STUDY PROJECT

TACTICS, FUNCTIONS, TECHNIQUES, AND PROCEDURES IN THE COMMAND, CONTROL, AND COMMUNICATIONS (C3) OF A COMBAT ELECTRONIC WARFARE INTELLIGENCE BATTALION

BY

LIEUTENANT COLONEL THOMAS M. McLAULIN, MI

14 MAY 1990

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TACTICS, FUNCTIONS, TECHNIQUES, AND PROCEDURES IN THE COMMAND,CONTROL, AND COMMUNICATIONS (C3) OF A COMBAT ELECTRONIC WARFARE INTELLIGENCE BATTALION

AN INDIVIDUAL STUDY PROJECT

by

Ltc Thomas M. McLaulin, MI

Colonel John J. O'Connell Jr.
Project Advisor

U.S. Army War College
Carlisle Barracks, Pennsylvania 17013
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ABSTRACT

AUTHOR: Ltc Thomas M. McLaulin, USA

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Combat Electronic Warfare Intelligence (CEWI) Battalions have only been in the Army force structure for about 10 years. Initial testing of the CEWI concept occurred in the mid 70s and activation of CEWI units occurred in the late 70s and early 80s. Most of the CEWI battalions that have been formed over the last decade have just now (1988-1990) been fielded with objective intelligence and electronic warfare systems. As a result, the doctrine and many of the procedures that underwrites CEWI operations are relatively immature. The author commanded the Army's first fully modernized heavy division CEWI unit. The unit achieved full modernization in July of 1988 just prior to the annual REFORGER exercise where its capabilities were fully utilized in unconstrained (relatively) tactical operations. This study seeks to provide insights into existing CEWI doctrine and to offer some alternatives to current tactics, functions, techniques and procedures for the evolution of CEWI organizations and operations.

Keywords: Command and control, Electronic warfare, Army intelligence, Military tactics; Battalion organizations. (EDC) ←

TACTICS, FUNCTIONS, TECHNIQUES, AND PROCEDURES IN THE COMMAND, CONTROL, AND COMMUNICATIONS (C3) OF A COMBAT ELECTRONIC WARFARE INTELLIGENCE BATALLION

CHAPTER I

INTRODUCTION

This paper will address successful approaches used by the author in meeting a Combat Electronic Warfare Intelligence (CEWI) battalion's mission in a conventional high intensity warfare environment. The paper has been developed at the request of LTG Eichelberger, DCSINT, HQDA for the furtherance of CEWI doctrine and capabilities. It is a personal statement, reflects one person's approach to satisfying an assigned mission, and should be considered in this context--one opinion-one approach. It is one of a series of papers commissioned by the DCSINT HQDA, from selected former CEWI commanders (heavy and light divisions), that will be used as a point of reference by the Army Intelligence Center and School for future CEWI organizational and operational refinements. The context of this review will not be isolated to the CEWI battalion alone but will address the intelligence environment surrounding the unit. Examples will be based on REFORGER 88 and other major divisional field training exercises and operations. REFORGER 88 offered a key insight into high intensity conflict as it was the largest field training exercise conducted since World War II. Experience from this exercise has direct application to worst case/high intensity scenarios and should be considered when developing future MI doctrine and organizational capabilities for high intensity conflicts. The intent of the paper is not to be revolutionary but to offer alternatives for consideration in refining current

doctrine and force structure. For the remainder of this paper the term Military Intelligence Battalion (MIB) will be used instead of Combat Electronic Warfare Intelligence Battalion because it is a more common term of reference.

CHAPTER II

TACTICS

OVERLAPPING SUPPORT (NATIONAL TO TACTICAL)

The intelligence structure supporting the US Government and its departments is robust. At national level, collection, processing and analysis capabilities (coverage) have a very broad scope and employ many sophisticated techniques to provide the required support. Support at theater level is less than that at national level but still offers broad coverage for the (supported) Commander in Chief (CINC). At tactical levels, intelligence support has less scope and is less sophisticated but still includes capabilities from each of the basic intelligence disciplines. Many times the intelligence requirements of tactical commanders can be satisfied from national and/or theater level coverage. Coverage by tactical echelons can also support and amplify coverage conducted at national levels. The total support required at tactical levels will probably never be organic to tactical organizations because of the inherent cost of desired capabilities. However, existing procedures within the intelligence community make it possible for overlapping and layered support to be routinely provided to tactical echelons from national/theater capabilities for both peace and combat requirements.

IMPORTANCE OF INTELLIGENCE SYSTEM SURROUNDING MILITARY INTELLIGENCE BATTALION (MIB) AT DIV LEVEL

Support for tactical operations comes from the entire intelligence system. MIB commanders and G-2s at tactical level must include the capabilities found throughout the structure to meet information and intelligence requirements. The critical issue is to understand the capabilities, limitations, and procedures necessary to obtain "structural support." To receive proper support, requests must be prioritized and focused to essential collection/intelligence requirements. Results from Battlefield Command Training Program (BCTP) have documented the improvement in intelligence when the command carefully establishes its priority intelligence requirements (PIR)[1]. Unfortunately, we frequently violate this rule and ask for more information than is necessary. Consequently, when we get the information requested from the structure, it is usually late (takes time to collect, process, disseminate) and it is frequently so voluminous that it can't effectively be used within the existing and perishable window of opportunity. Additionally, I believe, that there still is not an adequate understanding at tactical levels in terms of how the intelligence structure should function to provide focused and synergistic support to our commanders. This is not intended as a denigrating comment as the tactical intelligence structure has significantly grown over the last decade and provides much more credible support today than it ever has in the past. However, we still have not maximized our realistic potential--potential that is inherent in our structure, operations, equipment and personnel.

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[1]Interview, Intelligence Coordinator, Battlefield Command Training Program, Ltc Sloance, Ft. Leavenworth Kansas, 5 March 1990.

As examples of our inability to realize our potential, I will cite several REFORGER 88 events. While these are negative, I must hasten to state that both the division and corps commanders were very pleased with the intelligence they received. It was clearly better support than they had ever received before. It should also be emphasized that I am personally proud of the division and corps of which I was a member. Where shortcomings were found, open, honest and professional disagreement was allowed; and, in most cases realistic and effective "fixes" were implemented.

Example: Brigades were moving into attacks with only minimal information about the current disposition of the opposing force. It was evident that they thought the "speed and killing power" of their fully modernized armor force could overcome the opposition without taking the time for good reconnaissance and intelligence. They were not properly using (tasking/gaining information from) organic and available information producing assets. Available assets included scouts, OH-58Ds, fire support teams (FIST), TACFIRE information/plots, ground surveillance radar (GSR) teams, supporting cavalry (air/ground) units, aviation assets brigade command and control (C&C) aircraft, Air Force CAS/RECCE missions (conducted in the area), aviation brigade air attack and reconnaissance assets), and the eyes of 2,000 plus soldiers.

Information that was generated by these sources was not effectively managed nor delivered to the combat leaders in a coherent manner. The principal reason for this shortcoming was that brigade TOCs (S-2s) that normally provide this type support were too far to the rear to be integrated with most of the potential sources. This, in effect, meant that no one was managing the process (tasking/collecting) and flow of information. TOCs were left in the rear to improve operational security (OPSEC), for physical

protection, to allow more maneuverability (freedom of action) for the combat elements, and to insure connectivity to the division tactical operations center (DTOC) which was also well to the rear (70+ kms from FLOT).

Substantial information was available at division and it was getting to brigade TOCs. Hovever, it was not consistently reaching the commanders who were forward and were separated (physically and and frequently electronically) from their TOCs and staffs. In essence information that was available from division and in brigade TOCs "fell on the ground." Further exacerbating this mismanagement, the brigade S-2s were being used as night TOC officers resulting in the assistant S-2s being involved in intelligence management and information flow during the most critical moments of battle (during the day-exercise period). Combat information passed by the MIB had the tendency to lose its importance because the basic "picture" (situation) wasn't appreciated at brigade level.

This unacceptable breakdown in information flow between information sources and the brigades and division and MIB represents the classic type deficiency that can occur when units out run their communications and are not frequently confronted with realistic threat forces such as those found at the National Training Center (NTC) and now in BCTP[2]. This breakdown caused friction between senior commanders in the division because the CG, ADC-M, ADC-S, and C of S had good intelligence while the major subordinate command (MSC) commanders felt they had not been adequately supported. In reality the information to support all levels was available.

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[2] Ibid.

Subsequent to REFORGER, and prior to the division's participation in BCTP, an abbreviated version of the graphic intelligence summary (INTSUM) was implemented which substantially helped in the flow of information from the division to the brigades. BCTP forced our maneuver commanders to use their own organic information/intelligence assets to help provide resolution on the close battle. Both helped the MIB provide support to maneuver commanders because it put combat information in context. However, there remains work to be done on improving the intelligence flow in all directions.

As these comments would suggest, we also still have a challenge in getting maneuver commanders to properly use their S-2s and in providing them with the tasking authority and or influence they need over organic intelligence producing resources (scouts, OH-58Ds, etc.). Just as security of the force and individual self protection is every soldier's duty, so is collecting and reporting information. Leaders at all levels must help manage this process. The G-2 and MIB commander will never be able to exclusively provide the detailed information required to fight the close battle.

Example: The MIB was collecting "surges" of TACFIRE signals which it believed represented the massing of many battalions of the opposing corps' artillery. This was passed to the division's forward tactical operations center (DTAC), where artillery officers said it couldn't be true because U.S. artillery doctrine and TACFIRE didn't operate/function in this manner. The G-2 element didn't challenge the call. I didn't call the G-2 or the C of S to personally bring it to their attention. Equally important, I didn't cue GUARDRAIL which was available for additional coverage, conformation of the activity, and enhancement of locational data relating to the targets. The corps G-2 knew nothing of the whole situation because I didn't alert him. At ENDEX we found out that, in fact, V Corps had massed its fires and was

killing at least a maneuver battalion every time it shot massed fires. To me, this was probably the most important target of the entire REFORGER exercise. It relates to our number one real world/general defense plan (GDP) target (artillery) and the one which the MIB is best capable of exploiting. We had the information in our hands and could have destroyed the opposing corps artillery capability (or severely damage it) and let the opportunity get away.

Example: From the users' perspective, GUARDRAIL reports for the majority of REFORGER related to unidentified (U/I) elements located in the general vicinity (3-7 kms) of X location. Clearly both the division and the corps could have better focused this very valuable resource.

Example: Data bases provided by echelon above corps (EAC) were usable only in a manual mode because the format they were provided in was incompatible with the Technical Control and Analysis Center (TCAC) system. As a consequence we struggled throughout the exercise trying to correlate and identify collected signals with the data base. In a dynamic and dense signal environment, this is unacceptable. By chance we found an enemy CEOI for one period of the REFORGER battle. The impact on our collection operations with this information , even with co-channel interference, was astounding. While it will be seldom that a data base equates to an enemy/OPFOR CEOI, a data base that puts you in the right ball park and gives you a starting point is a very powerful tool. Tactical units, that are involved in the close battle and its following second echelon, will have very little time and opportunity to develop a data base other than in rudimentary proportions. Basic data base support must come from corps and EAC. Compatible data bases and communications to allow effective interface between the echelons for passage of technical data base information is critical.

In each of the examples cited above, a better/common appreciation of the situation and an integrated effort could have eliminate the intelligence shortcomings. The intelligence had been collected and was available. Most of the shortcomings came from piecemeal and fragmented efforts.

AVAILABILITY OF RESOURCES, FOCUSING, AND PRIORITIZING

MIBs and MI brigades, as stated above, are not resourced to meet the full intelligence requirements of their parent organizations (division/corps). Every MIB commander and G-2 wants to give direct support (DS) to each maneuver brigade in the division and also provide the division commander (CG, ADC-M, ADC-S, C of S) with needed support. However, resource levels will not accommodate both missions simultaneously. Added to limitations on raw numbers of total intelligence assets in MI organizations, terrain constraints (line of sight and hearability), the enemy and his chosen actions and avenues of approach and availability rates make anything but a general support mission impossible except for unique circumstances. Priority must go to the parent commander who has the greatest overall requirements for intelligence and who owns the combat multipliers available to support maneuver brigades. Brigades must help collect and manage the flow of information from their own internal sources. When there is a match between the needs (priority intelligence requirements) of the senior commander and his subordinates, some direct support is possible as discussed below in "Collector to Killer." Fundamentally, the MIB and its collection assets must be put on leveraged terrain that has line of sight (LOS) against the threat and not chopped up into arbitrary brigade packages that lose advantage of terrain, and that are not focused on the thereat. Providing general support to the principal combat leaders (CG, ADC-M, ADC-S, C of S)

that must plan for and commit the whole force and provide it with scarce combat multipliers is the only realistic and pragmatic option to the dilemma of having greater needs than capability.

This translates into the need to highly prioritize the functions and disposition of intelligence resources. Seldom would the terrain support more than one or two viable options (necessary LOS/security) for collection by signal intelligence (SIGINT) or surveillance systems and teams. Within this basic set of parameters it was critical that I understand exactly what the prioritized collection/electronic warfare needs of the division were at any given time. I counted heavily on the G-2 to keep me focused and in sync with the CG's and ADC-M's requirements. For the most part this worked well within the division--especially during REFORGER. Liaison officers were used to understand brigade requirements so that they could be accommodated within the limits of the GS mission to the greatest extent possible (see "Collector to Killer" below).

POSITIONING (FORWARD)

Collection assets must be positioned in the battle area so that they can see and hear enemy forces in their staging areas and along the principal avenues of approach/mobility corridors leading into battle areas. This normally necessitates the forward positioning of intelligence resources. Line of Sight (LOS) from available terrain, for SIGINT and surveillance teams to their intended target/target area, dictates just how far forward assets can be placed. Positioning must also consider the ability to communicate laterally to other teams (for netting, terrain utilization), to supported/control elements to the rear, and to combat elements (brigades/cavalry) that are in the forward battle area. The challenge with forward positioning of MI elements

is that this requires movement prior to that of combat elements if collection capabilities are to be in place and operative in time to support friendly fires and maneuver. Security of teams that are forward is a critical factor as there will initially (offense) be few friendly elements forward to provide intelligence teams any level of collective security. Security is critical because there are virtually no replacements for lost/attritted teams/systems. Most of the best collection sites are also prime areas for Soviet/opposing force suppressive fires. Extreme care must be taken in selecting sites that offer some natural terrain protection for the assets employed. Surveillance of team areas and approaches to team areas must be performed and factored into site selection.

Our initial deployment for REFORGER was well forward. We had conducted extensive LOS profiling and target tracking exercises of the area (much as we did for General Defense Plan (GDP) locations). Coverage of the battle area (s) was excellent. None of our positions were closer than 10 kms from the starting FLOT. However, there was a corps-wide (both corps) mix up on the location of the initial FLOT/boundary in our sector between the two corps. When the opposing corps started its attack it was initiated within what we thought was our own corps sector. As a result, we had two teams captured/destroyed when the OPFOR conducted its initial attack. Both of these teams (we found out later) were exposed along roads. They had not posted local security/surveillance elements. Other teams that were forward, and in the area of the thrust of the attack, but that were properly positioned and concealed survived initial advances into friendly areas. Local security warned these elements of the enemy's presence and the teams shut down systems and went deeper into concealment while hostile forces were in their immediate area. Subsequent to their bypass they exfiltrated into areas

within friendly lines. Their movement was at night and over secondary roads and trails. The teaching point for me was that with proper disposition, concealment, and local security, forward deployed elements have a chance of surviving initial penetrations into friendly areas. However, timely extraction from compromised areas must be achieved before the enemy/OPFOR can sweep and secure the area. In highly mobile armored actions the time available for this extraction and recovery could be between 6 to 36 hours.

I consistently deployed 103d elements forward of initial battle positions (REFORGER, division FTX/CPX's, GDP rehearsals) with success and minimal loss of personnel and equipment. Our teams were directed to take secondary roads and trails into forward areas to minimize the potential for enemy detection of their movement and presence. Each team had multiple fall back positions in the event they were directly threatened. To have held the assets in the rear waiting for the combat elements to secure the forward area or to have moved MI elements with the attacking elements would have meant no support for initial engagements. I was also prepared to tell teams to remain in place and continue collection operations when they were being bypassed if there was a pending counterattack that mandated we "see" enemy second echelon forces for subsequent targeting and disruption. MI units will always have to contend with enemy elements bypassing them as that is the nature of the modern, non linear, and "swirling" battlefield. Underwriting all of this movement and positioning is advanced land navigation skills, an area we constantly worked on with the help of our Long Range Surveillance (LRS) Company. Global Positioning System (GPS) will be a welcomed tool.

DETECTING, CUEING, AND TRACKING

Success in meeting intelligence requirements starts with detection and recognition of an important enemy/OPFOR element or event. Determining what the critical elements and events are is the responsibility of senior leaders in the intelligence structure and the concerned division and/or corps commanders. Once the battle is joined, the presence of enemy elements will be almost continuous. The critical function for tactical intelligence assets is to detect the important/critical nodes and elements within the enemy's forces and to track these entities until they are engaged and destroyed or dropped from priority as an important threat/capability. To track a target until it is engaged and destroyed requires (most cases) the cueing of multiple collection assets and analysis elements. Determining what is the worth of this level of effort is a constantly changing menu. The captain of this minute by minute selection process is the division/corps G-2 and his collection management element. Frequently the targets that can be heard or seen are not the most important ones and the ones the MIB is tasked to find. Therefore, intelligence requirements must constantly be prioritized to insure that the collectors are listening and looking for the right entities. Going hand in glove with prioritization efforts are cueing procedures that dynamically alert collectors to priority targets and changes in tasking.

I believe this is the most fundamental and important function (s) that is performed at tactical level. There are so many targets, formations, and signals and so few intelligence assets that every collection and processing asset must be locked on to a critical entity or looking/listening for the critical entity. Quick recognition, identification, discarding of nonessential targets and cueing for priority targets must be a basic discipline in the structure.

All too often we don't know what is important and spend our time tracking targets that are already known, located or are not critical to begin with.

In the 103d I optimally wanted the LRS (or a corps asset) to detect major/critical enemy elements/activity well forward. I then wanted SIGINT assets (starting with QUICK FIX--greatest range) to track the enemy as it moved to within artillery range and finally as the target entered the FLOT area to hand it off to brigade assets for final tracking and engagement (if it/they hadn't already been destroyed). I think brigade scouts, FIST teams, radar teams, and OH-58D teams must be cued to the areas from which the enemy is deploying/attacking. They should be alerted to the mobility corridor, axis of advance, or position the enemy is approaching from or utilizing by the intelligence structure. This will minimize their search efforts and concentrate their capabilities in the right areas. The determination of what's critical is the hard part. This difficulty is principally based on a clear and timely understanding of the battlefield situation. In REFORGER the division G-2 did a very good job of keeping the MIB on track concerning critical needs of the division commander. Unfortunately, the same results that were discussed above were not achieved with the brigades. Of all the targets serviced by the MIB during REFORGER the artillery nodes were the easiest to collect and locate and yet very few enemy artillery elements were actually engaged (counter fired) by DIVARTY. Challenges over accuracy of target locations and lack of familiarity with MI collection capabilities were the root cause of the ineptitude. Subsequent to the exercise, permanent liaison personnel were assigned (with supporting communications) to DIVARTY to improve targeting and fire servicing. Current MI doctrine and force structure does not support this direct interface. It should be incorporated as a requirement and resourced to take advantage of the MIBs

optimized capability (detection and location) against artillery (OPFOR and enemy). The destruction of artillery is held by senior commanders to be the most important target on the battlefield at both tactical and operational levels and the MIB/intelligence structure can be a key player in this process.

COMPANY FUNCTIONS

MI doctrine does not describe a significant intelligence role for companies during tactical operations. Individual teams are directed, managed and controlled by the battalion while the company provides logistic and administrative support. This approach must be changed because it causes the loss of control and focus as is discussed below.

BATTLE CAPTAIN FIGHTS HIS BATTLE

In combat arms units company commanders fight the battle. While the commander always sets priorities, others are principally concerned with logistic and administration. In MI units (as in combat arms) we pick our very best officers to command. Normally these officers have proven their intelligence skills as battalion or brigade S-2s. Why then do we describe their principal role as that of logistician and administrator? Why aren't these leaders and proven intelligence operatives directing collection, performing analysis, and making sure "nuggets of combat information" are sent along quick fire channels? Can the Technical Control and Analysis Element (TCAE), MIB commander or G-2 and his collection management element better direct positioning and dynamic collection activities from the rear? Should the TCAE have a better feel for the target environment of a company than the company commander? And, most importantly, can the intelligence structure of a division put all of its control functions in the

centralized and serial operations of a TCAE or collection management shop? The answer to all of these question is an emphatic no!

In the 103d the company commanders directed collection (within priorities and parameters set at battalion/division) and led/managed analysis and reporting operations within their units. They were the first echelon filter for detecting combat information ("nuggets"). They listened to the signal environment from their companies respective master control station (MCS) or forward base. Their command post was collocated with their principal operations for direct interface. The commander was provided the requisite communications and processing capability for these functions at no operational cost to overall company/battalion capabilities. At no time was the flow of reporting held up at company level for the commander to filter information. Information was received at company and battalion level at essentially the same time (milliseconds/seconds-disparity) so that filtration and processing could happen at both levels simultaneously (see communications structure and discussion below; and, diagrams 1-7--Annex A). The commander also made final decisions on positioning of assets from a general baseline provided (computer generated LOS profile) by the S-3. The commander had authority to go directly to a brigade (collector to killer) before he sent information to the TCAE or S-2 and to send critical information directly to the G-2 if he couldn't reach the MIB.

During REFORGER the filtration and control functions performed by the company commanders (both SIGINT and LRS) repeatedly surfaced targets that were critical. Many times the volume of information coming into the TCAE/S-2 was such that critical/time sensitive information had not yet been processed or reviewed, but was in a message cue in the Technical Control and Analysis Center (TCAC) or for lack of a better word "in box." The

commanders' tip offs highlighted information requiring immediate review, processing and dissemination. Company commanders directly interfacing with brigades (through MIB LNOs) provided similar tip offs to changing threat conditions and location of enemy elements. The serial numbering system (computer generated) used by the MIB minimized confusion that could be caused by duplicate reporting.

The major disconnect I see in MI doctrine and organizations is that there is not a clear understanding of relationships and responsibilities from battalion to company to platoon to collection team level concerning specific intelligence functions. As a consequence, platoon leaders are (by MTOE position, and doctrinal discussion of functions) de facto held responsible for collection operations while team leaders are let off the hook and company commanders who have the knowledge, experience and leadership are not fighting the intelligence battle as their highest priority[3]. This approach puts the least experienced in charge of potentially the most complex job on the battlefield. It chops up and fragments operations (that should be integrated) into slices and pieces that require them to be put back together again (each platoon's) at the battalion TOC or G-2 before they make sense. It centralizes control over operations at battalion using multiple communication links allowing a single communications failure to jeopardize the coherence of a search/collection strategy or tracking event.

SMALL COMPANY ANALYTIC CAPABILITY

In each company, the commander (even LRS) was required to have a small analytic capability at his command post (CP). Additionally, in SIGINT companies, the commander was to have an analyst (98C) in the master

[3] U.S. Department of the Army Field Manual 34-40, Electronic Warfare Operations. (Washington: GPO, October 1987) pages 3-24 to 3-27.

control station (TRAILBLAZER or TEAMMATE equipped) which was always collocated with his CP. With these elements/personnel the commander was to find the nuggets of information, make sure collection teams were effectively performing their tasking/priorities, and "flag" important collection (combat information/high value targets) to the TCAE and/or the battalion S-2. The commander and his analytic element became the first filter in the collection process but (due to automation and procedures described below) were never allowed to stop the flow of data to the TCAE.

XO/PLATOON LEADER'S RESPONSIBILITY-ADMIN/LOG

Platoon leaders were responsible for control of the platoon (issuing or orders), terrain management, movement, and logistics; and, when time permitted they also were involved in collection and analysis operations. Based on the officer distribution plan (ODP) there usually was only one lieutenant in each company. So in addition to the job of platoon leader he/she was also company XO. In an armor platoon elements/sections are almost always in hand and arm (visual) distance from the platoon leader. In a MIB, platoon leaders often have to deal with distances and control processes associated with an armor battalion. Platoon leaders (young 2LTs and 1LTs) though energetic, committed, and very intelligent, do not have the depth of knowledge and experience of a company commander and should not be the focal point and manager of time sensitive collection operations. This is not to say that they should not be involved in the process, they should. However, dealing with the basic responsibilities of issuing orders (distribution of plans) movement/terrain deconfliction, advance party and security tasks, maintenance, and logistics (fuel/ammo/chow) is a full time job during tactical operations. MI doctrine clearly focuses the responsibility

for collection operations at platoon level, and by default on the shoulders of the platoon leader and his platoon operations center (POC), where it does not belong for the reasons cited above[4].

ROLE OF TEAM LEADERS

In the 103d team leaders were held accountable for their systems status, collection performed by each member of the team, timely reporting, and security of their site (s). The advanced netted systems in SIGINT companies require all systems to be integrated to reach the potential of the collection system (s). The nature of the target environment also, many times, requires collective efforts of a team to capture and understand what is or is not happening. The loss of a single position and/or its focused-team collection can significantly degrade operations. Net Radio Protocol (NRP) communication links/capability, which automatically send to and strip messages from each independent collection position, place additional challenges on the team leader because he may not know what information has been released by other members of his team unless he has firm control over the mission. The leader must constantly know what each of his positions is collecting and reporting if he is to effectively control search procedures, sector searches (NAIs and TAIs), and tracking operations. He must insure that not only the literal transcription of what is collected is reported but also insure that his team members are putting reports in the proper context to their (enemy/OPFOR) urgency and precedence. He must know his enemy and be able to "read between the lines" when activity isn't self evident. He must emphasize and expedite collection against the most

[4] U.S. Department of the Army Field Manual 34-10, Division Intelligence and Electronic Warfare Operations, (Washington: GPO, November 1986) pages 5-1 to 5-5.

important targets and taskings. He must insure that when his team members are not hearing tasked signals they are reporting the absence of these signals and what they are in fact hearing. Centralized direction of collection positions can not possibly happen above company level in a dense and dynamic signal environment. The TCAE can not stay up with the dynamics of the environment at team/collection position level. The TCAE can (as is expected and explained below) set priorities, recommend general collection/search schemes, and perform data base processing and support against PIR that are helpful to the companies and collection teams. The TCAE can provide feedback and cueing that is meaningful and rewarding.

INTEGRATION AND CORRELATION

The power and value of all source intelligence has been recognized and is a process widely used throughout the intelligence structure. The counterpart in the MIB to all source operations is the correlation of multiple sources (though not all source fusion) which aids in making sense and relevance out of pieces of data and independent reports. By practice, structure (equipment and personnel) and doctrine the MIB S-2, TCAE, and S-3 elements conduct semi-independent operations[5]. To overcome this shortfall and realize the power of integrated operations and correlated data/information, I placed the battalion S-2 under the overall control of the battalion S-3 and collocated all three elements in one operations area. The TCAE which was already under the S-3's control was fully integrated with S-2 operations. The S-2 operated as a full blown intelligence operative responsible for time sensitive dissemination of correlated combat information. She was responsible for situation development and was the

[5] Ibid, pages 3-16 to 3-19.

person the S-3 and I held responsible for the overall credibility and quality of correlated information leaving the battalion. This relationship allowed the TCAE to remain focused on "technical" operations and reports and at the same time remain relevant to the essence of both friendly and enemy/OPFOR situations. To facilitate the flow of information between the SIGINT and collateral elements the S-2 was fully integrated into the battalion's communications and automation structure. She had a TCAC remote terminal (with manual release capability) which was placed side by side with the TCAE supervisory/product release terminal. This compatible automation, access to a common data base and reports, and means of face to face coordination insured the integration of information, cross cueing of intelligence assets, and dissemination of information. See S-2, S-3, TCAE below.

COLLECTOR TO KILLER

The term "collector to killer" was used to describe the authority, procedures, and importance of getting timely combat information directly from collection units (forward companies) to the lethal--killing elements of the division. This created a positive mind set within the MIB and also within the division concerning the intent of the MIB to deliver useful/targetable information against threat forces within the window (s) of opportunity for divisional combat elements. This was also the only practical means of providing direct support to maneuver elements while remaining in general support of the division. Simply stated, if a company acquired combat information, in its general support collection mission, that would affect a forward brigade, it had authority to go directly to the brigade with the information, even before reporting the information to the MIB TOC. The

forward location of both MI companies and maneuver brigades made this practical over FM communication links for most operations. The same criteria and procedures were used by the battalion TOC (S-2/TCAE) with the brigades. Similarly, the correlation effort, led and executed by the S-2, enhanced the potential to recognize critical events and to quick fire "nuggets of information" about these events to maneuver/combat elements. Occasionally information that shouldn't have been sent was but the overall strategy was well received at all levels within the division.

One of the issues surfaced in recent BCTP exercises is that the MIB competes with the G-2 in providing information and intelligence to the brigades and to the DTAC. Under the pressures and realities of tactical operations where communications with principal nodes and customers are a constant challenge, the big picture is much fuzzier, access to corps and EAC intelligence assets is not assured, results from collection assets are less pure, systems fail and maintenance is an intensive management problem, and movement is required, and the MIB can't compete with the G-2 even if it wants to. The two elements must be partners that have a clear division of effort (DOE). The MIB is responsible for collecting useable pieces of information and the G-2 is responsible for the analysis and assessment of all of the information. However, sometimes information has face value and doesn't need analysis to become relevant to a customer. This type information needs to be sent directly to customers that can use it. As was often said by maneuver commanders, "don't analyze the information so long I don't have the opportunity to act upon it." When the MIB sends this type information to a customer, the G-2 must also get the same information and be told that it has already been sent to the customer. Our automation helped us do this (sent X report to X customer) in a very time sensitive manner.

Never during the execution of REFORGER (or other division exercises) was there a conflict with this approach (dual levels of filtration and reporting) by me as the Battalion Commander or by the G-2.

TWO MINUTE REQUIREMENT FOR COMBAT INFORMATION

To make collector to killer a credible approach to direct support, a standard of two minutes was set for getting combat information through the battalion TOC to the G-2 and/or through the company CP or battalion TOC to the brigades. The principal focus of this requirement was information that on its face value was worthy of the attention of intelligence managers and combat leaders. This inherently means that collectors (SIGINT/surveillance) must know what constitutes combat information. I surprisingly found out that many of my personnel really didn't understand what combat information was and would report perishable information in a routine manner. To facilitate this process, I set a standard that said when you know what type of enemy element you are listening to or seeing (artillery, infantry, C&C, etc.), what echelon it is/represents, and where the target/activity is located, you have combat information that must be expedited through the system. The two minute criteria was an arbitrary figure that was believed to represent the timeliness needed to insure there was a reasonable chance to engage a target or take action before an opportunity was lost. I don't know that this time limit is/was fast enough. Tactical standards require that collection/surveillance teams prepare and send their reports to battalion for review before they are sent on to appropriate consumers. This approach inherently requires another delay for the battalion element (S-2/TCAE) to receive, process, and recognize the importance or worthiness of the information before dissemination can be

performed. The specific time restriction for the battalion to get the information to an appropriate consumer is longer than two minutes (actual timeliness standard is classified)[6]. If the target is an enemy/OPFOR maneuver element (tank, infantry, even artillery) there is significant potential that the target or activity will have moved or been terminated. The two minute requirement started from the second the collection operative or analyst realized the importance of a piece(s) of information (criteria above). The standard was never completely met during my command. However, during REFORGER, information meeting this criteria was consistently getting through the system to the user (DTOC, DTAC, brigades) in three and one half minutes. The communications structure (to include NRP) as outlined below could and did respond to these requirements. The mind set of the team leader, the direction of collection operations by the battle captain (company commander), and integrated correlation environment were fundamental underpinnings for this process and capability.

PSC-2/QUICK FIRE LINKS

To facilitate the flow of information within the MIB and between the battalion, subordinate companies, division G-2, and brigade S-2s, PSC-2 burst transmission links were used, see diagram 7, Annex A. The PSC-2s were adapted to standard FM radios and integrated to IBM personal computers (PC). The combination not only transmitted, displayed, recorded, filed and acknowledged the information transmitted or received, but also facilitated automatic relay of data between these elements. Speed of transmission was at 16 kbs. Reliability of these links was excellent during REFORGER (even

[6] United States Army Europe, SIGINT Reporting Instructions, (Heidelber: GPO, 1986) page 2.

through radio relay units) and during other field exercises; and, they were/are virtually unjammable.

USE OF ELECTRONIC WARFARE ASSETS-COLLECTING AND LOCATING

Company teams were developed that included both collection, locating and jamming assets. Habitual relationships placed TACJAM with the SIGINT company that was track heavy (Charlie Company-TRAILBLAZER, TEAMPACK) while wheel based Alpha Company (TEAMMATE) usually had all of the wheel based jamming assets. The logic for this split was that each of the battle captains would need and be able to effectively engage jammers during key actions in the battle(s), that jammers "thickened" collection capabilities, that C&C of jammers would be easier, and that the MIB could effect centralized massed electronic fire of jammers if required. There were times when all jammers were placed under one (either one) of the two SIGINT companies for massed electronic fire but the basic relationship was with the split described above. The baselines of the two companies were established so that the TRAILBLAZER company had the greatest/longest LOS and area coverage. Alpha Company, because of the speed and flexibility of its wheel base, was used as the pivot element. Where terrain and area coverage permitted, Alpha Company (TEAMMATE) was in front of the TRAILBLAZER company. However, it was infrequent that terrain afforded this overlapping coverage. Therefore, Alpha Company usually was used to cover a more discrete and focused area. To the extent possible there was a hinge that connected the two companies so that there would be some mutual coverage and support. In REFORGER, Alpha Company was required (based on commitment of the division by the corps commander) to be prepared to swing almost 40 kms from right to left and vice versa to meet the threat

while Charlie Company remained relatively stationary on the deepest looking terrain. Both company teams had alternate sets of positions and executed them as the situation (collection/friendly-enemy situation) dictated. Baselines were established that were more narrow than the capabilities specified for the systems. Seldom could terrain be found that supported the full extension of a potential baseline. Second, our gunnery exercises convinced us that the systems could not realistically be netted over the distances stated in system specifications. Maximum netting distance for TEAMMATE was 20 kms and 15 kms was more realistic. TRAILBLAZER could be netted over a 40 km baseline if the LOS was very good. Third, friendly and enemy situations seldom made it wise or possible to extend the baseline too far beyond 30 kms. While the threat, terrain, and friendly courses of action always were the dominate factors, the optimal configuration was not a straight line but a boomerang shape (see diagram 1, Appendix A) that gave good coverage for all types of electronic warfare (EW) assets in at least two primary directions while improving overall security and ability to command and control assets. This translated into a posture, terrain permitting, where Charlie Company team (TRAILBLAZER, TACJAM, AND TEAMPACK) would form the boomerang (affording broad coverage--to 120 degrees). Quick Fix (see diagram 2, Appendix A) could provide independent coverage of any targeted/prioritized area. Or, by using "INTEROP" netting (between TRAILBLAZER and Quick Fix) provide extended coverage in conjunction with either of the two basic TRAILBLAZER angles inherent in the boomerang (see diagram 3, Appendix A). Alpha Company was then placed either to the opposite flank gaining 180 degrees of coverage or to the front of either of the TRAILBLAZER angles for depth and concentrated effect (see diagrams 4,5,6, Appendix A). As stated above,

company commanders made final approval on placement of their assets on the ground. However, they were supported by extensive LOS profiling in addition to imagery interpretation of any sites that could not be physically reconnoitered to insure access, forest density, and exposure would support collection operations. This profiling and interpretation was a continuous function for subsequent positions. It clearly speed up and improved site selection under the stress of fast moving tactical operations. These skills and functions will be critical for actual combat once preselected GDP locations are abandoned.

SIGNAL ENVIRONMENT

REFORGER exposed us to great levels of "co-channel" interference. There were scheduled to be 16 users (both blue and orange) on each VHF frequency. While not all 16 users were using the frequency at once, it was common to find 4-6 units actively using the same frequency. This translates into several hundred simultaneous emissions in the frequency band of MIB collection systems. Additionally, as almost all users were speaking English, the identification of friend or foe was more difficult to determine. We also experienced some communications in French and German. French transmissions were quickly scrolled off of because they were from friendly forces on our side. The location of German transmissions had to be determined to confirm whether they were opposing force signals or friendly elements. Some discrete signals affiliated with Soviet capabilities were also recognized (and separately reported). In an actual combat environment the unique language (s) and signal profiles of intercepted transmissions will ease the burden of identification and targeting in a co-channel interference environment. I am convinced that there will never be a more dense signal

environment on an actual battlefield than that experienced during REFORGER from the thousands of radio transmitters belonging to the two closely confined opposing corps. From this background I believe it can be accurately said that ground based collection systems/operations will not be obviated by dense co-channel interference as was commonly postulated by many SIGINT experts and their simulation models. However, as we confirmed in REFORGER, there are so many potential signals to collect that any effort not confirming, denying, or searching for a priority signal is wasteful.

EMPLOYMENT

The SIGINT companies of the MIB were used in a systematic manner to develop the battlefield. The division commander, in a previous REFORGER (as an ADC-M), had lost sight of the battlefield and the enemy force. He was surprised during this (previous) exercise and consequently wanted to insure that he could "see the battlefield" and its basic dimensions. This translated into the requirement for REFORGER and GDP to have a constant appreciation for the basic disposition (template) of opposing forces and second echelon forces that could affect the battle area. As a result, the G-2, as the collection manager, was also concerned with a broad perspective. His PIR initially focused on the OPFOR/enemy's primary disposition and use of the battlefield. The first activity for the MIB then was to find enemy basic concentrations, his "lay of the land disposition" and to identify the type force (cavalry, infantry, artillery, armor) opposing or closing on friendly forces. This general search methodology could and did quickly template the enemy and identify principal avenues of approach. It did not provide (in most cases) high resolution targets and/or get into an in-depth understanding of enemy intentions beyond what was inherently obvious by the enemy's basic force

structure and its disposition. The exception, during this initial general search, was the detection and location of artillery. This was a priority not only because artillery is a key indicator of the enemy's disposition and weighting of the battlefield, but because it is the biggest overall killer and disrupter on the battlefield. From this initial appreciation (template) of the situation, which principally looked at first echelon forces of the enemy, we switched our attention to detecting and finding the command and control that was directing the close battle. It was constantly necessary to force collection operators off close battle signals to search for the controlling elements directing the application of combat power. From there our priority was to find the encrypted links/nodes that were communicating between the first and second echelon elements. Because the deep look takes more time to develop (and is always important), I had each company, from initiation of operations, allocate two collection positions (of 10) to detection and tracking of second echelon targets. Throughout all of these operations, the principal approach was to detect the type unit, its size, and its location and to report it through the system to the user within the two minute standard. Priority was obviously given to any report that satisfied a specific PIR or that needed development (processing/correlation to identify, etc.) to determine (because it was suspected to be important) if it would satisfy a PIR. The G-2, from his all source perspective would frequently direct us to drop coverage on certain targets that we were exploiting because he (G-2) had an "adequate perspective" on the situation and was concerned with other targets and sectors. This was infinitely frustrating to our operators, but in the overall scheme of maneuver and application of force, was necessary. When we were directed to refocus on a totally new sector (new enemy/OPFOR) we would revert to our general search to again get the "lay of the land." My division of

effort (DOE) during the first battle in a new sector/environment was to have about 70% of our resources feeling out the close battle while about 30% was trying to develop the second echelon situation. After we had developed the basic situation I wanted these percentages switched (70% second echelon, 30% close battle). As mentioned in the opening paragraphs, the data base that was provided to us was only marginally useful, and so, we developed our own limited data base for each phase of the operation. When we acquired the OPFOR CEOI mentioned above and could attack specific frequencies and call signs, our development of the situation obviously surged. While I don't think any of us expect to capture enemy CEOIs on a regular basis during combat operations, it was a very powerful insight into the value of a data base that can started you off on course.

As was previously stated, artillery was/is the most important target of the MIB. Artillery was pursued in REFORGER with a similar level of priority. However, REFORGER rules and umpires (contacting-locating umpires, arbitration procedures, etc.) made killing artillery an artificial and down played event. However, it showed up the vulnerability a force will have if its organic fire finding assets are not available (maintenance, attrition, displacement) or can not handle the volume of targets; and, the importance and value of the MIB and its collection resources to the counter fire battle.

USE OF ELECTRONIC WARFARE ASSETS-JAMMING

Jamming assets were used initially as collection capabilities until the situation was developed. Even after the basic situation was developed, very careful control of jamming assets was maintained. In fact, jamming operations were held in a centrally controlled mode until it was clear that friendly forces were in a critical situation that could benefit from the

concentrated application of jamming. We coordinated closely with the division G-3 and C of S concerning jamming operations to insure they were synchronized to division operations. The exception to the centralized control rule was, authorization to use low power (30-75 watts), white noise, harassment jamming (under company commander control) to help develop the situation. Our jamming logs show significant information on enemy forces (identity/echelon) was gained using this method. It also degraded the enemy's command and control without him knowing it.

There were several reasons for limiting active high powered jamming operations. First, because of the limited time that active jamming could be conducted before our assets were located by enemy SIGINT units, they had to be protected or hidden (explanation below) until the decisive moment in battle. Second, jamming was obviated and its effectiveness minimized or eliminated when our opponent knew he was being jammed and was given time to work around the situation. Our experience showed that opponents were able to work around jamming, once they detected its presence, within 5-7 minutes. Third, because jamming operations were considered (and proven) to be combat multipliers when employed at the right time, they were used selectively to insure that their effect was available for the decisive moments of a battle. Fourth, active and continuous jamming missions, especially using high power, risked loss of equipment due to maintenance failure prior to the decisive moment of battle.

During REFORGER, our assets were able to identify opponents jammers in less than 60 seconds; and, because of the high power that most used, it was easy to locate their positions with high resolution. While they were not easily neutralized in REFORGER, a single artillery volley would be very effective in combat against jammers. When massed/active jamming

operations were conducted, the targets selected were engaged with medium power (150-300 watts), using white noise, against specific command and control and fire control frequencies. These surgical attacks were normally conducted in support of offensive and defensive operations. Jammers must be relocated after each concentrated jamming attack for their survival (although it wasn't necessary for REFORGER because of the umpire situation--we may have learned a bad lesson). Quick Fix is clearly the best jammer in the inventory because of its range, depth of coverage, and flexibility (collect, locate, jam). It also was/is much more survivable because it can be moving as it is jamming or quickly move from its basic jamming location to another if it has been hovering.

USE OF INTELLIGENCE AND SURVEILLANCE (I&S) COMPANY ASSETS

The I&S Company structure in reality all but dissolves during tactical operations. Its assets become DS/GS to other organizations and elements. A productive use of the I&S command element functioning as LNOs was found that enhanced the overall integration of intelligence operations within the division (see LNOs below).

GROUND SURVEILLANCE RADARS (GSR)

The division commander placed GSR teams with the division cavalry squadron and his leading brigades. I experienced continuous problems with these relationships with the exception of the affiliation with the cavalry squadron. The principal problems were that employment of GSRs is limited in Europe because of terrain. Normal radar LOS is less than 3 kms which is equivalent to visual range. Night vision devices in combat vehicles and provided to individuals have essentially the same range as that of radars. Combat vehicles found in modernized divisions are faster and more

maneuverable than radar tracks, even the new M113A3s. Therefore, staying up with, much less ahead of or on the flank of the supported force, is a challenge. Frequently, brigades lost GSR teams, and morale was almost always bad after an exercise because the teams had not been employed effectively during the exercise. In the eyes of the brigade, they were more trouble than benefit, but each of the brigade commanders had to have his "MI slice." I believe that the GSR assets should be employed on a flank, either with the cavalry or on the opposite (and least dangerous) flank from the cavalry. I also believe and stressed to the GSR teams that their best surveillance system was their eyes and ears unless weather conditions were severe. Radars are very easy to detect and locate with modern electronic intelligence (ELINT) collection systems. The presence of radars usually defines the forward disposition of forces or a flank of a force. Consequently, employment of these devices should be selective, for specific purposes and conditions, and carefully controlled. I had the GSR teams trained to conduct reconnaissance missions much like the cavalry using their eyes, moving from position to position and reporting their observations. When used in conjunction with maneuver elements, this seemed to be the most productive capability for the GSR teams. As a result of this less than satisfactory situation, I developed several alternative missions that the GSR teams could perform and convinced the division command element on a case by case basis of the merits for each. In one exercise the GSR teams were employed around a force (brigade) that was being reconstituted before launching a counterattack. Their principal surveillance means was visual. They did, in fact, detect and warn the supported force of an advancing OPFOR attack. In another situation, the GSR element was used to conduct surveillance in the rear area around the division logistic base/staging area. In the final

situation (REFORGER) three teams were employed much like the LRS teams, forward of the FLOT to a depth of approximately 20 kms. In this capacity, they conducted surveillance missions from hide positions. They were initially airlifted into position. In subsequent missions they were either infiltrated into these positions or allowed to be "rolled over" by the opposing force. They exfiltrated or escaped and evaded out when required or necessary. While there is significant risk involved with this employment scheme, it was conducted successfully during REFORGER and, in my opinion, could be selectively employed during combat operations. Communications (reporting) was via VHF radio (PSC-2) LOS to a forward deployed control element or the closest LRS team who then sent the information out via HF burst. Overall, a close look at the value of the GSR teams needs to be conducted. I would vote for eliminating the GSR teams and plusing up the LRS capability of the MIB.

INTERROGATOR PRISONER OF WAR (IPW)

The value of interrogators (IPW) is frequently cited but can seldom be demonstrated through exercises although we have come a long way in at least understanding the difficulties (screening, security, transportation, etc.) that are inherent in handling enemy prisoners of war (EPW). To be most effective in supporting a division or a corps, the interrogators must have timely and direct access to prisoners or suspected prisoners. Of the 12 IPWs that were to become organic to the MIB (previously only 6 were authorized) the plan was to put at least four (only two with currently available personnel) in each forward/committed brigade during combat/tactical operations. Instead of waiting for EPWs to come to them, the interrogators would move to the capture site or the closest available site that could be

secured enough for initial screening and questioning. This would afford questioning of EPWs while they were still fresh from battle, confused, in shock-depressed from capture and potentially vulnerable to questioning. It would also put some expertise in handling of EPWs forward to help combat elements. Moving the interrogators forward meant that questioning and/or interrogation would be performed at the earliest possible moment so that any information gained could (hopefully) be exploited or add to the dynamic process of situation development. It also insured that those EPWs that warranted in-depth interrogation could be expeditiously identified and removed to the appropriate location and authority for further processing. I intended to leave the warrant officer from the interrogation section and his NCOIC in the division rear to form the nucleus for corps IPWs (14-20) to fall in on when they were forward deployed into the division rear area. In all three cases (forward brigades, division (rear), and corps), using this concept, there would be experienced IPW personnel who could develop habitual relationships with the supported command. In general (but always situation dependent), interrogators involved in screening, questioning, interrogating, and processing EPWs should perform their functions as far forward as possible and then quickly remove prisoners from the area of operations for follow on processing.

COUNTERINTELLIGENCE

Tactical counterintelligence (CI) personnel have many more authorized functions to perform in/during combat operations than in peace. First, they must continue to be the security/OPSEC watch dog for their command, insuring that related standard operating procedures are followed. They must proactively address (neutralize) known enemy agents/sympathizers in

the area of operations. They must assist in the screening of refugees and civilians to insure that hostile elements are identified. CI agents, like interrogators, need to be forward deployed to assist brigades. Of the 10 CI agents (5 currently authorized) that will be coming into the MIB, at least two must be deployed forward with each committed brigade. Remaining personnel should from the nucleus upon which corps assets (14-20) fall in on for rear area operations.

COUNTERINTELLIGENCE/INTERROGATORS PRISONER OF WAR TEAMS IN PROTECTION OF THE FORCE ROLE

At the point in time that a division and its combat elements culminate their current operations (attack/defense), they will have, in most cases, reached a point of near exhaustion and will need time to reassemble and recover from their operations. During these times many units will find themselves in unfamiliar areas or areas of which they have only limited knowledge. They will not know who the police chief or fire marshall is, or what civil government authorities remain in the area. The units will not know who belongs in the community/area and who doesn't. The local population will know who belongs there, who the individuals are that may be suspect, and where remaining enemy forces are in the area. CI/IPW teams will be invaluable during these highly vulnerable and transient periods in developing the "local" situation. Their language abilities and knowledge of local/national customs and procedures can be used to quickly facilitate the organization of the local populace in support of the tired and exhausted force as it recovers and develops its own security.

USE OF LONG RANGE SURVEILLANCE ASSETS

The addition of the Long Range Surveillance (LRS) Company into the MIB has been a very positive addition to the intelligence structure of the division. While the asset (in my division's case) was already in the division structure its value as an intelligence source was very limited. It was only a part time operative within the intelligence structure (when committed to tactical operations) and as such its training and understanding of intelligence requirements was suboptimal. It was only after the addition of the unit to the MIB and becoming a full time player in the intelligence structure that it surfaced as a synergistic resource capable of improving the whole intelligence structure of the division. The information provided by deeply positioned (45-70 kms) LRS teams in the vicinity of critical decision points-named areas of interest/target areas of interest (NAI/TAIs) gave the division commander the time needed to reach a decision on the execution or modification of his plan or time to react to the enemy's course of action. In many instances information from the LRS was the division commander's trigger mechanism for commitment or repositioning of forces. In the event that the LRS didn't see decisive enemy forces or activities at key/trigger locations, it told the division commander that what he had expected the enemy to do either hadn't happened yet or that the enemy had chosen another course of action. Either factor was important. The detection and reporting by the LRS of significant enemy forces not only was a trigger event for the commitment of combat elements and implementation of friendly courses of action, but also cued the other intelligence assets within the intelligence structure. When the LRS provided information of this substance, Quick Fix would be launched or diverted to pick up the force at the greatest possible distance from the FLOT to begin tracking it into fire/killing zones. If QUICKFIX wasn't available, or after initial tracking by Quick Fix,

TRAILBLAZER would be cued/directed to focus (sector focus--filter covering specific areas automatically blocking out signals emanating from outside the designated area) on avenues of approach and mobility corridors corresponding to these NAI/TAIs. Experience during REFORGER proved this to be a very effective and synergistic process leading to the successful tracking of enemy/OPFOR elements from areas outside the division's organic weapon systems' range to engagement areas. At other times information from SIGINT sources (corps/division resources) was used to cue LRS elements concerning the movement and presence of enemy forces moving towards NAI/TAIs under surveillance by LRS teams. LRS teams generated over 1500 reports in 12 days of exercise (REFORGER). Even more importantly, they tipped off three of the four major advances affecting our division's sector. In other FTXs the LRS were equally effective. And, as was stated above, but for emphasis, the full time entry of the LRS into the division intelligence structure was a very positive and synergistic event.

LRS doctrine has the LRS forward base and the commander located in the vicinity of the division TOC so that timely flow of intelligence from the deployed teams can be received by the division G-2[7]. At corps level, doctrine has information flow through the MI brigade to the corps G-2. While understanding and being full supportive of the critical need for timely submission of reports from the LRS to the G-2, we located the LRS CP (and forward base) in the forward area away from the DTOC and found another method for insuring timely dissemination of LRS reporting to the G-2. The underlying reasons for this positioning were that they provided additional security (DTOC is a large and prime target-LRS CP forward base very small

[7] U.S. Department of the Army Field Manual 7-93, Long Range Surveillance Unit Operations, (Washington: GPO, June 1987) page 2-9.

and mobile), logistics (CE maintenance, rations, ground transportation) were more timely and enhanced from the MIB than from the already over burdened division HHC, offered greater security and flexibility in movement (to/from extraction points), minimized movement/set up times between locations (significant time required for DTOC relocation), and provided the LRS commander more time for direct supervision and control of his operations. This positioning also made emergency/backup line of sight communications from some of the deployed teams possible. However, the principal concern was to insure that the information from the LRS teams was available not only for the G-2 but also for the MIB on a time sensitive/simultaneous basis. The MIB must cue its collectors in near real time (NRT) if it expects to track moving/dynamic targets. LRS teams were invaluable in cueing other collectors within the battalion because of their depth, credibility, and ability to clarify information. While the G-2 has a great interest and responsibility in providing the MIB with all relevant information it needs, it is not resourced with communications to support the level of throughput (retransmittal) generated by LRS teams, all of which is important and usually relevant (for cueing/situation development) to the MIB and its other collectors. To provide support to both the MIB and the G-2, we implemented a collateral radio teletype (RATT) net with stations at the LRS forward base/CP, MIB TOC, and the G-2/DTOC. This was backed up with FM burst communications links between the LRS forward base/CP and the MIB TOC; and, FM burst/PCM links between the MIB TOC and DTOC/DTAC. The LRS forward base/CP was usually located within 10-15 kms of the MIB TOC (and radio LOS-direct or through radio relay) and by practice the DTAC. This afforded timely couriering if either of the two primary communication links became inoperative. A spare RATT rig was

made available to backup any failure in this important link. One or the other primary links was always available during REFORGER. See diagram 7, Appendix A.

Our preference was to employ and keep employed 4 of 6 teams. In REFORGER we employed 4 of 4 available teams and confirmed that some flexibility was required. This employment concept allows some flexibility to the division commander and provided some relief to the LRS teams. LRS teams were supported with extensive LOS surveillance profiling and photo interpretation (by G-2) for any area that we could not physically evaluate. We learned that for teams to survive, they must remain essentially static once employed. While some movement to achieve different look angles was possible, movement was highly limited. None of our teams were captured during REFORGER but our division captured two OPFOR LRS teams both of which were detected in movement.

Every LRS team received extensive communications training and was always employed with a primary HF and secondary (backup) FM emergency communications plan. Teams were required to put up three different antennas even if their initially constructed antenna worked. One antenna was a long wire, one was a near vertical incidence antenna, and one was a continuously tuning HF box/loop antenna. Teams had three frequencies they could use in conjunction with these antennas at all times. Constant development of workable frequencies was performed between the forward and rear bases and then passed to the teams as required. Forward and rear base CPs mirrored the communications of the teams. Both base stations employed active and backup radios on each frequency/antenna. While this seems very redundant, and is, it proved to be very effective and essential in maintaining communications connectivity; and, was easily accomplished by

the teams. Communications connectivity which had been very suspect, below 50% prior to adapting these procedures turned into 100% connectivity during REFORGER and better than 95% connectivity during all subsequent exercises. In the event that a team had not been heard from within established time parameters, a backup FM emergency communications plan required moving to the FLOT and trying to reach teams from a secure high point; or, involved putting up a helicopter with compatible communications to achieve assured radio LOS

Qualifications for becoming the commander of the LRS Company included: being airborne and ranger qualified; and, the candidate also had to have previously completed a successful infantry company command. Being LRS qualified was desirable (but should be mandatory). The CG and my senior rater (ADC-S) both demanded that the LRS be truly elite and the best trained unit in the division. They were equally concerned that soldiers trained to this level and with the inherent prestige of this type unit could become "rambos" that were too impressed with themselves and out of control. For this reason they wanted a very experienced and mature company commander who could insure control of this vital intelligence resource. The LRS Company commander was selected by the CG.

DECEPTION OPERATIONS

MI doctrine says that the deception team is to be organic to the MIB but OPCON to the division G-3[6]. This is not only an untenable relationship in garrison but makes little sense for tactical operations. A close look at the deception team shows two distinct functional elements: a planning element

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[6] U.S. Department of the Army Living Table of Organization and Equipment, 103d MI Battalion, (Washington: GPO, February 1988) page 17.

and an execution element. I (with the G-2's full support) convinced the division to put the plans element (3 people) in the division G-3 to develop the division's deception plans and to leave the rest of the deception team in the MIB for decentralized execution of deception operations. A division staff element should not have an element responsible for tactical operations assigned to it. No staff element is capable of providing the kind of operational and logistical support required for this type element during the execution of its mission. Are artillery or engineer battalion/companies OPCON to the division G-3 staff? The element that remained in the MIB was assigned to the I&S Company. This was done because the size and C&C of the MIB's HHS Company was/is already too large and complex. However, the deception elements electronic equipment was the organizational maintenance responsibility of the signal maintenance section of the HHS Company. One of the deception elements principal missions was to determine the OPSEC posture of the division and its subordinate elements in conjunction with the CI section which is also in the I&S Company. The logic for this non doctrinal mission is, that before you can deceive an enemy you must know what it is you are trying to deceive him about. Because the only elements in the division capable of determining the effectiveness of the electronic deception element are the two SIGINT companies in the MIB, a close working relationship between the two companies and the deception element developed. The deception element proved very useful in MI gunnery exercises by providing the electronic signature of battalion and above nodes; and, in the process it received some very good training and evaluation. The deception element was also used during ARTEPs at Hohenfels to deceive (physical/visual) participating elements and to evaluate their OPSEC posture. In this regard some very valuable education was

achieved concerning communications security (COMSEC) procedures used by the participating forces.

During REFORGER the deception element was used as part of a corps deception operation. The whole force consisted of two division deception elements and a brigade size force. After action critiques indicated that the consolidated corps deception element /force had not been successful. This is not a reflection on the corps. It is an indication of the difficulty in conducting deception operations and provides an appreciation for the level of commitment in resources that must be provided to make deception credible. Most corps don't have spare brigades or divisions to flesh out deception elements to make them "real" enough for the enemy/OPFOR to react to them.

The value of well planned and executed deception operations is unquestionable and has proven to be a decisive factor in major campaigns throughout history. However, I believe we should have serious concerns over the deception capability and strategy we have implemented in the MI structure. First, I think this element is misplaced in divisions. Deception is very hard and costly to implement and requires synchronization and coordination between all of the echelons. As a minimum, deception planning should be performed at corps and this is still probably not a high enough echelon or large enough portrayed force to make a Soviet army commander change his plan and course of action. Deception has got to start at theater, if not national level to insure security and unity of effort. Only with this level of focus and authority will the resources, priority, and patience be found to implement this very complex and risky mission.

As long as the deception element is assigned to division, it can be productively used in MI gunnery exercises and in the performance of OPSEC

missions. The deception element should remain in the MIB. The intelligence structure can clearly respond to deception requirements without giving up (OPCON) any more of our spaces and talent.

CSS FORWARD TEAM AFFILIATION

The MIB does not have enough maintenance personnel organic to it to perform maintenance on a company team basis. This is reflected in the recent MTOE change that centralized maintenance in MIBs[9]. However, to meet the maintenance challenges in a MIB, centralized maintenance was a reality long before the MTOE change. Armor battalions have one track mechanic for every three tracked vehicles. MIBs have one track mechanic for every four vehicles[10]. This disparity is further exacerbated by the number of different tracks (M1015, M548, M578, M113) that mechanics must work on; and, even within these vehicles there are variations and unique parts peculiar only to intelligence and electronic warfare (IEW) systems. A company team, for tactical operations, may have three different types of IEW tracked vehicles--each with unique parts. On top of this, it is seldom that the MIB has all of its authorized track mechanics which is further exacerbated by the number of vehicles each track mechanic is assigned for maintenance. While the number of track mechanics per unit/MTOE is fairly distributed through out the division the MIB starts out with less than other battalions as discussed above. Add to this the fact that every tank has two sergeants and two other enlisted personnel to perform

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[9] U.S. Department of the Army Modified Table of Organization and Equipment, 103d MI Battalion, (Washington: GPO, March 1988) page 23.

[10] Ibid. page 23.

operator level maintenance and that they are backed up with far more extensive and common spare parts/PLL and the disparity grows.

Signal maintenance shortages are legendary--our fill usually ran from 4 to 6 of 11 authorized. With these shortages company team maintenance operations could not be supported even though their tactical deployment and distance from the MIB trains warranted this configuration. We performed the bulk of our own radio repair (over 80%) which was not authorized but greatly improved our radio status and command and control ability.

A combat trains was formed and normally (situation dependent) was as far forward as the battalion TOC to provide timely forward support. We worked hard on the Administration Logistic Operation Center's (ALOC) command and control (C&C) to insure that it could effectively control the support provided by the combat trains and battalion trains. Effective C&C by the ALOC insured that I knew what the status of outstanding maintenance requirements was and what action was being taken to provide the needed support.

To give a company team some level of support, we provided one signal maintenance mechanic (trained to support the basic systems unique to a company team) and one wheel or track mechanic to each company. Every company was made responsible for self recovery of its vehicles and equipment, even though the battalion had four recovery vehicles (two wheeled and two tracked). Additional tow bars were obtained to make this possible. It was not unusual for a commander to tow a system to his next location, even after a vehicle failure had occurred, to continue to operate the system as long as the electronics would function. Frequently we would tow a TACJAM (with M578) from one site to another to minimize strain on the M1015 prime mover. The battalion's four recovery vehicles were constantly

in use supporting and backing up company teams and their self recovery operations. Each of our maintenance contact teams had radios (even though they were not authorized) to insure they could be reached for high priority missions and to maximum their efficiency. Tank and pump units (TPU) were kept constantly on the road providing fuel support. Because of the flow of the battle and movement of teams, making a rendezvous between TPUs and individual teams was a constant challenge. Map reading and land navigation were critical and were stressed in both garrison and field training. Usually the platoon leader would meet a TPU on the road near a designated town and lead it in to team sites. During REFORGER, the routes were often circuitous to bypass the OPFOR. To the greatest extent possible all of our maintenance operations were performed out of local maintenance sheds or barns.

During tactical operations, maintenance priorities were set that maximized intelligence potential. Within this framework, netted systems form the backbone of the MIBs intelligence capability (less the LRS). As a result, systems that break the netted structure usually had a higher priority for repair than other equipment. When you spend inordinate amounts of time on your intelligence systems (capable though fragile) there is a lot less time available for other equipment and systems. The only relief to this situation comes from top quality services, and they are performed (usually) in garrison before deployment. The combination of shortages in overall maintenance personnel and the priority for netted systems caused many systemic maintenance problems that would have been difficult to address in sustained combat operations over two weeks in duration. Without question, conducting maintenance operations from buildings helped sustain the overall

readiness rate of battalion equipment not to mention the morale of some very over worked support personnel.

Contract maintenance personnel (for IEW systems) are fully qualified and add great support to maintenance operations. The Army should "fish or cut bait" regarding their permanent affiliation with MIB/brigades. The case can be made either way (green suit or contract)---"just do it" and get on with the backup support the MIB/brigades require.

The readiness rate of the battalion's equipment in garrison ranged from 83-86% operationally ready (OR). During tactical operations the rate fell to a range of from 78-84% OR. Our tactical plans reflected these availability rates. Because of this realistic assessment and planning, we were more successful than some other MIBs. With the built in challenges inherent in "one of a kind" IEW systems, maintenance in our units will remain an art and guts business instead of a science and organized process.

CHAPTER III

FUNCTIONS, TECHNIQUES AND PROCEDURES

The complex mission of a MIB, and the intelligence structure of which it is a part, requires a fundamental understanding of intelligence techniques and procedures. These techniques must be tailored to meet specific mission requirements that can change from operation to operation. This requires exceptional flexibility, a clear statement of mission, a good understanding of the supported commander's intent, and clearly stated priorities for the intelligence structure.

Sophisticated procedures and skills are required across the spectrum of intelligence collection, processing, and reporting functions. Most personnel who are expected to perform these functions have received basic training. Some have come from jobs with national agencies where they have used advanced techniques and skills. But commonly, especially for people just entering the Army, most soldiers do not possess high order skills and knowledge in the application of these techniques. To make a cohesive unit (and teams) from this cross section of skills and knowledge, simple rudimentary techniques and procedures that all can understand and utilize are best. The techniques and procedures used in my MIB were as simple and direct as I could make them and still accomplish the mission. At times, we could build teams that were really "high speed" but we always had to have a training program that emphasized the basics. No where in the Army does COHORT have a more valid application than in MIBs.

COMMUNICATIONS ALIGNMENT AND REDUNDANCY

Communications connectivity makes or breaks intelligence operations. The MIB has a significant number of organic communications means. Additional communications means are provided by the division and corps communications structures. Current MI doctrine describes a very complex and highly structured communications network that is not very flexible and is subject to single points of failure. With equipment on hand, a much more reliable and flexible structure can be implemented.

Our primary communications between analytic and collection nodes within the battalion (companies to TOC), and between the battalion TOC, the G-2 and the brigade S-2s was via FM radios (digital burst mode). To facilitate rapid, flexible, and reliable communications between these nodes, we implemented a network structure/capability that integrated the Technical Control and Analysis Center's (TCAC) communications processing capability and FM radios adapted with PSC-2s (digital burst devices) that were terminated with IBM PCs. FM radio relay (RR) units provided us needed LOS and extended distance. Net Radio Protocol (NRP) communication links were used for passage of intelligence reports between collection systems equipped with this capability and the TCAE (via TCAC). However, not all collection systems are equipped with NRP (and there are still some bugs and anomalies in NRP) and none of the brigade S-2s or G-2 is equipped with NRP. Instead of the multiple independent communication nets/links between the companies and the battalion called for in MI doctrine, we established two primary intelligence FM radio nets/links (vice five) and operated them exclusively in the digital burst mode to move data and

information[11]. Because the nets/links operated in the burst mode, utilization rates were exponentially improved obviating the need for other nets/links. These nets/links were common for all intelligence elements in the battalion (or any other authorized division intelligence element). One was special intelligence (SI) high and one was collateral. Both could be supervised by the TCAC's communications processor (for automatic routing and relay). Incoming digital messages to the battalion TOC were routed by the communications processor (TCAC's) to one of eight TCAC work stations or IBM remotes. Incoming SI high messages were routed to TCAE operatives and incoming collateral messages were routed to the S-2 who had a TCAC remote work station equipped with a manual release capability. Both the TCAE and S-2 had access (both inside field special compartmented intelligence facility (SCIF)) to all messages regardless of their classification. From these terminals, messages could be received or transmitted to any user (division G-2, brigade S-2, company CP) without moving from the operator/analyst's work station. Similarly, the division G-2, brigade S-2s or company CPs could transmit or receive through their IBM/PSC-2/ FM radio capability to any other element on these nets/links. This eliminated the need for most voice transmissions and all hand (finger) poking of digital messages on PSC-2s. This capability/technique made the duties normally required to communicate (RTO duties) on both ends of the net a no cost by-product of routine intelligence functions performed by intelligence operatives (35D/G, 98C/G, 96B). Specifically, this technique, saved us ten RTOs (five nets) that would normally be necessary to man these nets as a full

[11] U.S. Department of the Army Field Manual 34-10, Division Intelligence and Electronic Warfare Operations, (Washington: GPO, November 1986) pages 3-30 to 3-44.

time job. This made every intelligence analyst an operator and not a part time operator and full time RTO.

Supplementing this primary means were PCM links between the MIB, the G-2, and brigade S-2s (though not nearly as timely or reliable); HF RATT links between intelligence collection companies and the MIB TOC, and between the MIB TOC, division G-2 and TCAE; and, Deutches Bundes Post (DBP) commercial lines to corps and EAC (secured by CAL 43 devices) on an as required/as available basis. Our familiarity with these capabilities and techniques was excellent because we used them in our day to day peacetime intelligence operations between collection companies (TROJAN, HOMEBOUND, peace time reconnaissance program (PARPRO), live environment training (LET) missions) and the battalion TOC (fully operational and integrated with the intelligence system on a day to day basis in garrison), division G-2 (all source intelligence center (ASIC)/collection management (CM)) element, and corps TCAE. We required no learning curve in communications procedures or integration when we deployed to the field. See diagram 7, Appendix A.

Obviously, Mobile Subscriber Equipment (MSE) will have a dramatic and desirable effect on division, corps, and MIB communications. Nonetheless, many of the communications currently organic to the MIBs will not be replaced and must be utilized to their potential. The power and flexibility of the digital links (HF/FM radio, NRP) will remain the bread and butter communications between collection teams, company CPs and the S-2/TCAE. These links will still have important back up assignments to MSE.

HF PRIORITY (SECURITY/RELIABILITY)--STREAMLINED NETS

The MIB has eight organic HF radio teletype (RATT) systems. At least two other RATT systems are provided to the MIB to tie it into the division

and corps intelligence and command structures. It is realized that RATT systems will be coming out of the structure. However, the value they have to the intelligence system is stated here and should be used to justify acquisition and/or distribution of the Improved High Frequency Radio (IHFR) and Digital Message Data Group (DMDG) burst transmission devices. For now, RATT systems are relatively difficult to maintain due to the age of the equipment. Well trained and experienced operators are necessary to keep the systems operational. As was pointed out above, MIB companies operate over greater distances than any other type company in the division. The MIB itself has to operate over a sector much wider and deeper than any brigade. The MIB is also one of the first, if not the first, element of the division to move forward in the area of operations. The question of wether MSE will be there for the early stages of operations, especially on a non-linear battlefield, must be asked and answered. Both the depth and width of operations performed by the MIB can be supported from inception by HF communications. RATT capabilities (or IHFR capabilities) afford tying dispersed elements in forward collection companies together with the MIB and supported elements in the rear (DTOC, CTOC). Additionally, HF signals are difficult to locate (sky wave direction finding, +/- 50 kms) by an enemy or opposing force for targeting or tactical maneuver against friendly elements. This provides security, especially to forward deployed elements. MI doctrine requires four RATT nets for the eight RATT systems to support communications between collection platoons and the MIB TOC. Three are in the Alpha Company to support the three communications and jamming (C&J) platoons and one is in Charlie Company to support the EW platoon. Also, by doctrine, one RATT system is provided by the corps MI operations battalion to tie the division and corps MI elements together. The division also

provides one RATT system to the MIB to enable it (division) to communicate with the MIB for passing operations and intelligence information. Keeping all of these systems and separate links operational is very difficult. It takes significant effort and management of each link. Since the primary collection systems in both Alpha and Charlie Company are netted and have their own integral high capacity data links for communications between systems and with the TCAE (and are backed up by FM burst links), RATT systems are no longer (originally they were) needed for this purpose. Also, RATT systems could not handle the volume of traffic generated by these new collection systems--they would literally be destroyed trying to handle the volume. But, RATT communications (or more precisely HF communications) does have an important place in intelligence operations for the reason initially mentioned above.

To take advantage of the RATT systems capabilities and use them within their capability and potential, I provided the principal collection companies (Alpha, Charlie, and Delta) with a RATT system. The RATT was collocated with the company's CP (and master control station in SIGINT companies). One system was provided to the G-2 and two systems were kept at the battalion TOC. Two backup RATT systems were kept to replace failed systems, one at the battalion TOC (for MIB or G-2) and one at the LRS CP. Two networks were utilized. One network was SI high and handled SIGINT reporting and one network was collateral and handled LRS reporting and on call collateral connectivity with QUICK FIX for mission planning and fragmentation orders (FRAGO). The corps RATT system provided SIGINT connectivity between the division and corps TCAEs.

The RATT nets were backup to the principal communications discussed above with the exception of LRS reports (FM burst was the LRS

backup). Of course, if the companies were deployed forward ahead of the division/corps, RATT was the primary link. However, normally, only information of a critical nature, that could not be passed over other means, was sent over RATT. RATT was also used when a company's principal FM links were being jammed. Strict limitations were imposed on the type traffic allowed to be passed over RATT - it had to be high priority. The simplicity of these net structures (one SI, one collateral) facilitated better information flow, required improved communications discipline, and provided redundancy (backup capability) where it was most needed. Our experience in REFORGER with HF RATT systems and nets was very positive. When we had a failure with RATT, it almost always was caused by excessive volume of non-essential traffic. Overall, availability rate for RATTs was over 90%. Most importantly, RATT provided solid backup communication when they were crucial and afforded us an initial means of communicating with the DTOC (located far to the rear pending commitment by the corps).

It is strongly suggested that MIBs (and the intelligence structure overall) will have a continuing need for HF communication links. The new IHFR should be aggressively pursued for the MIB (s) and the intelligence structure in general. IHFR will help overcome reliability problems inherent in the ageing RATTs and when combined with DMDG type capabilities will provide a type record traffic and improved security for our forward deployed elements. I do not have confidence that MSE will always be there when we first deploy (ahead of division and corps combat elements) nor on a non linear battlefield. MSE does have a distinct and detectable signature that could expose the presence of lead elements of friendly forces. The IHFR is also compatible with LRS communication capabilities (if not identical) and will afford good connectivity between the LRS CP, MIB and G-2; and, function

as a backup capability or primary capability before MSE is fully deployed and operational. Even without designated force structure to operate IHFR/DMDG communications, we can accommodate the capability within our current manning levels. If resourced, IHFR/DMDG (or equivalent capability) should be provided to the same nodes that have our current RATT capabilities in addition to the LRS Company.

PSC-2/IBM LINKS--INCLUDING THE G-2/BDES

The importance of the FM/PSC-2/IBM links and their basic connectivity was specified above as is important to remember. To the operator, this configuration simplified his duties and allowed him to concentrate on intelligence functions. The IBM (controlling device) was much easier to use than the PSC-2 by itself because of the size of the keyboard and larger visual display. The IBM could store virtually an unlimited number of reports for subsequent analysis or retransmission and provided a simple data base capability for some data manipulation. The PSC-2 error correcting algorithm significantly improved the reliability of transmission and virtually eliminated the old requirement to "say again all after" drills we used to have to perform. The speed of the burst transmission not only minimized our signature and saved radios, it also proved to be very secure (even without encryption) and was almost impossible to jam. We programmed the IBMs to relay messages. For example, if we couldn't reach Alpha Company but could reach Charlie Company, we would relay traffic to Alpha Company through Charlie Company. In one exercise we conducted, the G-2 could not effectively reach brigade S-2s, but by implementing the relay protocols he was able to reliably reach the brigades by automatic relay through the IBM/TCAC

configuration. Retransmission was all automatic, and when it arrived at the distant end, it told the recipient who it was from and who it had been relayed through. This technique gave the intelligence structure in the division its first integrated, highly flexible, digital communications capability. When collector to killer information was passed to a brigade, the company commander would send a message from his CP (IBM/PSC-2) to the brigade liaison officer (LNO) located in the S-2's track in a very timely and accountable manner. The transmitted message was automatically acknowledged and a message serial number was automatically assigned with a date-time group. After the message had been sent to the brigade, the commander would have the message sent to the battalion TOC. It took a couple of key strokes. The time differential between receipt at the brigade and battalion TOC was a few seconds at most. Using this capability and technique, we had confidence that our messages would get through to our customers on a time sensitive and consistent basis.

Hopefully, MSE will be as good as advertised. It certainly will take some of the burden off the MIB. However, the IHFR/DMDG and IBM-PSC-2-FM capabilities should be kept in the intelligence inventory for backup and special purposes. For the even more nonlinear battlefield of the future they will be an essential capability.

RADIO RELAY

Radio relay capabilities were essential to achieve the flexibility and simplicity demanded of our communications structure and extended (distance) communications requirements. The MIB has three radio relay units that are intended to provide connectivity between C&J platoons, which are performing independent-DS operations, and the battalion TOC. We chose

to use them instead in support of the entire division intelligence structure. Their placement can be seen in diagrams 1-7 Appendix A. One was used to insure connectivity for FM burst transmissions to the G-2. It supported SI traffic headed to the ASIC. Frequently, the division TOC would be located in a town that was blocked (radio LOS) by terrain or buildings. This radio relay insured we had radio LOS to our principal customer. The second radio relay was also SI high and was placed forward to insure connectivity between the battalion TOC and forward collection companies. The final radio relay supported collateral communications and was situationally used to support the battalion command net or the battalion intelligence net. This relay normally was employed with the battalion intelligence net to provide extended connectivity to-from brigade LNOs; because, it was easier for them to operate in a collateral mode inside the brigade S-2's track. This final radio relay was our swing/backup capability in case of failure in one of the other systems. Although, based on the situation, any of the relays could be used to complete essential LOS to a critical node. Reliability of the radio relay systems was excellent, worked well with FM digital burst transmissions (PSC-2), and once mounted in HMMWV offered exceptional flexibility for our communications. We never lost our basic SI/collateral radio relay capability during REFORGER. At one point, because of the distance between the battalion TOC and G-2, we had to put two radio relay systems in tandem to reach the G-2. This pushed our capabilities and reliability, but it worked for the short period of time that it was essential until an alternate location (with better LOS) could be implemented. Flexibility in the use of radio relay units was substantially enhanced when we implemented the capability in the IBMs/TCAC to perform relay functions.

We aggressively used radio relay to get around jamming. A single

code word modified our entire communication structure with the relays picking up the bulk of the traffic on their assigned frequencies until other primary frequencies were allocated or it was effective to return to original frequencies. The radio relays gave the company commanders (and others) an on line alternate frequency and communications path that could be utilized as required. As an aside, we chose our alternate frequencies (from available pool of alternates) by putting a SIGINT collection system on the target frequencies to determine activity and potential for co-channel interference.

NET RADIO PROTOCOL--USES, STRENGTHS, WEAKNESSES

Net Radio Protocol (NRP) as a tool is potentially very useful although there are some shortcomings that detract from its potential and should be fixed. NRP has been implemented on a system (e. g.. TRAILBLAZER) by system basis. There are differences in how the capability has been integrated into systems. Specifically, TEAMMATE can operate in a polling (sequential-interface) mode or in a contention (discrete-interface) mode, but TRAILBLAZER can only operate in the polling mode. TCAC, which controls NRP can not effectively function in both modes simultaneously. Initialization of NRP in either mode is a moderately difficult and time consuming function. Much greater flexibility is possible with a system that can function in both modes. In the polling mode each station in a system is "polled" sequentially in a hierarchy established by the TCAC to pass messages to a station and receive messages from that station. In our battalion it took about 35 seconds for every station to be polled (send messages/receive messages). In this mode the station communicated directly with the TCAC and required LOS to the TCAC. In the contention mode (possible in TEAMMATE) a station could

talk directly to TCAC or could talk to another station in the system or could relay (send/receive) through another station (TEAMMATE). In the first case, polling was very difficult to execute because it required, for TRAILBLAZER, five systems to have LOS to the TCAC in order to communicate with it, LOS between the five TRAILBLAZER systems for netted direction finding, and common LOS between the five TRAILBLAZER systems and their primary target/target areas. To find this type terrain was almost impossible from all three perspectives (rear-internal-forward). Additionally, NRP in TRAILBLAZER (polling mode) did not allow passage of gisted messages between stations; so, one station could not pass a text message to another using NRP. Work-arounds were required to keep the MCS aware of the subordinate operators reports and to keep the battle captain informed about the environment, tasking, collection and performance of his unit. The alternative was voice communications between stations which resulted in poor communications security. Contention mode, on the other hand, allowed direct passage of messages between systems. This minimized the requirement for three dimensional LOS and allowed the battle captain and his MCS to be capable of filtration (for combat information and collector to killer functions) and influencing collection operations. The other shortfall in NRP is that not all collectors are equipped with the capability; specifically, QUICK FIX, our most flexible system, is not equipped with NRP and there are no plans to add this capability[12]. As an aside, QUICK FIX has communication problems with the FM radio located in the rear of the aircraft used to pass messages to the MIB TOC. This problems was not experienced with the previous version of QUICK FIX. We initially thought it might only be our

[12] Interview, Program Manager QUICK FIX, Ltc Olson, Wurzburg Germany, October 1988.

aircraft that were having problems but other units were experiencing similar problems too. Because of this difficulty we used the pilots radios to communicate with the MIBs TOC for most of our time sensitive reporting.

To overcome and work around the shortfalls described above we used one and sometimes two TEAMMATE systems in the Forward Sensor Interface Communications (FSIC) role to gain the required LOS between collection systems and the TCAC. We had TCAC automatically send/relay copies of messages it received from TRAILBLAZER/TEAMMATE back to their MCSs and battle captains so they could "see"/control/influence collection operations. By "jerry rigging," we could make one TCAC work in the polling mode while the other worked in contention. The internodal capability between shelters was used to cross level information between the two processing shelters but this was not easy to implement and caused confusion between crews in both TCACs. A failure in one TCAC meant you could only operate using the polling mode (the common denominator between TCAC, TRAILBLAZER and TEAMMATE NRP capabilities). Using TEAMMATE in the FSIC role would normally take the shelter used for this purpose out of a collection role and had the effect of reducing the TEAMMATE system's ability to conduct direction finding. Because we had five TEAMMATES, we had some flexibility in implementing the FSIC function with a TEAMMATE. The unit is now equipped with only three TEAMMATE systems so the additional systems are no longer available to be used as FSICs. However, two interim NRP relay devices have been provided to the unit and they are functioning well in this capacity.

When NRP could be set up with the required LOS and initialized properly, it was a very effective system. The operators truly liked its effectiveness in passing data/reports and the " reporting burden" it lifted off

their backs. It should be improved and expanded to be the common means (both modes) of communications between all systems. Separate capabilities should be provided that can work with any of the systems to gain extended range and flexibility, like the prototypes currently provided to the unit. The NRP relay must have a printer capability and have an independent capability to communicate/manage information while simultaneously acting as a relay. This capability will assist the filtration process at any levels it is provided and can act as a stop gap capability if TCACs are down for maintenance or jumping. Finally, there must be a solid back up capability to NRP - like the FM/PSC-2/IBM capability for C&C, management and product reporting.

PCM LINKS

PCM communications served as the principal means for voice communications between the MIB, brigade S-2, and the division and corps G-2s. We developed an interface that allowed the passage of digital communications between these nodes using the TCAC and IBM capabilities described above. This was very useful in passing bulk traffic. However, it was difficult to maintain the quality of the circuits to the point that we were able to take full advantage of this potential. In REFORGER, we used dial up circuits to pass traffic between TCACs at division and corps. Again, availability, required effort, and quality of circuits was a constant challenge. Because we had other backup means (RATT/telephone-DBP), we eventually stopped trying to make the system (data-TCAC to TCAC) work. We also tried to make the TYC-39 (SI high) switch connection between division and corps work and could not. Clearly MSE will improve both voice and digital

communications between these nodes. Hopefully, it will also work with the TYC-39 and/or new automated switch.

SURGE/REDUNDANCY REQUIREMENTS

The communications electronic staff officer's (CESO) life in my battalion was always hectic. He was expected to always know the communications status for the battalion, our companies, and all circuits to higher and lower. While his day never ended when we were conducting tactical operations, it started with a communications briefing to me or the S-3 each morning at 0430 hours (A) and was the first report I wanted when I returned to the TOC after checking company operations or conducting other business away from the battalion. Company commanders were expected to have similar knowledge of their communications capabilities. If communications were down or marginal, fixing them was (except for unusual circumstances) the top priority-no communications-no intelligence. The CESO was always to have or to be implementing backup capabilities--one means was never enough. The success of the 103d can, at least partially, be attributed to the effectiveness of the communications in the battalion. Leaders and operators at all levels understood the priority of communications and applied their time and energy to it without question. During REFORGER we always had communications within the battalion and with the G-2/S-2s one way or another; and, when we needed to surge and pass bulk data we could. The 103d passed over 5,000 messages to its customers during REFORGER.

LNOs AT DTOC, DTAC, AND DIVARTY

The MIB can not operate independently within the intelligence and operation structures of the division and/or the corps. Because there are so

many targets and activities simultaneously occurring, the MIB must stay focused on the division's priorities and must insure that the intelligence support it provides is satisfying these needs. I found that good, knowledgeable LNOs were critical to this synchronization. I took talent out of hide to put LNO teams in the most critical places in addition to those required by doctrine. Current MI doctrine does not have LNOs at the DTOC, DTAC, the aviation brigade or DIVARTY[13]. I believe that when you are conducting a general support mission, LNOs at DTOC, DTAC, the aviation brigade and DIVARTY (each a controller of combat multipliers) are critical. If I had to make a choice between putting LNOs in maneuver brigades as MI doctrine calls for versus putting them at the nodes that control combat multipliers, I would chose the latter.

For REFORGER I used the Bravo (I&S) commander as the LNO at the DTOC and his platoon leader/XO as the LNO at the DTAC. During REFORGER, the LNOs priorities were: to work with the G-2 to insure the MIB's status and needs were understood and supported; to insure that the MIB got plans and OPORDs as soon as they were developed/issued from DTOC/DTAC; to insure the MIB was aware of fast breaking critical events (friendly and enemy); to understand and develop (if necessary) the G-2's tasking and concerns with the MIB's operations; to represent the MIB's needs in the absence of the G-2 or his operations officer; and to evaluate the flow of MIB's products through the system. In fairness, the senior intelligence representative to BCTP and a previous division G-2 both expressed concern that the LNOs at these nodes could have the tendency to cause confusion, be competitive with and to diminish the role of the G-2 or his element at these locations. This is

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[13] U.S. Department of the Army Field Manual 34-10, Division Intelligence and Electronic Warfare Operations, (Washington: GPO, November 1986) page 3-26.

possible but it shouldn't be allowed to happen nor was it the intent. The LNOs spent about 75% of their time at the respective division command post and the rest at the MIB. These LNOs worked with the G-2 but were under the full control of the MIB.

A MIB's capabilities are maximized against artillery--be it OPFOR or Soviet. In general, the most important target to a division commander is his opponents' artillery. The counter fire battle can be substantially supported by the MIB's assets. Although we worked closely with the DIVARTY staff prior to REFORGER, far too many targeting opportunities were missed, including the biggest target of the exercise as described in the first section. At the conclusion of REFORGER, I created a LNO team for DIVARTY. I took the LNO team from one of the division's uncommitted brigades. The DIVARTY commander concurred and welcomed the MIB's direct presence and support. The MIB now has a LNO from DIVARTY in its TOC with TACFIRE communications connectivity. Begging for support and liaison was/is the aviation brigade and its killing systems. For REFORGER we provided a sergeant to the aviation brigade for liaison. The interface was positive and it was continued.

I think the MI structure should rethink its distribution of liaison officers. I believe they belong at the DTOC/DTAC (where every other major element of the division has liaison officers), at DIVARTY and the aviation brigade (for targeting and to cue high definition locating systems--OH-58D, FIRE FINDER). This does not mean that LNO teams with the brigades are not important, they are, but there are only limited assets to be provided. For a GS mission (like most MIBs have), LNO teams should go to the nodes that support the primary decision makers for the whole force and to forces that

have combat multiplier missions. If an MIB is operating in DS to a specific force, it should be provided necessary LNO personnel.

TOC INTEGRATION AND CONFIGURATION

The MIB possesses significant potential for effective interface with other intelligence and maneuver elements in the division. My appreciation is that too many assets are misplaced within our MTOEs and incorrectly aligned doctrinally. By reorganizing and reallocating equipment within the battalion and companies I feel we came closer to achieving the battalion's potential.

BATTALION

The intelligence structure has benefited from being an integral system (one of seven battlefield operating systems (BOS)) within the division. The all source intelligence approach to satisfying the informational needs of the commander has lead to solid intelligence. However, MI doctrine (primarily because of its previous focus on DS operations) does not adequately stress the importance of integration and synergism within the MIB. To plan, operate, and react to the dynamics of tactical operations, a closer integration of the functional elements within the battalion and an all source vision is required. To meet these requirements, we reconfigured our command and control nodes (TOC-CP) and reorganized ourselves so that the different operating elements were brought together in a dynamic and integrated manner. The functions and roles of the S-3, S-2, and TCAE were aligned to make them interdependent, supportive of each other, and broader based in perspective. Their relationship became a positive factor: an action in one

element almost always signaled an impact in the other(s). This affiliation was not only important within the battalion, but tied us much closer to the division G-2, G-3, ADC-M, and brigades. To facilitate this dynamic interaction, I took three M577 tracks and provided them respectively to the S-2, S-3, and TCAE to achieve commonality, better interoperability and flexibility. Additionally, each SIGINT company had one M577 for its operations and C&C purposes. The three M577s which made up the guts of the TOC were aligned track to track (normally in a row) with shrouds extended. Interior canvass walls were lifted forming a large operations center. TCAC systems (two) were located adjacent to the tracks. Three RATTs were located in close proximity to the tracks/TCACs (one collateral, one SI high both for battalion interface, and one for SI connectivity to the corps). The final vehicle in the TOC was a MSC-29 van used for back up PCM communications connectivity and routine record traffic. Requisite generators (two-30 KWs, one primary-one back up) equipped with special hocks so that all TOC elements could plug in independently to one generator were also located close to the TOC. In total, there were nine vehicles and two generators forming our TOC, see diagram 9, 10, Appendix A. All of the operating elements (S-3, S-2, TCAE) were collocated and could either see and talk to each other from their work stations/locations, talk over a common intercom to each other, or take less than six (6) steps to conduct business. All senior intelligence operatives were face to face, console to console, and functioned from a single all source situation map. The tracks reliability, speed of set up/tear down, built in communication harness and antennas, and maneuverability quickly made them indispensable to our operations. During REFORGER, we had to make an unplanned emergency jump (division flank being over run). We shut down systems, packed, moved 30 (+)

kilometers and were totally back in operation within four hours. Again because of the inherent communication capability (ability to communicate on move) built into the tracks, the TOC was never out of interface with our companies and the division intelligence system. Our normal mode of operations was to put all of this in barns, factories, or vehicle sheds. We placed our antennas and generators outside, along the exterior walls of the building (see diagram 9, Appendix A). Going into buildings allowed us to set the TOC up quicker and we didn't have to camouflage vehicles or fight mud and snow. It offered immediate concealment, and because buildings are normally on LOCs, afforded a quicker and more direct exit (jump) from the area. It also improved security and added some level of creature comfort for our personnel in terms of warmth, an area to eat, and sometimes (depending on the size of the building) a place to sleep without having to erect tents. We were also adept at operations in forests/open areas (see diagram 10, Appendix A) but preferred the building approach because of the advantages listed above. In Germany there is no shortage of such facilities even during peacetime operations.

Remotes from the TCACs (four: two double pedestal, two IBM-ATs) were located within the operations/correlation area formed by the three M577s (inside shrouds). One remote was the S-2's, and three belonged to the TCAE. One functioned as the technical release authority (senior operators position); one functioned as an analysts/data base position; and the third terminal was used to develop and control tasking and to maintain on line interface with SIGINT teams/collection positions. The four terminals inside the TCAC were used for reviewing, flagging, and correlating incoming traffic (two terminals), routine data base development (one terminal), processing ELINT data and interface with ELINT collectors (one terminal).

The S-3 had overall responsibility for: TOC operations, plans, intelligence, and technical intelligence support. The S-2 was responsible for: portrayal of the friendly situation, the all source situation, battalion interface to the division intelligence net and dissemination of combat information. The TCAE was responsible for technical support to SIGINT companies, dissemination of KLEIGHLIGHTs and TACREPs, interfacing with the corps TCAE and being a partner in the correlation process with the S-2. Our configuration improved our common awareness of the threat and enhanced our ability to focus our efforts and resources. It did become noisy at times, but the interface and understanding about the friendly, enemy and battalion situation was consistent and coherent--the right hand knew what the left was doing within the battalion and division.

This technique and configuration is contrasted with the numerous additional vehicles (sixteen) suggested in MI doctrine, physical separation between operational elements (forget dynamic all source correlation), greater difficulty in maneuverability (primarily wheel-based), the addition of multiple communication shelter required to establish twelve (vs six) primary intelligence and C&C links, multiple and independent generators, and the sheer difficulty of "lashing" it all together[14]. The first time I took my battalion to the field, I had the S-3 set it up as close to the configuration described in MI doctrine as possible--and swore I would never allow it to happen again. I watched a very good sister MIB set up its TOC according to MI doctrine. It took them 18 hours to achieve full operational status and over six hours to achieve the basic rudiments of C&C and interface to their intelligence structure. After my fellow commander visited our TOC he

[14] Ibid. page 3-21.

changed his configuration. However, MI doctrine is changing and communications are being streamlined and simplified[15], see Appendix B, paragraph 6.

RADIO NETS AND SIGNAL PREPARATION

We constructed LOS profiles for each of our communications nets. Prior to deployment, we used the signal battalion's MICROVAX to develop profiles because of its speed, power, and high definition. When we were in the field and needed to plan for a new net structure and layout, we used the Electronic Warfare Battlefield Management Aide (EWBMA) and Terrain Analysis (TERRA) based software which, though much slower, provided us the basic information on LOS between locations for signaling and collection options (primary radio sites/relay sites, collection sites) for our operations.

INTELLIGENCE

The battalion ran two principal FM radio nets in support of intelligence operations. One was a collateral intelligence net controlled by the battalion S-2, and one was an SI high tasking and reporting (T&R) net controlled by the TCAE. Both nets primarily functioned in the FM digital burst mode. Radios to support both of these nets were located in the respective M577 tracks. Backup radios for the tasking and reporting (T&R) net were located in the TCACs. They were also available for monitoring and voice communications with the SIGINT companies and their teams. However, they were seldom used in voice mode once the net was established. The S-2's net interfaced with the LRS Company, IPW and CI teams, and the LNO teams (easier than operating SI high in brigade CPs) in each brigade. The

[15] Interview, U.S. Army Intelligence Center and School Counsel of Colonels, Ft. Huachuca Arizona, 9 march, 1990.

S-2 was in charge of the battalion's interface to the division's intelligence net. See diagram 7, Appendix A.

OPERATIONS AND LOGISTICS

The battalion command net was controlled by the S-3 from his track and it also principally operated in the digital burst mode. The S-3 was in charge of the battalion's interface to the division's command net. The battalion used an administration and logistics (A&L) net that was controlled jointly by the S-4 and battalion maintenance officer (BMO) who operated (for C&C) from a common M577 track. The XO and S-1 also used this net for administration and logistic issues. This net was equipped with FM digital burst capability to allow efficient interface with the forward companies and the battalion TOC. Frequently, a RATT net is established in MIBs for A&L purposes. We didn't because our FM radio nets/relays gave us the power (distance) and flexibility (discrete addressing) we needed. This advantage, in conjunction with the relatively forward location of the combat trains and Administrative Logistics Operations Center (ALOC), obviated the need to use RATTs for this purpose. In the event a commander or platoon leader was having difficulty getting through on the A&L net (which was seldom) they would use the battalion command net, and the TOC would relay/burst the request over to the ALOC.

TOC RELATIVE LOCATION

The battalion TOC was placed forward on the battlefield between the DTOC and DTAC (see diagram 8, Appendix A). This positioning kept us within 10 to 20 kilometers from our forward companies and facilitated FM communications, coordination with battalion elements, and the division's principal war fighting CPs. It also kept us (in general) out of the range of artillery. It did mean that we had to be able to move/relocate quickly if

there was an OPFOR penetration. In REFORGER, the DTOC was significantly (45 kms) to the rear which provided us with challenges in both communications and coordination visits. The battalion's TOC remained forward in relative proximity to our companies. The division DTAC moved forward when the division was committed, which put us back in a habitual (space) relationship at least with one principal division C&C node.

JUMPING

The most critical part of jumping is to have first reconnoitered alternative locations and to have a good advance party that knows how to move and position assets upon arrival at the new site. Initially officers performed this function, but the Command Sergeant Major (CSM) insisted it was "sergeant's business." He was right and the sergeants performed both the reconnaissance and advance party functions to standard. This greatly eased the burden on our officers who were continuing to maintain control of battalion operations and intelligence functions during the jump.

If the move was a planned relocation, we dispatched the S-3's track and an officer to sustain operations with the advance party. The communications internal to the track were adequate for command of battalion elements and control of intelligence operations during the subsequent movement of the TOC main body. As backup, the S-2 and S-3 would monitor operations from a HMMWV equipped for C&C (three net capability) during the actual relocation--obviously they could intervene as required.. Again, we went into buildings and barns, minimizing our set up time unless forced into the woods/countryside.

If we had to make an unexpected or emergency relocation, I would chop control of the battalion to one of the companies. Under these conditions I would send one to three intelligence personnel to the selected company's

CP to assist the commander in interfacing with the division G-2 and to provide additional analytic support. I expected the company commander to direct and control the battalion intelligence operations until we were free of the crisis, relocated and fully able to resume control. Situation dependent, I would move to the selected company CP to continue C&C of intelligence operations and other battalion functions. During REFORGER, at one point in the battle, the battalion was in eminent danger of being overrun. We implemented this technique (company control of battalion) without loss of basic intelligence support to the division. In this case the battalion TOC was overrun and I was a casualty. The battalion continued to function effectively. The communications described above, that were integral to each company CP, were critical to the success of this approach.

S-2 FUNCTIONS

Developing the S-2 position into a principal intelligence functionary in the MIB was one of the most important steps I took as the commander. While the S-2 in maneuver battalions and brigades is the principal intelligence functionary, this has not been true in most MIBs and brigades[16]. Normally these individuals are focused on security matters. I felt that the OIC of the TCAE and the S-3 were so fully committed in their respective functions (as described below) that we were short changing the battalion's potential in intelligence. The job truly warrants an experienced captain and I had a second lieutenant. So I trained the lieutenant to be a captain and she became equal to the task and most of the rank. The S-2 was the principal interface on a day to day basis with the G-2 staff. During tactical operations the S-2's intelligence role was significant. She gave us a true all source

[16] U.S. Department of the Army Field Manual 34-10, Division Intelligence and Electronic Warfare Operations, (Washington: GPO, November 1986) page 3-16

appreciation for our operations (as described below) which many times made sense of "data," improving our support to the G-2 (principal customer), and allowing us within the battalion to better focus and prioritize our efforts in accordance with division's needs. The stated importance of the S-2 does not reduce the importance of the TCAE but instead had the effect of enhancing its capability.

COLLATERAL INFORMATION/INTERFACE WITH BDES

Knowledge of the friendly situation and friendly combat units' perspective of the enemy goes a long way to explaining what SIGINT assets are hearing (and seeing, in terms of movement-tracking). It is also a direct key to what the enemy/OPFOR C&C elements will be directing their committed and second echelon/reserve forces to do. LRS teams can be alerted to pick up signs of projected events based on activity or lack of activity in the close battle area. This perspective is essential to the G-2 and the MIB in terms of commitment, recall, and prioritization of collection assets. Within the MIB, the S-2 had the principal responsibility for this perspective. Other elements, especially the S-3 section, added to the perspective. To perform this function, the S-2's interface to/with the brigade LNO/S-2 was key. She was (as described above) the principal MIB interface on the division intelligence net, and had her own net for other battalion collateral information. The division LNOs (DTOC/DTAC) actively interfaced with the S-2 on this net. She also monitored the division command net to hear the ADC-M's instructions and directives to the brigade commanders (a source of great value). From these sources we had a consistently good handle on the friendly situation and impending activity.

ANALYTIC SKILLS, CORRELATION, FUSION

The greatest analytic shortfall I found in the battalion was the knowledge of junior personnel (enlisted and officer) in combined arms tactics of friendly as well as of enemy forces. Analysts had been relatively well trained in their specific intelligence skills (MOS). However, they lacked a perspective of how the pieces of friendly and enemy information were related and the ability to anticipate what might occur next on the battlefield. Because they didn't have a good battlefield perspective of pending likely actions, they didn't know which pieces of information were missing or should be sought (tasked and collected). The G-2 and I both took on the development of these personnel. As an aside, the G-2 had people who also lacked this understanding, and knowledge of how the MIB functioned and what it should/could (realistically) be collecting. I made the S-2 responsible (under my direct supervision) for this function. To assist the S-2 and to cement correlation and an all source perspective into our analysts/operatives, I gave the S-2 control over all 96Bs for training and tactical operations. The G-2 gave us time and access to his most senior analysts, over and above routine interface, to develop the knowledge of our 96Bs. The result were teams (SIGINT/collateral) that had a much broader perspective of the enemy and knew what should happen next in the tactical situation or what was missing from the tactical situation that we must anticipate. Our configuration, described above, focused and physically brought us together to achieve this objective. This doesn't mean that 98Cs weren't good analysts and or didn't perform correlation, they did, but they did it much better after we were all looking at the whole problem as a team. During tactical operations 96Bs were as supportive of SIGINT (technical)

functions as they were of collateral. We soon found that our 96Bs and 98Cs could both operate constructively in both environment (collateral/SI). Events on one side or from one perspective made us look for the corollary or related action by the enemy. The junior analysts then, with this outlook, were ready to take on the dimension of echeloned forces which put us in the business of supporting the G-2/division commander with information he could use to analyze enemy capabilities and potential courses of action.

The S-3 was responsible for positive integration and bridging gaps in skills and knowledge within the TOC team. To insure that our operations were integrated and a team effort, the S-2 worked directly for the S-3 during tactical operations. Our correlation efforts and all source outlook was not competitive with the G-2's all source fusion effort. On the contrary it was supportive of his requirements. It taught us to look and listen for the most important missing pieces of information, to better task and mission manage MI assets, and to recognize them (nuggets) when we had them. Our all source understanding also helped us request pertinent support from corps and better utilize information provided.

DISSEMINATION

The communications and automation suite described above allowed all of the principal intelligence elements (TOC/companies) in the battalion to disseminate intelligence where it was required. However, to insure there was a systematic flow of information and intelligence, I held the S-2 principally responsible for dissemination (interface) to the brigades, division G-2, and corps G-2. This allowed the other operatives to focus and concentrate on the tasking, collecting, and processing of technical data and intelligence. During REFORGER, virtually every intelligence element in the

battalion interfaced with outside elements, but it was the S-2 who performed most of the non technical interface and dissemination. The S-3 supervised it all.

S-3 FUNCTIONS

The S-3 was the TOC czar. His authority overrode all authority except mine concerning C&C and intelligence functions within the battalion. This included company commanders and the S-2. This basically confined the S-3 to the TOC during tactical operations, which he didn't like, but it afforded me the control I thought necessary and freed me up to move about the battlefield. The comments below on planning, tasking, and movement/status of assets are standard functions that an S-3 should be responsible for, but which are seldom realized. I insisted they be executed to standard. I insured that the S-3 was fully resourced with personnel to perform these functions: it was the only element in the battalion with this resource profile.

PLANNING

The S-3 planned in depth for the battalion. He was expected to always have at least one fully prepared alternate plan for the battalion. He worked closely with the G-3 and G-2 staffs and the MIB LNOs at the DTOC and DTAC to insure we were anticipating future requirements. Companies had multiple CP locations and collection positions for their teams. The S-3 insured, through LOS profiling and terrain management, that these sites were functional and realistic in terms of the flow of battle and OPORDs[17]. The CESO worked for the S-3 and had to be fully prepared to execute any of the alternative plans developed by the S-3.

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[17] U.S. Department of the Army Field Manual 34-130, Intelligence Preparation of the Battlefield, (Washington: GPO, May 1989) page 5-3.

TASKING

The S-3 was the basic tasker for the battalion through plans, OPORDs, and FRAGOs. He executed decentralized intelligence tasking and control through the S-2 and TCAE OIC. Company commanders sought his approval prior to changing their tasking and habitually consulted him on any change in their basic collection strategy.

MOVEMENT AND STATUS OF ASSETS

The S-3 maintained strict control over movement of assets. Carefully planned and reconnoitered (when possible) march routes were utilized (because we were frequently the lead element in the division to move). The S-3 insured that checkpoints (start point (SP) and release point (RP)) and status of movement-redeployment were explicitly followed and that any deviation was approved prior to execution. The S-3 maintained a continuous status of the battalion's intelligence and support capabilities. Our status was constantly provided to the division G-2/G-3 as it changed, in addition to mandatory reporting thresholds. The LNOs facilitated this status reporting at the DTOC/DTAC. If there was a significant shortfall, the S-3 would directly contact the division G-2 or G-3. During REFORGER the discipline developed by the S-3 in these functions insured that we were able to support the division or could explain why we couldn't and when we estimated we could provide the required support. This resulted in an ability to correctly prioritize the utilization and movement of our capabilities and surgically recover from system fai' ure or mispositioning.

TCAE FUNCTIONS

The most complex mission in the battalion belonged to the TCAE. The TCAE is a large element (54 people) and rivals the size of three of the

companies in the battalion. Discipline in this element is critical. Failure or in one in one of its functions can lead to a battalion wide intelligence shortfall. For these reasons, I tried to simplify the functions in this element and redirect some of its distracting doctrinal functions to the S-2 and company commanders.

TASKING AND REPORTING

Tasking and reporting procedures are habitually too complex and cumbersome. We have a tendency to make them overwhelming and confusing tasks. Yet, these are two bread and butter functions that we must perform effectively and quickly to accomplish our mission. To make the point I want to recall an exercise the division commander led me and the G-2 through during a Rapid Targeting Collection Exercise (RTCE). At the start of the USAREUR wide intelligence collection, processing, targeting and reporting exercise, the G-2 and I met with him to outline the value and benefit of the exercise as it related to the division's intelligence structure. He asked the G-2 and me to explain how we communicated his intelligence needs and how information/intelligence got back to him. The G-2 started by describing the division's PIR. The division commander agreed they were his priority intelligence requirements (PIR) but he wanted a more detailed explanation of how the process worked. So, we walked him through the entire system. From the ASIC (collection management shop) where the PIR were developed, we walked to the battalion TCAE (set up on a hardstand/intelligence compound-contiguous to the MIB and G-2) and showed him the PIR we had received from the G-2. We then explained how PIR were converted into mission management tasks by the TCAE and how we then tasked company teams. We then went to a company team CP and he asked them what

tasking they had received. He was shown the full list of mission management/tasking from the TCAE. He asked the company commander if he understood what it was that he wanted. From there we went to a collection team that was actively performing collection operations (using TROJAN) in the RTCE exercise. The division commander asked the analysts and collectors what they were supposed to be collecting and whether they had collected any of the information he wanted/needed. He then asked the team what they were collecting that he had not specified that they thought was important. He asked the team when and how they reported their information and what they told their leaders/supervisors about what they were and were not collecting. The division commander then walked the system back through to the G-2 ASIC to see how information reported had been analyzed and what subsequent actions and taskings had been performed. This live and tactically relevant review of one cycle of tasking and reporting and analysis, from end to end, convinced me that my training was not adequate (because there were too many disconnects and inconsistencies) and that this basic bread and butter function was very complex, too complex. From the time of this review on, I (with G-2's understanding) limited the number of PIR we would undertake, developed a definition of what combat information is ("a nugget of information" that makes sense by itself and is tactically relevant to the current situation), described how and when to report it, put the company commanders in charge of controlling collection operations, put limits on tasking that could be issued to subordinate collection companies/teams, and focused the TCAE on managing collection requirements and technical processing within the scope, intent and parameters of PIRs.

TASKING SIMPLICITY

The tasking function performed by the TCAE (mission management) is crucial to the success of battalion collection operations. It must be based on the needs of the division (PIR), a clear perspective of the all source situation (friendly and enemy), cues from corps level systems, and an evaluation for what is and is not being heard and seen. Current doctrine, I believe, promotes too sophisticated an approach to SIGINT functions, is fragmented in the control of operations, and requires a very complex communications system for reporting. In the very dense signal environment we experienced in REFORGER, and that can be expected in a Soviet/high intensity encounter, this level of sophistication will be an impediment to effective operations. There just isn't enough time to be too complex and chase all of the potential signals to fruition. Collection and reporting must be accomplished within reaction/vulnerability windows of opportunity. For these reasons, our tasking was fundamental and was limited to significantly less that the whole target environment we were facing.

We maintained a very acute division of effort (DOE) that was related to selected PIR and areas (NAIs, mobility corridors). We limited tasking to make it match our available collection resources. The resulting abbreviated and simplified tasking enabled our collection operators to be better focused. My contention was that chasing PIR and affiliated signals that weren't active was nonproductive even though in a more sophisticated and robust environment "cast iron" coverage may have been directed against key frequencies and entities even if they hadn't been heard. Equally unproductive is copying/tracking signals and emmissions that are not immediately relative to the tactical situation confronting the division. The time sensitive and effective interface we enjoyed with the G-2 kept us on

track with the division's most important concerns. We were frequently directed to drop copy (because adequate information was already held) and switch to other priority unknowns. To a SIGINTer, dropping solid copy of enemy activity is anathema, but frequently we had to do it to stay ahead of the constantly changing support requirements of the division. The all source vision discussed above was essential to maintaining the correct balance between tracking and search for new activity relating to new/changed PIR. We had to limit tasking to our level of ability and balance current requirements with those of pending operations.

PURGING/FILTERING

With modern SIGINT collection systems, collateral collection resources, and effective communications between collectors and processors, it was easy to be overwhelmed with data. The potential input from these systems (my estimate) is at least 800 inputs of data per hour. Our experience in REFORGER reflected repeated surges of over 500 inputs per hour when the LRS and blue force information was included. We routed all of our data except that coming from the LRS into TCAC where it was distributed to eight automated terminals, reviewed, processed, and further disseminated. Selected LRS data was manually put into TCAC.

LOOKING FOR NUGGETS

The key challenge was to insure that incoming reports were quickly screened and correlated (both SIGINT data base and all source review) to find the nuggets of information and associated critical events. It was not uncommon for a TCAC terminal to have 30 cued up messages waiting for review and processing. We had at least two terminals/operators constantly screening the flow of incoming reports for combat information and data

requiring immediate processing (while other operators performed more routine processing). Collection operators used special flags for important messages that automatically alerted TCAE/S-2 operators that a hot message had been received. However, the collection operators frequently were not aware that information they held was important. The battle captains (company commanders) were important in the filtration process and frequently tipped us off as to important data that needed immediate processing and/or review and dissemination. Although said above, it is necessary to emphasize that battle captains did not stop the flow of data enroute to the battalion TOC. Our automation and procedures kept the information flowing while providing the battle captains a simultaneous look at the information. In one instance, the Charlie Company commander recognized that one of his operators had detected and located an OPFOR element that was preparing to ambush our lead brigade that was making the division's main attack. The message he was concerned about was also in the TCAC cue, but had not been flagged and wasn't yet processed. The commander called and tipped us off concerning the threat. He had tried to reach the brigade directly (collector to killer) but couldn't. His intervention saved us seconds, if not minutes, in providing this information to the concerned commander. It also triggered a whole new set of tasking priorities and a new collection/electronic counter measure (ECM) strategy.

The collocation of TCAE and S-2 terminals and operators made integration and correlation timely and effective and in the situation just mentioned allowed us to track the situation from multiple sources and perspectives (COMINT, friendly). The on line (TCAC/IBM-PSC-2) connectivity with the G-2 afforded timely forwarding of pertinent information, feedback, and revised tasking in situations like this.

IDENTIFYING INFORMATION FOR DEVELOPMENT AND PRIORITIZATION

Possibly the most difficult task performed by the TCAE is determining what data or collection warrants further development and action--whether it be collection, jamming, or data base development. It is easy to get consumed in analysis and processing that can't match windows of opportunity with resulting information building history instead of tactical exploitation. We maintained a small map over the TCAE/S-2 co-located terminals that showed the location and description of the most important SIGINT and collateral targets we were tracking and developing. This review was constantly correlated and bounced against the S-2's situation map/assessment. A significant amount of our tasking was based on this subset of targets. It also drove our data base searches and correlation. The limited number of targets (usually less than 12 in REFORGER) allowed us to focus our efforts on the most important events.

COLLECTION/EW SITE DEVELOPMENT

To support our SIGINT companies and the LRS Company, the S-3 performed LOS assessments (baselines, collection sites) for collection, jamming and surveillance operations. The advance development of sites was not only time saving for collection companies and their teams, but supported our entire collection, jamming and C&C strategy-no communications-no intelligence-no control. As discussed above, the signal battalion had a MICROVAX that was much more powerful than our internal capability (EWBMA, ZENITH/IBM PC). As the MIB becomes more reliant on NRP and MSE for its support, it will need a more powerful capability to meet LOS profiling requirements (Portable All Source Analysis System Work Station (PAWS), etc.). We were very successful during REFORGER in establishing

effective baselines, collection sites, and signal sites because we had performed advance terrain reconnaissance and LOS review. Had we lost access to these areas, it would have been very time consuming and inefficient to find comparable sites in a new area without our existing level of automation. Collection for GDP purposes will be even more critically effected because of the unconstrained dynamics and lethality of the environment. Hopefully, ASAS/PAWS will provide the needed power for this requirement.

ADMINISTRATION LOGISTICS OPERATION CENTER (ALOC)

The Administration Logistics Operations Center (ALOC) was headed up by the battalion XO and included the battalion maintenance officer (BMO), battalion S-4, and the battalion S-1. The ALOC was responsible for all of the administrative, logistic and sustainment operations within the battalion. It was located in the battalion trains area and operated from a M577 track. The ALOC controlled a communications net (administration and logistics (A&L) that interfaced with all of the companies in the battalion and the battalion TOC. While each of these functions could be operated in isolation from the other, we found that bringing them together allowed us to provide around the clock support to other battalion elements which otherwise could not have been supported. With this approach, routine but people eating duties like radio watch, security, shuttle runs, mail distribution, division interface (DISCOM, G-1, SJA, etc.) would have been overwhelming leading to substantially reduced support in all functional areas. A significant level of cross training in basic requirements between these elements was achieved that enhanced overall support to battalion elements.

VISIBILITY OF READINESS/LOGISTIC POSTURE

The ALOC, in its version of all source information, gave me a clear picture of the administration and logistics posture of the battalion. While this seems obvious, we ARTEPed a sister battalion that did not have a consolidated operation and never really had a clear picture of their composite status. Their motor and signal maintenance operations were separated to the point that maintenance failure on either side of a system didn't affect the other. So, a collection vehicle (actual example) down for an engine could be classified operationally ready as long as the system electronics worked! When we brought this to the attention of the supporting DISCOM the response was that they really didn't pay much attention to the MIB unless the battalion commander personally called and requested support because it was a unique organization--MI doesn't need this type support. Our ALOC was effective in providing the multiple time sensitive reports required by the division in logistics and administrative areas. Most importantly, I could easily see the sustainability posture for the battalion and each company from this single interface. Having this perspective made our decision making process and tactical plans for movement and commitment more realistic and accurate. It also made it easier to decide on requests for cross leveling and controlled substitution (cannibalization). I could also quickly justify request for additional support from the division when it was essential.

ADEQUACY OF BASIC LOADS

The basic loads of ammunition, fuel, and food are items that can easily be overlooked during most tactical operations short of combat or NTC type exercise. Other than routine review by the division, the adequacy of our basic loads was not checked. I developed concern for basic loads because

we frequently had to operate independently for extended periods of time in forward deployed and potentially lethal environments. This doesn't mean the division didn't support us logistically, but when you are forward, collecting, in preparation for offensive operations, in terrain that is generally not conducive to maneuver force from which you could get support you are often on your own. The adequacy of the concept and procedures for support then become very important.

CLASS III

During REFORGER we got a good test of our ability to use and control our basic load of POL. Within the battalion's capabilities, the ALOC did an excellent job of controlling the distribution, replenishment, and accounting of these supplies. The shortfall we suffered was in the number of tank and pump units (TPU) that were organic (two authorized) to the battalion. Shortage of TPUs was exacerbated by the number of different types of fuel each company used, which sometimes meant more than one TPU had to service the unit because of the safety requirements for split loads of fuel on the same vehicle. With collection teams, TOC/CPs, and support elements scattered over a terrain box that is at least 45 by 40 kms in size, and bulk resupply points in the division rear significantly outside the battalion's area, more than two TPUs are required to effectively resupply forward battalion elements and shuttle to the rear to top off the TPUs. There were times during REFORGER when we had to conserve fuel (or run out) by shutting down some of our systems and "keeping watch" with others pending arrival of fuel supplies. It is possible to get fuel from other division/corps elements, but under many circumstances this is not practical and/or possible. During REFORGER, our collection teams were seldom in proximity to division combat

elements because our LOS and terrain over watch requirements generally separated us from most of the division's other forward elements. While this separation isn't always the case, the answer isn't to expect support from other elements, but to get more TPUs for the battalion.

CLASS V

We found ourselves wanting in the types of class V we had to support battalion elements. Each of our companies and our TOC and trains had to be prepared to protect themselves against armored and infantry forces. As we got wrapped up in the dynamics of REFORGER, it was clear that we did not have the depth of weapons that we needed or would need for actual combat. In two instances the battalion TOC had to retreat from small (company sized forces) because we were lacking in the number and type of armor killing weapons that should have been available. My presumption, as was my staff's, was that we would not be as frequently threatened as occurred. We also made some mistakes in the distribution of our ammunition and weapons. Our collection teams frequently found themselves facing armor threats with the bulk of their anti-tank weapons still in the company area. While all of these events used notional weapons and ammunition, the observable tenants of the swirling battlefield and its potential lethality caused us to reexamine the number, types and distribution of ammunition and weapon systems that were in our class V basic load.

CLASS I

In the class I area, we found our T-RATs to be relatively tasty, filling, and easy to prepare. While most people wanted "A" rations, they realized that T-RATs minimized personnel requirements for kitchen police (KP), could be prepared almost immediately, were always hot, required a lot less space

(could be prepared in the corner of a barn) and required a lot less camouflaging and maintenance of equipment. REFORGER was conducted in relatively warm weather but we were involved in other winter exercises where our water buffaloes partially froze limiting the amount of available water for all cooking requirements, cleaning the Mobile Kitchen Trailer (MKT) was almost impossible because of the icing conditions, and the cost in personnel and cold weather protection measures were so labor intensive that it retarded the entire battalion's intelligence capability. With T-RATs, managing this type challenge is much easier.

FACILITIES

In general, armor heavy combined arms forces move and fight along improved lines of communications to gain the speed of attack desired-both enemy and friendly. This obviously doesn't mean that movement or surprise attacks can't be conducted, or, more specifically, initiated over open terrain.

TOC/TRAINS FACILITIES

For a MIB that has elements spread all over the division/corps sector, finding and using facilities (buildings/barns/machine sheds/sport halls) for CPs and TOCs enables these elements to move quickly in terms of set up and tear down time, see diagram 9, Appendix A. It is also imminently easier to operate out of these type facilities than establishing a TOC site in a forest. Setting up a TOC site in the forest requires the element to jockey around in the dirt/mud and snow without damaging the trees or roads/trails to achieve the desired configuration, see diagram 10, Appendix A. One of the S-4's most important tasks for us in tactical operations was to find such facilities and then to insure that our logistics and supplies were timed to

arrive at these locations when the elements closed on site. While this seems relatively easy, it is far more complex when you consider where our support elements have to go to get ammo, fuel, and food stocks.

IMPROVISED SUPPORT (HAY TO FUEL TO SHOWERS)

The best of support plans go wrong and when they did the S-4 was expected to have a solution. Not being able to find a barn for a CP and having to set up in a field/wood line was mitigated by 20 bales of hay sitting on site to absorb some of the moisture for personnel and equipment. We used butane fuel to heat our CPs and TOCs because it was clean and wouldn't damage our electronics (radios, computers) like diesel fuel burning in pot belly stoves--they were also warmer and quicker to heat. We also planned on having to buy emergency rations of fuel off the economy while our tankers were being refueled or waiting to be refueled. The S-4 had to insure we had the requisite fuel coupons and had to decide when they should be used based on scheduling of fuel-refueling and return. The S-4 also was in charge of insuring we could get soldiers to showers at least once every five days, which took as much planning and coordination as any other logistics operation and it was more important to the troops. These are examples of improvised support. We expected the unexpected and relied on individual initiative to find solutions to shortcomings, but the S-4 was expected to routinely perform "support miracles." It often meant bending the rules so the S-4 had to know, in spades, what was bending the rules and what was breaking the rules.

CSM/1SG MISSIONS

In my opinion, the performance of a CSM and his 1SGs are critical to success in tactical operations. They have to anticipate the needs of their

units and soldiers, be there when they are needed, and provide the sanguine suggestions and leadership that is required. In most cases, they are the most senior and experienced personnel in the organization. They can't sit in TOCs and they can't be relegated to shuttling chow and supplies--that's why we have supply sergeants! I would like to take credit for my CSM, but there may be more credit due in the other direction.

CSMs and 1SGs must have vehicles and communications. My CSM got the first HMMWV in the battalion, although he wasn't authorized a vehicle, and it was configured with a full communications suite (radios, PSC-2s, KYs) and "high speed" driver. I never expected the CSM to ride with me unless we were going to a division "huddle" or strategy meeting. Seldom did I arrive in a company area or a team site on the side of a hill that he hadn't already been there--the troops were either smiling from his praise or searing from his "guidance." The relief that this type CSM, who demanded the same performance from his 1SGs, provided to me was substantial. It allowed me to concentrate on things other than discipline and morale, although a commander never is absolved from these responsibilities, nor does he want to be, having a hard charging "working partner" is great. Company commanders could override a CSM "suggestion" but they had better be very, very right, or they would hear my guidance up front and personal. My company commanders came to trust the CSM as much as they did me, and in truth, he was responsible for a lot of their training. I respected my CSM and trusted his judgement. I believe the MI structure has a lot of CSMs and 1SGs as good as mine. CSMs must either be released from administrative duties and put in their true leadership positions or fired. There can be no middle ground.

RECONNAISSANCE AND SECURITY

During REFORGER the CSM and 1SGs did advance reconnaissance for the battalion; after all, they were expected to be with the soldiers and teams, not in their TOC or CPs. To determine the delineation of battle lines on days when the enemy's relative position was unclear, the CSM would organize a forward reconnaissance team that would find friendly troops who knew where the enemies basic lines were; or, the team would visually locate the enemy. He started his reconnaissance before dawn so that at BMNT he would be in position to see at distance. We coordinated his movement with the brigades he was passing through although most of the time this type reconnaissance was performed, we were the division's lead element (division in hiding positions preparing for offensive operations). With his 1SGs, the CSM was able to develop the situation in a 30 km wide sector in front of our collection teams in about two hours.

ASSESSMENT

In REFORGER, the CSM and 1SGs also ran flank checks and reconnaissance to insure our positions to either flank were relatively secure. They checked each companies' security at least three times a day and any other time the situation warranted. Our flanks (and for that matter front) were never totally secure because of the swirling battlefield and its pockets of enemy forces. At one time during REFORGER, an enemy force broke through a sister unit's flank (2 ACR's) and was rapidly approaching from our east. The CSM went east and developed the situation to the point that we understood the threat and our options.

RECONSTITUTION

When the battalion had to jump from one location to another, NCOs under the CSM and 1SGs were in charge of the advance reconnaissance and movement--while the officers and selected soldiers/teams continued to support the intelligence structure. Twice during REFORGER when companies were bypassed, I used the CSM to help the affected commander and his 1SG recover and reconstitute the unit in a new location. In these cases, the CSM selected a secure site for the company to recover to in proximity to a proposed new baseline. The 1SG rounded up his teams with the platoon leader while the CSM and company commander made final selection of new CP and team sites. In another situation, where a company had been bypassed and was surrounded, I sent the CSM in to plus up the leadership/morale in the affected company and to help exfiltrate the unit from its highly insecure position (which was accomplished without further loss).

REVIEW

Each of the examples above (reconnaissance and security, assessment, reconstitution) were all from a peacetime exercise that didn't use real bullets or result in real casualties. However, I suggest that these examples show the knowledge, skill, flexibility, and power that these senior NCO leaders can provide to the MI structure. While every unit is different and every battle is different, we should be developing and expecting this kind of initiative and support from our CSMs and 1SGs.

CHAPTER IV

ADDITIONAL PROCEDURES

Most of the basic techniques and procedures used by the battalion to satisfy its mission were described above. However, we worked procedurally in garrison, on a day to day basis, exactly as we had to be able to perform under tactical conditions. Our TOC remained set up, was fully operative in its tactical configuration, and was used for peace time intelligence operations. All communication links were the same (or emulated) as those used for tactical operations. The G-2 had an IBM-PC/PSC-2/FM digital burst capability, backed up by fiber optic links (emulating and RATT connectivity). We used DBP links to make TCAC (division) to TCAC (corps) connectivity (emulating RATT and PCM) and used the Improved GUARDRAIL V (IGRV) TCAC and commanders tactical terminal (CTT) interface for IGRV operations and missions. Our companies communicated with us from TROJAN and HOMEBOUND sites using the IBM-PC/PSC-2/FM digital burst capability and NRP. QUICK FIX used its standard communications to interface with the TOC during its PARPRO missions. The LRS Company conducted its operations and interface with the battalion and G-2 in the same manner (HF burst/RATT) as used for tactical operations. From this basic setting, the G-2 tasked, the MIB mission managed, the companies collected, and the corps supported. For us, there was no transition from peacetime techniques and procedures to tactical techniques and procedures.

PREPARATION FOR DEPLOYMENT

Each commander had a detailed checklist that he followed before we departed from garrison for tactical operations. This list was relevant whether it was a planned exercise or an alert.

SYSTEM CHECKS

To the extent we could, we had our contracted support deploy with us for exercise and tactical operations. We always requested their support prior to a planned exercise. If time permitted before deployment, we immediately ran up IEW systems after an alert and checked our communications. We had specific checklists that we developed for each system to determine its basic operational status in a thorough but streamlined manner. The routine started by checking each system, then the communications between shelters, and finally system netting. Usually there were adjustments that had to be made and black boxes were swapped, cross leveled, or repaired. This level system check was only a preliminary check until we could extend the systems and establish full baselines.

ACCURACY TESTS

To verify our systems within garrison (when we had time before deployment), we put a signal generator in the middle of a field, surrounded it on cardinal points with our systems, reduced the output of the signal generator to minus 45 DB, and checked the line of bearing (LOB), netting, and direction finding (DF) capabilities of our systems to determine their relative accuracy. As soon as we were in the field and had a baseline set up we would run accuracy tests on communications shot at the battalion TOC and our radio relay units. We obviously knew where these elements were with a good degree of accuracy and could thus evaluate the accuracy of our

direction finding systems. If time and the tactical conditions permitted, we would move transmitters around in our rear area to further check the accuracy of our systems.

HUSH III

To enhance OPSEC, the division made/makes its deployments in HUSH III which means radios can only be used for emergencies until directed by the division commander. I convinced the division that the PSC-2s could be used safely in its high speed (16kbs) burst mode and that the LRS HF burst transmitters and RATT systems did not give away our specific location. Radio transmission were essential for us to begin collection and reporting activities in the forward areas. However, even with this waiver, we still had to establish our nets (command/intelligence/logistics) without using voice transmissions--a significant challenge. To overcome this difficulty we double checked and reverified our CEOIs, fills, and modes (all PSC-2s had to be in the same mode--2B to allow burst through retrans), and KG strapping (for systems using NRP) multiple times before deployment. Even then, we faced significant challenges in establishing our nets and system interfaces without using voice communications. After our first encounter with trying to make all the parts work from distance, we got smart and did a complete check of our communications by bringing them together in close proximity in the rear and running a full check. This procedure was frustrating because it cost us time we didn't want to have to spend, but in the end was cost effective. If we were lucky we could achieve most of this check out in garrison before deploying. We learned to be very careful about any communication changes in the field while we were under HUSH III.

CHAPTER V

MISSION HIGHLIGHTS

The tactics, techniques, and procedures outlined above worked well in integrating, unifying, and simplifying the mission and functions of the MIB. Future evolution of MI organizations, equipment, and capabilities should strive to keep our organization and functions streamlined and as simple as possible. The more direct our interface and the more flexible we are in making intelligence flow between principal intelligence producers and users the better. Following is a recap of the most effective methods, fundamental principals employed, and functions that were emphasized.

A. EFFECTIVE RELATIONSHIP AND PROCEDURES BETWEEN G-2 STAFF AND MIB
B. IMPROVED AND SIMPLIFIED TOC DESIGN
C. TOTAL INTEGRATION OF S-2/TCAE/S-3 UNDER OVERALL CONTROL OF THE S-3; MAJOR ROLE FOR S-2 AS INTELLIGENCE OPERATIVE
D. TCAE FOCUSED ON TECHNICAL PROCESSING, ANALYSIS, AND TASKING
E. FORWARD/ADVANCE DEPLOYMENT AND POSITIONING OF COLLECTION TEAMS AND COMMUNICATIONS CAPABILITIES
F. FLEXIBLE AND REDUNDANT COMMUNICATIONS AT EVERY LEVEL
G PRACTICAL UTILIZATION OF AUTOMATION TO IMPROVE C&C AND INTELLIGENCE FUNCTIONS
H MISSION MANAGEMENT/ BALANCE OF ASSETS FOR DEVELOPING CLOSE BATTLE AND SECOND ECHELON TARGETS/FORCES
I. METHOD FOR HAND OFF AND TRACKING OF TARGETS
J. BATTLE CAPTAINS FIGHTING THE FORWARD COLLECTION/ INTELLIGENCE BATTLE UNDER GENERAL GUIDANCE AND DIRECTION FROM BATTALION
K. SIMPLIFIED REPORTING CRITERIA AND TWO MINUTE STANDARD FOR GETTING INFORMATION TO USER
L. ESTABLISHMENT OF MULTIPLE FILTERS FOR DETECTION AND

REPORTING OF COMBAT INFORMATION (WITHOUT STOPPING FLOW OF DATA)

M. COLLECTOR TO KILLER QUICK FIRE REPORTING TO COMBAT ELEMENTS

N. LIMITED LEVEL OF ANALYSIS--RELIANCE ON G-2 (DIV/CORPS) FOR MOST IN DEPTH PREDICTIVE ANALYSIS

O. ESTABLISHMENT OF LNOs AT NODES (DTOC, DTAC, DIVARTY, AVN BDE) CONTROLLING COMBAT MULTIPLIERS

P. INTEGRATION OF ADMIN/LOG RESOURCES UNDER UNIFIED CONTROL

Q. ESTABLISHMENT OF PEACETIME TRAINING PROGRAMS THAT EMULATE AND SUPPORT TACTICAL OPERATIONS

CHAPTER VI

CONCLUSIONS

Overall, the intelligence structure in place today in divisions and corps has significant capability but its potential has not yet been achieved. Tactics and doctrine, force structure, and equipment challenges still remain that need to be addressed. Improved effectiveness can be achieved at minimal additional cost in personnel and equipment.

PERSPECTIVE-UNITY OF EFFORT

The intelligence structure can be optimized through better integration of its parts. The respective G-2s and MI commanders must continue to improve their relationship and interface. An improved interface will assist them in identifying critical issues (PIRs) that they must collectively solve. Every person in the intelligence structure must understand where he fits in the equation, how the system works, and above all how to be a productive team player. Work remains to be done to achieve full vertical and horizontal integration within the structure.

STRUCTURE AND EQUIPMENT

The MI structure as currently organized is fragmented. There are too many independent operations ongoing at the same time under multiple controllers. Because of this complex division of effort, it is very difficult to get all of the pieces coordinated and operating together for a focused requirement. There are too many indians operating outside the purview of their chiefs--albeit with good intentions--leading to poor efficiency and lack of synergism. Battle captains must fight the forward battle, the mission

manager and intelligence officer must manage and produce useable information, and the G-2 must set priorities and produce intelligence.

The introduction of MSE, an automated switch (capable of handling SI communications), ASAS, and JOINT STARS all represent quantum leaps in the capabilities that will be integral to the intelligence structure. With these systems we will be able to interface and send messages to almost any user or intelligence node in the tactical force structure. ASAS will improve our ability to process information, display it, manage our resources, perform situational analysis, and disseminate information and intelligence. JOINT STARS will give us a significant ability to see deep and track activity and targets with accuracy we currently don't have in the structure. However, the environment will remain essentially the same. It will still be extremely dense, complex, and lethal in forward areas. We must remember that these systems are tools that must be properly used by well trained personnel; and that more leadership, management, and skill will be required to realize their potential. They are also subject to maintenance failure and we must have backup capabilities available to continue our missions--above all we must insure we don't loose our people skills in the process of becoming modernized and our processes need to remain focused and streamlined. The fundamentals of multiple levels of filtration-early recognition of combat information, simplicity of command and control, and time sensitive delivery of information and intelligence must remain our goal.

TACTICS

MI tactics, in my opinion are too general and are too ambivalent. MI doctrine is correct in that it allows adaptation. However, I think that a tighter and more integrated baseline can be laid out that will maximize our

potential under worst case conditions and still leave room for adapting to unique circumstances. We need to stress the basics. The MIB needs to plan for the companies, provide pertinent tasking, manage the flow of information, process/correlate/analyze data received, disseminate information and provide sustainment to subordinate elements. Our battle captains (company commanders) need to fight the intelligence battle under general direction from the battalion. The battle captain should be given the tasking and told to insure that it is implemented. Collection teams should not be individually controlled from the rear except under unique circumstances.

ROLE OF THE G-2 AND MI COMMANDER

The G-2 and MI commander are the leaders of the intelligence structure. They must insure that all of the intelligence players understand their functions, missions, and responsibilities. They must keep the capabilities of the structure focused on PIR and at the same time provide the vision and direction for subsequent plans and operations. Neither can try to dominate the other and each must respect the support the other provides. Their relationship must be founded on professionalism and a win win strategy that unites the intelligence structure and makes it a synergistic capability.

SURVIVAL

The MI force structure needs to be better equipped to operate in a lethal environment. The lethality and risk of the environment is inescapable and must be dealt with--not in a cavalier way but one that teaches our elements to operate and survive within the confines of the threat. MI

elements must be forward. They must know how to kill enemy elements with direct fire weapons and how to protect themselves with indirect fires. They must use terrain to minimize exposure to enemy direct and indirect fires while still being in position to perform intelligence functions. They must know how to hide and evade hostile forces. When called upon to support counter attacks and mobile defenses, MI elements must be prepared to be bypassed and told to stay in place in order to locate the enemy's second echelon so it can be attacked and killed.

TECHNIQUES AND PROCEDURES

The MI force structure is small and has a constant turn over of personnel. The environment it works in is dense and complex. Techniques and procedures that are used to achieve national technical capabilities must be simplified for tactical operations. Combat information must be identified and filtered at each level (company, battalion, division, corps) and without delaying dissemination for sophisticated processing and long term analysis, be delivered to the user. Information must be received by the user within his window of opportunity and the enemy's period of vulnerability even if it has not been confirmed. The G-2 must identify items of information that are worthy of in-depth analysis. The number of items deserving this effort must be few.

TRAINING

Every effort must be made to practice in peace as we will be expected to function in war. This tired expression is none the less true. The intelligence structure is too complex to be expected to function properly during initial phases of tactical operations if it isn't used daily--and in the

high intensity environment mentioned above, if it doesn't work right initially it may be destroyed before it gets a second chance.

OPERATIONAL CONTINUUM

The text above addresses intelligence capabilities in a high intensity environment. As the army refocuses to better address low intensity conflict (LIC) and other contingency requirements, should MI change its focus also? The operational continuum, and our recent experience in Panama, suggests that even in a LIC environment there will be periods when the signal environment is dense, maneuver by ground and air forces is prevalent, lethality is high, logistics are tested and MI elements will be expected to provide time sensitive intelligence support to multiple commanders and echelons simultaneously. Whether most of the time the pace of operations will be less intense must be kept in perspective and not be allowed to emasculate MI's capability and potential. Additionally, there are many potential threat areas in the third/developing world where modern conventional armies are being formed that we may some day have to confront to secure our national objectives.

From my perspective, intelligence challenges will be the same in the coming decade. The LIC environment and the dynamics of the operational continuum may be even more challenging than conventional operations. It will be imperative that the intelligence structure (national to tactical) work together; and, at tactical levels integration and prioritization will be critical. Our communications and automation must help us efficiently filter and process information and get it to our customers within their windows of opportunity. The complexities of the high intensity environment made us focus on the basics and caused us to streamline how we did business. I

submit that these same concerns should guide us as we modify and focus our capabilities and doctrine to support LIC requirements and other contingency requirements throughout the operational continuum.

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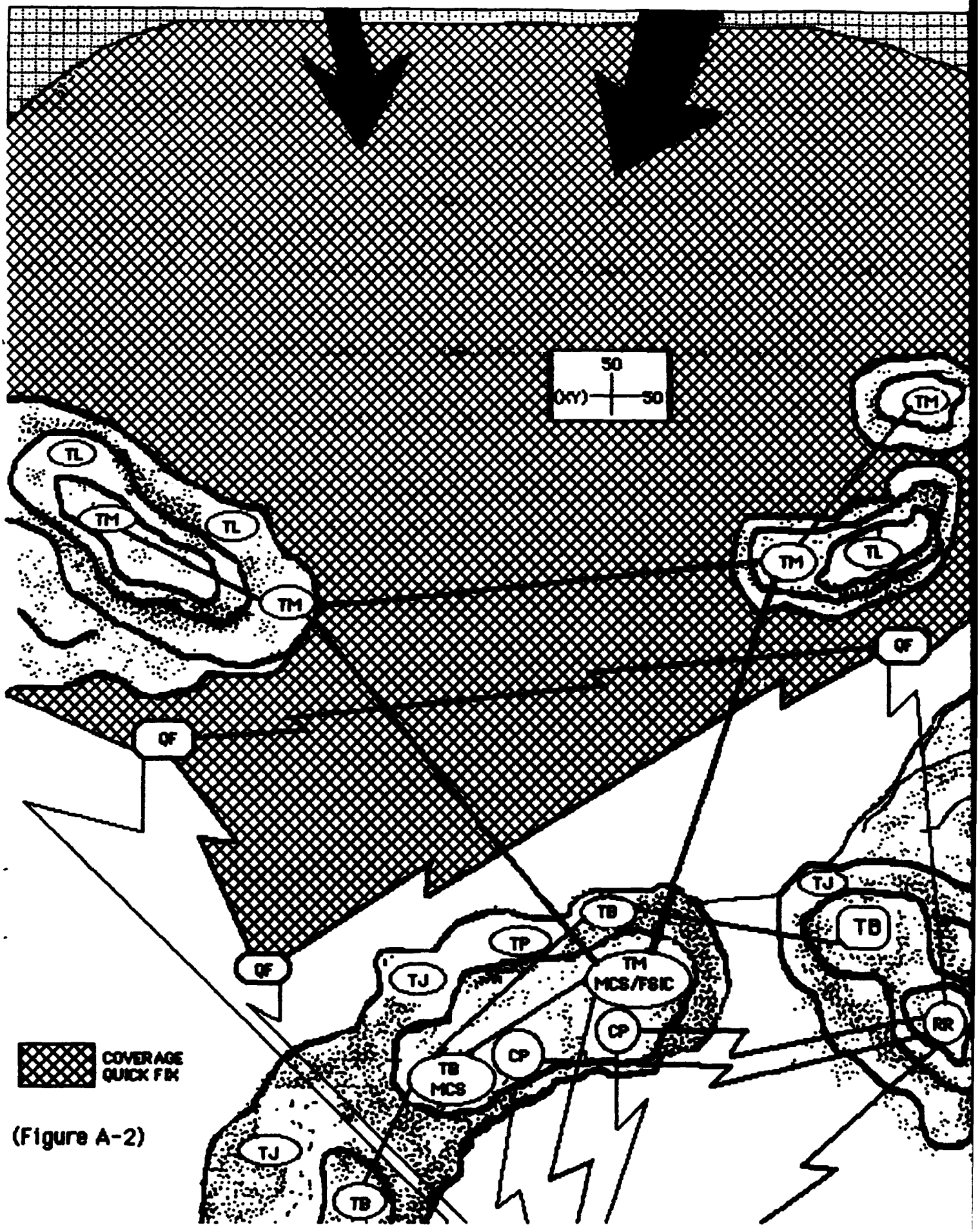
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TJ
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MCS/FSIC
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CP
CP
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MCS
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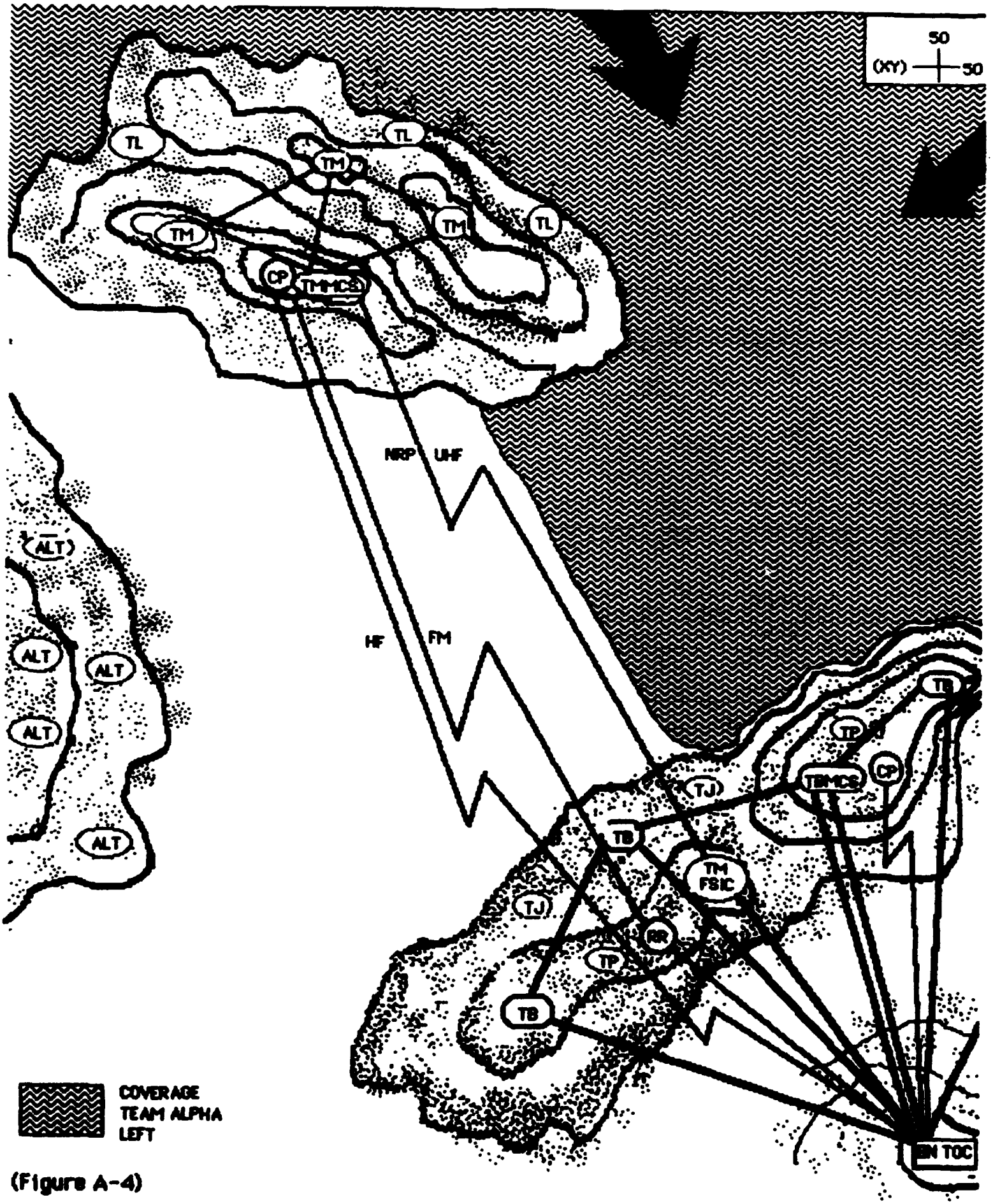
COVERAGE
QUICK FIX

(Figure A-2)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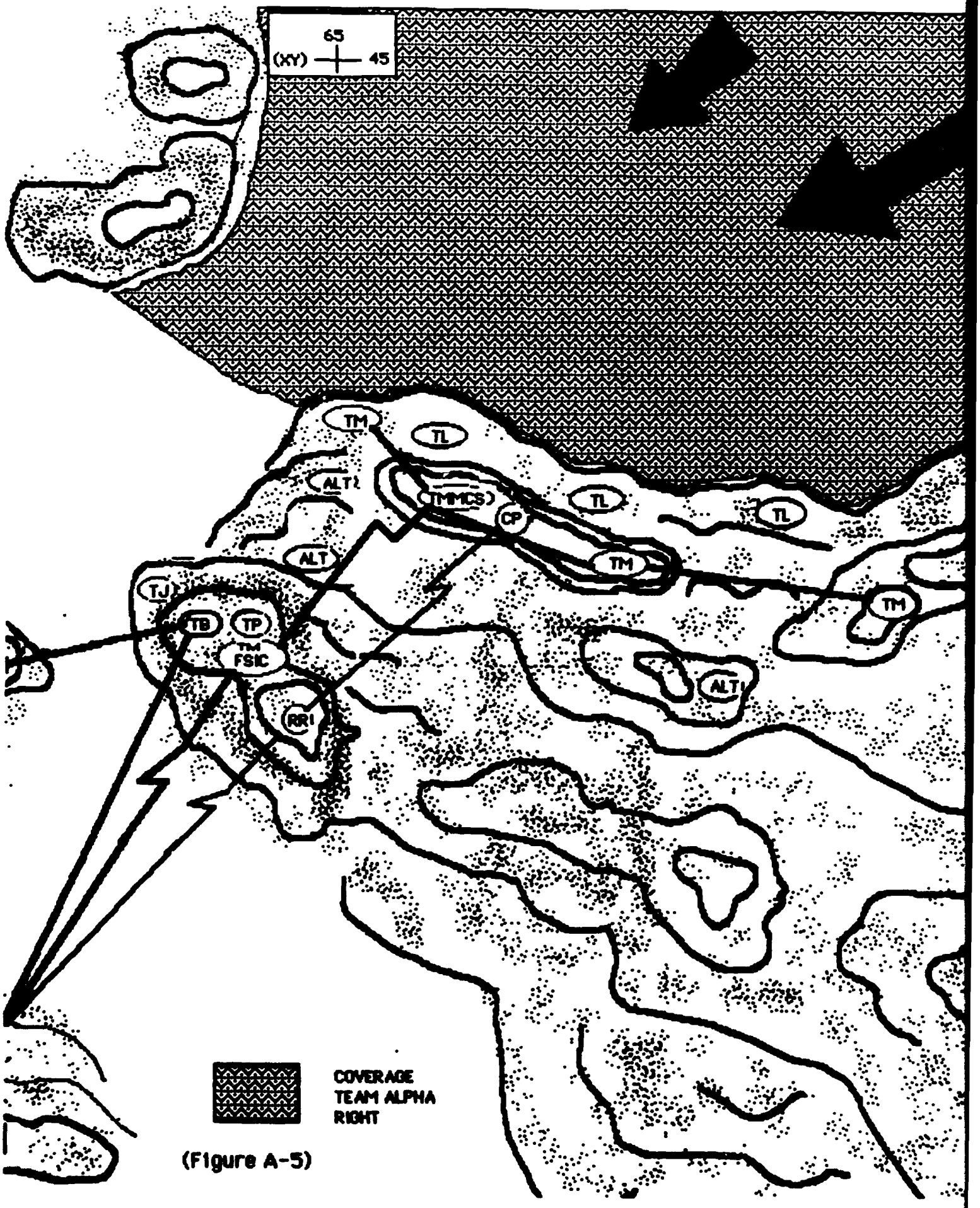
BN TOC
COVERAGE
TEAM ALPHA
LEFT

(Figure A-4)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TMMCS
CP
TL
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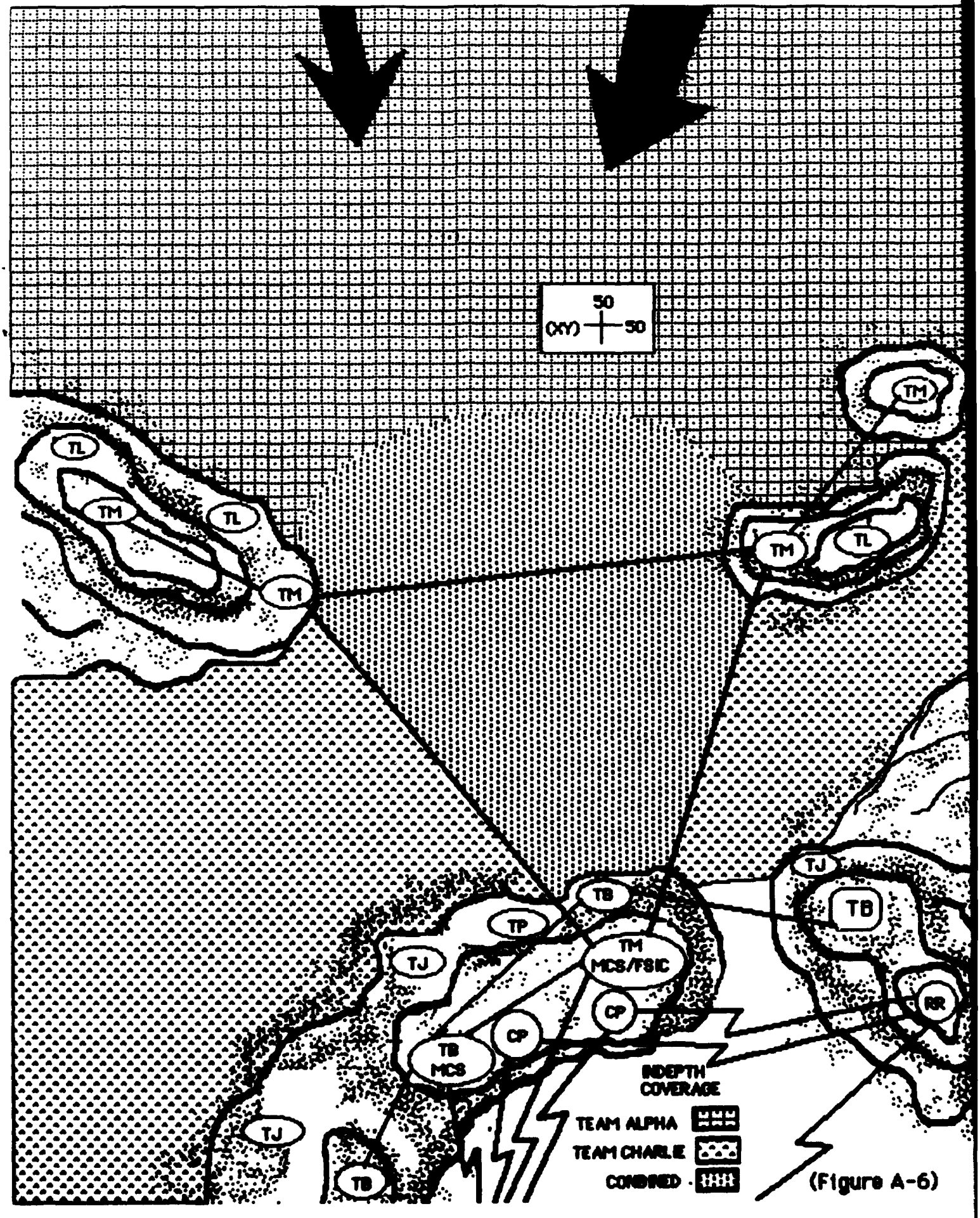
TM
FSIC
ALT
RRI
COVERAGE
TEAM ALPHA
RIGHT

(Figure A-5)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(XY)
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TL
TM
TL
TM
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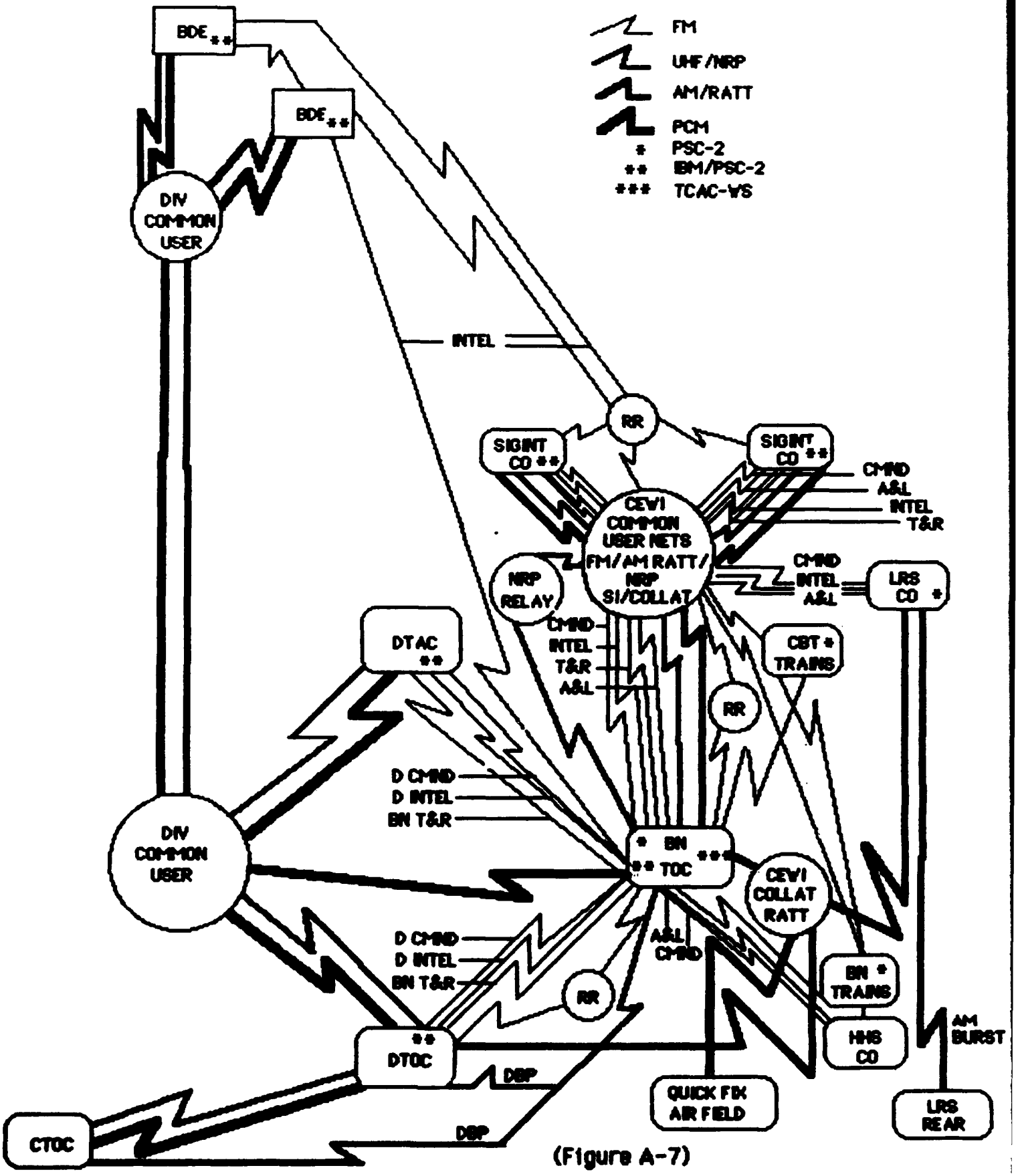
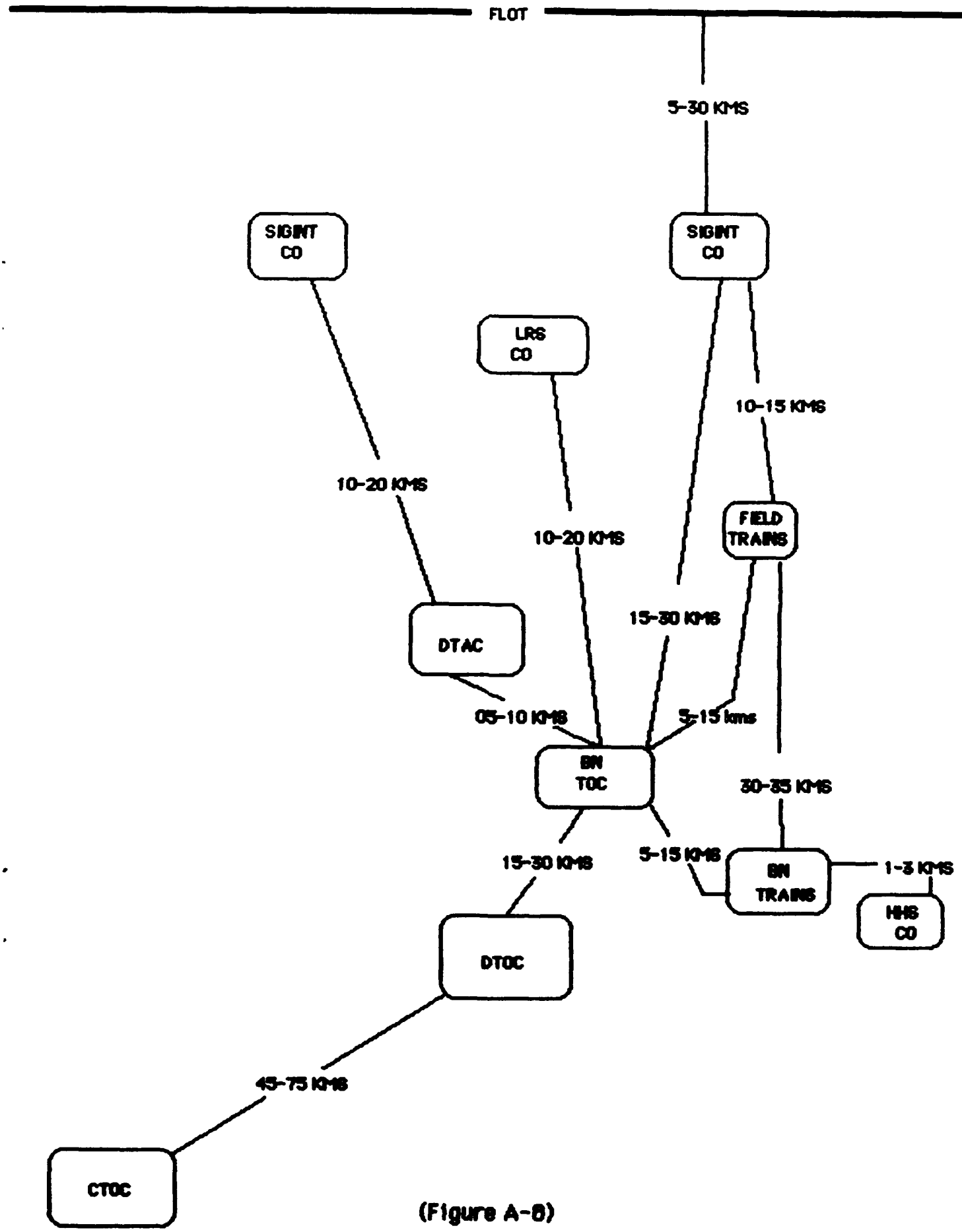
TL
TJ
TB
TB
TP
TM
MCS/FSIC
TJ
CP
CP
TB
MCS
TJ
TB
INDEPTH
COVERAGE
TEAM ALPHA
TEAM CHARLIE
COMBINED

(Figure A-6)

INTELLIGENCE COMMS LINKS-DIV/CEWI
C2 NODES

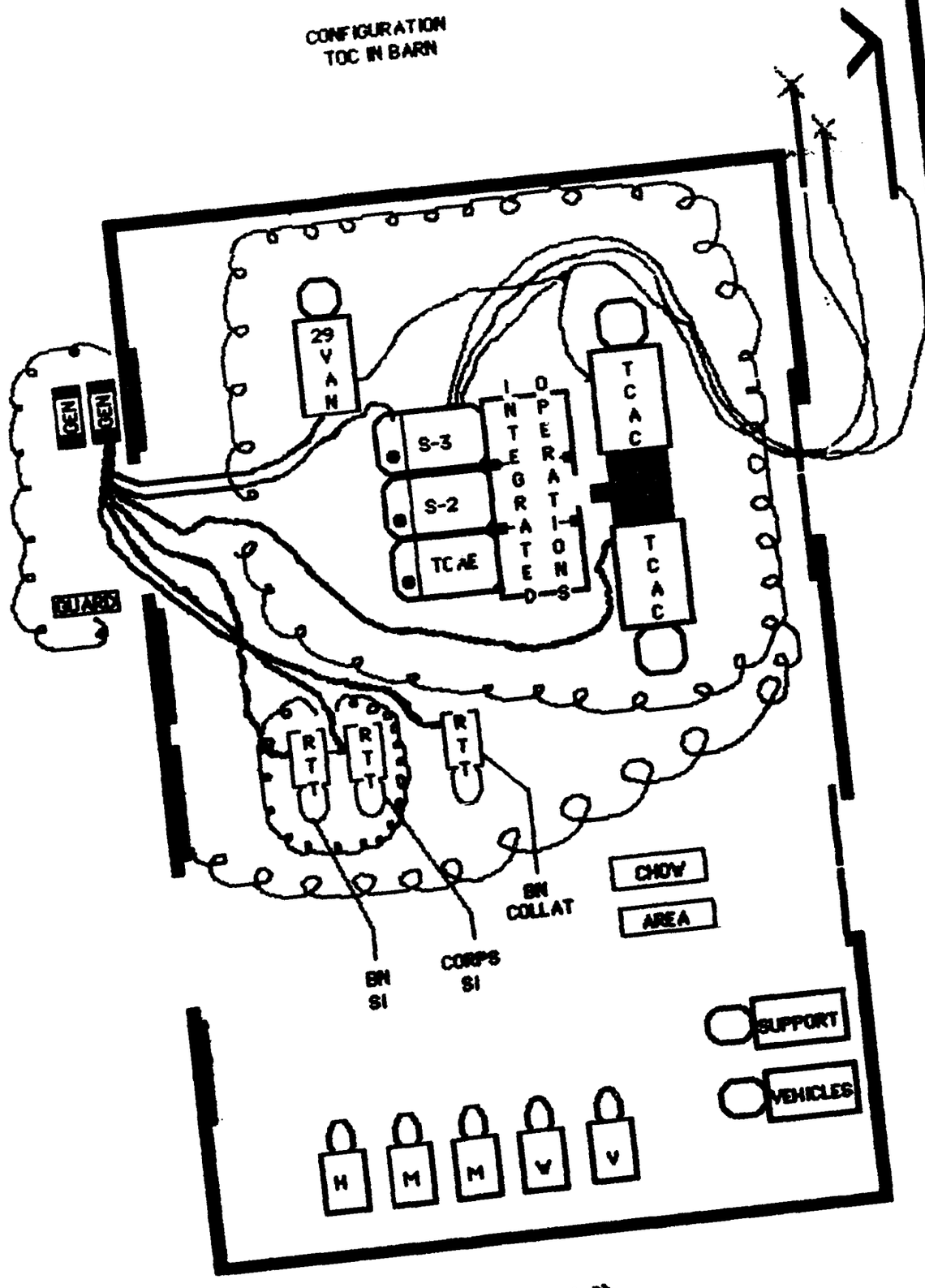


(Figure A-7)


FLOT
5-30 KMS
SIGINT CO
SIGINT CO
LRS CO
10-15 KMS
10-20 KMS
10-20 KMS
FIELD TRANS
15-30 KMS
DTAC
05-10 KMS
5-15 kms
BN TOC
30-35 KMS
15-30 KMS
5-15 KMS
BN TRANS
1-3 KMS
HHS CO
DTOC
45-75 KMS
CTOC

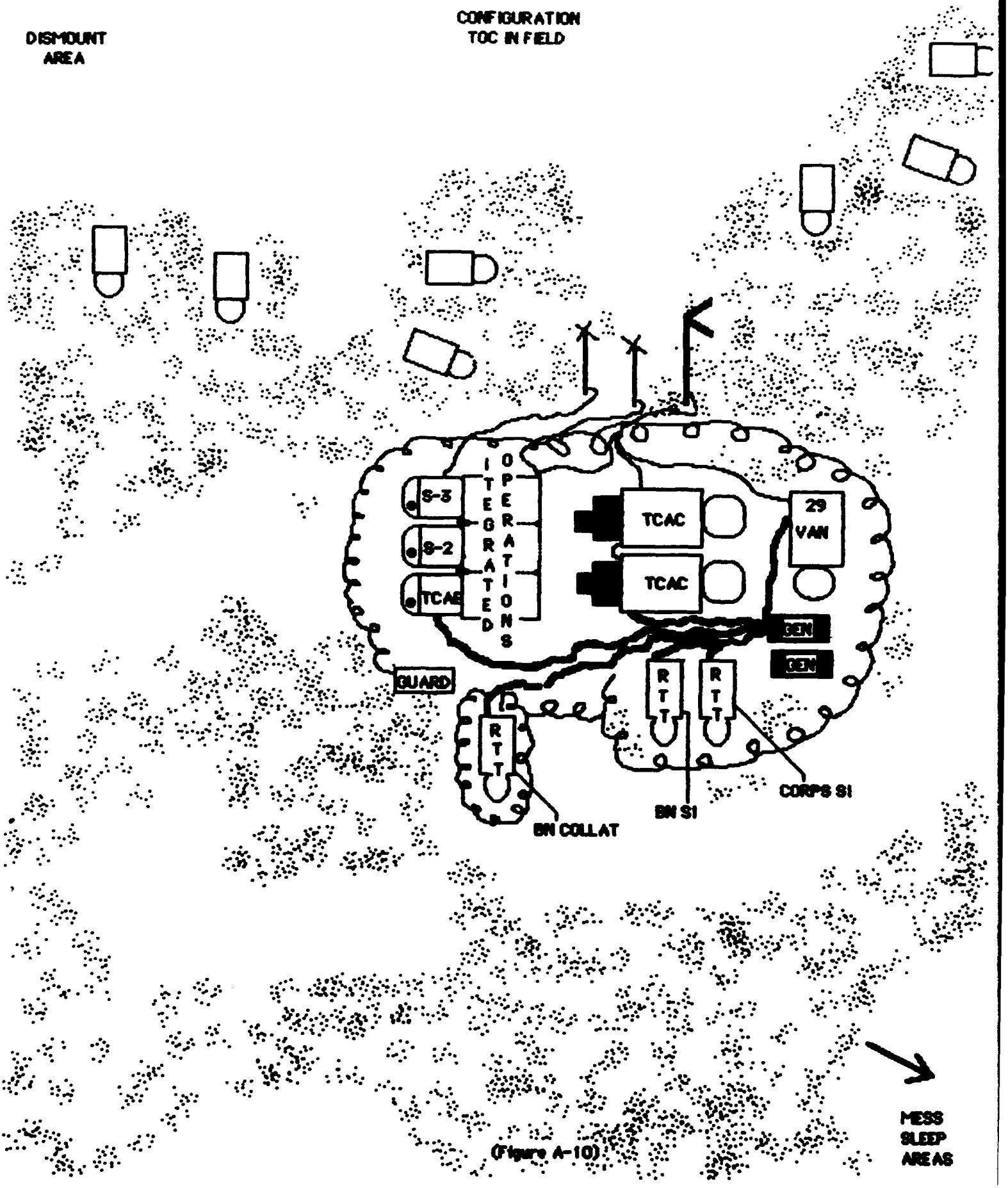
(Figure A-8)

CONFIGURATION
TOC IN BARN



(Figure A-9)

CONFIGURATION
TOC IN FIELD



(Figure A-10)

COMMENTS AND REVIEW-COUNCIL OF COLONELS
U.S. ARMY INTELLIGENCE CENTER AND SCHOOL
FT. HUACHUCA ARIZONA

SUBJECT: AWC paper by LTC McLaulin--TACTICS, FUNCTIONS, TECHNIQUES, AND PROCEDURES IN THE COMMAND, CONTROL, AND COMMUNICATIONS OF A CEWI BATTALION

Colonels present for discussion:

Col Milam, Deputy Commander Intelligence Center and School
Col LaNassa, Deputy Commandant Intelligence School
Col Black, Director of Training and Doctrine
Col Okimoto, Director of Training, Intelligence, and Military Science
Ltc Pape, Deputy Director-Combat Developments

Comments provided are summarized and capsulated below.

1. Colonels agreed paper was relevant and offered options for future refinement of doctrine and force structure. Liked initiatives in C3, simplicity of operational concept, and flexibility described. Liked positive control over collection operations and idea of battle captains fighting the intelligence battle.

2. Colonels contended that many of the initiatives outlined in paper had been seen individually in other commands but not collectively and had not previously been described/collected in one source document.

3. Contended that most of initiatives outlined could be accommodated within existing CEWI doctrine although they are not specifically described in doctrine.

4. Stated that CEWI doctrine was very generai and was based on former TRADOC Commander's guidance to make doctrine broad enough to accommodate all different types of CEWI battalions.

5. Agreed that current doctrine may leave too much room for interpretation and different approaches in implementation. Stated that doctrine currently being written is more defined and prescriptive. Many of issues/ideas outlined in paper are being incorporated in next series of doctrinal publications.

6. Agreed that C3 is CEWI's Achilles heal and must be better structured and ordered to realize potential of existing resources. Stated many of current IEW initiative targeted at addressing this shortfall. Stated that ideas presented in paper offered excellent insight/strawman for integration of advanced C3 capabilities in CEWI/intelligence structure.

7. Challenged notion that CEWI battalion does all source analysis. Stated that G2 does all source intelligence analysis and CEWI battalion correlates information from different sources--author agreed.

COMMENTS AND REVIEW BY
INTELLIGENCE COORDINATOR (LTC SLOANE)
BATTLEFIELD COMMAND TRAINING PROGRAM

SUBJECT: AWC paper by LTC McLaulin--TACTICS, FUNCTIONS, TECHNIQUES, AND PROCEDURES IN THE COMMAND, CONTROL, AND COMMUNICATIONS OF A CEWI BATTALION

Comments provided are summarized below.

1. Thought description of basic functions and procedures was excellent and offered elements in the CEWI battalion a good basis for effective operations.

2. Liked integration of battalion operations and focus on correlation of information. Like relationship and division of effort described between G-2 and CEWI Battalion.

3. Commended emphasis on communications and integration of automation throughout the battalion and intelligence structure. Liked organization of unit and relationship of intelligence functionaries within the unit.

4. Liked emphasis on CEWI unit producing combat information and not trying to compete with G-2 as analytic center.

5. Cautioned that REFORGER lessons learned must be carefully weighed against reality of actual combat.

6. Cautioned that LNOs at principal division nodes may cause competition with G-2.

7. Recommended that paper stress importance of good communications between division and corps and their impact on technical support for SIGINT operations and data bases.

GLOSSARY

35D/G: Tactical intelligence officers (All Source/SIGINT)
96B: Enlisted Order of Battle analyst
98C: Enlisted Signals Intelligence analyst
98G: Enlisted Signals Intelligence linguist
A&L: Administration and Logistics
ACR: Armored Cavalry Regiment
ADC-M: Assistant Division Commander Maneuver
ADC-S: Assistant Division Commander Maneuver
ALOC: Administration Logistic Operation Center
ARTEP: Army Training and Evaluation Program
ASAS: All Source Analysis System
ASIC: All Source Intelligence Center
BCTP: Battlefield Command Training Program
BMO: Battalion Maintenance Officer
BOS: Battlefield Operating Systems
C of S: Chief of Staff
C&C: Command and Control
C&J: Communications and Jamming
CAL: (a small off line encryption system adaptable to commercial telephones)
CAS: Close Air Support
CEOI: Communications Electronic Operating Instructions
CESO: Communications Electronic Staff Officer
CEWI: Combat Electronic Warfare Intelligence
CG: Commanding General
CI: Counterintelligence
CINC: Commander in Chief
CM: Collection Management
COMSEC: Communications Security
CP: Command Post
CPX: Command Post Exercise
CSM: Command Sergeant Major
CTOC: Corps Tactical Operations Center
CTT: Commanders Tactical Terminal
DBP: Deutches Bundes Post (German Telephone System)
DF: Direction Finding
DISCOM: Division Support Command
DIVARTY: Division Artillery
DMDG: Digital Message Data Group
DOE: Division of Effort
DTAC: Division Tactical Center
DTOC: Division Tactical Operations Center
EAC: Echelon Above Corps
ECM: Electronic Counter Measure
ELINT: Electronic Intelligence
ENDEX: End of Exercise
EPW: Enemy Prisoners of War
EW: Electronic Warfare
EWBMA: Electronic Warfare Battlefield Management Aide
FIRE FINDER: (an artillery counter battery radar)
FIST: Fire Support Team
FLOT: Front Line of Own Troops
FM: Frequency Modulation
FRAGO: Fragmentary Order
FSIC: Forward Sensor Interface Communications
FTX: Field Training Exercise
GDP: General Defense Plan
GPS: Global Positioning System
GSR: Ground Surveillance Radar

GUARDRAIL: (an airborne SIGINT collection and direction finding system)
HF: High Frequency
HMMWV: High Mobility Multipurpose Wheeled Vehicle
HOMEBOUND: (a HF SIGINT collection/training program)
HUSH III: (a COMSEC measure to minimize communications emissions)
I&S: Intelligence and Surveillance
IEW: Intelligence and Electronic Warfare
IGRV: Improved GUARDRAIL Five
IHFR: Improved High Frequency Radio
INTSUM: Intelligence Summary
IPW: Interrogator Prisoner of War
JOINT STARS: Joint Surveillance Target Acquisition System (an airborne high resolution radar system supporting Army and Air Force users)
KG: Key Generation (a means of encryption)
KLEIGHLIGHT: (a SIGINT technical report)
KY: (an encryption device used with standard Army radios)
LET: Live Environment Training
LIC: Low Intensity Conflict
LNO: Liaison Officer
LOB: Line of Bearing
LOS: Line of Sight
LRS: Long Range Surveillance
MCS: Master Control Station
MIB: Military Intelligence Battalion
MICROVAX: (a computer used by signal elements for signal profiling)
MKT: Mobile Kitchen Trailer
MSC: Major Subordinate Command
MSE: Mobile Subscriber Equipment
MTOE: Modified Table of Organization and Equipment
NAI: Named Area of Interest
NRP: Net Radio Protocol
NRT: Near Real Time
NTC: National Training Center
ODP: Officer Distribution Plan
OH-58D: (a high accuracy laser target designation system--helicopter mounted)
OPCON: Operational Control
OPFOR: Opposing Force
OPORD: Operations Order
OPSEC: Operations Security
OR: Operationally Ready
PARPRO: Peacetime Reconnaissance Program
PAWS: Portable ASAS Work Station
PCM: Pulse Code Modulation
PIR: Priority Intelligence Requirements
PLL: Prescribed Load List
POC: Platoon Operations Center
PSC-2: (a digital burst device adaptable to standard radios)
QUICK FIX: (a SIGINT collection, direction finding, jamming system--helicopter mounted)
RATT: Radio Teletype
RECCE: Reconnaissance
REFORGER: Return of Forces to Germany
RP: Release Point
RR: Radio Relay
RTCE: Rapid Targeting Collection Exercise (a USAREUR/USAFE intelligence exercise)
RTO: Radio Telephone Operator
S-2: Staff Intelligence Officer