STUDY PROJECT

PREPARATION AND DEPLOYMENT OF A FORWARD-DEPLOYED, HEAVY AIR DEFENSE BATTALION TO SOUTHWEST ASIA

BY

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PREPARATION AND DEPLOYMENT OF A FORWARD-DEPLOYED, HEAVY, AIR DEFENSE BATTALION TO SOUTHWEST ASIA

AN INDIVIDUAL STUDY PROJECT

by

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ABSTRACT

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PREFACE

The deployment of the 6th "Hotshot" Battalion, 3rd Air Defense Artillery, 1st Armored Division, from a forward-deployed status is the focus of this paper. The Hotshot Battalion deployment was unique for several reasons which will be discussed throughout the following chapters: Chapter 1: Introduction, Chapter 2: Leadership, Chapter 3: Training, Chapter 4: Maintenance, Chapter 5: Caring, Chapter 6: Air Defense Issues, and Chapter 7: Conclusion.

This paper is not intended to be all encompassing. Details of the most important issues will be discussed to capture experiences gained from this historical event. These experiences provide lessons learned for future deployments. The majority of the information contained in this paper originates from information captured in journals, daily logs, and after-action reports by the battalion's leaders and soldiers. Analysis of divisional air defense doctrine are addressed throughout applicable sections of the paper. The majority of the paper will be organized in a narrative of the experience followed, where applicable, by a statement of doctrine compared or contrasted with the lessons learned from the experience. Finally, recommendations for change or verification of the validity of existing doctrine will be addressed.

The deployment to Southwest Asia of the 6th Battalion, 3rd Air Defense Artillery was its last major operation. Designated as one of the units to be reduced from the force structure because of the draw down of conventional forces from Europe, the colors of the battalion were cased in a ceremony at O'brien Barracks, Schwabach, Germany, on the 15th of November, 1991. Two new combat streamers were added to the colors acknowledging the sacrifices and courage of the battalion's soldiers and families during Operations Desert Shield and Desert Storm.

CHAPTER 1

INTRODUCTION

The "Mother of All Experiences" began rather auspiciously for soldiers and families of the 6th Battalion, 3rd Air Defense Artillery. At approximately 10 p.m., local German time on the 9th of November, 1990, most of the "Hotshot" personnel were watching a special Cable News Network (CNN) report on Armed Forces Network (AFN) television. The President of the United States, along with the Secretary of Defense and Chairman of the Joint Chiefs of Staff, were scheduled to make an announcement that would change the focus and tempo of the lives of the soldiers and their families stationed at O'brien Barracks in the quiet and picturesque Bavarian city of Schwabach, Germany. While speculation and rumors existed concerning the further build-up of forces in Southwest Asia, there had been no indication these forces would come from the forward-deployed units in Europe.

The President announced that, as Commander in Chief, he had made the decision to send more heavy forces to Southwest Asia to defend Saudi Arabia and to add an offensive option to the operation to expel Iraqi forces from Kuwait.[1] The President's announcement was followed by more detailed announcements by the Secretary of Defense and Chairman of the Joint Chiefs of Staff. The combination of these announcements made it clear that two heavy divisions from forces in Europe would be deployed to Southwest Asia. The majority of military leaders believed these heavy forces would be the two armored divisions in Germany. It was then obvious to conclude that the Hotshot Battalion, organic to the 1st Armored Division, would be deployed to the Persian Gulf region.

This unorthodox method of alerting the forces caused a great deal of consternation within the chain of command of the division. The general feeling was that the chain of command should have been notified prior to a public announcement which impacted directly on the lives of soldiers and their families. While the need for

secrecy in such operations and decisions is understood by all, the chain of command must be entrusted with essential information required to make proper decisions and keep anxiety of soldiers and families at proper levels.

The following morning, a commander's meeting at division headquarters was held. The Commanding General informed the leadership that no alert orders or further information was available. We were to proceed with preparations to deploy and be prepared to start loading equipment no later than 10 days hence. While the Commanding General expressed uncertainty as to the exact deployment timetable or our mission upon arrival, it was clear that considerable work had to be done. Accepting the challenge, battalion leaders and soldiers reacted swiftly to the anticipated mission in three areas: planning, training, and unit deployment.[2]

Planning offered the battalion leaders two unprecedented challenges. First, the battalion had to be shipped to Southwest Asia in a logical order to support lodgement operations as divisional units arrived in theater and moved to assembly areas. The battalion had never practiced these monumental tasks. Platoons and batteries trained for deployments to local training areas, defensive positions, and the Combat Maneuver Training Center (CMTC), but the battalion had never deployed as a unit. The battalion was fortunate, however, to have several leaders and staff officers who had recently participated in Return of Forces to Germany (REFORGER) exercises. This was to be a "DEFORGER" exercise which utilized many of the same planning factors and experiences but would still task planning and execution capabilities of each element of the battalion. Since the battalion was among the first units listed on the Division Time Phased Force Deployment List (TPFDL), the planning began immediately. Preparation for movement of equipment and personnel became the priority.

The second challenge was that the battalion had to orient its planning to a new theater. All battalion battle books, contingency plans, and operations orders were oriented to operations in Central Europe. Training, equipment, and support were all designed to conduct a general defensive operation in the European environment. The deployment would require new equipment, different training focus, and desert survival skills. Again, fortunately, the battalion command group and staff, two battery

commanders and several non-commissioned officers were veterans of the National Training Center (NTC). NTC experience would prove invaluable in planning, preparation, and deployment.

Vehicle and personnel deployment provided another challenge for the battalion. These movements unavoidably occurred on short notice or in bad weather conditions amidst many changes. These changes provided leadership challenges and required long hours of preparation during weekends and holidays. Despite these all-absorbing activities, the battalion was able to schedule and conduct the traditional Thanksgiving Day meal in the dining facility. The meal was attended by soldiers, families, and local German guests, who had historically enjoyed this annual event. A festive, yet emotional, atmosphere prevailed as soldiers utilized every opportunity to spend quality time with their families and friends. The German community leaders and local German-American club members shared the day with the battalion soldiers and their families, pledging their support for soldiers and families remaining behind.

The battalion advance party departed on the 10th of December, to prepare for the arrival of the battalion main body. The advance party consisted of the Battalion S-3, S-4 NCOIC, the battalion maintenance officer and five soldiers. In hindsight, the advance party was too small for the gargantuan task they were to accomplish in an unprepared theater. Because of a lack of communications with them following their departure, the battalion had to rely on messages returning to the division headquarters via couriers for information involving personnel, equipment, and maintenance.

Changes in the TPFDL occurred almost daily as armored battalions were manifested before us in order to get the heavy units on the ground first. After the vehicles had departed and the main body awaited its movement dates, leaders renewed emphasis on individual training. Deployment of the main body finally began on the 28th of December and all personnel had closed in Southwest Asia by the 4th of January. Upon arrival in Saudi Arabia, the battalion was bussed to an Intermediate Staging Area (ISA) near the port of Al Jubayl to await the arrival of equipment.

A crowded bus ride followed a tense flight into the theater of operations adding to the anxiety of the soldiers. Poor living conditions heightened the initial bustle and

confusion upon arrival at the ISA. The "Scud Bowl," as the ISA later became affectionately called, was dusty, crowded (10,000 soldiers crammed 16 to 20 soldiers in each tent), and often unsanitary. Meals consisted of two contracted meals for breakfast and supper, and a Meal-Ready-to-Eat (MRE) for lunch. The contracted meals, provided by local caterers, caused illness among soldiers. Close living quarters added to the problem. In many ways, however, the ISA prepared soldiers for desert life, because it forced them to deal with dust, moisture, sanitation, heat, and personal hygiene. Everyone quickly learned that self discipline in the desert was a prerequisite for survival.

Planning and coordination continued as the battalion equipment began to arrive When platoon and battery sets were complete, movement to the division assembly area was coordinated. The movement to Tactical Assembly Area (TAA) Thompson was a dangerous and difficult trip along Tapline Road, the only major highway in northern Saudi Arabia. The highway became known as "Suicide Alley" because of many accidents caused by numerous hazards and obstacles: traffic jams, driver fatigue, and frustrated and reckless Saudi drivers. The trip was a 15 to 20-hour drive for wheeled vehicles because of heavy traffic, lengthy fuel and rest stops, and poor road conditions which required slow rates of movement. All tracked vehicles were loaded on Heavy Equipment Transports (HET) or contracted trucks for movement to the TAA.

When the battalion completed its movement, preparations for combat began. The battalion continued to train; obtain necessary supplies; train; procure ammunition and missiles; train; and task organize for the expected attack into Iraq. In less than 60 days, leaders and soldiers of the battalion had accomplished a truly magnificent achievement, moving all equipment and personnel to the theater of operations without a single accident, injury, or loss of life.

CHAPTER 2

LEADERSHIP

Leadership is defined as the process of influencing others to accomplish the mission by providing purpose, direction, and motivation.[3] Leadership on the battlefield requires an even greater challenge:

> Inspire soldiers to do things against their natural will -- to carry out missions for the greater good of the unit, the Army, and the country.[4]

Leaders must be able to assess the situation in the combat area and "form their battle-field vision."[5] Utilizing this vision, and the necessary skills of communication and technical competence, leaders must then be able to assume the responsibility inherent in their individual positions and make the decisions necessary to accomplish the mission. Such were the challenges faced by the leaders of the Hotshot battalion as they prepared for the war in Southwest Asia.

The Hotshot battalion had only recently undergone a change of leadership. I assumed command of the battalion on the 6th of July. The executive officer and operations officer had less than one month experience in their respective positions. The battalion S-1and S-4 were also new, being assigned shortly after the change of command. The turbulence caused by the new leadership changes was significant because of the distinct differences in leadership styles and philosophies between myself and the outgoing commander. My philosophy of command was one of delegation, accountability, and making decisions at the lowest appropriate level.

The commissioned and noncommissioned officers were talented and desirous to train and lead the soldiers of the battalion. The leadership training they had received in their professional development courses had provided a firm foundation for good leadership. What was lacking was the necessary guidance, focus, and

motivation from the battalion command group.

Several indicators were apparent as the overall command and leadership climate in the battalion was assessed. Physical fitness, basic soldier skills, and collective training were three critical areas which showed signs of neglect. The unit had the highest rates of indiscipline in the division. At battery level, leaders were reluctant to make independent decisions because of a fear of failure. The overall morale of the unit was low and pride was lacking. This type of command climate was not conducive to success in garrison, much less the battlefield. Air defense leaders must think and act independently in a divisional unit since their roles in direct support missions require them to be experts and decision-makers at their own levels.

Adding to the problems discussed above was the fact that the battalion had been completely reorganized by a previous commander. This organization was solely oriented to support the division's general defense plan. Three of the batteries were permanently task organized with two Vulcan platoons, one Chaparral platoon, and a Stinger platoon. Each of the Vulcan platoons also had a Stinger section permanently attached.

This task organization appeared to be logical from the view point of supporting the three maneuver brigades in the division for the general defense plan. It was not, however, in accordance with the established Table of Organization and Equipment (TOE). The task organization did not allow unity of effort in training or flexibility in supporting changes to the Commanding General's air defense priorities based on new threats or operational requirements. More significant, in my opinion, was the inordinate amount of time consumed by leaders in resolving problems caused by the reorganization which took them away from leading, training, and caring for their soldiers.

For example, the automated systems for personnel, Standard Installation Division Personnel System (SIDPERS), and maintenance, Unit Level Logistics System, (ULLS) were not designed to support this new task organization. In personnel actions SIDPERS did not allow the assignment of a Chaparral crewman (16P) to Battery A or Battery B since they were not authorized Chaparral crewmen by

TOE. Likewise, Vulcan crewmen could not be assigned to Battery C which had no authorizations for Vulcan soldiers. It also required unauthorized assignment of maintenance personnel. The consequences were high error rates in processing personnel and finance transactions, and inaccurate personnel accountability documents. These errors caused problems for the soldiers which impacted adversely on morale and consequently caused them to question the credibility of leaders.

The automated maintenance system experienced the same difficulties, resulting in high requisition rejection rates, delayed processing of parts requests, and poor accountability of expensive repair items. It also required the battalion to maintain four Chaparral and three Vulcan prescribed load lists (PLL). While maintenance personnel had worked around these problems, the result was ineffective maintenance, excessive down time for pacing items, and poor accountability of parts. More leader time was consumed attempting to resolve these problems. The organization and associated difficulties in the personnel and maintenance areas resulted in three consecutive failures of Annual General Inspections.

After studying the reasons for the task organization and reviewing the overall personnel accountability and maintenance status, I chose to revert back to the approved TOE organization. This was accomplished in late September, 1990. The benefits were visible almost immediately. Personnel actions and maintenance rates improved dramatically within the first month. Leaders were then able to focus on training and leadership issues which had not received the proper amount of attention in the past.

During my inprocessing interview with the Commanding General, he directed me to make immediate changes in the leadership climate of the battalion. He specifically addressed the need to improve morale, readiness and discipline, which he stated had suffered under the previous leadership. In concert with the executive officer, S-3, and battery commanders, we began to make immediate changes to the command and leadership climate which we believed necessary to support the air defense mission within the division. I felt that the four leadership requirements described in FM 22-100 were applicable and appropriate to the situation I had

inherited.

The first requirement, lead in peace to be prepared in war,[6] needed to be instilled in the unit. The first step was to change the philosophy of leadership which promoted success by allowing mistakes of learning and initiative, rather than punishment for those mistakes. Next, all activities, to include training, taskings, and meetings, focused on using wartime skills. I required all leaders to develop communication skills through briefings as often as allowed and when appropriate to the situation. I also set high standards for staff actions, briefings, and written communications to ensure that leaders were competent and professional when communicating within the chain of command.

Leaders were trained in weekly sessions on their roles, responsibilities, and my expectations in the areas of leadership, training, maintaining, and caring. My goal was to establish a command climate where each leader made decisions appropriate to his level of responsibility. My experience in other divisions had taught me the importance of junior leaders who knew how to make decisions and were not afraid to take risk as the situation required. The junior leaders in the battalion had the talent and the desire; they only required direction, encouragement and support.

The second requirement, develop individual leaders,[7] demanded that skills, knowledge, and competence be first taught and then required of each leader. The battalion Command Sergeant Major and I developed a detailed noncommissioned and commissioned officer leadership development program which emphasized leadership principles and skills we found lacking in the unit. Leadership development received priority in all unit functions. Mentoring and coaching occurred when and where possible, until leaders understood that their success as a leader was a key to the success of the unit.

The third requirement, develop leadership teams,[8] was accomplished by ensuring that all activities focused on maintaining unit integrity. The battalion S-3 was instructed that leaders were to be assigned missions, not tasks. We utilized five-paragraph operations orders for mission assignment to familiarize leaders with what they could expect during wartime. All training and garrison support missions were

performed at unit level -- squad, section, platoon, or battery -- as the situation allowed This focus allowed leaders to concentrate on team building, unit cohesion, communications, and unity of effort.

The fourth requirement, decentralize[9], was the most difficult step to accomplish because leaders had been required to operate differently in the past. Leaders were reluctant to make decisions and looked to the battalion command group or staff officers to make the decision for them. We immediately established the policy that only commanders, platoon leaders, and squad/section leaders were to make decisions. The battalion staff would support the decision with the necessary resources. While this seems like fundamental leadership, which should have been present in the day-to-day operations of the unit, it was not. For this reason, it was difficult to break the mold and bring leaders to the realization that their decisions, input, and contributions to the unit were valued and supported.

I utilized every opportunity to instill the importance of the principles of leadership and the need to lead from the front. I personally set the example in personal appearance, physical fitness, and ethics. I hoped to establish an environment where leaders were respected, trusted, and followed. While the challenge was difficult, positive changes in the morale, discipline, and pride of the unit were apparent after a few short weeks. Most notable, and certainly the most important, was that leaders began to take charge at their own levels of responsibility. Initiative was noted and commended, decisions supported, and examples of positive leadership encouraged. The atmosphere among the leadership became one of a team which could perform in garrison or field environments.

This team atmosphere provided the foundation to prepare competent, decisive and independent leaders who were capable of providing air defense coverage across the width and depth of a division area of operations. To further develop this environment, we relentlessly and systematically insisted that decisions be made at the lowest level possible. As this command climate matured, it was easier to distinguish those leaders who would function under stress and who could be depended upon to accomplish assigned missions. Some changes were made to place the stronger

leaders where they would be needed and utilize the talents of other leaders to improve the readiness and cohesion of the battalion.

Training activities concentrated on leader presence and involvement which had a positive effect in two areas. First, leaders became more familiar with responsibilities of their soldiers and their equipment, thus raising their technical competence. Second, the presence of leaders demonstrated to soldiers that leaders were concerned and cared that soldiers were properly trained and supported. Throughout all phases of the deployment, leading from the front enabled all missions to be accomplished in a timely, safe, and professional manner.

The emphasis on leadership which had begun just four short months earlier, was apparent as soldiers prepared for deployment. The incidents of indiscipline had decreased to the lowest in the division. Soldiers demonstrated pride in themselves, their leaders, and their unit. Leaders paid meticulous attention to detail as the battalion prepared for movement. The care and concern demonstrated by the leaders ensured that every soldier was prepared with the necessary equipment, training, and discipline as the movement date arrived.

When the final movement schedule arrived, the leadership was prepared. Soldiers were confident that they were well led and families were comfortable that their husbands and fathers were in good hands. The emphasis placed on training and focus given to preparing leaders had not been wasted. Unit cohesion, morale, and pride were reflected by each soldier as he boarded the planes for the trip to Southwest Asia.

The role of leaders was further emphasized upon arrival in Saudi Arabia. Soldiers were anxious and uncertain of what they faced as they boarded buses for the ISA. Leaders provided assurance and available information while outlining steps to be taken upon arrival in the ISA. Training schedules were developed to ensure soldiers were acclimated to the new environment as the battalion awaited arrival of the equipment and final preparations for movement to the desert.

Our efforts to instill confidence and initiative in the leaders, especially at platoon, section, and squad level, reaped benefits promptly following our arrival in the

TAA. Preparations for combat began almost immediately. Batteries were task organized and assigned to the brigades and other division assets according to the priorities established by the Commanding General. Leaders began coordination with brigade, task force, and other division leaders to assume their air defense missions and for planning, support, and combined arms training.

As batteries and platoons assumed their direct and general support missions, I was confident that each leader was prepared and soldiers trained to face the challenges ahead. Air defenders went on full alert as soon as equipment and ammunition became available. They remained on alert until their return to the rear assembly area for deployment back to Germany. The Commanding General and other division leaders at brigade and task force level praised the leadership of the battalion for their professionalism, readiness, and training. While no hostile target was fired upon, air defenders stood trained and ready to accomplish their mission. Leaders from squad to battery level distinguished themselves before, during, and after the combat phase. Their conduct under stress was impeccable.

CHAPTER 3

TRAINING

The Commanding General's assessment of the battalion's training and readiness status was on target. It was apparent that physical fitness, basic soldier skills, common tasks, and collective training had not been conducted on a regular basis nor in accordance with established Master Training Plans (MTP).

Three major areas demanded immediate attention. First, leader training, as discussed in the previous chapter, to refocus efforts of the chain of command on mission essential tasks and war fighting skills which the battalion had to accomplish to fulfill its air defense mission. Second, the battalion had to return to the basics of air defense which had been abandoned for a new approach entitled the 1st Armored Division Air Defense Concept. Third, community support and tasking requirements had to be reduced and better managed to maximize soldier availability for training.

The first step taken in training leaders was to integrate the principles outlined in FM 25-100, Training the Force, and FM 25-101, Battle-Focused Training. I required each leader to read these manuals and focused our efforts on the following:

> We train the way we intend to fight because our historical experiences show the direct correlation between realistic training and success on the battlefield. The Army has an obligation to the American people to ensure its sons and daughters go into battle with the best chance of success and survival. This is an obligation that only outstanding and realistic training conducted to the highest standards can fulfill. The highest quality training is, therefore, essential at all levels.[10]

I insisted that leaders adopt this guidance as the battalion training creed. We also implemented the principles of planning outlined in Chapter 3, FM 25-100 which had not been followed previously. This step enabled me to hold leaders accountable for effective planning and execution of their training missions.

Several distractions had to be eliminated to allow as many soldiers as possible to attend scheduled training. The first was a battalion training program entitled Education Week. This program was the primary focus of the previous commander and it consisted of one platoon per quarter standing down for an entire week to attend college courses from the local education center. The program was not voluntary, and platoon leaders were held accountable for having their soldiers sign up and attend classes during their scheduled week. The platoon was protected from all details, taskings, and mandatory training, including Iron Soldier or Sergeant's Time, during this week. This program violated the Commanding General's policy and was a source of concern of the soldiers who had to pay for these courses against their will.

The program received media attention and publicity for the battalion and was credited with making the battalion soldiers more competitive when considered for promotion. While I could understand the benefits of such a program, I also believed that it took soldiers and leaders away from their responsibilities and detracted from readiness. We worked with the education center and leaders in the battalion to set up the same classes during periods which did not take soldiers from training. The program became a voluntary rather than mandatory one.

Iron Soldier time was a five-hour block of time set aside each week for the first line leaders to train their soldiers on individual and collective skills. Soldiers and their leaders were not to schedule any other training, appointments, or activities during this period. All soldiers performing taskings, community support, or staff missions were required to return to their units to participate in scheduled training events. This weekly period of dedicated time for training was an excellent time for correction of deficiencies noted in individual and collective training.

The battalion Command Sergeant Major and I, along with the battalion XO and S-3, set up a regular inspection schedule to ensure that leaders conducted training which focused on war fighting skills. It was also possible to ensure that training was properly planned, resourced, and conducted. After several weeks of holding noncommissioned officers responsible, the quality of training conducted during Iron Soldier time began to improve. Soldiers began to demonstrate more proficiency in

their individual and collective skills and showed increased confidence in their leaders. Leaders became more adept in their training responsibilities and accountability of their soldiers.

Leadership training continued throughout the preparation for movement and during the lodgement and tactical assembly area phases of Operations Desert Shield and Storm. During the preparation for movement phase, leaders were required to become qualified on all the weapons their unit would utilize. Platoon leaders became qualified on their major weapons systems: Vulcan, Chaparral, or Stinger. They also qualified on all individual weapons, crew-served weapons, and ordnance expected to be encountered on the battlefield. Technical competence allowed them to better employ these weapons and build confidence among their subordinates, supported unit leaders, and soldiers as war drew nearer. Leader confidence increased directly proportional to technical competence.

Command post exercises were conducted as often as the schedule allowed during the preparation for movement and subsequent phases of the deployment. These exercises required leaders to practice the command and control procedures of their units, work on communication procedures, and improve the Battalion Tactical Standard Operating Procedure (TSOP) which would be utilized as the primary means of internal command and control during combat.

The second major area of training emphasis resulted from the battalion's new concept of air defense coverage of the division. The concept was a radical departure from the doctrinal support of an armored division by its organic air defense battalion. The concept was centered around air defense "killer teams"[11] being set up at locations called ambush sites throughout the division sector.

The killer teams were under the command of a platoon leader but were controlled by the battalion tactical operations center (TOC). Normal direct support relationships with the maneuver brigade as outlined in FM 44-63 did not exist. Doctrinally, air defense systems in support of a division "must be able to maneuver and react with the division elements likely to be attacked by enemy aviation."[12] With this new approach, "killer teams" did not "maneuver with the brigades" but moved

from ambush site to ambush site.

While I attempted to understand the rationale behind this concept, I was not convinced that it was in the best interest of the battalion or the division. I could not understand how this concept could be logistically supported since the battalion normally relied on the forward support battalions of the maneuver brigades and the main support battalion for support. In this concept, the battalion would have to support all batteries, platoons, and sections. The battalion possessed neither the assets nor the resources to support "killer teams" spread across the width and depth of the division area of operation.

Moreover, I could not envision command and control of this concept. Battery commanders and platoon leaders were virtually removed from commanding and controlling their own elements. This concept centralized all the command and control functions at battalion level, including the positioning of the "killer teams."

Furthermore, air defense doctrine requires that air defense weapons systems be as far forward as possible to ensure that forward elements of the brigade are inside engagement ranges of these systems. The air defense battalion commander weights the main effort of the division attack with the bulk of the air defense assets.[13] The battalion's concept countered that doctrine by having teams spread throughout the division area with no consideration of the main effort or the division commander's air defense priorities. While the concept may well establish coverage of the entire width and depth of the division area of operation, it fails to provide the flexibility of movement needed to keep the elements of the main effort within the engagement ranges of the air defense systems. The concept is oriented primarily to a defensive operation. In an operation as dynamic and rapid as Desert Storm, this concept would never work since the systems must be moving constantly to keep up with the brigades and provide air defense coverage. It robs the division commander and the air defense officer of the necessary flexibility to counter any threat which might emerge in the division area.

Discussion of this concept with the key leaders and staff officers in the battalion who had experience with it, revealed that it was neither understood nor supported.

After consulting with the Commanding General, the division G-3, and the maneuver brigade commanders, I made the decision to return to normal doctrinal support of the division and focused all efforts to retraining leaders, crews, and soldiers in air defense basic tactics.

Initial training took place in garrison and the local training area, where classes and command post exercises were conducted to familiarize leaders with FM 44-63 and FM 44-100. The next phase was to conduct platoon field training exercises in the local training area to train crews and soldiers. This phase was evaluated by the battalion S-3 section. An after-action review provided feedback to all platoon members. The S-3 provided commanders with noted deficiencies. Platoon leaders planned additional training to correct the deficiencies as soon as time and training resources would support it.

Shortly following the completion of the initial phase of leader training, the battalion had the opportunity to participate in a division-level, command post exercise. The exercise required Headquarters Battery, the battalion TOC, and line battery command posts to move to a field site near the Czechoslovakian border. Platoon leaders participated in the control cell which allowed them to command and control a simulated platoon, using doctrinal air defense tactics.

This exercise provided me the opportunity to accomplish several goals. First, it offered an excellent environment to demonstrate to leaders of the battalion that air defense doctrine worked. Second, it provided a forum to reestablish support relationships between myself and the division, battery and brigade commanders, and platoon/section leaders and task force commanders. Third, it allowed us to train liaison cells and platoon leaders on their warfighting responsibilities. Fourth, it presented an opportunity to demonstrate to the division chain of command that the battalion was competent and capable of performing its mission essential tasks. Finally, it gave me an opportunity to evaluate the battalion chain of command and staff in a field environment.

This exercise was the turning point in both leader training and credibility of the battalion within the division, the division staff, and the maneuver brigades. Our

operations plan worked almost to perfection. Because of our demonstrated competence, I was accepted as the air defense officer and consulted on air defense employment in planning and conducting the operations associated with Desert Shield and Desert Storm. The success experienced during this exercise changed the image of the battalion. We were able to build positive relationships with the brigades which allowed retraining of the batteries and platoons as an integral part of the combined arms teams.

Following the command post exercise, we were fortunate to be scheduled for a rotation at the Combat Maneuver Training Center (CMTC) at Hohenfels, Germany. During the previous two years, only Vulcan and Stinger platoons selected by the battalion commander had participated. Since batteries and platoons had not established habitual relationships with their respective brigade or task force under the ambush concept, a platoon could go through more than one rotation with different task forces. The reasons given for this rotation scheme were based on appearance and making the battalion look good rather than maximizing the training opportunities. Chaparral platoons had not been included and stayed in garrison to pull guard and community support details.

I directed the S-3 to rotate all Vulcan, Stinger, and Chaparral platoons through the CMTC during our scheduled training period. Battery command posts deployed in support of assigned brigades to establish relationships with the commander and staffs and coordinate logistical support relationships with the brigade forward support battalions. The S-3 deployed the battalion Tactical Operations Center (TOC) to train the staff on control of battalion assets and coordination with their division TOC counterparts.

The CMTC rotation proved to be a vital step toward completing the necessary training of crews and individual soldiers in the basics of air defense. They were taught how to support maneuver with the task forces using air defense doctrine, protect those forces against enemy air, and perform mission essential tasks to support offensive, defensive, and convoy operations. The battalion S-3 and I accompanied each platoon and provided our own after-action review with the platoons to

complement those provided by CMTC Observer/Controller Teams. The battalion S-3's experience as an Observer/Controller at the National Training Center proved invaluable in training the platoon leaders and squads/teams during the rotation

We achieved our goals and every platoon participated in the CMTC rotations, either in support of the opposing force or the task force being evaluated. The experience gained during these task force rotations proved invaluable in building leader and soldier confidence, getting the battalion back to basics, and further enhancing the credibility of the battalion within the division. In hindsight, this particular period came at a very fortuitous time because it was just one month later that we were notified of our deployment. The training remained fresh in the minds of all the soldiers. Lessons learned were used in planning and conducting training before the alert, during the preparation for movement phase, and finally during the lodgement, assembly area, and combat phases.

The battalion training program had also suffered because of heavy requirements levied against it for both community support and guard requirements of the local ammunition storage area. These taskings often required up to four platoons to accomplish. Since I also wore the subcommunity commander hat, I reviewed the taskings and requirements. I then discussed them with the community commander, who was also the Assistant Division Commander. I proposed alternative methods to reduce the support and guard requirements and free up leaders and soldiers for training. He concurred and reduced the requirements to only two platoons.

In consonance with my intent to maximize training time and ensure that the maximum number of soldiers were free to attend scheduled training, I conducted all administrative and disciplinary actions after normal duty hours. Hours of operation for the battalion personnel administration center were changed so that it was open to process soldier actions during hours not reserved for prime time training. A total maintenance program, which will be discussed in the following chapter, assisted in ensuring all personnel actions were up-to-date and reduced appointments which conflicted with training. Emergency situations provided the only exceptions.

Shortly before the notification to deploy to Southwest Asia, the Forward Area

Alerting Radar (FAAR) platoon was directed to turn in all of its radar systems. We considered options of training the FAAR platoon as air scouts or as a Manual Early Warning System (MEWS) platoon. We utilized the opportunity of the CMTC rotation to evaluate the effectiveness of air scouts. We were not satisfied with the results. The proposal to place these untrained radar operators in HMMWVs (which were not authorized) in forward positions, equipped only with binoculars and radios to search and scan the skies for enemy aircraft, proved both unsafe and ineffective. Given the range and capability of enemy aircraft and ordnance they carried, "air scouts" or MEWS teams would have to position themselves ahead of even the screening force to provide any credible early warning of approaching aircraft. To fill this void, an interim method of early warning was designed and utilized. Training of battalion fire units and division personnel on the interim method took place during two division level CPXs held in the TAA. These CPXs provided checks of the communication systems as well as the ability for fire units, liaison cells, the division airspace management element (DAME), and battery CPs to receive and disseminate the necessary warnings of enemy aircraft or strategic ballistic missiles which threatened the division. The training was successful and the system was used during all remaining phases of the operation.

Since employment doctrine[14] for the MEWs did not exist, we decided to cross train soldiers of the FAAR platoon as Stinger gunners and constituted them as a separate Stinger platoon. Their mission was to provide air defense of the Division Rear Command Post and Division Support Command. The additional 16 Stinger teams provided the battalion with additional firepower and allowed more teams to be placed forward with the maneuver brigades and aviation assets.

After completion of our CMTC rotations and immediately following the notification to deploy to Southwest Asia, training intensified, especially in the areas of individual skills. Training concentrated on Nuclear, Biological, and Chemical (NBC) defense and air defense crew drills. Soldiers qualified on individual and crew-served weapons. Vulcan gunners and assistant gunners qualified through Table VIII of Vulcan gunnery. Chaparral gunners and assistant gunners moved to the Moving

Target and Dome Simulators where they qualified to the degree possible. Stinger gunners and team chiefs utilized our local Moving Target Simulator and the Stinger Trainer Inert Launch System (STILS) to improve their engagement skills.

Limited maneuver training and live gunnery were conducted prior to shipping the equipment and again upon arrival in the Tactical Assembly Area. Platoons and batteries conducted maneuver training with the maneuver brigades while remaining on continuous air defense alert. The opportunity to conduct gunnery was limited, but Vulcan crews fired in support of Combined Live Fire Exercises (CALFEXs). Chaparral and Stinger gunners were not as fortunate, despite available missiles and space. Fear of fratricide of friendly aircraft and lack of ballistic aerial targets prevented live fire exercises for these elements.

One valuable asset utilized in training the battalion leaders and soldiers before, during, and after the deployment was the Mission Training Plans published by the Air Defense School. These documents contain the tasks and training guidance necessary to focus training at the appropriate level and intensity. During the retraining of the battalion in air defense basics, these manuals provided the subject matter and resource materials which made the training possible and successful. The thought and effort rendered in producing these training programs were certainly justified by the results experienced in the battalion, culminated by the successful operation in the Gulf.

In retrospect, the remarks of General Vuono found in the preface of FM 25-100, were most appropriate as the battalion overcame its training deficiencies and prepared for war:

> As recent events have illustrated, our nation's ability to deter attack or act decisively to contain and de-escalate a crisis demands an essentially instantaneous transition from peace to war preparedness. This requires that all leaders in the Army understand, attain, sustain, and enforce high standards of combat readiness through tough, realistic multiechelon combined arms training designed to challenge and develop individuals, leaders, and units.[15]

While the battalion started from a point of poor training, the emphasis placed by

the leaders resulted in a well-trained air defense unit that was fully capable and competent of performing its mission in Southwest Asia. All air defenders were disappointed that the enemy did not fly against us. Nevertheless, our mission was successful. I firmly believe that the enemy was well aware of the effectiveness of the soldiers, weapons, and tactics of the divisional air defense units and these factors served as effective a deterrent as did the success of the coalition air force. This was especially true in the case of the enemy's rotary wing aircraft.

The experiences gained during the preparation and deployment of the battalion have convinced me of the need for the commander to constantly maintain the training environment and focus which will allow the soldiers to sustain the technical and tactical edge they will require in combat. To do less would endanger the Army's greatest asset: its soldiers.

CHAPTER 4

MAINTENANCE AND LOGISTICS

Operations Desert Shield and Storm taught many valuable lessons in the areas of maintenance and logistics. Leaders and soldiers quickly realized the reasons for continuous emphasis on maintaining equipment and ensuring that necessary repair parts and supplies were available to sustain the systems and crews. Hours spent in the motor pool, field, and training were no longer considered a waste of time. Personal attention to detail in these areas became a daily habit rather than something leaders constantly had to monitor.

The procurement of needed supplies and equipment during the preparation for movement phase, movement of the supplies and equipment to the gulf region, and transporting those supplies and equipment proved to be a major effort. Being a separate battalion in a heavy division, where priority and focus are given to maneuver battalions and brigades, made these tasks even more of a challenge. Training opportunities, such as CMTC rotations and gunnery, completed prior to our notification, provided opportunities to coordinate support with brigade and division support units. Procedures trained during CMTC rotations helped overcome some of the difficulties caused by the "Ambush Concept" and ensure that the battalion was properly supported and equipment maintained.

Shortly after assuming command, I initiated a recall, alerting all batteries to move all personnel and equipment to a predesignated location away from O'brien Kaserne. I had a three- fold purpose for this exercise. First, I wanted to evaluate the capability of the battalion to move quickly from the cantonment area to defensive positions or assembly areas similar to what might be required under our general defensive plan missions. Second, I needed to determine the actual readiness status of all battalion equipment. Third, I could assess the capability of leaders, staff, and

soldiers to perform their assigned mission essential tasks involving command, control, and movement. The exercise pointed out several areas which required training, resourcing, and priority of effort. The movement highlighted deficiencies in equipment maintenance and logistics that would have rendered the battalion combat ineffective had it been an actual alert.

To improve maintenance within the battalion, I initiated a maintenance program called the Total Unit Element Maintenance Program (TUEMP). I had used this program while I was executive officer of 2d Battalion, 5th Air Defense Artillery at Fort Hood, Texas. The benefits of the program convinced me that it would effectively correct deficiencies in the maintenance program in the battalion and ensure improved equipment and personnel readiness.

The program focused on total maintenance of a unit, normally a platoon, for an entire week. I trained maintenance personnel and battery leaders on the principles of the program at weekly maintenance meetings for three weeks prior to its initiation. Like all units, reluctance to change was prevalent. After the basics of the program were outlined; however, and a platoon from each battery was assisted through the program, leaders and soldiers were convinced of its value.

A platoon sized element, except for Stinger and Headquarters Battery platoons which were halved because of their size, was scheduled for TUEMP once each quarter. The platoon was removed from all taskings and training other than Iron Soldier training. The platoon's sole focus was on maintenance of personnel, equipment, facilities, and families. All annual, semiannual, and quarterly services were scheduled during their TUEMP week. Complete system maintenance was coordinated with the Main Support Battalion and conducted during this week also. All maintenance records were updated and parts requisitioned as required. A quality control team from the Battalion Maintenance Office inspected each vehicle in the platoon for compliance with service requirements and operator and organizational standards of maintenance. Vehicles not meeting standards were rejected and returned to the platoon where corrective actions were completed. All documentation was then updated by the platoon sergeant and squad leaders as required. The first rotation through the

program provided considerable opportunity for maintenance training, seriously needed at all levels.

Personnel maintenance included reviews of personnel records and updates of medical and dental records. Personnel actions such as wills, powers of attorneys, insurance, and pay status were also completed. Any other actions required during the review of records were completed as much as possible during this period. Individual weapons; crew-served weapons; NBC masks, clothing, and equipment; and CTA-50 equipment were also checked, and maintenance performed as required. Any unserviceable equipment exchanges were completed during this week also.

Facility maintenance included barracks upgrades, painting, cleaning, and other maintenance as required. Platoon leaders and platoon sergeants were required to coordinate their efforts with the local engineers to perform installation level maintenance. Maintenance areas, storage areas, and CONEXES were also inspected, maintained, and cleaned which helped identify serviceable containers which could be used during a deployment.

Family maintenance included visits to homes of soldiers and their families to ensure that living conditions were adequate and that families were not experiencing problems which had not been brought to the attention of the chain of command. Platoon leaders coordinated these visits with the soldier and his family. The visits were conducted by the battery commander, platoon leader and platoon sergeant. Where problems were identified, family support groups or community agencies qualified to assist, were notified. When the deployment actually occurred, knowledge gained about the families remaining behind was extremely valuable to the battalion family support group leaders.

The battalion had completed one complete cycle through the program prior to being notified. The division Inspector General (IG) was invited to conduct the equivalent of its Annual General Inspection. The IG team found that the battalion maintenance program was commendable. More importantly, battalion equipment was rated as combat ready, personnel were prepared for deployment, and families were better supported.

I mention this program because I believe it to be the reason for the battalion's success in the desert. The lessons learned, by each leader and soldier in the battalion and direct support detachment, contributed to maintaining the Operational Readiness (OR) rate above 90% throughout Operations Desert Shield and Storm.

The procurement of supplies and equipment needed to survive in the desert proved to be a very difficult task. The battalion S-4 spent innumerable hours attempting to get necessary items such as tents, cots, desert camouflage netting, chemical clothing, desert BDUs, and other needed supplies. The fact that we were competing with two other divisions and a corps headquarters, for limited resources, made the task even more difficult. We finally turned to our German Partnership unit, the 4th German Air Defense Regiment, for help, and they were able to procure badly needed cots and containers for water and fuel which we had been directed to take with us.

Without this host nation support, we would have deployed with a shortage of these items. Some items such as desert BDUs were just not available and it was not until we had completed the ground combat phase that the battalion finally received its allocations. Our forward-deployed status and our mission based on the European theater environment contributed to the difficulties of obtaining needed supplies and equipment. Battalion plans had not addressed the possibility of deployment to a desert environment. Other divisional and corps units experienced the same frustrations.

Movement of Chaparral and Stinger missiles from the local Basic Load Storage Area was another area which caused a great deal of effort and frustration . Transportation assets available in the battalion could not move the large quantity of ammunition contained in the unit's basic load. The bulkiness of Chaparral and Stinger storage containers contributed to the large number of trucks required to move this ammunition to the rail loading site. Efforts to schedule a transportation company were difficult because those assets were overloaded with other haul requirements throughout Europe. The task was finally completed with only one day to spare before the ammunition ship was scheduled to sail.

Upon arrival in theater, the establishment of supply and maintenance accounts took first priority. Only three days after the main body had arrived at Al Jubayl to await ships bearing our equipment, the division commander became concerned that the division TAA was vulnerable to preemptive air strikes. He directed the battalion to deploy a Stinger platoon to the TAA to provide air defense coverage to vital aviation and logistics assets. Since we had no equipment, communications, or transportation to assume an active air defense role, these teams would have to operate autonomously and rely on support that the advanced party and division could provide. Of even greater concern was the fact that we were unable to determine the status of our basic load, that is, which ship was carrying it, and estimated time of arrival.

I personally visited the headquarters of XVIII Airborne Corps to attempt to procure enough Stinger missiles to arm the teams which would be deployed to the TAA. The G-4 of the XVIII Airborne Corps informed me that unless I had orders from CENTCOM, he would not release any missiles. I then visited CENTCOM headquarters at Daharan and spoke with the J-4 concerning our problem. He was able to identify only 15 missiles which he could allocate to us. The following morning, a ship carrying over 250 Stingers docked and we were able to procure those missiles for the mission.

I later learned that our basic load of Stinger missiles had arrived in theater earlier. Since our unit had not arrived and unit accounts had not been established, these missiles were given to XVIII Airborne Corps. As a result of this experience, changes in ammunition accountability and shipping are deemed necessary. As a minimum, unit basic loads should be shipped well before equipment and personnel. These basic loads should be identified by ship, date of arrival, port of arrival and owning unit. Advance party personnel should be notified of the arrival of unit ammunition and movement to the respective unit's assembly area be expedited. Ammunition should not be given to units on a first-come, first-served basis.

If the TPFDL had been followed, air defense soldiers would have been among the first division soldiers on the ground. We addressed this point early in deployment planning, but

armored and mechanized forces received priority, which resulted in air defense being pushed to the rear in deployment time tables. The division was vulnerable to preemptive attack during lodgement and TAA operations as a result of these changes to the TPFDL which should be precluded in future deployments. The need to have air defense on the ground early cannot be minimized as this experience clearly demonstrates.

The low density of Chaparral equipment resulted in low priority of repair parts. The electronic boxes required for repairing the Forward Looking Infrared Radar (FLIR) and control boxes which have a tendency to fail on a regular basis were limited to those shipped by the battalion. With no repair parts in theater, we resorted to in-house repairs, utilizing direct support capabilities at the Main Support Battalion and exchanging parts with 5th Battalion, 3rd Air Defense Artillery, 3rd Armored Division. This battalion also brought the Chaparral from Europe and we combined efforts to keep both the Chaparral and Vulcan systems operational.

Chaparral systems suffered numerous mechanical and electronic failures during the sustained operations of Desert Shield and Desert Storm. The maintenance conducted prior to deployment was instrumental in bringing systems to the best possible status before shipment to Southwest Asia. Once in theater, however, Chaparral encountered difficulties which had not been anticipated. Elevation brakes, air compressor clutches and belts, and radios failed at higher than expected rates.

Thirteen of twenty-four Chaparral launch stations experienced elevation brake malfunctions. The brake system has four functional areas: the action handles, load-stow electronics, elevation gear, and the azimuth gear. These areas were carefully evaluated by our systems technician, unit mechanics, and direct support personnel. This evaluation determined that a degenerative feedback caused the elevation brake to be released without pressing the action handles. The reasons for the feedback could not be determined, however, and no solution was devised to correct the problem. Chaparral system mechanics and the civilian technician determined that the problem was most likely caused by total missile weight, the long distances traveled in a fully loaded status, and the continuous operations required by the 24-hour air

defense alert. During the ground combat phase, the systems operated around the clock. The components of the air compressor system, which is vital to the cooling of the seeker heads, experienced several failures especially, clutches and belts. The 5-3 ADA experienced similar problems. These were the first recorded incidents of such problems and they were referred to the manufacturer for review and resolution.

Since Chaparral was the only system that could provide the division with air defense coverage during periods of darkness or inclement weather, some systems often operated for 24 hours with little time for maintenance. During operations in the Tactical Assembly Area, I directed that platoons rotate "hot status" squads so that systems and crews were given time for maintenance and rest.

Operations Desert Shield and Storm offered the only opportunity to evaluate the Chaparral Guided Missile System under combat conditions since the Arab-Israeli conflict. Systems technicians found ways to "field fix" systems to overcome the aforementioned problems. Further evaluation of these malfunctions and their causes must be conducted and corrected, since the Chaparral is, by design, the only night and inclement weather capable forward air defense system.

Several years of use and many exercises have clearly demonstrated that the FM radios of the Chaparral system are not mounted in a location which promotes continuous operation with minimum failures. FM radios experienced more failures than previously encountered during exercises and training. Experiences gained with the Chaparral at the National Training Center have demonstrated similar problems which are directly attributable to overheating. The radios cause their own internal temperatures. Combined with heat from other electronics and generators close to the radio, and poor ventilation in the enclosed compartment, failure of delicate electronics within the radio is understandable. Further review of the placement and type of radio needs to be conducted to determine a better solution.

Vulcan system parts were also in short supply and were usually obtained from other air defense battalions. These parts were more readily available because there were more battalions with Vulcan Air Defense Systems in theater. The Vulcan carrier, a modified M113A2, proved to be very reliable and failures were few, but the lack of

M113 chassis parts, especially engines, hindered the rapid repair of systems. Mechanics "field fixed" equipment or performed controlled substitution to keep pacing items operational.

One important lesson, which leaders constantly stressed and soldiers quickly learned, was the need to religiously perform daily maintenance. The fine dust of the desert infiltrated everything. At each opportunity when equipment was not on alert status, crews cleaned dust from compartments, blew out air filters, and checked oil for proper levels and cleanliness. Utilizing air hoses from 5-Ton trucks, dust was blown out of radio, generator, and engine compartments. Crews covered missiles to prevent dust from scratching the seeker head and binding the missiles on the rails. Containers kept Stingers clean until they were removed for mission requirements. Crews checked belts on all vehicles as the dust seemed to eat the material much quicker if they were not cleaned constantly. The importance of daily maintenance was indelibly printed on the minds of soldiers.

Transportation within the battalion almost became the Achilles' heel. Reductions caused by Army of Excellence cuts had left the battalion with insufficient assets to carry required Class I/III/V, MTOE equipment, and personnel gear and life support equipment. Items of equipment such as water cans, cots, and others needed to sustain operations in the desert environment added to the requirements. During Operation Desert Storm, the most significant and repeated issue within the division, was the battalion's inability to carry its own ammunition and equipment necessary to conduct sustained combat operations.

The battalion's MTOE authorizes each Vulcan and Chaparral platoon one 5-Ton and one 2 1/2-ton cargo truck. The battalion was directed to carry Tier 1 and Tier 2 levels of ammunition (two basic loads), five days of Class I (MREs and T-Rations), water, fuel, package POL, and all soldiers' personal gear. Our inability to move even our own basic load of ammunition illustrated the severity of the problem. If we chose to commit these vehicles to transport our ammunition, several other logistical problems developed. Battery supply and mess personnel constantly had to down load ammunition to pick up supplies or make daily ration runs. Commanders had to make

tough choices between hauling a day's supply of Class I or critical POL. Class IX, chemical decontamination equipment, and life support items such as tents, water, and field sanitation gear added to a monumental transportation requirement.

It is an inherent responsibility of the battalion to carry ADA peculiar equipment (repair parts, ammunition, maintenance equipment), which only intensifies the problem. The division commander directed the Forward and Main Support Battalion to transport the large quantities of missiles and ammunition of the battalion. This resulted in several support vehicles being unavailable for transporting brigade and task force supplies. The lack of haul capability in the battalion caused planning difficulties for the division and support command staffs.

The standard hauler for the armored division is the HEMMT. The ADA battalion was one of the few units in the division that did not have these vehicles as the prime mover. Utilizing supported unit repair parts was not possible since the battalion was not using similar vehicles. This required the battalion to carry more of its own Class IX, further adding to the inability of the battalion to carry other required sustainment items . The battalion operated side-by-side with the maneuver units; however, it was not given the same hauling capability or equipment. The battalion needed the same vehicles and more compatible equipment to be able to sustain and operate independently.

After examining the lessons learned during Desert Shield and Storm, it would be more cost effective to eliminate the current fleet of 2-1/2 and 5-ton trucks and authorize HEMMTs for hauling and sustainment operations. The TOE should be modified to authorize each Stinger platoon one HEMMT, each Vulcan and Chaparral platoon two HEMMTs and each Battery Headquarters three HEMMTs. Changing to the common chassis used in the division enhances readiness and allows the battalion to access common Prescribed Load Lists (PLL)s within the division, rather than having to maintain a unique repair parts inventory. Changing to the common chassis more fully integrates the air defense battalion into the division's combined arms team by providing the same mobility and haul capacity as the rest of the divisional units.

Upon arrival in Southwest Asia, the Class IX system was not capable of making

up PLL shortages resulting from preparing systems for deployment or responding to new requests. Some parts that were requisitioned while in theater were never received. Vehicles inoperational because of repair parts shortages would have been down for extended periods except for extraordinary efforts of maintenance personnel.

The fact that a divisional air defense battalion has ADA peculiar equipment is well known. Outdated equipment such as the M113 series vehicles, 2-1/2 and 5-Ton trucks contributes to repair problems. No other units in the division can assist by providing repair parts, since there is no commonality of equipment. Modernization of air defense equipment and vehicles is a must. The modernization of this equipment should be based on commonality of equipment, mobility, and survivability equivalent to the supported units.

Operations Desert Shield and Desert Storm offered an advantage which future conflicts may not. The theater logistics and combat forces had sufficient time to build up to acceptable stock levels prior to initiating combat operations. Even with this build up period, logistics stocks, primarily in terms of Class IX, were inadequate to support a conflict of any length. We were again fortunate that the conflict was extremely short and inexpensive in terms of equipment and personnel losses. This prevented stressing the logistics system and allowed the conflict to be fought primarily on organic PLL and Authorized Stockage List (ASL) inventories.

Logistics and maintenance were the "long poles in the tent" as the expression goes. Failure to pay meticulous attention to detail in these areas could result in mission failure. The outstanding effort of the battalion S-4, battery supply and maintenance personnel, and soldiers in the battalion, all contributed to overcome difficult conditions and lack of repair parts. The battalion's success was in no small part directly attributable to initiatives displayed by these soldiers as they fulfilled logistics and maintenance missions.

CHAPTER 5

CARING

The readiness of a unit depends on the readiness of individual soldiers. The mission of caring for soldiers is secondary only to mission accomplishment. Commanders and leaders at all levels are entrusted with America's finest young men and women and are expected to ensure their physical, spiritual, and mental well-being. Caring for subordinates builds unit cohesion, mutual trust and respect. It also helps leaders and soldiers to become capable, competent members of the combat team.[16]

Upon assuming command of the battalion, I told all leaders there were two areas where I would not tolerate mistakes: personal integrity and care of soldiers and their families. My philosophy was centered around the need for trust among leaders, respect of soldiers, and a wholesome environment where soldiers and families felt they were important members of the battalion family.

One of the purposes for initiating the TUEMP program explained in Chapter 4 was to ensure that soldiers were prepared for deployment. During their TUEMP week, leaders ensured personnel records, legal documents, medical, and dental records were current. Leaders also ensured that their soldiers' shot records were up-to-date and necessary immunizations were completed. Dental X-rays (PANOREXES) were checked to ensure they were updated and present in dental files. These efforts made the preparation for movement to Southwest Asia a simple task. It also allowed soldiers to spend quality time completing other personal tasks or with families prior to deployment.

The battalion chaplain began a series of counseling sessions where soldiers expressed their anxieties, concerns and fears about the deployment. Army Community Service and Red Cross offices set up seminars to assist soldiers to prepare their personal affairs. Leaders became more attentive to mood swings and

signs of stress and concern. I conducted weekly updates to ensure that information was getting to the soldiers which helped relieve stress caused by rumors and speculation.

The ability to fight and win in combat depends not only on the readiness of the soldiers and equipment of the unit, but also on family readiness. Approximately 40% of the battalion was married and had families collocated with them. As Chief of Staff of the Army, General Wickam, stated in the Army Family White Paper on 15 August 1983:

> "A partnership exists between the Army and Army families. The Army's unique missions, concept of service, and lifestyle of its members -- all affect the nature of this partnership. Towards the goal of building a strong partnership, the Army remains committed to assuring adequate support to families in order to promote wellness; to develop a sense of community; and to strengthen the mutually reinforcing bonds between the Army and its families."[17]

I took this partnership seriously and made sure that all other leaders did the same.

The deployment of a forward deployed battalion, leaving families in a foreign land, was a new experience for many who were involved. The immediate concern of married soldiers was the welfare of their families, who would either remain in Germany or return to the United States where relatives could assist during the deployment. Programs were quickly provided which could help families to facilititate whichever decision they made.

The impact of the deployment on families remaining behind and the deployment of a forward deployed unit was an item of interest in the local and national media. Almost immediately after the announcement of the deployment, I was interviewed by CNN and Army Times. Their main focus was concern over what was to become of the families of our soldiers residing in or near the city of Schwabach, Germany. My response to their queries was, "Families are encouraged to stay here, although some will probably return to the United States. I hope the majority of them stay here, because this is where the support is."[18]

The division commander, MG Ronald Griffith, also expressed the emphasis

placed on families, "We're giving at least as much attention to the support basis for the families as our own preparations for deployment."[19] When the battalion was finally deployed, only a few families had chosen to return to the United States. The remainder stayed in Germany awaiting the return of the unit.

The battalion had, fortunately, prepared for such an eventuality. Two months prior to the announced deployment, battery commanders, 1st Sergeants and their wives had met to organize and implement family support groups at battalion and battery level. Since this was a new concept for the battalion, we utilized Department of the Army Pamphlet 608-47 to get the program started. The leaders and their wives developed family support groups according to Chapter 3 of the DA Pamphlet.[20] To expedite the process, we held weekly meetings for organizing and educating ourselves on the concept and purpose of the family support groups. The battalion wives organized chains of concern, and tested their role during the unit's deployment to the CMTC in September. These actions, taken prior to the deployment to the Gulf, proved to be a godsend.

The battalion families were far away from relatives in the United States who could assist them. They had to rely on each other and on the support of host nation neighbors and community leaders. We were extremely fortunate. Many of the same leaders, responsible for implementing this vital program, were also members of the local German-American club. Several influential officials of the Schwabach city mayor's office, city police, doctors, and many local merchants were also members of the German-American club. When the unit received notification to deploy, the hospitality and friendship of club members were extended to the families of the battalion.

The president of the club, a prominent member of the community, immediately gathered the city leaders and met with the battalion family support group. They assured us that they would take care of our families who chose to remain behind. The mayor assured me that every effort would be made to provide whatever support was needed for the welfare, security, and health of the families. To show their support, these leaders attended deployment briefings for families, family support group

meetings, and community agency meetings which followed.

A significant contribution came in the area of medical care. Since the local Army hospital was designated at the main evacuation hospital for Europe, all dependent care was terminated. The president of the German-American club and the city mayor contacted local doctors, clinics, and hospitals to arrange for them to honor CHAMPUS and to provide needed medical and dental services when required. Other help came when families were taken into homes of German families for Christmas. The care and concern shown by our German neighbors made our job much easier and undoubtedly, contributed to the ability of soldiers to focus on their mission without undue concern for their families.

Military Community agencies also contributed their support. Community Commanders organized Family Assistance Centers where representatives from all applicable agencies were represented 24 hours a day until the ground combat phase had been completed. Agencies such as the Army Community Service, Red Cross, Military Police, Community Chaplain's Office, Department of Defense Dependent Schools, and others manned the center. A hot line service was set up for battalion commander's wives to call in case of an emergency that could not be handled by the Family Support Groups. These Family Assistance Centers also assisted families who decided to return to the United States, after their husbands had deployed to the Gulf.

Of immediate concern to all leaders, soldiers, and family members was the threat of terrorism. Local and military community leaders met to discuss increased security measures and heightened alert status which restricted access to U.S. installations. German police and Bundeswehr leaders met with installation commanders and planned increased patrols and security measures which would remain in place until the threat against military installations, housing areas, and U.S. citizens diminished. Local military police patrols were increased and housing areas organized neighborhood patrols to monitor their areas and report any abnormal or suspicious activities. Dependent schools also increased security with the assistance of local police, community assets, and soldiers from units that did not deploy.

After the battalion deployed, the responsibilities of caring for the families fell on

the battalion's Rear Detachment, Family Support Group and community leaders. The effectiveness of this care was evident as only one soldier had to return home to a family emergency during the entire deployment. My wife and other wives of the battalion organized several methods of keeping in contact with each other and passing along information received through the battalion rear detachment. Weekly telephone calls, Friday night potluck dinners, home visits, news letters, and chapel services were a few events scheduled to keep family members involved. The term, "battalion family," became a reality.

Care of the soldiers in the desert was a challenge. The conditions of the lodgement area were less than comfortable. Several soldiers experienced illnesses caused by a combination of new foods served by locally-contracted caterers, unsanitary conditions and a totally new environment. Hot meals are generally welcomed by the soldier in the field. The discomfort and illness which resulted from new food items, poorly cooked meats, and unsanitary serving conditions forced many to forego the hot meals and rely solely on MREs. To avoid this problem in the future, mobile kitchens manned by U.S. military food preparation personnel could prepare meals more compatible to those normally consumed in garrison or field exercises. Sanitary conditions and food handling procedures could be monitored and enforced by the chain of command. Mobile kitchen equipment would need to be deployed early in the deployment schedule. Food preparation personnel could be provided by the units occupying the staging area and rotated as units arrived and departed.

The division went to great efforts to make the time spent in the lodgement area as tolerable as possible. They set up a small PX which offered soft drinks, cookies, and other "treats" the soldiers could purchase. Engineers constructed showers which offered some relief from the fine dust of the area. Mobile trucks came to the area with treats such as Baskin-Robbins ice cream and Wolfeburgers (hamburgers) and fries. While our time there was short, conscientious leaders made it more tolerable by making extra efforts to care for soldiers. These types of morale builders should be included in the planning for future deployments.

When the equipment finally arrived, we quickly moved to the TAA. There the

advance party had prepared the battalion area -- affectionately called Hotshot Moonbase -- with as many comforts as possible. They had prepared showers, tents, latrines and perimeters for each battery and the occupation went smoothly. The S-4 NCOIC had set up supply accounts to stock the area with the necessary Class I, III, and V supplies. Each soldier was required to have a cot and live in a tent to prevent contracting diseases from the desert floor. Soldiers erected the remaining tents and prepared their areas and equipment.

Mobile kitchen trailers provided at least one hot meal a day. These meals were welcomed by all after the experience with the catered foods at the ISA. MREs and other supplements provided the rest of the sustainment for the soldiers. The Division Support Command set up mobile PX areas near the brigade level headquarters, where soldiers could buy some familiar and necessary items.

The division arranged for AT&T to set up long distance phone banks in a fest tent near the Division Support Command location. Calling cards were issued to all soldiers who requested them. The capability of calling home proved to be both a boon and a bane. They gave the soldier an opportunity to talk to families and ensure that things were in order at home, as well as passing on their status and concerns. On the negative side, however, many soldiers abused the privileges, running up phone bills in excess of $2000 in less than a month. The payment of these expenses became a problem for soldiers and their families after the soldiers returned home. The phone banks also proved to be a slight security risk as soldiers discussed plans and locations of units which were part of the friendly deception plan. This information found its way into newspapers both in the United States and in Germany, causing a warning to be issued that all phone banks would be removed if soldiers did not honor the need for secrecy. For the most part, they honored this request and phone banks followed the division as it moved west and even after it had secured Kuwait.

Prevention of similar problems in future deployments will require a more active role by the chain of command in briefing soldiers on operational security requirements. The length and number of calls could be monitored by the service provider. Calls could be limited, allowing the soldier to remain in contact with his family, yet ensuring

that he did not accumulate a phone bill which would cause financial strain upon his return. These procedures would have to be established either prior to deployment or upon arrival in the theater of operations so that soldiers knew the rules and restrictions regarding the use of this privilege.

Despite innovative efforts, such as the PX and phone banks, and intensity of the training which kept morale high, one problem threatened to destroy it. The distribution of mail in theater was a serious problem for the first six weeks after our arrival. Theater postal units were overwhelmed with the volume of mail. Operational requirements required that priority for movement to the Tactical Assembly Areas be given to armored vehicles, ammunition, fuel, and other necessary supplies. Theater, corps, and divisional postal units could not handle the volume of mail being sent out or received. The inability to distribute began to have a detrimental effect on morale of soldiers and families in Germany after several weeks. The division commander made a decision to dedicate several flat bed trucks for daily pickup and delivery of mail. These trucks provided some relief but the overwhelming amount of mail that had piled up in the port area was impossible to move as fast as was necessary. Finally, the corps commander appointed an officer to investigate the handling of mail, dedicated additional corps transportation assets and manpower resources to resolve the mail situation. In addition, reserve postal detachments augmented the number of soldiers already allocated to move the mail. These efforts finally broke the backlog and mail began to flow on a regular basis.

As delivery and pickup increased, so did soldiers' morale. Limited copies of Stars and Stripes also began to appear which provided some news from outside the theater. At the Tactical Assembly Area location, we could not receive any English speaking radio station, so the newspapers were welcome sights. They provided an insight into news as the families were receiving it. The efforts of leaders to provide these services was a key to keeping morale high for those who would soon face the brunt of the conflict.

As the division moved into Iraq, the mail was delayed until the mission was accomplished and a cease fire was declared. Transportation assets, including cargo

planes and helicopters, were then utilized to move mail forward to the units. The division also ran a courier service back to Germany on a regular basis, allowing some news to be sent back to Family Support Groups. This included videos which had been taken with unit cameras. These videos were effective morale boosters for wives and family members who, in turn, made videos of dinners and gatherings so soldiers could see that family members were doing well.

Another item which proved valuable was a short wave radio operated by our battalion maintenance officer. He was a licensed MARS operator and was able to link up with the MARS network which allowed soldiers to call families after the conflict had ended. The radio was also used to contact the Rear Detachment to update them on the unit's status and return dates. These radios might prove to be an inexpensive alternative to the phone banks and the problems already mentioned.

Caring for soldiers and families made a difference. Soldiers followed leaders without question and performed missions with competence and enthusiasm. They knew their families were being cared for and were able to focus all their energies on the mission in Southwest Asia. Likewise, families were confident that leaders were concerned about their soldiers and would do everything to ensure their well-being. This environment was as important a combat multiplier as any other.

CHAPTER 6

AIR DEFENSE ISSUES

The Desert Shield and Desert Storm experience provided opportunity to examine and validate air defense doctrine and other air defense specific issues. This chapter will discuss specific doctrine and issues not already presented in the preceding chapters.

The first issue involves the use of the Manual SHORAD Control System (MSCS) to pass early warning information. MSCS, now called Manual FAAD Control System, uses various communications nets and components to provide timely, accurate, and reliable early warning information.[21] The system utilizes an early warning grid matrix consisting of 400 grid squares with a code name assigned to each square. Each air defense fire unit uses this matrix to record aircraft tracking data received from air defense radars. The manual on early warning states that only that portion of the matrix applicable to the area of operation need be used. A matrix reference point is set to extend the coverage area at least 20 kilometers beyond the division boundaries.[22]

An analysis of the operations plan, the terrain and area to be covered, and the expected rapid movement of the ground combat phase caused the battalion to realize that it was not feasible to use the MSCS grid matrix. Since the grid matrix covers only a 200 x 200 kilometer area, the reference point for the matrix would have had required changing several times within a 24-hour period. The dynamics of the operation and unknown factors such as weather, enemy resistance, and mobility after crossing the border did not allow us to preset reference points with any degree of assurance that changes could be made which would ensure all division assets changed at the same time.

In a mobile and dynamic combat operation such as Desert Storm, MSCS grids

will not work because of the large distances involved. The battalion recommended to VII Corps that it utilize the Universal Transverse Mapping (UTM) grid system to identify the location of incoming aircraft. VII Corps agreed with the proposal and it was accepted for use in the TAA and during the combat phase.

The location of an aircraft was identified by first giving the grid designator (i.e. PU or QU), followed by two or four digits (right and up on a map) which located the target to within 10 kilometers or 1 kilometer, respectively. This methodology provided the battalion fire units with the necessary early warning information while also providing a more viable system for the terrain involved. UTM is understood by all Army and Air Force personnel, which eliminated the need to convert from world geographic reference system (GEOREF) data or MSCS for rebroadcast over the command nets. It also eliminated the requirement to readjust the reference point any time the battalion moves over 100 kilometers.

The loss of organic radar assets required the battalion to redesign the doctrinal [23] method of providing early warning to the division. Although systems like Target Detection Acquisition Radars (TDARS)[24] and light and special divisions interim sensor (LSDIS), were being evaluated, they were not available for deployment with the battalion. Having no organic radars limited our ability to fulfill our early warning mission. Alternative procedures had to be developed.

Upon arrival at the TAA, the battalion S-3 and I took the initiative to organize and resource an Early Warning Cell utilizing an M109 Van and personnel from the battalion Air Defense Fire Coordination System (ADFCS). The cell was collocated with TF 8-43 (Patriot/ Hawk) Information Control Center (ICC). The van was also offered to personnel from the other VII Corps units, 4-5 ADA of the 1st Cavalry Division, and 1-5 ADA of the 24th Mechanized Infantry Division.

ADFCS personnel utilized a Tactical Intelligence Broadcast System (TIBS) scope mounted in the van. This scope provided timely down-link information from AWACS and F111E aircraft as well as information from TF 8-43 radars. Additionally, the ICC was able to feed information from national intelligence gathering assets such as the Joint Surveillance Targeting Acquisition Radar System (JSTARS) to unit

representatives in the van. The cell was equipped with an AM and FM radio and each battalion TOC had an AM radio to receive information directly from the cell. Battalion TOCs rebroadcast the information over FM radios on Division Command and Early Warning Nets. VII Corps airspace management element and TF 8-43 also provided an ultra-high frequency (UHF) radio link for strategic ballistic missile launch warnings to each division airspace management officer (DAMO).

While this alternative method was only a temporary fix, it proved that long range radios are essential to timely early warning for divisional fire units. Time required to rebroadcast information over the Division Early Warning Net (FM), and the limited range of the radios monitoring this net often preclude fire units from receiving the data. Additionally, the number of nets that a fire unit often is required to monitor for command and control purposes forces the squad to use the AN/VRC-442 receiver. This receiver is very limited in range.

The UHF link provided by VII Corps for ballistic missile launch warning functioned well if the division was in a fixed position. Under rapidly moving and dynamic operations such as Desert Storm, this link proved unreliable since constant movement prevented links from being established. With the fielding of Multiple Subscriber Equipment (MSE), this problem will be more easily resolved since MSE allows long range communications while on the move.

The 1st Armored Division Air Defense Fire Coordination System (ADFCS) was the battalion and division's link to the Corps Early Warning System. The ADFCS is common to all divisional ADA units and proved to be a much more viable and responsive system than the Air Battle Management Operations Center[25] (ABMOC) cell. The heavy division ADA MTOE does not currently provide for the ADFCS cell at the Patriot ICC but the success of the operation during Desert Storm should support further evaluation of such a concept. The ABMOC, which is authorized, proved to be a cumbersome and counter-productive system. It should be evaluated for possible elimination and the force structure used for liaison cells with higher and adjacent units to coordinate air defense coverage, command and control issues, and logistical support.

The liaison officers in the ADFCS cell were key players in brigade operational planning and provided the air defense expertise needed by brigade commanders as they executed their missions. Platoon leaders were tied up with commanding and controlling their units. Liaison officers also provided early warning information which was rebroadcast over brigade command nets. The system was practiced during training in the TAA and proved very successful.

Locating AN/GRC 193 radios at each battery and platoon command post would further enhance the capability of the battalion to get the early warning data to the fire units. While these radios are authorized under the MTOE, they have not been fielded. Their absence detracts from the readiness and responsiveness of the fire units to enemy threats.

A point must be emphasized here that this interim fix worked well because the terrain permitted radar coverage from Patriot and Hawk fire units over the entire area of operation. Only curvature of the earth limitations were encountered which did not impact significantly on radar acquisition of aircraft in the area. If this conflict had occurred in a mountainous or forested terrain, the battalion would not have been able to effectively provide local early warning information. Terrain masking and other limiting factors would have prevented the Patriot or Hawk radars from obtaining airborne targets. With no organic radars, the division would have been vulnerable to enemy aircraft flying in masked areas within its area of operations.

We cannot become complacent because the Air Force has been successful in gaining air superiority over enemy air forces as occurred in Desert Storm. The greatest threat to maneuverability of the armored division remains the attack helicopter. The ADA battalion must have means of locating these threats as far from division assets as possible. Organic radars are essential to the divisional ADA battalion's early warning mission.

Replacement systems must be evaluated against factors such as common carriers, mobility, survivability, and capability to integrate local information with the information available from national intelligence gathering assets. The information provided by the combined assets would assure detailed information on any fixed-wing

and rotary-wing movement in the entire theater. Using this information, we could easily select and monitor aircraft which threaten our area of responsibility.

Short range air defense doctrine requires visual identification of threat aircraft prior to engagement. The earlier an aircraft is identified, the better it is for the air defense crews. Two means are available to divisional ADA units for long range identification: procedural and electronic.[26]

Procedural identification is provided by rules outlined in the daily Airspace Control Order (ACO) issued by the theater Joint Forces Air Component Commander and passed to corps and division headquarters.[27] ACO information is designed to reach air defense crews at fire units to assist in identification and preventing fratricide. The daily ACO contains all friendly air sorties which will transit the area of operation and their routes/altitudes. ACOs are normally delivered using electronic and communications equipment to the division airspace management element (DAME). The DAME provides it to the ADA battalion TOC. The TOC distributes applicable information to the respective fire units.

The procedural identification process is critical to ensure elimination of fratricide within the area of responsibility of the ADA battalion. During Desert Storm its importance was clearly demonstrated since both coalition and Iraqi air forces flew the same types of aircraft. In this environment, normal visual aircraft identification cannot distinguish between friendly and enemy aircraft in sufficient time to provide effective air defense. During one particular period of intense fighting in Desert Storm, two Mirage aircraft suddenly appeared in the division airspace and were observed by Stinger and Chaparral gunners. Concern immediately surfaced that enemy aircraft threatened the division. We were at Weapons Hold, which permits air defense systems to fire only in self defense or if the unit being defended is under direct attack. We immediately made frantic calls to division to determine if friendly Mirage aircraft were being flown in support of our operations. VII Corps determined that French Mirages were in our airspace. We relayed the information to the fire units in sufficient time to prevent fratricide. The current ACO contained no information on French mission in our area and this oversight could have easily resulted in a serious incident.

Adherence to daily ACO procedures would prevent this from happening.

Solutions to this problem will require joint service resolution as well as prior coordination among allied air forces prior to initiation of conflict. The importance of setting procedural control measures and adherence to them are critical if fratricide is to be avoided. As the ACO changes daily, or more often in some cases, information pertinent to ADA fire units must be provided in sufficient time to preclude any potential fratricide. Fielding proposed C3I of FAADS will help accomplish this. Interim solutions include providing additional AM radios to monitor a real-time Early Warning net (AM) and adding additional FM radios at battalion and battery level to monitor the Tactical Aviation Request net. Other possible solutions include use of computers to transmit the ACO to the division and battalion TOCs. During Desert Storm, other messages and plans were distributed via computer. This method could provide timely and easily reproducible information which can be distributed quickly to the battalion fire units.

The second method of IFF is electronic. Stinger and Chaparral fire units in the battalion are equipped with IFF equipment which queries potential targets at long range to determine if they are friendly or hostile. In a conflict where the opposing forces both have identical aircraft, use of electronic IFF is a valuable aid to air defenders in identification of friendly aircraft.

Two specific problems existed with electronic IFF in the battalion. First, the battalion was authorized and requires 22 GSX-1 IFF Programmers and 104 PPX-3 IFF Interrogators. Of the seven GSX-1 programmers on hand during the operation, five were operational. Limited quantities of the IFF equipment allowed no latitude for charging, programming or replacing non-operational equipment. While divisional ADA units needed more interrogators, the lack of programmers was even more critical. With the battalion dispersed over the entire division area, having only 1 programmer per battery made the task of frequent reprogramming a monumental undertaking. Attempts to procure more programmers prior to deploying or "borrowing" the equipment from non-deploying units was unsuccessful. We discovered that the contract for producing these items of equipment had terminated and no new

equipment or repair parts were available to be requisitioned.

Associated problems exist with the 3 KW generator used to charge the system and the code storage capacity of the interrogators. The IFF equipment generator is too bulky and too noisy, taking up already limited haul space in the platoon vehicles. A quiet, light, 1.5 KW generator would serve the purpose and consume less space.

An IFF interrogator stores only four days of code. The device should be able to store up to 7 days worth of codes which would reduce the need for frequent reprogramming. The current programmer is also difficult and complex to use. Programming equipment similar to the coding device used to program communications security equipment would be more practical and easier to use. If electronic IFF is to remain as a means of identifying aircraft, technology needs to be made available to facilitate its use and its effectiveness.

Coalition warfare in the Gulf clearly demonstrated the importance of IFF. Coalition warfare will, undoubtedly, be the rule rather than the exception in future conflicts. The need to identify friendly aircraft will be more critical and technology must be further developed to provide aviation and ADA assets with devices which are more reliable and more responsive. Laser technology and passive identification devices are currently being developed which may help overcome this problem. Ground or vehicle mounted interrogators using current electronic technology such as scanners, readers, or video recorders are already being utilized by commercial transportation companies to identify vehicles and cargo as it enters or leaves a location. Similar technology could be refined and utilized to solve the electronic IFF deficiencies.

In addition to the equipment problems, training of both air defenders and aviators is essential if electronic IFF is to be successful. IFF interrogation training needs to be emphasized at all CMTC and NTC rotations and all joint and combined exercises where ADA and aviation are utilized. Better equipment and effective training can reduce the potential for fratricide and give ADA units more time to respond to hostile aircraft.

Divisional ADA and maneuver units were kept at air defense weapons control

status HOLD for the entire war. Units were not allowed to engage aircraft until aircraft had committed a hostile act against friendly assets.[28] Considering the enemy's potential capability and range of airborne munitions, this could have proven disastrous. In order to minimize potential damage to divisions assets, air defense systems must engage both rotary and fixed-wing aircraft at maximum effective ranges. While the threat of fixed-wing attacks was low, attacks from rotary-wing aircraft were likely as indicated by the AD Warning which was yellow for rotary-wing aircraft throughout the combat phase. (Air Defense Warning yellow means attack is probable.) The Air Force had difficulty locating rotary-wing assets of the enemy and had destroyed very few of his attack helicopter assets.

Based on our Air IPB, Weapons Hold was appropriate for fixed-wing. Weapons Tight (engage only targets positively identified as hostile) would have been more appropriate for rotary-wing, once units had crossed the Saudi Arabia-Iraq border and contact with the enemy initiated. Numerous requests to have the status changed for rotary-wing were submitted, but they were consistently disapproved. Patriot and Hawk units were placed at Weapons Tight, but divisional units remained at Weapons Hold. The rationale was to prevent fratricide. The continued restrictions placed on forward air defense units endangered the division. As General Schwarzkopf stated, "..the Iraqi air force will always remain a threat so long as they have one airplane ..... the threat is always there, and we're never, ever going to assume away the threat."[29] While we may have not assumed away the threat, we certainly tied the hands of those forces responsible for countering it.

Placing ADA units in a combat zone at Weapons Hold, questions the ability of ADA soldiers to ascertain when and what targets to engage and casts a shadow over the reliability of our aircraft recognition and engagement training. It places soldiers, equipment, and operational plans at risk. Reacting to aggressive action or attack, after it has occurred, is not the appropriate way to counter the threat to the division's vertical axis. This risk is easily avoided by declaring a weapons control status commensurate with the assessed threat. Since the assessed threat for helicopters during Desert Storm led planners to believe an attack was probable, weapons control

status Tight would have been more appropriate. We must place as much confidence in the ability and training of ADA soldiers to perform their mission of identifying and engaging enemy aircraft as we place in tank crews to identify and engage enemy armor. The quality of the soldiers is the same. The trust and confidence afforded should be likewise.

Air defense doctrine for support of offensive operations states the following:

> "Offensive missions, by nature, are characterized by maneuver. When maneuver units are moving they are more vulnerable to both enemy fixed- and rotary-wing aircraft. They are easily located and identified by enemy aircraft and are able to maintain much less cover and concealment. ADA is very critical in the offense. ADA systems must be able to maneuver and react with the division elements likely to be attacked by enemy aviation."[30]

The doctrinal employment of the battalion in a movement to contact operation, which characterized the first day of Operation Desert Storm's ground phase, is to weight the division's main efforts with Vulcans and Stinger teams.[31] In the 1st Armored Division's concept of operations, the division was in a compressed wedge formation with the 1st Brigade as the main effort. The 1-1 Cavalry Squadron (CAV) acted as the division screening force. The division commander's air defense priorities included protection of this force. We elected to place a Stinger section with 1-1 CAV for protection against attacks by the main threat: enemy attack helicopters.

To properly provide effective short range air defense for the maneuver forces, Stinger teams must be pushed forward to not more than 1 km behind the lead elements. Based on the existing MTOE, the HMMWV served as the prime mover for these teams. Mobility and survivability of the Stinger teams is not commensurate with the units they must support that far forward. Soft skin vehicles, such as the HMMWV, are too vulnerable to small arms and artillery fires. The survivability of crews is jeopardized by the lack of armor protection possessed by the forces being protected. During the ground phase, two of our Stinger teams supporting the 1-1 CAV were hit by indirect fire. Resulting damage rendered the vehicles unserviceable. Three soldiers received injuries from shrapnel and the explosions. An armored personnel

carrier (APC) or Bradley Fighting Vehicle (BFV) would have absorbed this damage and continued in the fight. An APC next to the HMMWV was also hit by the same fire and continued without any delay. The desert terrain offered no cover or concealment from enemy artillery or direct fires which placed crews in soft-skinned vehicles in jeopardy.

The second limitation of the HMMWV as a Stinger team vehicle is mobility/ maneuverability. The ground phase of Operation Desert Storm proved to be a fast-paced, dynamic battle. The terrain was often littered with small and large rocks which cut the rubber tires and limited the cross-country mobility of the HMMWV. Tracked vehicles traversed this terrain with relative ease and speed. Consequently, the Stinger teams were in danger of not being able to accomplish their mission of providing air defense coverage of the leading armored vehicles.

Efforts to correct this deficiency are currently underway with the replacement of Vulcans and Stinger HMMWVs with the Bradley Fignting Vehicle. This may prove to be an interim fix, but it is a move in the right direction. It gives the teams the same mobility and survivability as the supported units. It also provides commonality of equipment with supported units facilitating maintenance and support.

A new threat and air defense issue arose shortly after the arrival of the division in the TAA. It was known through intelligence assessments that the Iraqi forces possessed Unmanned Aerial Vehicles (UAVs). It was not known if, where, or when they would use them. This was an area of concern, especially for the leaders of the VII Corps units in their attempt to deceive the enemy concerning their locations. Friendly forces also possessed and intended to utilize UAVs to monitor enemy troop movement and assist in screening the area around the Saudi Arabia-Iraq border. Two problems which arose from these vehicles impacted directly on our battalion. First, what were the rules of engagement and what was the mission? While it seemed to be an ADA mission, it was not given to us in our operations order. Second, what were the rules for coordinating use of coalition forces' UAVs over friendly airspace?

The doctrine and rules of engagement for enemy UAVs were not established for the theater. Discussions followed on who was responsible for the mission to

engage this potential threat to the security and movement of friendly forces. After unconfirmed sightings of enemy UAVs along the border, the VII Corps airspace management element directed our battalion to develop a contingency plan which involved movement of two Chaparral platoons to locations just south of the border to be prepared to engage enemy UAVs. This mission caused some concerns over the rules of engagement, airspace management, weapons control status, and security of the air defense assets.

The battalion developed a contingency plan to accomplish the mission after agreeing to some specific rules of engagement and weapons control measures. Since Chaparral was the only night capable system available, it was selected as the weapon of choice. The mission was primarily focused on hours of darkness. To prevent fratricide, we recommended that a weapons free zone be established during the hours of darkness. All friendly flights would be prohibited from flying over this area to preclude any confusion over identification procedures. Moreover, it was recommended that a small mechanized force provide security against enemy patrols in the area. The battalion S-3 coordinated with division and corps staffs to establish the rules of engagement and establishment of the weapons control status for the area. The plan was never executed but it established the need to consider the UAVs as threats in future operations and address the proper methodology for countering them.

Coalition forces did not properly coordinate the flight of UAV assets over friendly airspace. An accurate schedule of flights was not provided to friendly, especially ADA, units. Such a schedule would preclude anxiety over unknown UAVs in the division area of responsibility and assist in determining if the UAV were, in fact, friendly or hostile. On several occasions during the build up phase in the TAA, UAVs were sighted and reported. These assets always proved to be friendly, but the anxiety level could have been avoided. In one instance, we were within minutes of engaging an unidentified UAV which had flown several passes over our second brigade area. At the last minute it was determined that the UAV belonged to a theater intelligence unit who had failed to notify anyone of its flight schedule and routes.

As a minimum, friendly intelligence units must be required to enter their UAV

flights into the Airspace Control Order. These units must be required to follow the procedures approved in this order. An adequate UAV defense must include an approval for ADA units to engage UAVs that do not meet the established criteria in the ACO. Both the Stinger and the Chaparral are capable of engaging and destroying UAVs. Development of doctrine for air defense against UAVs should be addressed. Friendly units utilizing UAVs must be responsible for coordinating their use and ensuring that they follow established procedures.

The new threat provided by UAVs could be duplicated by the introduction of any other new system into a theater. If the presence of these systems are not first coordinated, and their characteristics and employment made known to friendly forces, there exists the possibility that they could be engaged and destroyed. Introduction of new systems on the battlefield, for whatever purpose, poses a danger to operators as well as friendly forces whose anxiety could lead to fratricide. The UAVs were but one example of such systems.

Equipment shortages in the air defense battalion are well known. Some critical shortages have already been identified. Others which require a reexamination are vehicles for the battalion Command Sergeant Major, Chaplain, and cargo vehicles for the battalion S-4 and maintenance officer. Battery 1st Sergeants and Stinger platoon sergeants are not authorized vehicles and these are critical shortages. These shortages create problems with life support, command and control, and the ability to perform their respective missions. The battery 1st Sergeants and Stinger platoon sergeants cannot support their soldiers logistically without a vehicle with communications capabilities. Similarly, to not provide the battalion Command Sergeant Major with his own transportation belies the importance of his position and his ability to assist the battalion commander in the command, control, and support of the battalion.

AM radios are still a shortage item and this operation clearly demonstrated their need. Several key personnel are without communications. In addition to those listed above, battery and battalion contact teams, and supply sections at all levels require communications to effectively carry out their mission.

There were numerous night movements during the build up and combat phases. During night operations, given a formidable adversary, survival depends in large measure on "seeing the battlefield." A safety factor also existed during these movements. The ability to accurately assess activities and terrain can mean the difference between success and failure of limited visibility operations. Night vision devices were critically short because of inadequate authorization and a failure to modernize those on hand in the battalion. The devices on hand were old devices (AN/PVS-2) and batteries were no longer available for them. Many of the battalion drivers and track commanders did not have any goggles, yet they were required to move with the armored and infantry units which had the modern night vision devices (AN/PVS-7) and thermal optics to assist them. Adjustment to the current MTOE is required which authorizes drivers and vehicle commanders night vision goggles. The types of goggles issued should be of equal technology as those used by units being supported if the air defense battalion is to be a credible member of the combined arms team.

The doctrine and tactics of the armored division air defense battalion espoused in the manuals and taught in schools were validated by Operation Desert Shield and Storm. The battalion was able to maneuver effectively with the armored and infantry units, albeit with some difficulty because of the problems discussed above. The difficulties were caused by outdated equipment and shortages of required items on the MTOE. Doctrinally, the employment of Stinger, Vulcan, and Chaparral as outlined in FM 44-100 was followed during the entire operation and proved to be highly successful. Only one exception might be noted. While FM 44-100 does not specifically state otherwise, Chaparrals are normally deployed in defense of rear assets. During Operation Desert Storm, we deployed two platoons well forward with the force artillery and the division tactical command post (DTAC) because of their mobility and greater range. The Chaparrals performed well in these roles and being well forward presented no greater danger in our assessment, than did placing Stinger teams in HMMWVs with the screening force and forward elements of the task forces. The remaining Chaparrals were deployed as recommended in the FM, in defense of

the division main tactical operations center, division support command assets, and aviation brigade assets. The Chaparrals performed their missions well. Their removal from the divisional air defense battalion MTOE and placement as a corps asset is a significant loss to the division. This is especially true in operations during periods of limited visibility.

CHAPTER 7

CONCLUSION

Operations Desert Shield and Storm provided the leaders, soldiers, and families of the Hotshot battalion experiences which will not soon be forgotten. Preparations which took place prior to our deployment were instrumental in achieving the accomplishment of our assigned missions in a safe, timely, and professional manner.

The battalion was indeed fortunate to be forward deployed in an area which openly supported our presence and the deployment to Saudi Arabia. Host nation support provided by our partnership unit, the local German-American club, and local community leaders made our task much easier. The concern shown by our neighbors and allied units was an important element in our successful deployment and the combat operation which ensued. Knowing our families were being well taken care of allowed complete focus on our mission in support of the 1st Armored Division. The effort of years of establishing friendships and mutual understanding between German communities and United States military forces were justified in many ways.

The deployment also taught us valuable lessons concerning our air defense equipment. Vulcans are clearly an outdated weapons system and must be replaced with an effective gun or missile system for the divisional air defense mission. Vulcan is no longer cost effective to maintain nor does it have the range and capability needed to counter modern aircraft and munitions. Chaparrals and Stingers are still lethal and valuable short range air defense systems. Continued modernization of the missiles and system upgrades will allow these systems to carry the burden of short range air defense into the next century.

Equipment shortages have severely limited the war fighting and sustainment capabilities of the divisional air defense battalion. Failure to modernize much of short range air defense equipment places soldiers at risk, impacts on readiness, and

threatens mission accomplishment. ADA battalion cargo vehicles must be compatible with the vehicles used by the other units in the division to enhance maintenance, haul capacity, and parts exchange. We need to take advantage of modern navigational technology such as the Global Satellite Positioning System (GSPS) or Long Range Navigational System (LORANS) which proved invaluable in a desert environment. Safety or soldiers and accomplishment of the air defense mission under limited visibility conditions require better sight optics and night vision devices.

Air defense doctrine also proved itself in this operation. The organization of the heavy air defense battalion provided the necessary systems and flexibility to accomplish the mission. The steps taken to put the battalion back in its correct organization proved itself in the missions in Southwest Asia. The dynamic and rapid operations of Operation Desert Storm proved that permanently assigning Chaparrals to a Vulcan battery was fruitless. The Chaparrals were better served protecting the division's critical artillery, aviation, and support units. Some of these units were well forward in the division area and capably protected by Chaparral platoons.

Clearly, *Desert Shield and Desert Storm operations highlighted* some glaring deficiencies in our doctrine and our organization. The problems experienced with procedural and electronic IFF requires evaluation and study to resolve the problems discussed earlier. Integrating available technology into electronic identification procedures can easily bridge the gap which currently exists. Procedural IFF requires training in all combined and joint exercises and enforcement of established standards to ensure its effectiveness in preventing fratricide.

Equipment shortages threaten the ability of the divisional air defense battalion to sustain itself in a conflict of any length. Communications equipment must be modernized to take advantage of technology which extends the ranges of the FM and AM radios used by the battalion. The fielding of MSE will improve command and control communications but long range AM radios such as the AN-GRC 193 and 213 radios proved their usefulness especially in providing real time early warning. Other equipment shortages which cannot be allowed to continue are vehicles for key leaders such as the battalion Command Sergeant Major, Stinger platoon sergeants, the

battalion chaplain, and maintenance contact teams.

The implications of the Gulf War for divisional air defense units are unclear. While we accomplished all aspects of our air defense mission, we were never required to actually engage a hostile target. An argument can be raised that divisional air defense is no longer needed because of the ability of the Air Force to gain air superiority and eliminate the threat against the division. The counter to this argument is also valid. Divisional air defense fulfills a critical role in the combined arms team. Forward area air defense units counter any threat which cannot be eliminated by the Air Force, specifically, the attack helicopter and the anti-tank and chemical munitions it carries. I submit that air defense battalions were effective by simply being present on the battlefield with lethal systems well known to the enemy. A case could easily be made that no Iraqi rotary-wing aircraft were flown because they would have suffered unacceptable losses of these valuable assets to the capable soldiers and systems of the air defense units.

Despite the arguments on either side, air defense played an important role during all phases of the operation. The "vertical front" never became a factor in the conflict because the enemy knew of our capabilities and the lethality of our weapons, especially those of Stinger, from lessons learned in Afghanistan. This was fortunate for the combined arms teams of the division, because they were able to concentrate on the mission in front of them without undue concern of what was going on above them. We must be careful, however, not to assume that this will always be the case. Air defenders must always be a part of the team and continue to be vigilant, trained, and competent. By doing so, divisional air defense will be as successful in the future as it was in Southwest Asia where it completely fulfilled its mission: to destroy enemy aircraft or reduce its effectiveness.

The experience clearly demonstrated the quality of the American soldier in today's Army. The intelligence, patriotism, and loyalty of these soldiers are unquestionably the best. Given the proper leadership, training, and care, these soldiers will gladly go in harm's way, face the enemy, and accomplish their mission. The leaders, both officers and noncommissioned officers, are fully prepared to plan,

coordinate, and execute all orders.

The experience achieved a level of unit cohesion and esprit de corps that would have been impossible in any other environment. The air defenders of the Hotshot battalion, although disappointed that they did not get to demonstrate their lethality, stood fully prepared and combat ready. It may never be known why Saddam Hussein chose not to use his air assets against our forces but air defense soldiers and leaders believe they played a major role in his decision.

The teamwork and morale of the squads, sections, platoons and batteries were always at a peak. The professionalism and dedication of each and every soldier was commendable. The efforts of our Rear Detachment, unselfish wives and members of the Family Support Group, military community staff, and host nation neighbors contributed to our success because we were able to focus on our mission and know that our families were in good hands.

The opportunity to serve in combat is something every soldier prepares for and yet secretly hopes he may never have to face. For it is the soldier that has to face the brunt and violence of war. The leaders and soldiers of the Hotshot battalion met the enemy and survived the violence and destruction of the four day conflict. The soldiers and family members of the Hotshot battalion can be justifiably proud of their role in one of America's finest moments. They earned the respect of all of us who served with them as members of the battalion during this memorable period in history. Perhaps the Commanding General said it best when he commended the leadership and soldiers of the battalion shortly after our arrival in Kuwait. He stated, "The leadership in the battalion was superb. Soldiers performed magnificently. No one in the division had to fear an air attack, which gave us the freedom of maneuver necessary to defeat the Republican Guards so decisively."[32]

ENDNOTES

[1] VII Corps Public Affairs Office, Desert Jayhawk. Operation Desert Shield/ Storm, (Stuttgart, Germany: Hugo Mattheas Gmbh, June 1991), p. 3.

[2] 1st Armored Division Public Affairs Office, Operation Desert Storm, 24-28 Feb1991. Ironsides, Special Issue For Iron Soldiers of Desert Storm, (Hindenburg Kaserne: Public Affairs Office, Ansbach, Germany, June, 1991), p. 5.

[3] Department of the Army, Military Leadership, Field Manual 22-100, (Washington: U.S. Department of the Army, 31 July 1990), p. 1.

[4] Ibid.

[5] Department of the Army, Leadership and Command at Senior Levels, Field Manual 22-103, (Washington: U.S. Department of the Army, June 1987), p. 3.

[6] DA, FM 22-100, p. vii.

[7] Ibid.

[8] Ibid, p. viii.

[9] Ibid.

[10] Department of the Army, Training the Force, Field Manual FM 25-100, (Washington: U.S. Department of the Army, November 1988), p. 1-1.

[11] LTC Edward C. Murphy, "1st Armored Division Air Defense Concept," Schwabach, Germany, (APO NY 09142), Memorandum for Commanding General, 1st Armored Division, APO NY 09326, 23 May 1989.

[12] Department of the Army, FAAD/SHORAD Battalion Operations, Heavy Division, Field Manual 44-63, (Washington: U.S. Department of the Army, 31 March 1992), p. 5-1.

[13] Ibid, p. 5-2.

[14] Department of the Army, ADA Scout Platoon and Team, Final Draft Special Text 44-48-1, (Washington: U. S. Department of the Army, 15 July 1992), p. 1-1.

[15] DA, FM 25-100, p. i.

[16] DA, FM 22-100, p. 50.

[17] Department of the Army, Army White Paper: The Army Family, (Washington: U. S. Department of the Army, Office of the Chief of Staff, 15 August 1983), preface.

[18] Steve Vogel, "Bracing For War," The Army Times, 26 November 1990, No. 17, p. 4.

[19] Ibid, p. 13

[20] Department of the Army, A Guide to Establishing Family Support Groups, DA Pamphlet 608-47, (Washington: U.S. Department of the Army, 6 January 1988), pp. 3-2 5 3-5.

[21] Final Draft Special Text 44-48-1, p. J-2.

[22] Ibid, p. J-3-J-4.

[23] DA, FM 44-63, p. 3-17.

[24] 1LT Scott A. Zeches, "Tactical Defense Alerting Radar," Air Defense Artillery, (Summer 1989), p. 4-5.

[25] DA, FM 44-63, p. 3-15 - 3-18.

[26] Ibid, p. 3-13.

[27] Department of the Army, Doctrine and Procedures for Airspace Control in a Combat Zone, Field Manual 100-103, (Washington: U.S. Department of the Army, 7 Oct 1987), p. 3-1 - 3-5.

[28] DA, FM 44-63, p. 3-17.

[29] "Desert Storm Air Battle," Air Defense Artillery, (March-April 1991), p. 8.

[30] DA. FM 44-63, p. 5-1.

[31] Ibid, p. 5-2.

[32] 6th Battalion, 3rd Air Defense Artillery S-1 Log, 24 March 1991, Near Line of Demarcation, Kuwait.

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