating to changes in division movements and traffic control plans must be coordinated with the G4.[24]

The support command commander's responsibility for area damage control involves measures taken to minimize interruption of logistical support caused by enemy use of nuclear, chemical, or biological weapons or by natural disaster.[25] Transportation needed to support area damage control operations, again, must come from the resources in the supply and transport battalion.

From the preceding discussion, it seems apparent that the planning functions performed by the transportation section do not fall within the scope of the commander's interest or responsibility based on the mission of the command. Likewise, transportation planning does not seem to come within the scope of rear area security or area damage control functions. And certainly it seems apparent that they do not fall within the responsibilities inherent in command, which embodies such matters as discipline, law and order, and the welfare of the command. Further, it would seem that the capability statement in the support command headquarters TOE was included, not because it relates to the mission or

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[23]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 41.

[24]U.S. Department of the Army. Field Manual 61-100, The Division, Change 1, p. 80.

[25]U.S. Department of the Army. Field Manual 54-2, Division Logistics and The Support Command, p. 42.

associated matters of the support command, but because the transportation section was assigned to the headquarters in the final TOE.

Field Experience

The questionnaire sent to the support commands contained two questions relating to the adequacy of the division transportation section. The questions are as indicated below.[26]

> The composition of the division transportation section to provide for planning and supervising transportation operations and exercising technical supervision over transportation activities in the division is totally adequate, mostly adequate, adequate, mostly inadequate, or totally inadequate.
>
> The composition of the division transportation section to provide assistance and advice to the division general staff (particularly the G3 and G4) on transportation matters (preparation of march tables, march graphs, etc.) in addition to performing the functions stated in the previous question, is totally adequate, mostly adequate, adequate, mostly inadequate, or totally inadequate.

Figure 22 contains a summary of the responses. As will be noted from inspection of Figure 22, only ten of the eleven support commands answered the questions. The 3d Infantry Division did not answer these questions. The reason for not answering, as stated in their response, was that the transportation section is operating as part of the G4 section and is not an operational element of the support command.

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[26]Refer to Appendix I, Questionnaire, for definition of the term "composition" as used in the questionnaire, and for definition of the adjectival ratings. The accompanying instructions requested the support commands to select one of the five adjectival ratings and, if a rating of adequate or lower was selected, to indicate what changes were required in the organization.

	Totally Adequate	Mostly Adequate	Adequate	Mostly Inadequate
Planning and supervising transportation operations	-	8	1	1
Providing advice and assistance to the division staff	1	7	2	

Fig. 22.--Summary of Data on the Adequacy of the Division Transportation Section

Figure 22 reveals that eight of the ten support commands who answered these questions considered the composition of the transportation section to be mostly or totally adequate. By definition in the questionnaire, these ratings mean that no changes are required in the personnel structure of the section.

Two commands, by their ratings, indicated that changes are required in the personnel authorization. The 1st Infantry Division Support Command selected a rating of adequate for the question on planning and supervising transportation operations; the 1st Armored Division selected a rating of mostly inadequate for the same question. Both of these units selected a rating of adequate for the question on providing advice and assistance to the division staff. The 1st Infantry Division Support Command indicated that one additional movement supervisor, E7, MOS 71970, is required in the section. The 1st Armored Division Support Command stated that three additional personnel are required: one movement control officer, Captain, MOS 0694; and two movement specialists, E6, MOS 71960.

The questionnaire did not ask for information regarding the employment or assignment of the division transportation section. Four

support commands, however, commented on this subject area. As already noted, the 3d Infantry Division stated that its transportation section is operating as part of the G4 section. The 8th Infantry Division reported that its transportation section is operating with the division staff, though it was not indicated in the report whether the section is operating in a special staff status or as part of a general staff section. The 1st Infantry Division Support Command has made a recommendation to the division commander that the transportation section be deleted from the support command headquarters TOE and added to the division headquarters TOE. The 4th Infantry Division Support Command Commander, in a letter attached to the questionnaire, stated that he believes this section should be a part of the division staff.

Other source material indicates that these are not the only divisions who are taking action in this matter. The 5th Infantry Division submitted a letter to the Commanding General, Fifth United States Army in September 1963, recommending that the transportation section be a special staff section in the division headquarters.[27] In the 24th Infantry Division, the division transportation section is operating as an integral part of the G4 section.[28] The 25th Infantry Division also is operating with the transportation section as part of the G4 section.[29]

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[27]Headquarters, 5th Infantry Division (Mechanized). "Location and Function of the Division Transportation Section" (Ltr), (Fort Carson, Colo.: 10 September 1963).

[28]Letter from 1st Lt Paul M. Hinko, Movements Control Officer, Division Transportation Section, Headquarters, 24th Infantry Division, 27 July 1964.

[29]Headquarters, 25th Infantry Division. "General Orders Number 42, Attachment of Organization/Unit," (APO 25, San Francisco, Calif.: 5 May 1964).

And the 1st Armored Division has likewise placed the transportation officer and his assistants in the division G4 section.[30]

To summarize, the field experience indicates that the composition of the division transportation section provides the section with the capability to perform its functions, and that there is some question as to the location at which the section should operate. The results of the questionnaire indicate that four of the divisions have taken action to place the section with the division staff or have recommended that such action be taken. Other source material reveals that four additional divisions have taken similar action.

Evaluation

The analysis of the transportation section suggests that the qualifications of the personnel provide an adequate technical capability for the section to perform its functions. However, no statement could be made regarding the adequacy of the number of personnel. The analysis disclosed that the workload of the section is related directly to the tactical situation. To determine the adequacy of the number of personnel, it was suggested that analysis should be based on workload norms derived from field experience.

On the basis of the analysis, the authorized communication equipment appears to meet the section's requirements for communication.

Regarding employment, the analysis indicates the transportation section should operate at the division main headquarters. In connection with the related matter of assignment, the analysis suggests that the functions of the transportation section do not fall within the scope of the support command's mission or associated activities.

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[30]Interview with Lt Col Richard D. Kisling by Maj Paul E. Riese, 23 December 1964.

The field experience indicates the grade structure, specialties, and number of personnel in the transportation section provide the requisite capability for the section to perform its functions. Two support commands stated that additional personnel are required, but the conclusions of two commands does not constitute conclusive evidence when eight have indicated no changes are required.

On the basis of the analysis and the field experience, it would appear that the personnel and communication resources are adequate. However, both the analysis and field experience raise a question as to the employment and assignment of this section. It seems apparent from the earlier discussion that the section must operate with the planners at the division main headquarters. Eight divisions have either taken action or recommended action be taken to provide for making the section a part of the division headquarters. Such action seems appropriate for the reasons stated in the analysis. Moreover, the present assignment of the transportation section seems to violate the organizational principle of homogeneous assignment. Homogeneous assignment ". . . applies to the grouping of functions within the organization. Similar or related jobs give rise to similar problems and require incumbents with levels of intelligence, experience, and training that are often quite similar. Homogeneous assignment is the predominating principle by which jobs are grouped."[31] Analyzing this principle as it applies to the division reveals that a planning agency--the transportation section--is assigned to an operating agency--the support command. Assignment of the transportation section to the division headquarters would place it in a unit whose primary function is planning.

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[31]U.S. Army Command and General Staff College. "Instructional Problem A1010, Management," (Fort Leavenworth, Kan.: FY 65).

Conclusions

The conclusions which seem to be indicated from the analysis, field experience and evaluation are as follows:

(1) The division transportation section can perform its functions with the personnel and communication resources presently authorized.

(2) The section can accomplish its functions better by operating at the division main headquarters.

(3) The division transportation section, because its functions are mainly planning in nature, should be assigned to the division headquarters rather than the support command headquarters.

CHAPTER VIII

CONCLUSIONS

At this point, it seems appropriate to restate the mission and the objective, the mission of the support command and the objective of this paper. The mission of the support command is "to provide division level supply, field maintenance, medical service and miscellaneous services for all elements of the division assigned or attached."[1] The objective of this paper is to analyze the adequacy of the support command headquarters to effect command and control. Essentially, the task of the headquarters is to insure that the mission of the command is accomplished. To state it another way: To insure that the right support personnel, the right supplies, and the right equipment get to the right place at the right time. The headquarters accomplishes its mission through direction, coordination, and supervision of the organic and attached units.

With two exceptions, the methodology used in this analysis was to evaluate the elements of the headquarters that assist the support command commander in exercising control. The exceptions were in Chapter III, the analysis of communications for command and control, and Chapter V, the analysis of control of support command forward support elements.

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[1]U.S. Department of the Army. Table of Organization and Equipment 29-11E, Support Command, Infantry Division (Mechanized). (Washington, D.C.: 15 July 1963).

The examination of communications suggests that, for the most part, the communication resources are suitable and do provide the support command headquarters with the requisite capability for exercising command and control. The limitations that do exist in communications support are related to internal communications. It was concluded, and it seems reasonably so, that additional wire in the support command operations platoon and an additional radio in the support command headquarters would provide better communications and, thus, better control within the command.

From the investigation of the control exercised by the support command commander and the unit staff, it seems apparent that the logistical operations center is the better method for exercising control of support command operations. In this method, personnel from the support command headquarters are joined by specialists from the support command battalions to form a focal point for supported units and the division staff to contact on other than routine logistical matters. In addition to augmenting the personnel strength of the support command headquarters, the specialists from the battalions bring with them an intimate knowledge of their units' operations. Since these specialists are invariably key personnel in their own battalions, the support command headquarters' gain is their parent battalion's loss. To preclude this, it was concluded that the TOE of each battalion headquarters should be increased by one officer and one noncommissioned officer of the grade and MOS that would permit them to represent their unit as specialists in the logistical operations center.

As an outgrowth of the analysis in Chapter IV, it was concluded that Field Manual 54-2 should be modified to indicate that the logistical operations center provides the better means for controlling

operations, and that the logistical operations center depicted therein should be modified to include the entire S3 and S4 staff sections.

The examination of control of the forward support elements found the current doctrine in Field Manual 54-2 to be valid. The parent battalions should and can control best the operations of the forward support elements.

The analysis of control of ammunition supply found that the division ammunition section provides the support command headquarters with the capability to control effectively ammunition supply for the division and attached units.

Examination of the support command commander's responsibility for transportation planning revealed that the division transportation section has the capability to perform its functions. The examination also indicated the support command commander's interest in transportation, based on the support command mission, is in transportation as an operational function of supply and not as a transportation planning function. Further, it seems apparent from the analysis that the transportation section can accomplish its functions best by operating at the division main headquarters. Because the support command's interest in transportation is as an operational function of supply and <u>because the division transportation section can accomplish its mission best by operating at the division main headquarters</u>, it was concluded that the division transportation section should be assigned to the division headquarters rather than the support command headquarters.

The overall conclusion resulting from this research into the adequacy of the support command headquarters to exercise command and

control is that the capability of the headquarters is generally adequate, but that command and control would be improved substantially if the following modifications in communication equipment, operating procedures, and organization were implemented:

(1) An additional radio and additional wire are authorized for internal communications.

(2) The logistical operations center method is adopted as a standing operating procedure.

(3) The composition of the logistical operations center is modified to include the entire S3 and S4 staff sections, and the support command battalions are authorized TOE spaces for their representatives who operate in the logistical operations center.

(4) The division transportation section is assigned to the division headquarters rather than to the support command headquarters.

APPENDIX I

QUESTIONNAIRE

This appendix contains a copy of the questionnaire sent to the support commands. As noted in the Preface, eleven of the fourteen support commands queried provided replies. A summary of the data reported for questions requiring an adjectival rating is shown in the questionnaire. This has been done by indicating the number of support commands who selected a particular rating. No attempt has been made to include the data for those questions requiring a narrative reply. It is impracticable to include the specific responses because of the many and varied responses involved; however, a summary in figure form appears in the appropriate chapter of this paper for most of the questions of this type.

QUESTIONNAIRE

SUPPORT COMMAND HEADQUARTERS

SECTION I - HEADQUARTERS, HEADQUARTERS COMPANY AND BAND

DIRECTIONS:

1. Please read the definitions given below for the adjectival ratings before answering the questions, and please accept the definitions without further qualification.

2. In selecting an adjectival rating for your answer to a given question, be sure to consider the 24-hour operational criterion, if applicable.

3. In answering the questions, assume all of your personnel are qualified in accordance with their assigned MOS.

4. The term "composition" as used in this questionnaire is defined as follows: Composition - the grade structure, MOS, and the number of personnel authorized as reflected in the TOE.

5. Below each of the questions requiring an adjectival rating is a space to indicate whether your answer is based on operational field experience or, in those cases where field experience is not available, on your knowledge and judgement. If your answer is based on operational field experience, place an "X" in the space marked "E"; if your answer is based on your knowledge and judgement without the benefit of field experience, place an "X" in the space marked "K".

6. If you select an adjectival rating of Adequate, Mostly Inadequate, or Totally Inadequate for any of the questions in this section, please indicate in the space provided at the end of the section what changes you recommend be made in the TOE

DEFINITION OF TERMS:

TOTALLY ADEQUATE

1. Provides enough personnel to accomplish 100% of the functions stated in the question.
2. Provides enough manpower for 24-hour operation, if applicable.

MOSTLY ADEQUATE

1. Provides enough personnel to accomplish 90% of the functions stated in the question.
2. Provides enough manpower for 24-hour operation, if applicable.

ADEQUATE

1. Provides enough personnel to accomplish 75% of the functions stated in the question.
2. Provides enough manpower for 12-hour operation or minimal manpower for 24-hour operation, if applicable.

MOSTLY INADEQUATE

1. Provides enough personnel to accomplish 50% of the functions stated in the question.
2. Provides enough manpower for 12-hour operation, but less that enough for 24-hour operation, if applicable.

TOTALLY INADEQUATE

1. Provides enough personnel to accomplish less than 50% of the functions stated in the question.
2. Provides enough manpower for 12-hour operation, but insufficient manpower for continuous operation for any period in excess of 12 hours, if applicable.

EXAMPLE:

If you believe the composition (as defined in the instructions) of the band is mostly adequate to provide for local security for the support command command post and your evaluation is based on operational field experience, you would place an "X" in the MOSTLY ADEQUATE column and an "X" in the space marked "E" as has been done for illustration.

SAMPLE QUESTION

The composition of the band to provide for local security for the support command command post is

E X K _____

1. The composition of the support command headquarters (command headquarters and headquarters section) to provide for command and control functions, to include planning and supervising the operations of the support command, is

E 11 K _____

2. The composition of the division ammunition section to provide for exercising administrative control over ammunition supply to the division and attached units is

E 10 K 1

3. The composition of the division transportation section to provide for planning and supervising transportation operations and exercising technical supervision over transportation activities in the division is

E 9 K 1

4. The composition of the division transportation section to provide assistance and advice to the division general staff (particularly the G3 and G4) on transportation matters (preparation of march tables, march graphs, etc.) in addition to performing the functions stated in question 4, above, is

E 9 K 1

TOTALLY ADEQUATE	MOSTLY ADEQUATE	ADEQUATE	MOSTLY INADEQUATE	TOTALLY INADEQUATE
	X			
2	8		1	
6	4	1		
	*8	1	1	
*1	7	2		

*The 3d Infantry Division did not answer questions 3 and 4.

5. If you selected an adjectival rating of Adequate, Mostly Inadequate, or Totally Inadequate for any of the questions in this section, please indicate in the space below what changes you recommend be made in the TOE to eliminate the deficiencies. Please be specific in your recommendations; indicate the number of spaces, the MOS, and the job title for each space you recommend be added, deleted, or modified.

6. Are there any other matters or problem areas that you desire to comment on? If so, please describe briefly.

7. How much time has the division been engaged in division-size or larger field training exercises or maneuvers since it reorganized under the ROAD concept?

Months _____ Weeks _____

SECTION II - COMMUNICATIONS

DIRECTIONS:

1. Please read the definitions given below for the adjectival ratings before answering the questions, and please accept the definitions without further qualification.

2. Below each of the questions requiring an adjectival rating is a space to indicate whether your answer is based on operational field experience or, in those cases where field experience is not available, on your knowledge and judgement. If your answer is based on operational field experience, place an "X" in the space marked "E"; if your answer is based on your knowledge and judgement without benefit of field experience, place an "X" in the space marked "K".

3. If you select an adjectival rating of Adequate, Mostly Inadequate, or Totally Inadequate for any of the questions in this section, please indicate in the space provided at question #6 what changes you recommend be made in the TOE. Additionally, if you desire to make any other comments, please use the same space to do so.

DEFINITION OF TERMS:

TOTALLY ADEQUATE

Provides enough radio sets in number and type for timely and responsive communication on a continuous basis with organic subordinate elements or supported units or higher headquarters.

MOSTLY ADEQUATE

Provides enough radio sets in number and type for timely and responsive communication 90% of the time with organic subordinate elements or supported units or higher headquarters.

ADEQUATE

Provides enough radio sets in number and type for timely and responsive communication 75% of the time with organic subordinate elements or supported units or higher headquarters.

MOSTLY INADEQUATE

Provides enough radio sets in number and type for timely and responsive communication 50% of the time with organic subordinate elements or supported units or higher headquarters.

TOTALLY INADEQUATE

Provides enough radio sets in number and type for timely and responsive communication less than 50% of the time with organic subordinate elements or supported units or higher headquarters.

	TOTALLY ADEQUATE	MOSTLY ADEQUATE	ADEQUATE	MOSTLY INADEQUATE	TOTALLY INADEQUATE
1. Considering the communication resources available in the headquarters, headquarters company and band for the support command headquarters and the communication support provided by the support command operations platoon of the signal battalion's signal support operations company, is communication between the support command headquarters and field army E 5 K 6	1	10			
2. Considering the same communication resources identified in Question #1, is communication between the support command headquarters and the division command post E 11 K	2	9			
3. Considering the same communication resources identified in Question #1, is communication between the support command headquarters and organic subordinate elements, i.e., medical battalion, supply and transport battalion, and maintenance battalion, (to include consideration of communication requirements during displacement) E 11 K		7		3	1
4. Considering the same communication resources identified in Question #1, is communication between the support command headquarters and supported units E 10 K 1	1	10			

5. If you are operating with an augmentation or shortage to your TOE communication equipment authorization and your answers were based on either of these conditions, please indicate in the space below, as appropriate, what the augmentation consists of or what the shortage is.

6. If you selected an adjectival rating of Adequate, Mostly Inadequate, or Totally Inadequate for any of the questions in this section, please indicate in the space below what changes you recommend be made in the TOE to eliminate the deficiencies. Please be specific in your recommendations; indicate the number and type of radios you recommend be added to or deleted from the TOE.

7. Please inclose, as part of your reply, a copy of your division administrative-logistics net, preferably in graphic form. I am particularly interested in knowing what stations are in the net and with what radios.

SECTION III - CONTROL OF OPERATIONS

DIRECTIONS: The questions in this section, for the most part, require narrative answers. Your response will be of most assistance to me if it is as complete as possible with the limits of your available time.

1. Does the support command headquarters control operations by establishing a logistical operations center in the division support area?

YES _____ NO _____

2. If a logistical operations center is NOT established, what procedures are used by the support command headquarters to act on emergency requirements, such as resupply by land transport of a particular item for a particular unit, such as aerial resupply, such as medical evacuation by air, such as repair of equipment and provision of repair parts to a particular unit? Please read the additional questions below before answering.

a. Do requests for emergency support flow from the combat battalion to the support command headquarters, or do they flow from the combat battalion to the functional unit concerned (supply and transport battalion, maintenance battalion, etc.), or do they flow from the combat battalion to a division general staff or special staff officer? Do any requests for emergency support flow through the brigade S4?

b. Paragraph IIIDlc(2) of Appendix III (Sample Division SOP) in Change 1 to FM 61-100 states: "Requests for aeromedical evacuation to division surgeon by most expeditious means." Do requests for aeromedical evacuation follow this procedure in your division? If so, why? If not, what procedure do you use and why?

3. If a logistical operations center is established in your command, what staff officer has unit staff responsibility for the functioning of the operations center?

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4. If a logistical operations center is established in the division support area, what is its organization? Please name the representatives by job title, grade, MOS, and unit. Additionally, request that you indicate how the operations center is organized to operate on a 24-hour basis by showing the organization in terms of a day shift and a night shift or by whatever organizational method you use.

5. How does the support command headquarters control its organic elements which are operating in the brigade trains areas?

a. Do these elements report their requirements, workload, work progress, need for additional support, etc., directly to the logistical operations center (if one is established) or to the support command headquarters (if a logistical operations center is not established)?

b. If the forward support elements do not report directly to the logistical operations center/support command headquarters, do they report to, and are they controlled by, their parent units?

c. Have you found that there is a requirement for some type of a forward support controller, i.e., a man who is physically present in the brigade trains area and controls the operations of the support command's forward supply, medical, and maintenance elements? If you have concluded that there is a requirement for a forward support controller, do you employ one?

(1) To whom does he report?

(2) Must this forward support controller have any special qualifications, i.e., can a maintenance officer control or supervise the operations of the supply and medical elements or, if the controller is a medical officer, can he supervise the operations of the supply and maintenance elements?

(3) If a forward support controller is used, do you obtain him from within your organic resources? If so, from what unit(s)? Does this result in someone having to perform two jobs? Do you believe this position should be a TOE space? If so, to what unit or units do you think the space should be allocated?

d. Please answer the questions above and, if you do not use one of the procedures outlined above to control your forward elements, please explain what procedures you do use.

APPENDIX II

REPORT OF 1ST INFANTRY DIVISION SUPPORT COMMAND ON THE DIVISION AMMUNITION SECTION

A copy of the report is included in this paper because it is considered to be of value to anyone conducting research on the adequacy of the division ammunition section to effect control of ammunition supply.

REPORT OF 1ST INFANTRY DIVISION SUPPORT COMMAND
ON THE DIVISION AMMUNITION SECTION

1. PROBLEM: To provide the Division Ammunition Office with personnel possessing the proper technical skills and equipment to give the office the capability of effectively supporting a combat division in the field.

2. FACTS BEARING ON PROBLEM:

a. Section I, para 04, TOE 29-2E, does not authorize personnel with the technical skills to fully perform the mission of the Division Ammunition Office.

b. Section II, para 04, TOE 29-2E, does not authorize adequate equipment to support the Division Ammunition Office in the field.

3. DISCUSSION:

a. The mission of the Division Ammunition Office requires personnel with the capability of supervising division ammunition activities which includes, but is not limited to, instructing unit personnel, inspecting ammunition and storage areas, maintaining records, preparing reports and giving technical advice in both conventional and nuclear ammunition.

(1) The Ammunition Supply Officer, MOS 4513, Ordnance Guided Missile and Special Weapons Staff Officer, would have better technical qualifications to perform his mission if the MOS was changed to 1723, Nuclear Weapons Officer.

(2) The Chief Ammunition Clerk, E-8, MOS 419.8 should be considered as a Division Staff NCO and be the highest skill level authorized his MOS, MOS 419.9.

(3) One NCO E-7, MOS 436.70, Nuclear Weapons Maintenance Adviser should be added to the TOE to assist the Ammunition Supply Officer, MOS 1723 in providing advice and assistance in the nuclear weapons area.

(4) One NCO E-7, MOS 419.70, Ammunition Inspector, should be added to the TOE to give the division the internal capability of inspecting ammunition.

(5) Authorized ammunition clerks should have skill levels ranging from E-4, MOS 411.2 to E-6 411.6. This would provide personnel with a higher degree of skill and establish a career pattern in the Division Ammunition Office.

(6) MOS 710.00, Light Truck Driver, should be changed to a clerk typist MOS 711.2 to provide the section adequate clerical capability. There is no MOS requirement for an ammunition clerk to be able to type.

b. The Division Ammunition Section in the field is often separated from its parent organization and located near the supporting ASP. There are also instances where the DAO will be with Support Command Hqs and the Ammunition Supply Officer and staff are at another location. This requires the section to have tentage, stoves, office equipment, and communication equipment not presently authorized.

4. CONCLUSION:

That Sections I and II, para 004, TOE 29-2E should be revised to provide adequate personnel and equipment for the Division Ammunition Section.

5. ACTION RECOMMENDED:

a. That Section I, para 004, TOE 29-2E be changed to the organization, personnel, as listed in Annex A.

b. That Section II, para 004, TOE 29-2E be changed to authorize the equipment listed in Annex B.

6. This proposed change was submitted to G-3 in October 1964, has been approved by 1st Inf Div Hq and forwarded to Hq 5th US Army

JAMES F DEVINNEY
Major OrdC
Div Ammo Officer

Annex A

Proposed Organization (Personnel) for the Division Ammunition Section.

LINE	DESIGNATION	MOS	GRADE	STRENGTH
01	Div Ammo Officer	4514	Major	1
02	Ammo Supply Officer	1723	Captain	1
03	Chief Ammo Clerk	41990	E-9	1
04	Ammo Inspector	41970	E-7	1
05	Nu Wpns Maint Adv	43670	E-7	1
06	Section Chief	41160	E-6	1
07	Sr Ammo Rds Clk	41120	E-5	1
08	Ammo Records Clk	41120	E-4	1
09	Clerk Typist	71120	E-4	1

Annex B

Proposed equipment for the Division Ammunition Section, Support Command.

ITEM	QUANTITY
Decontaminating Apparatus Portable 1 1/2 qt	3
Bayonet Knife w/scabbard for 7.62mm Rifle	8
Pistol Automatic Cal .45	1
Rifle 7.62mm Semi Automatic Lt Barrel	8
Trailer Amphibious Cargo 1/4 Ton 2 wheel	1
Trailer Cargo 3/4 Ton 2 wheel	2
Truck 3/4 Ton 4 x 4	2
Truck 1/4 Ton Utility 4 x 4	1
Case Office Field Mach 18 1/2, 22 1/2, 26 1/2, or 34 1/2 lid	2
Desk, field, plywood	1
Goggles Sun 2 plastic lens - 1 Colorless, 1 Polarized Green	3
Safe 2 shelver, 1 drawer, 2 compartment 26H, 17W, 17 1/2D	1
Typewriter non portable 11 or 12 inch elite, pica or bulletin type	2
Machine Office calculating 9 keys	1
Table folding legs wood solid top wood legs - 36L, 24W, 27 25/32H	4
Tent GP medium	1
Cabinet filing single drawer steel	4
Heater space coal or oil 45000 BTU 18 5/8 unit	2
Radio Set AN/VRC 46 MTD in 1/4 Ton Truck	1
Radio Set AN/VRC 46 MTD in 3/4 Ton Truck	1
Telephone Set TA 312/PT	1
Antenna AT-791	2

BIBLIOGRAPHY

Public Documents

AR 310-31, Organization and Equipment Authorization Tables. 1964.

AR 320-5, Dictionary of United States Army Terms. 1963.

AR 611-101, Personnel Selection and Classification: Manual of Commissioned Officer Military Occupational Specialities. 1960.

AR 611-201, Personnel Selection and Classification: Manual of Enlisted Military Occupational Specialities. 1960.

TOE 8-35E, Medical Battalion, Infantry Division (Mechanized). 1963.

TOE 8-36E, Headquarters and Support Company, Medical Battalion, Infantry Division (Mechanized). 1963.

TOE 8-37E, Medical Company, Medical Battalion, Infantry Division (Mechanized). 1963.

TOE 10-7E, Supply and Service Company, Supply and Transport Battalion, Infantry Division (Mechanized). 1963.

TOE 11-39E, Signal Support Operations Company, Signal Battalion, Infantry Division (Mechanized). 1963.

TOE 29-2E, Headquarters and Headquarters Company and Band, Support Command, Infantry Division (Mechanized). 1963.

TOE 29-6E, Headquarters and Headquarters Company, Supply and Transport Battalion, Infantry Division (Mechanized). 1963.

TOE 29-11E, Support Command, Infantry Division (Mechanized). 1963

TOE 29-25E, Maintenance Battalion, Infantry Division (Mechanized). 1963.

TOE 29-26E, Headquarters and Main Support Company, Maintenance Battalion, Infantry Division (Mechanized). 1963.

TOE 29-27E, Forward Support Company, Maintenance Battalion, Infantry Division (Mechanized). 1963.

TOE 29-65E, Supply and Transport Battalion, Infantry Division (Mechanized). 1963.

TOE 37-4E (Draft), Mechanized Division Headquarters and Headquarters Company. Undated.

TOE 55-87E, Transportation Motor Transport Company, Supply and Transport Battalion, Infantry Division (Mechanized). 1963.

TOE 55-89E, Transportation Aircraft Maintenance Company, Maintenance Battalion, Infantry Division (Mechanized). 1963.

FM 7-30, Infantry, Airborne, and Mechanized Division Brigades. 1962.

FM 7-100, Infantry Division. 1060.

FM 8-15, Division Medical Service, Infantry, Airborne, Mechanized, and Armored Division. 1961.

FM 9-5, Ordnance Ammunition Service. 1959.

FM 9-30, Maintenance Battalion, Division Support Command. 1961.

FM 10-50, Supply and Transport Battalion, Division Support Command. 1961.

FM 11-50, Signal Battalion, Armored Mechanized and Infantry Divisions. 1961.

FM 17-50, Supply, Evacuation, and Trains. 1945.

FM 17-50, Armor Logistics. 1958.

FM 54-2, Division Logistics and The Support Command. 1961.

FM 55-37, Infantry Division Transportation Battalion and Transportation Tactical Carrier Units. 1962.

FM 61-100, The Division. Change 1. 1962.

FM 100-10, Field Service Regulations, Administration. Change 1. 1963.

G & C Merriam Company. Webster's Third New International Dictionary. Springfield, Massachusetts, 1961.

U.S. Department of the Army, Armor School. Communication for Armor. Fort Knox, Kentucky: U.S. Army Armor School, 1964.

U.S. Department of the Army, Infantry School. Combat Logistics Handbook. Fort Benning, Georgia: U.S. Army Infantry School, 1965.

_____. Infantry Communication Data. Fort Benning, Georgia: U.S. Army Infantry School, 1964.

Unpublished Materials

U.S. Department of the Army, Headquarters, Combat Developments Command. Air Assault Division Combat Service Support and the Support Command. Fort Belvoir, Virginia: U.S. Army Combat Developments Command. 1963.

U.S. Department of the Army, Headquarters, Combat Developments Command. High Frequency Radio-Teletypewriter Nets in the ROAD Division (Letter). Fort Belvoir, Virginia: U.S. Army Combat Developments Command. 1963.

_____. Reorganization Objectives Division, Army, and Corps - 1970 (U), (RODAC-70). Fort Leavenworth, Kansas: U.S. Army Combat Developments Command Combined Arms Agency. 1963. CONFIDENTIAL.

_____. FM 11-50 (Draft), Signal Battalion, Armored, Mechanized, and Infantry Divisions. Fort Monmouth, New Jersey: U.S. Army Combat Developments Command Communications-Electronics Agency. 1964.

_____. Characteristics of Signal Corps Communications-Electronics Equipment Within a Field Army. Fort Monmouth, New Jersey: U.S. Army Combat Developments Command Communications-Electronics Agency. 1963.

U.S. Department of the Army, Command and General Staff College. Rear Support Coordination Center, Infantry Division, Fort Leavenworth, Kansas: U.S. Army Command and General Staff College. 1957.

_____. Development of the ADSOC. Fort Leavenworth, Kansas: U.S. Army Command and General Staff College. 1960.

_____. Special Text 100-10-1, Field Service Regulations, Combat Service Support. Fort Leavenworth, Kansas: U.S. Army Command and General Staff College. 1964.

_____. Special Text 101-5A, ROAD Supplement to FM 101-5. Fort Leavenworth, Kansas: U.S. Army Command and General Staff College. 1963.

_____. Special Text 101-5-1, Staff Organization and Procedures. Fort Leavenworth, Kansas: U.S. Army Command and General Staff College. 1964.

_____. Instructional Problem A1010, Management. Fort Leavenworth, Kansas: U.S. Army Command and General Staff College. 1965.

_____. Instructional Problems M6420, Armored Division Offensive Operations, and M6425, Division in a Coordinated Attack. Fort Leavenworth, Kansas: U.S. Army Command and General Staff College. 1965.

_____. Instructional Problems M6215, Infantry Division Defense Operations, and M6290, Division Defensive Operations. Fort Leavenworth, Kansas: U.S. Army Command and General Staff College. 1965.

_____. Division Organization (Letter). Fort Leavenworth, Kansas: U.S. Army Command and General Staff College. 1960. SECRET.

U.S. Department of the Army, Headquarters, Continental Army Command. Field Army Logistical Coordination Center (ALCC). Fort Monroe, Virginia: U.S. Continental Army Command 1957.

_____. New Divisional Organization. Letter. Fort Monroe, Virginia: U.S. Continental Army Command. 1956.

_____. Phased Time Schedule for the Reorganization of the Active Army Combat Divisions of the United States Army. Letter. Fort Monroe, Virginia: U.S. Continental Army Command. 1956.

_____. Reorganization of Current Infantry Division. Letter. Fort Monroe, Virginia: U.S. Continental Army Command. 1956. SECRET.

_____. Reorganization of the Infantry and Armored Divisions and Creation of a Mechanized Division (U). Fort Monroe, Virginia: U.S. Continental Army Command. 1960. CONFIDENTIAL.

_____. Reorganization Objective Army Divisions 1965 (ROAD) (U). Fort Monroe, Virginia: U.S. Continental Army Command. 1961. SECRET.

_____. War Game Evaluation Report, Mechanized Division in the Defense (U). Fort Monroe, Virginia: U.S. Continental Army Command. 1962. SECRET.

_____. War Game Evaluation Report, Mechanized Division in the Offense (U). Fort Monroe, Virginia: U.S. Continental Army Command. 1962. SECRET.

_____. ABC Armies Operational Concept 1966 - 1970. Fort Monroe, Virginia: U.S. Continental Army Command. 1962. SECRET.

U.S. Department of the Army, Quartermaster School. Division Support Command Concept and Division Supply, Service, and Transport Operations. Fort Lee, Virginia: U.S. Army Quartermaster School, 1964.

U.S. Department of the Army, Headquarters, Department of the Army. Implementing Directive for Reorganization of Army Units Under ROAD in FY 63 and FY 64. Washington, D.C.: Headquarters, Department of the Army. 1963. SECRET.

U.S. Department of the Army, Headquarters, III Corps. Evaluation Report, ROAD Division (U). Fort Hood, Texas: Headquarters, III Corps. 1962. CONFIDENTIAL.

U.S. Department of the Army, Headquarters, 2d Armored Division. Institution of a Div-Log Command in the Armored Division Trains. Fort Hood, Texas: Headquarters, 2d Armored Division Trains. 1956.

U.S. Department of the Army, Headquarters, 5th Infantry Division (Mechanized). Evaluation of Organizational and Operational Concepts, ROAD Mechanized and Infantry Divisions (U). Fort Carson, Colo: Headquarters, 5th Infantry Division (Mechanized). 1962. FOR OFFICIAL USE ONLY.

_____. Location and Function of the Division Transportation Section. Letter. Fort Carson, Colo: Headquarters, 5th Infantry Division (Mechanized). 1963.

U.S. Department of the Army, Headquarters, 8th Infantry Division. Special Topics of Interest to USACGSC. Letter. APO 111, U.S. Forces: Headquarters, 8th Infantry Division Support Command. 1963.

U.S. Department of the Army, Headquarters, 25th Infantry Division. General Orders Number 42, Attachment of Organization/Unit. APO 25, San Francisco, California: Headquarters, 25th Infantry Division. 1964.

U.S. War Department, Headquarters, War Department. Reorganization of Infantry Divisions (Letter). Washington, D.C.: U.S. War Department. 1943.

_____. Reorganization of Armored Divisions (Letter). Washington, D.C.: U.S. War Department. 1943.

Other Sources

Headquarters, 24th Infantry Division, Division Transportation Section. Letter from 1st Lt Paul M. Hinko, Movements Control Officer. 27 July 1964.

Personal interview with Lt Col Richard D. Kisling by Maj Paul E. Riese. 23 December 1964.

Personal interview with Maj Paul E. Riese. 2 March 1965.

Personal interview with Lt Col F. A. Cahill, Signal Corps. 22 March 1965.

Personal interview with Maj M. J. Dooley, Ordnance Corps. 22 March 1965.