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STUDY PROJECT

READINESS IMPACT OF FIELDING MOBILE SUBSCRIBER EQUIPMENT IN THE AIRBORNE DIVISION

BY

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23 APRIL 1987

US ARMY WAR COLLEGE, CARLISLE BARRACKS, PA 17013

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USAWC MILITARY STUDIES PROGRAM PAPER

READINESS IMPACT OF FIELDING MOBILE SUBSCRIBER EQUIPMENT IN THE AIRBORNE DIVISION

AN INDIVIDUAL STUDY PROJECT

by

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ABSTRACT

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PREFACE

The choice of this topic for an Individual Study Project grew out of a career with many years of service in and around airborne units. These include assignments with HHC, 35th Signal Brigade (ABN), three out of the four signal battalions subordinate to the 35th, XVIII Airborne Corps C-E staff, John F. Kennedy Center For Military Assistance and the 82d Airborne Division. This last assignment included thirty months as the Signal Battalion Commander/Division Signal Officer followed by ten months on the Division staff as the ACofS for Force Development, (G-7). During these assignments there were fortunately numerous exercises at various levels from which it was relatively easy, over the years, to determine the true communications-electronics requirements of the airborne community. Participation in Operation Urgent Fury from the assault on D-day to the conclusion of the operation was by far the most educational experience, in terms of actually seeing first hand the requirements for communications in a forced entry operation. The type and quantities of signal equipment to satisfy those requirements 100% were not on hand at the time of the operation. The fielding of Mobile Subscriber Equipment (MSE) in the Airborne Division Signal Signal Battalion also falls short of the mark in many key areas.

The purpose of this study is to investigate and present a better solution to the problem than the current system provides and that the approved MSE system will provide in the future.

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CHAPTER 1

INTRODUCTION

The fielding of Mobile Subscriber Equipment (MSE) will without a doubt result in the most significant improvement in communications capability in most Army units since the introduction of the radio. The replacement of the majority of the different communications assemblages as outlined in the Battlefield Communications Review III[1] with a standardized MSE system at Division and Corps is a gigantic step in the direction of modernization and standardization. As with any new equipment fielding it must be recognized that shortfalls are bound to occur. This is especially true with a non-developmental system such as MSE. This type of procurement strategy usually results in equipment being procured that meets most, but not all requirements. Recognizing that fact an effort has been made in this study, not to dwell on those types of shortcomings. Exceptions being major deficiencies which effect the main topic, the airborne division's ability to perform its mission in an acceptable manner.

The benefits of standardization are also recognized as being extremely important in areas such as inter-operability, training and maintenance.

There are cases however when the attempt to standardize reaches the point where mission accomplishment is hindered in some types of units. Those instances where this occurs with the approved MSE structure in the airborne division will be examined.

There are many unique factors in communications equipment and procedures that impact on the airborne division's ability to execute mission requirements. Some critical examples that could be "war stoppers" in a forced entry situation are: strategic and tactical mobility; outload and intermediate support base (ISB) communications; secure over the horizon, manpack voice and data capability; secure enroute communications, both line of sight and over the horizon; Defense Communications System (DCS) entry capability and the ability to communicate securely with Naval, Marine and Air Force elements.

The ability of MSE to fulfill the above airborne unique requirements will be examined and where shortcomings occur an honest attempt has been made to recommend a method which provides the required capability while maintaining the spirit of standardization.

The conclusions and recommendations of this study incorporate the strawman of a modified MSE structure that allows the airborne division to accomplish its mission in a forced entry, joint force environment and retain the ability to inter-operate with other MSE equipped divisions and corps on a conventional battlefield.

Working within the constraint of 486 personnel requires compromise in both areas, but the ability to accomplish both requirements in a satisfactory manner remains.

BACKGROUND

There have been numerous articles published in the last few years that explain in detail the evolution of the decision to procure MSE, as a result most readers of this study are probably familiar with the reasons why a new communications system is desperately required. In an attempt to provide a review without becoming boring, a summary of significant background facts is provided.

"The rapid evolution of tactical doctrine over the past decade to the AirLand Battle concept dictated a significant change in communications doctrine and the means to support the deeper, expanded and integrated battlefield. The need for increased flexibility, dispersibility, mobility and transportability is concurrent with the established requirement for automated simplicity and accompanying reduction in manpower."[2] Based on the above situation and direct guidance from the Vice Chief of Staff, Army, to senior Signal Corps leaders a series of meetings and studies were conducted in 1983 and 1984.

The results of the Battlefield Communications Review in 1983 indicated that some form of Mobile Subscriber system was required to meet the doctrinal requirements of the AirLand Battle concept. In January 1984 the Vice approved the MSE concept and a request for proposal was completed for the acquisition of the entire MSE system. In November 1985 the MSE contract was awarded to GTE Corporation. System fielding is scheduled to begin in February 1988 and be completed in November 1993.[3]

STATEMENT OF THE PROBLEM

The fielding of MSE as part of future Army of Excellence (AOE) TRADOC approved designs[4], presents several serious challenges and problems to the airborne division. These are most accurately categorized in two broad areas; first, strategic and tactical air mobility; second, the tactical plausibility of employing MSE in a forced entry airborne mission. This second area dictates that communications equipment be airdrop capable and inter-operable with a Joint Task Force Headquarters and elements comprised of U.S. Naval, Marine and Air Force components. Research indicates that MSE equipment will not be certified as air-droppable or low altitude parachute extraction system (LAPES) capable. This has some very obvious shortcomings for an airborne division.

The MSE Table of Organization and Equipment (TOE 11065L000), dated 21 July 1986, contains numerous deficiencies in the allocation of people and equipment. The requirement to provide secure enroute communications, intermediate support base (ISB) communications, outload communications and forced entry communications are not addressed in the TOE. Additionally the MSE design is more expensive in terms of airframes than the current design. All of these challenges and shortcomings will be addressed in the body of this study.

CLARIFICATION OF TERMS

Readiness Impact: In attempting to assess the impact on readiness in the airborne division when MSE TOE 11065L000 becomes effective the traditional AR 220-1, 2715 report approach was not utilized. The assumption was made that the system would be fielded in such a manner that equipment on hand, equipment availability, personnel assigned and training would be C-1. The assessment was made by comparing the suitability of the MSE TOE to the mission requirements of the airborne division.

SECOMP: Secure Enroute Communications Package, the original configuration of this device was an

ARC-51, UHF radio and an encryption device mounted in a metal box which is carried on Air Force or Army aircraft and connected to a UHF aircraft antenna. This provides the airborne commander the capability to provide intelligence updates and possible mission changes to subordinate elements in the air flow via a secure line of sight means. In the past couple of years the term SECOMP has also been attached to the URC 101 and PSC-3, manpack satellite radios. These radios can also provide secure line of sight communications when connected to the aircraft UHF antenna, additionally it can also be used in the over the horizon or satellite mode if connected to a hatch mounted satellite antenna that is installed on the aircraft during the deployment sequence. The latter configuration is the one that will be referred to in this study. Both configurations, less the hatch mounted satellite antennas, are currently on hand in limited numbers in the airborne signal battalion structure.

Deployment Sequence: A very structured standing operating procedure used in the airborne division that allows it to comply with the mission of "wheels up" on the first deploying aircraft with combat ready paratroopers and equipment within eighteen hours after notification instructions have been received.

INVESTIGATIVE PROCEDURES

The procedures used were along the lines of a traditional research design. Data collection methods consisted of literature research, telephone interviews and personal interviews. Data analysis consisted of comparing MSE capabilities and airlift requirements with the airlift constraints we are faced with and airborne division mission requirements. The latter admittedly comes more from personal experience than empirical research.

ORGANIZATION OF THE PAPER

The organization of the paper follows the theme of providing the reader with a sufficient description of the MSE system in layman language.

This is followed by a description of mission requirements of the airborne division in sufficient detail that the reader will understand the unique requirements faced by the signal battalion as compared to a non-airborne unit.

Comparisons are then made between MSE capabilities and airborne mission requirements. A conclusion is drawn from this comparison which states the suitability of the MSE system and proposed structure (TOE) for the airborne division signal battalion.

The majority of the paper is dedicated to a recommended solution rather than a long list of problems that someone else must solve.

ENDNOTES

1. US Army Signal School and Fort Gordon, Battlefield Communications Review III, Vol I, December 1985

2. US Army Signal School and Fort Gordon, Final Draft Operational and Organization Plan for Mobile Subscriber Equipment System, 6 October 1986, p. 1-1.

3. US Army Communications and Electronics Command, Project Manager MSE, Mobile Subscriber Equipment System Material Fielding Plan, 17 July 1986, p. 1-5.

4. US Army Training and Doctrine Command, TOE 11065L00, 21 July 1986, p.77-81.

CHAPTER II

MSE SYSTEM DESCRIPTION

MSE MISSION STATEMENT

MSE provides the tactical area communications system for all US Army Corps and Divisions. MSE integrates the functions of transmission, switching, control, and terminal equipment (voice and data) into one system. MSE provides a switched system, extended by radio, to mobile subscribers.[5]

FUNCTION STATEMENT

The MSE system is a common-user, self organizing communications system. Users can communicate throughout the battlefield in either a mobile or static situation. MSE includes five functional areas:

*Area coverage-A total network, throughout the Corps area of operation that is tied together with automatic switches and line of sight radios.

*Wire subscriber access-At command posts or other areas where there are concentrations of telephone users, the system provides the means for their access into the entire area coverage network.

*Mobile subscriber access-A radio-telephone system that allows a user to have access to the entire area network while in a mobile configuration.

*Subscriber terminals-The equipment that the user has available that allows him access into the system, for example, telephones, facsimile machines, keyboards and radio-telephones. These items are user equipment, and are installed, operated and maintained by the user.

*System control-Operated by the Signal Corps to manage and control the entire network within the Corps.

The functional areas contain five major hardware elements:

*Node center

*Large extension node (LEN)

*Small extension node (SEN)

*Mobile radiotelephones

*System control and telephones

The MSE system is designed to provide communications coverage from the Corps rear boundary forward to the division maneuver battalion's rear boundary. This would include nodes from both the Corps Signal Brigade and the Division Signal Battalions. The typical area of coverage for a five division corps would be 15,000 square miles.[6]

DIVISION SYSTEM EQUIPMENT OVERVIEW

The MSE system as required in TOE 11065L000, (Division Signal Battalion) consists of the following:[7]

*Personnel=486

*Vehicles

HMMWV=165

2 1/2 Ton Truck=25

5 Ton Truck=4

Wrecker, 5 Ton=1

TOTAL Vehicles=195

Power Generation Equipment

5 KW, TRL Mounted=47

10 KW, TRL Mounted=28

Misc skid mounted=8

TOTAL Generators=83

Combat Net Radios

AN/GRC-106=2

AN/VRC-46=55

AN/VRC-47=8

AN/VRC-49=6

MRST=10

TOTAL Single Channel Radios=81

Shelters S-250 & S-250 Extended

Total=79

It must be noted here that the MSE structure for the airborne division signal battalion does not include any manpack FM, HF or TACSAT radios. It would also eliminate the current authorization for SECOMP radios.

CHAPTER SUMMARY

The fact that MSE provides an abundance of capability that far exceeds the capacity of the existent system is unquestioned. Additionally the need for some type of new system to replace the fragmented and aging present system is not challenged. What is still in question is, does MSE provide the necessary type of system that enhances rather than degrades the airborne division's ability to accomplish its unique mission requirements?

ENDNOTES

5.FC 11-36, Mobile Subscriber Equipment Architecture, Preliminary Draft, Nov 1986, P. 1-1.

6. Ibid, P.1-2/1-8.

7.US Army Training and Doctrine Command, TOE 11065L00,21 July 1986, P. 77-81.

CHAPTER III

AIRBORNE DIVISION MISSION REQUIREMENTS

A small amount of background information is necessary at this point in order to set the stage for a more detailed discussion of airborne division mission requirements. In early October 1983, the airborne division, along with other light divisions and the air assault division were instructed to develop redesign proposals under Army of Excellence guidelines. The author during this time period was the commander of an airborne division signal battalion, and was given the responsibility of developing the communications design for the division. Initial instructions were sometimes confusing and conflicting. For example the maximum number of airframes allowed was either 400 or 500, depending on which message you read or which person you talked to. There were also several division strength levels bantered about, they went from a low of 10,000 to a high of around 15,000 personnel. Work on this project was interrupted later in October 83, by Operation Urgent Fury. This was probably just a stroke of luck, but it provided first hand experience in outload communications requirements, the shortfalls in strategic lift, enroute communications, ISB communications and communication requirements in a forced entry scenario. For reasons I won't go into here, the assault phase was conducted without any vehicle support whatsoever. That dictated that <u>all</u> communications equipment be deployed in someone's rucksack.

This was not the typical scenario which normally included a minimum number of vehicle mounted C-^{3} packages, delivered by heavy drop and used to form an austere division CP. The significance is that it quickly pointed out that the division was completely without a viable manpack HF radio capability. This was not something that was just discovered during the operation. It had been a known fact for some time, and requests for suitable equipment had been submitted for months. The important element here is the critical importance of HF in a Joint Operation. If you want to talk to the Navy you better have HF radio and it must be manpacked in some scenarios. Another hard lesson learned was the importance of having a secure, over the horizon (TACSAT) capability for use on Air Force aircraft while enroute. The division had the satellite radios in very limited numbers but didn't own any of the hatch-mounted antennas. This capability had to be borrowed from another source just prior to deployment. All other required equipment was on hand in sufficient quantities to set up an austere joint and internal communications network.

There were other numerous lessons learned in all functional areas, the important point is that these lessons were immediately applied to the division redesign proposals which were started in earnest upon return to Fort Bragg. The designs submitted for the division signal battalion and other communications elements were considered radical and unorthodox.

The major reason this proposal received criticism from the traditional (central battle oriented) Signal Corps was the elimination of most multichannel radio equipment in favor of a better mix of manpack HF, TACSAT and FM radios that could be personnel parachuted into the airhead and later, if required and the situation permitting, they would be installed into vehicles equipped with power supplies, terminal devices, (facsimile, teletype, micro-computers), amplifiers and more sophisticated antenna systems. The Signal Corps maintained that this proposal was too austere and too non-standard to be approved. The airborne division on the other hand maintained that the proposal provided a sufficient capability in packages that were deployable. Why have the increased capacity if it's merely nice to have, but not mission essential and it remains behind in the motorpool because it's to large to get to the war?

A quote from a letter written by the CG of the airborne division to the CG Training and Doctrine Command, May 1984 serves to illustrate the crystal clear vision of requirements for communications that existed at the time.

> We realize that we are proposing some fairly radical changes. However they are changes which technology permits and our mission requires.
>
> The overriding requirement in our communications philosophy was that the structure include only those types of equipment that could be rapidly deployed to establish command and control, administrative and logistical communications.

> This means that the equipment must be light, compact airdroppable and man-transportable. An additional consideration was that the manpacked equipment expand into a vehicle configuration for sustained operations.
>
> The most significant difference between current MTOE's and our proposal is that we do not include multichannel equipment. Line of sight multichannel equipment is not needed to support the mission of the Airborne Division and is difficult to deploy because of its weight and bulk. Further, the new MSE concept will require 16 vehicles for each communications node. The Airborne Division, and perhaps all light divisions, cannot afford that overhead and stay within current deployability criteria.
>
> Our structure provides reliability of communications through redundancy of radio nets and a mixture of equipment. The functional areas of operations, intelligence, administration and logistics are each provided communications via HF, TACSAT, and FM radios. Therefore, no function relies on only one transmission means. The redundancy of nets requires an increase in the number of HF and TACSAT radios required, but the cost is more than offset by the elimination of the multichannel equipment. Record traffic can be provided over any of the nets using facsimile or teletype, thus providing redundancy for hard copy traffic.[8]

Several other references could be inserted here that would echo the words of the CG. Rather than belabor the point let me just state that there was tremendous support within the division for the type of structure described above.

MISSION ANALYSIS

The argument has been made many times that an airborne division operates exactly the same as an infantry division does after its deployed. On the surface its difficult to dispute that argument because it's basically accurate.

The important element that people tend to overlook is that because of the way an airborne division is transported and inserted into an area of operations, constraints are imposed that do not occur in a typical light infantry division. Additionally because of the requirement to have "wheels up" on the first aircraft in eighteen hours or less, some very time sensitive command, control and communications capabilities must be organic to the division. The following descriptions of requirements are presented in an attempt to familiarize the reader with those differences that require special consideration.

Airborne Division Outload (Deployment) Sequence: At one hour after notification (H+1) the division signal battalion has the mission to have the division Emergency Operations Center (EOC) completely activated with several communications nets established. This network expands until all areas that are essential to accomplishing a successful deployment are tied in by secure means. The network consists of secure radio nets, both tactical and hand held Motorola radios. Permanent wirelines are also terminated using Vinson with wireline adapters. During a typical deployment, once this network is established it remains installed until all follow on deployment is completed. Operation Urgent Fury proved the importance of this network in an actual operation. The network stayed in operation 24 hours a day the entire time of the operation and was used to coordinate the redeployment of forces at the termination of the operation.

This network is critical to the coordination of the multitude of tasks that are required in a very time sensitive, front loaded, time compressed situation. The people and things required to install operate and maintain the network must be provided as organic assets to the division command, control, communications structure. There is simply insufficient time available to wait for them to come from a source that is not directly under the control of the division signal officer.

Secure Enroute Communications Package (SECOMP): The ability of the airborne commander to receive updated intelligence information from the JTF Commander, analyze that information, make any changes to the ground tactical plan and then disseminate any changes to subordinate commanders while enroute is essential. The older SECOMP model, while useful, is limited to line of sight and takes up two additional seats on the aircraft. The new methodology of using a manpack TACSAT provides the option of line of sight or over the horizon communications. The real beauty of this method is that the radio and operator are used enroute and then jumped or airlanded into the AO along with the deploying force and utilized on the ground. This provides the airborne commander constant communications enroute and secure satellite communications within minutes after landing. This method was used on Operation Urgent Fury and many other deployments with great success.

Intermediate Support Base (ISB) Communications: If the situation requires the use of an ISB to launch an assault from or provide follow on support to the deployed force, then secure, long haul communications become a critical requirement. The same if not more strict restrictions on airframes apply to establishing the ISB as conducting a forced entry mission. Additionally, the same eighteen hour "wheels up" capability would be necessary. For these reasons the communications equipment and personnel used to establish the ISB should be organic to the airborne division and meet the same size and weight criteria as other communications equipment in the division. The equipment must also be easily inter-operable with other services.

Secure, Long Range, Manpack and Personnel Parachutable Radios: The requirement for this type of radio is really a burst of the obvious for the airborne division signal battalion. How else are secure communications introduced in a forced entry airborne assault scenario? The types of radios that would be utilized for the long range requirement would be HF and TACSAT. FM radio would be the primary means utilized to send tactical traffic. The requirement also exists for dedicated signal personnel to carry and operate these radios, first of all someone has to physically jump them in, carry them off the drop zone and put them into rapid operation.

Additionally the airborne concept calls for adding terminal devices, (facsimile, teletype, micro-computers) to these radios for secure record traffic, making it above the skill level of an infantrymen schooled only in basic voice operations.

Over the Horizon (long range) Communications: This term has been used in conjunction with other requirements but really is a stand alone capability that the airborne commander requires in a forced entry mission in order to talk to higher command and also direct and coordinate follow-on forces. This capability must deploy with the assault force, because in almost every scenario the airborne division will be the first on the scene and will not have the luxury of "plugging into" an existing communications system. Additionally, line of sight equipment that requires relays every twenty five or so miles will not satisfy this requirement. If this last statement is questioned, take one more look at the Grenada operation. Its a long way from the island to Fort Bragg where follow-on forces and supplies were located.

Defense Communications System (DCS) Entry: This is a tough one, if all the above requirements are met, its nearly impossible with today's technology to stuff all required equipment into a rucksack and expect someone to jump it in. There is however a work around solution, that is simply putting a tactical communications interface point in the system. This could be accomplished almost anywhere in the world but the logical spot would be the USAISC Communications Center at Fort Bragg.

This location is chosen because of the advantages derived from the day to day interface that would be realized between personnel in the airborne division and the fixed station facility. The method, crude as it may be, is the installation of a small amount of tactical radio equipment with terminal devices, (facsimile, teletype, micro-computers) in the Fort Bragg fixed facility where messages would be received and transmitted to deployed airborne forces. In reverse, messages from the deployed force would be introduced into the DCS in the fixed facility.

Inter-Operability with other US Forces: This is a requirement that could be claimed by any other Army division, unfortunately problems still exist. It must be pointed out that this requirement is a true "war stopper" if necessary equipment is not organic to the airborne division. If you look at any realistic scenario for airborne forces it is apparent that the capability to communicate from the drop zone with Naval, Marine and Air Force elements is critical. It is also a requirement to communicate with other Army units on a real time basis.

Many scenarios place the commander of the airborne division directly subordinate to a Naval Joint Task Force Commander and also contain the requirement to perform a link up operation with Marine forces. It happened in Urgent Fury and it could certainly happen in the future.

Air Drop or LAPES Capable Equipment: This requirement has also been stated as a part of other unique requirements, but some further amplification is necessary.

It has been a long standing goal of the airborne division to have a 100% air drop or LAPES capability. That has not been achieved to date, and it is recognized that it will probably never be met for many reasons. The main point is that a certain portion of communications equipment must meet the air drop or LAPES requirement in order to support a forced entry airborne operation. Additionally, some equipment must be personnel parachutable so critical nets can be established almost instantly. Peripheral devices and additional equipment could be inserted in door bundles or heavy drop platforms. Other equipment used in the build up phase which did not have an air drop or LAPES capability could be air landed once the tactical situation permitted.

Air Transportability: This requirement is one that applies to most units in the Army and should be a goal whenever equipment is designed or procured. It takes on more significance in the airborne division because of the limited number of airframes available in a compressed time frame. Competition for aircraft is keen among the various battalion commanders, each thinking his particular mission is the most important. There is a tendency among combat arms commanders to give priority to systems that provide direct combat power. The only way you can kill a communist with a communications van is to run over him with the truck. As a result communications equipment that requires a large amount of aircraft space does not enjoy a high priority.

It's certainly not ignored but the tendency is to take the bare minimum. For these reasons communications equipment, especially for forced entry units must be small and light. Bigger is definitely not better in this case.

CHAPTER SUMMARY

As indicated in the above mission descriptions there are several unique requirements placed on the Signal Corps in respect to the airborne division. These requirements are not generated by the airborne division's tactical role as infantry soldiers but rather their mission as paratroopers which must be performed before they can be employed as infantry. The strategic mission of the airborne division combined with the forced entry requirement also contributes to the requirement for some unique communications equipment and procedures.

In summary these are:

*Outload Sequence Communications Support.

*Secure Enroute Communications.

*ISB communications support.

*Secure, Long Range, Manpack, Personnel Parachutable Radios.

*Over the Horizon Capability.

*Defense Communication System Entry.

*Inter-operability with Naval, Marine, Air Force and other Army forces.

*Air Drop or LAPES Capable Equipment.

*Air Transportability

The above requirements were valid in the 1983-85 time frame and recent telephone conversations[9] and personal interviews[10] conducted during the research phase of this study, indicate they are still valid today. Recent message traffic from the Commander, 82d Airborne Division reiterates the importance of being able to accomplish several of these unique requirements with organic communications equipment and coordinated joint procedures.[11]

ENDNOTES

8. Commander 82d Airborne Division, letter to Commander Training and Doctrine Command, 8 May 1984.

9. Several telephone conversations with LTC Raymond Dolan, Commander 82d Signal Battalion and MAJ James Schroeder, Assistant Division Signal Officer, 82d Airborne Division, during the period December 1986-April 1987.

10. Interview with LTC Dolan and MAJ Schroeder, 9 December 1986, Fort Bragg N.C.

11. Commander 82 Airborne Division, message to Commander Forces Command, 9 March 1987.

CHAPTER IV

SUITABILITY ANALYSIS OF MSE vs AIRBORNE REQUIREMENTS

The comparison between mission requirements and the MSE structure will be made by analyzing the equipment and personnel requirements contained in TOE 11065L000[12], Mobile Subscriber Equipment, Division Signal Battalion and each of the airborne requirements outlined in Chapter III.

Mission Requirement: Outload Sequence Communications Support.

Ability of MSE structure to satisfy requirement: TOE 11065L000 does not provide a dedicated section to perform this function, however the requirement could be met by using equipment and personnel from the signal battalion that is in the support cycle, additionally people and equipment from the support brigade and DISCOM could also be task organized to provide support. It must be recognized that using this concept would require replacement by a non-divisional unit at some point in time during the deployment sequence, if the entire division was required to deploy. Other than the one short fall of not having dedicated people and equipment, MSE could satisfy this requirement in an excellent manner.

Mission Requirement: Secure Enroute Communications.

Ability of MSE structure to satisfy requirement: TOE 11065L000 does not authorize any equipment that could be used in this role. The MSE structure fails to satisfy this requirement totally.

Mission Requirement: ISB Communication Support.

Ability of MSE structure to satisfy requirement: If the assumption is made that the ISB is not within line of sight distance from the departure airfield(s) in North Carolina or the objective area, then the MSE structure would be incapable of satisfying this requirement. There are currently no means of long range (over the horizon) communications in the MSE TOE. There is a future incremental change package (ICP) planned for the objective TOE that would provide a multichannel TACSAT capability, but this equipment is too large to be realistically deployed as an ISB communications support package. In summary, current and objective MSE structures will not provide communications support for an ISB.

Mission Requirement: Secure, Long Range, Manpack, Personnel Parachutable Radios.

Ability of MSE structure to satisfy requirement: The current and objective MSE TOE does not provide for any manpack radios in the division signal battalion. This requirement is totally unsatisfied by the MSE structure.

Mission Requirement: Long Range or Over the Horizon Capability.

Ability of MSE structure to satisfy requirement: The current MSE structure does not provide any equipment that will satisfy this requirement. As stated earlier a planned ICP will put a multichannel TACSAT capability in the division signal battalion. This equipment however is not air droppable or LAPES capable, therefore it could not be used in the assault phase. It is concluded that the MSE structure does not meet this requirement in a realistic manner.

Mission Requirement: DCS Entry.

Ability of MSE structure to satisfy requirement: Current doctrine does not provide this capability at the division level and current MSE structure does not provide the required equipment. DCS entry is accomplished at the Corps or in most cases, at echelons above Corps. The airborne division will in some scenarios, be deployed alone, without the benefit of a Corps communication network.

The multichannel TACSAT ICP will solve this problem in the future, but only after an airfield has been secured and the equipment can be air landed. There is still a complete void in a forced entry airborne operation.

Mission Requirement: Inter-Operability with Naval, Marine, Air Force and other Army units:

Ability of MSE structure to satisfy requirement: The ability to communicate with other Army units goes unchallenged. If all Army corps and divisions are equipped with MSE, inter-operability should be excellent. The Navy, Marine Corps and Air Force on the other hand have no known plans to purchase the MSE system. Technically it is possible to communicate with other services through the MSE radio access units or by terminating a sister service multichannel system at an MSE node and patching it into the system. Again it must be pointed out that this arrangement could not be accomplished until after an airfield had been secured and the MSE equipment air landed. The current and objective MSE structures do not satisfy this requirement in a forced entry airborne scenario.

Mission Requirement: Air Drop or LAPES capability.

Ability of MSE structure to satisfy requirement: None.

Mission Requirement: Air Transportability.

Ability of MSE structure to satisfy requirement: A detailed air movement study was not accomplished as part of this paper because the exact configuration of some MSE equipment is still unknown at this time. It is possible however to get a crude estimate of the number of aircraft required simply by adding up the number of vehicles and trailers in the TOE and figuring out the number of aircraft required. You must make the assumption that all shelters will actually fit on a HMMWV and that they are within height and weight restrictions that would allow roll on, roll off C-130/C-141B aircraft. This may not be a good assumption as learned from personal interviews with MSE Project Manager personnel.[13] It was indicated that some weight and height problems existed that could result in the requirement to remove shelters from vehicles and load them separately. If that occurs the impact on air transportability would be significant. Using the above method and making the assumption, it would take approximately 75 C-141B airframes to transport the MSE signal battalion. That works out to be almost 20% of the entire division's allocation if you use 400 airframes as a planning figure, 15% if you use 500 airframes. This sortie requirement is excessive in the context of total airframes available.

CONCLUSIONS

The MSE structure, not necessarily MSE equipment or concepts, falls short of meeting the unique requirements of an airborne division. The current MSE TOE only satisfies one out of nine requirements, the objective TOE partiality satisfies only two more. The solution then obviously is a modified structure for the airborne division signal battalion that takes advantage of the MSE equipment and also provides the equipment and personnel required to perform the airborne unique missions. Given the personnel cap of 486 soldiers in a division signal battalion, there has to be some compromise in both areas. The possible courses of action outlined in the next chapter will provide two workable solutions to this problem and still stay under the personnel constraints.

ENDNOTES

12. US Army Training and Doctrine Command, TOE 11065L000, 21 July 1987.

13. Interview with Mr. Gregg Scott, Office of the Project Manager, MSE, Fort Monmouth, N.J., 18 November 1986.

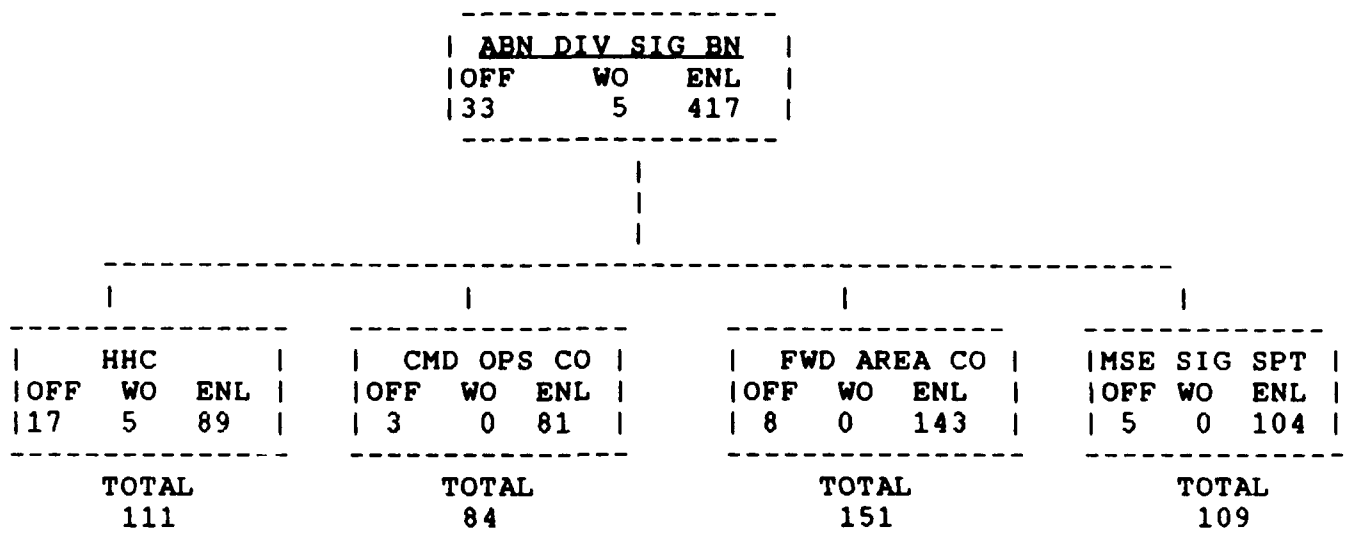
CHAPTER V

POSSIBLE COURSES OF ACTION

There are two possible courses of action that would provide the capability to perform all the unique airborne requirements already discussed and include a sufficient MSE capability that would permit the airborne division to inter-operate with other Army units. The major difference in the two proposals is the placing of the Division MSE element in the overall corps structure. The capabilities in both courses of action in a technical sense are identical. The first course of action places the MSE capability as an organic element of the airborne division signal battalion. The second proposal merely strips the MSE element out of the airborne division and places it in the Corps signal brigade with the dedicated mission of providing communications support as a follow on element to the airborne division. In the second option the MSE element would be under the operational control of the airborne division signal officer once it was deployed. This is an awkward arrangement that has some obvious disadvantages but on the other hand there are some merits to this arrangement. These will be addressed in the last chapter.

COURSE OF ACTION NUMBER ONE

MSE ORGANIC TO THE AIRBORNE DIVISION



GRAND TOTAL
455
APPROVED MSE STRUCTURE TOTAL--475
COURSE OF ACTION # 1 TOTAL--455
PERSONNEL SAVINGS--20

This design takes advantage of two company level TOEs in the approved MSE structure. The Headquarters Company is identical to TOE 11066L000.[14] The Signal Support Company is the same as TOE 11068L000,[15] but contains two General Support Platoons as compared to one in the approved structure.

The following capabilities are provided by this design:

*The signal battalion provides all higher to lower single channel communications to major subordinate commands (MSCs) and separate battalions.

*All essential communications equipment can be manpacked.

*Manpacked equipment expands into vehicle configuration as vehicles arrive into the objective area.

*Secure enroute communications is accomplished with manpack TACSAT radios, eliminating the current bulky SECOMP pallet.

*Redundancy provided for all single channel functions by using a mix of HF, TACSAT, and FM radios.

*LNO communications provided by manpack single channel radios and MSE mobile radio subscriber terminals (MRST).

*Rear area communications provided to DISCOM.

Base station (Fort Bragg) and ISB communications provided.

The following assumptions are made:

*The airborne division relies on the Corps MSE network to provide inter-connectivity for division main and DISCOM, all other division units rely on single channel radio, to include limited MRSTs.

*Sufficient satellite segments will be available.

*POL and mess support will be provided by the supported unit.

The following internal communications means would be provided:

*HF operations and intelligence net

*HF admin/logistics net

*TACSAT operations and intelligence net

*TACSAT command operations (DATA) net

*TACSAT admin/logistics net

*FM command/operations net

*FM intelligence net

*FM admin/logistics net

*FM communications engineering net

*FM RACO net

*MSE large extension switches at division main and DISCOM

*Mobile Radio Subscriber Terminals (MRSTs) at division, brigade and separate battalion level

*FM retransmission capability

The following external communications would be provided:

*HF command

*HF fire coordination

*HF Data

*TACSAT command

*TACSAT Data

*FM command (Corps)

*FM operations and intelligence (Corps)

The major equipment required to provide the above support would consist of:

*HMMWV--79

*3/4 Ton Trailer--63

*Gen Set 5kw--4

*Gen Set 10kw--2

*Gen Set, Portable 1.5kw--39

*Truck M1009--4

*Truck M1008--4

*Truck 2-1/2 Ton--3

*1-1/2 Ton Trailer--3

*Truck 5 Ton--1

*Trailer POL--1

*TACSAT radios--33

*HF radios--28

*FM radios--75

*Facsimile--26

*Teletype/micro-computer--6

*Switchboard--13

*MSE large extension nodes--2

*MRSTs--10

Using the same method of computing airframes and making again the assumption that all MSE equipment is roll on/off a C141B, it will require approximately 31 C-141B airframes to deploy the entire battalion.

COURSE OF ACTION NUMBER TWO

DIVISION MSE CAPABILITY PLACED AT CORPS LEVEL

ABN DIV SIG BN		
OFF	WO	ENL
23	4	295

HHC			CMD OPS CO			FWD AREA CO		
OFF	WO	ENL	OFF	WO	ENL	OFF	WO	ENL
12	4	71	3	0	81	8	0	143

TOTAL DIV SIG BN

322

SIGNAL SUPPORT COMPANY ASSIGNED TO CORPS

109

GRAND TOTAL

431

APPROVED MSE STRUCTURE TOTAL 475

PERSONNEL SAVINGS 44

This design would organically provide all the single channel radio and CP support described in course of action number one, less the MSE large extension nodes at division main and DISCOM. The MSE capability would be placed in the Corps signal brigade and deployed when required, giving the airborne division the capability of communicating with other Army units utilizing a down sized MSE structure.

The additional manpower savings in this option results from a scaled down HHC structure which takes into account the absence of MSE equipment organic to the division.

The major equipment required to provide the above support would consist of:

*HMMWV--59

*3/4 Ton Trailer--43

*Gen Set, Portable 1.5 kw--39

*TACSAT radios--33

*HF radios--28

*FM radios--75

*Facsimile--26

*Teletype/micro-computer--6

*Switchboard--13

*MRSTs--10

This course of action would permit total deployment of the airborne division signal battalion in approximately 24 C-141B aircraft. A show of force option could be supported with personnel and equipment using only two airframes.

ENDNOTES

14. US Army Training and Doctrine Command, TOE 11066L000, 21 July 1986, P.57.

15. US Army Training and Doctrine Command, TOE 11068L000, 21 July 1986,P.171.

CHAPTER VI

RECOMMENDED COURSE OF ACTION

Course of action number one is the recommended course of action from the author's perspective for the following reasons.

*Provides all required C^3 capabilities to support a forced entry airborne operation.

*Satisfies all nine airborne unique communications requirements.

*Eases maintenance tasks in the division signal battalion--less vehicles--less generators.

*Places MSE support company organic to the division signal battalion where training and maintenance priorities and standards can be established by the commander who will be responsible for the employment of the company during wartime.

*Reduces manpower requirements while providing a robust C^3 capability in the division/ corps area.

*Enhances strategic mobility.

*Enhances tactical mobility--all single channel communication packages can be moved by UH-60.

*Signal battalion provides all higher to lower single channel communications.

The major reason this course of action is recommended is because it contains less risk for the airborne division. Having the MSE equipment and personnel organic to the division, reduces the risk that MSE support would not be available when required. It also eliminates the awkward relationship of operational control when the MSE company would be deployed in support of the division. In summary it represents the most logical structure, which permits the airborne division signal battalion to train and maintain in peacetime, the same way it would in time of conflict.

BIBLIOGRAPHY

1. US Army Signal School and Fort Gordon, Battlefield Communications Review III, Vol I, December 1985

2. US Army Signal School and Fort Gordon, Final Draft Operational and Organization Plan for Mobile Subscriber Equipment System, 6 October 1986, p. 1-1.

3. US Army Communications and Electronics Command, Project Manager MSE, Mobile Subscriber Equipment System Material Fielding Plan, 17 July 1986, p. 1-5.

4. US Army Training and Doctrine Command, TOE 11065L00, 21 July 1986, p.77-81.

5.FC 11-36, Mobile Subscriber Equipment Architecture, Preliminary Draft, Nov 1986, P. 1-1.

6. Ibid, P.1-2/1-8.

7.US Army Training and Doctrine Command, TOE 11065L00,21 July 1986, P. 77-81.

8. Commander 82d Airborne Division, letter to Commander Training and Doctrine Command, 8 May 1984.

9. Several telephone conversations with LTC Raymond Dolan, Commander 82d Signal Battalion and MAJ James Schroeder, Assistant Division Signal Officer, 82d Airborne Division, during the period December 1986-April 1987.

10. Interview with LTC Dolan and MAJ Schroeder, 9 December 1986, Fort Bragg N.C.

11. Commander 82 Airborne Division, message to Commander Forces Command, 9 March 1987.

12. US Army Training and Doctrine Command, TOE 11065L000, 21 July 1987.

13. Interview with Mr. Gregg Scott, Office of the Project Manager, MSE, Fort Monmouth, N.J., 18 November 1986.

14. US Army Training and Doctrine Command, TOE 11066L000, 21 July 1986, P.57.

15. US Army Training and Doctrine Command, TOE 11068L000, 21 July 1986,P.171.