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Initial Impressions Report

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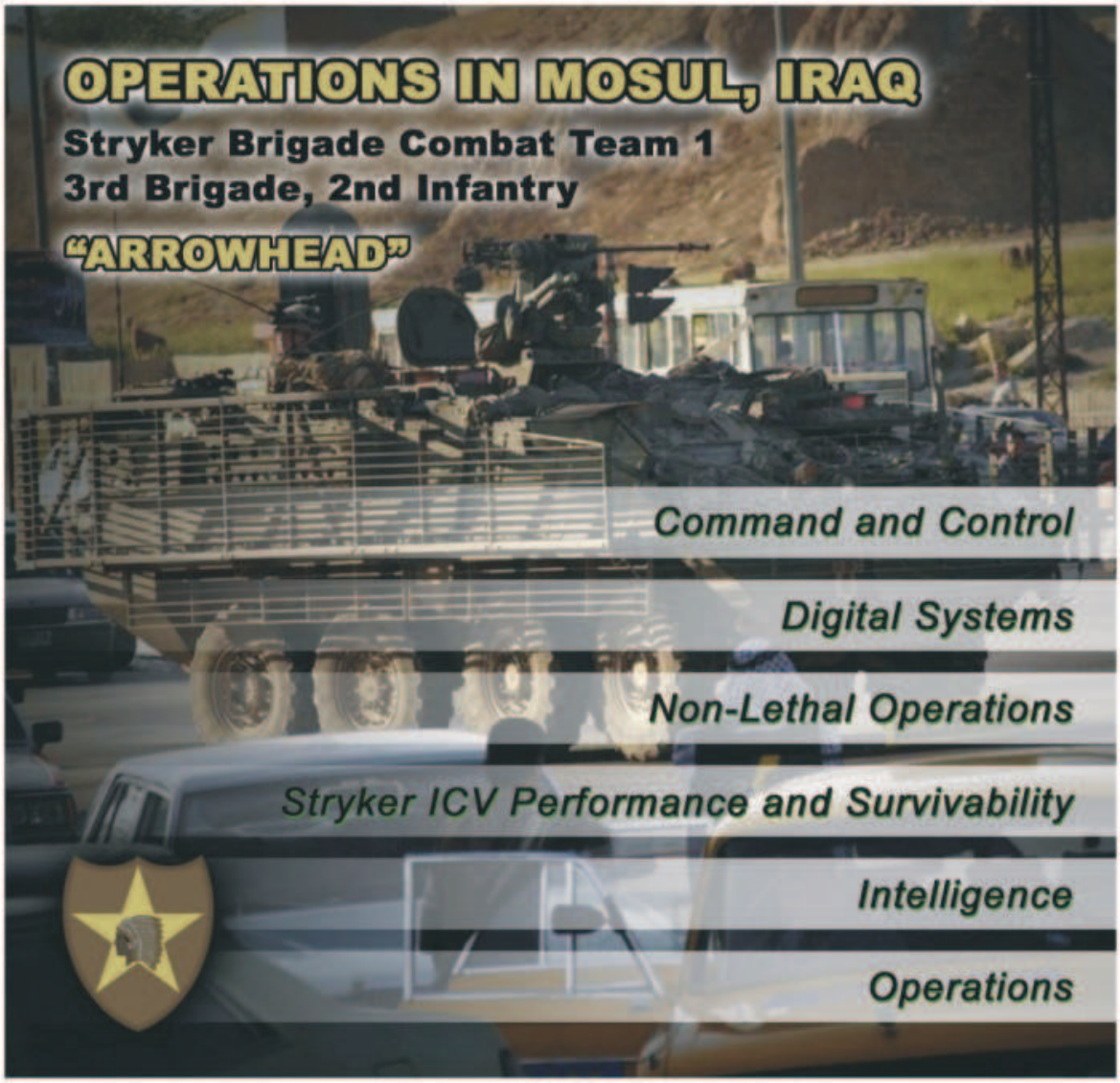

Center for Army Lessons Learned
Fort Leavenworth, Kansas 66027-1350

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Telephone: DSN 552-3035 or 2255; Commercial (913) 684-3035 or 2255
Fax: DSN 552-4387; Commercial (913) 684-4387
E-mail Address: callrfi@leavenworth.army.mil
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Introduction

This initial impression report (IIR) provides a summary of key emerging insights, observations and tactics, techniques and procedures (TTP). Impressions were taken from the operational deployment of the Stryker Brigade Combat Team (SBCT), 3rd Brigade, 2nd Infantry Division in OPERATION IRAQI FREEDOM (OIF), between 22 September and 19 October 2004.

The Center for Army Lessons Learned (CALL) formed, trained and deployed a nine-person collection and analysis team (CAAT) to Mosul, Iraq. The team consisted of subject matter experts from the Combined Arms Center (CAC), the US Army Infantry School, the Information Operation (IO) proponent, the Battle Command Training Center (BCTC), and the 172nd Infantry Brigade (SBCT 3). CALL acknowledges and thanks the officers, NCOs, and Soldiers of the 3rd Brigade who not only tolerated an extra set of eyes in their units, but also supported the collection effort. The access to information and other support they provided was invaluable and greatly appreciated.

This report is the ninth in a series on Army transformation, its emerging insights, observations and TTP. CALL has collected observations and developed lessons learned on Army transformation in digital units from the first Army Warfighting Experiment (AWE) in 1997, the Joint Contingency Force Advanced Warfighting Experiment (JCF AWE) in 2000, the Division Capstone Exercise (DCX) I in 2001 and the DCX II in 2002, the Millennium Challenge 2002 (MC02), exercise ARROWHEAD LIGHTING 2, SBCT 1, the Operational Exercise (OE) in 2003, the Joint Readiness Training Center (JRTC) rotation 04-05 LANCER STORM, SBCT 2 Mission Rehearsal Exercise (MRE), and the 3rd Brigade 2nd Infantry Operations in Samarra, Iraq.

CALL executed the mission by observation, conducting interviews, attendance at after action reviews (AAR), hot-washes, AAR documents, and notes. Many emerging insights, observations, and TTP have been captured for analysis and cataloged into CALL databases through this collection effort. CALL also acknowledges, and thanks the brigade for reviewing this report and for their contributions in making it a better product.

CALL encourages visiting the CALL-restricted database for a compilation of observations on this initial impressions report, other reports and information. To request information, contact CALL at http://call.army.mil. Select “Request Information on a CALL product”on the CALL main Web page.

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Executive Summary

This initial impression report (IIR) provides a summary of key emerging insights, observations and tactics, techniques and procedures (TTP) from 3rd Brigade, 2nd Infantry Division's operational deployment to OPERATION IRAQI FREEDOM (OIF), Mosul, Iraq. This report follows the IIR of 3rd Brigade's execution of OPERATION ARROWHEAD BLIZZARD, Forward Operating Base (FOB) PACESETTER, Samarra, Iraq. This report describes actual operations and is not necessarily in concert with published organization and operation (O&O) concept plans. All observations and recommendations come directly from the leaders, Soldiers, and contractors interviewed. Since many observations were made at the battalion and below level, there may be conflicting information or views allowing readers to assess the issue and visualize a possible workaround.

CALL's mission was to form, train and deploy a collection and analysis team (CAAT). The team's mission was to collect emerging key insights, observations and TTP from 3rd Brigade, 2nd Infantry Division's operational deployment. Information was collected through interviews and attendance at mission briefs, targeting meetings and AAR documents. Information collected has been entered CALL's databases, written and published products for use by future SBCTs and appropriate Army agencies.

From the information, CALL organized the observations, discussion, insights and lessons learned, doctrine, organization, training, materiel, leadership, personnel and facilities (DOTMLPF) implications, recommendations, and TTP into the following chapters:

Summary of Key Insights and Observations

Upon arrival in Mosul, the 3rd Brigade, 2nd Infantry Division conducted a Relief in Place and Transfer of Authority (RIP/TOA). The unit replaced the 101st Airborne Division (ABN DIV) Assault (AASLT) and made the transition to stability and support operations. The brigade was relieving a division with an area of responsibility (AOR) of more than 38,000 km. The brigade faced significant command and control (C2) and support challenges; one infantry battalion was detached and the operating AOR was expansive. The increased responsibility of small unit leaders and decentralized execution of operations added to C2 challenge. The backdrop of the brigade's AOR is a recurring theme in many observations in the following chapters.

Whether by nature or by training, military leaders usually acknowledge things going right when observing training exercises or actual operations; however, they tend to focus on what needs

improvement. This focus on improvement empowers units to learn and improve combat readiness so the insights and TTP can be passed to others. The unit did many things successfully. Below are some key insights, observations and TTP by doctrine, organizations, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) categories. Discussion of these key observations, discussions, insights, lessons learned and recommendations are contained within the individual chapters.

Doctrine:

Intelligence. The nature of a commander's priority intelligence requirements (PIR) in stability operations do not lend them to being more than partially answered. Static PIR and other information requirements for current operations are valid, and have distinctly different information requirements. Doctrine should recognize and distinguish the simultaneous existence of short-term and long-term PIR in a stability operation and support operation environment.

Intelligence. Forward operating base (FOB) employee screening operations involved most of the brigade human intelligence (HUMINT) assets. The brigade augments employee screening with contracted, national and theater support. It is recommended FOB employee screening operations become a doctrinal, corps-level task to relieve the limited HUMINT assets at the brigade level.

Organization:

Operations. The brigade support battalion (BSB) provides good expeditionary support to the brigade. It is not capable to sustain a brigade AOR of 38,000 sq. km, nor is it equipped and manned to sustain the brigade for the prolonged time in theater.

A corps support battalion (CSB) was in the brigade AOR performing its legacy mission of area support and supporting corps elements; however, it did not provide dedicated transportation support to the SBCT. When operating in a doctrinally larger AOR and when time-in-theater exceeds six months, interviewed BSB logisticians recommend creating a dedicated Stryker support group (SSG) from the CSB to support the SBCT.

Non-lethal Operations and Intelligence. Interpreter and linguist support to the brigade was inadequate. Many local interpreters quit because of threats to them or their family from anti-Iraq forces . Keeping interpreters employed and alive was a key issue with the brigade. The limited number of interpreters available forced the brigade to move interpreters to various elements across a spectrum of functional disciplines including civil affairs (CA), intelligence, psychological operations (PSYOPS), and the AOR to meet mission requirements. The screening process for linguists is limited. The brigade sometimes relied on linguists without clearances for key positions such as PSYOPS and CA team support. The number of linguists available and occasionally their clearance levels limited collection efforts.

It is recommended that level-two contractors support Army units of action, contracted interpreters commit to remaining with the unit until redeployed, national-theater (INSCOM) counterintelligence provide screening support for interpreters deployed in theater, and the

Department of the Army (DA) ensures attached PSYOP teams have at least one level-two linguist.

Intelligence. The brigade's tactical HUMINT teams (THT) were task organized to support the large AOR. The brigade has five organic THT by modification table of organization and equipment (MTOE). The size of the AOR caused the brigade to constitute an additional four THTs from the 97Bs were organic in the troops at the reconnaissance, surveillance, and target acquisition (RSTA) squadron. THT personnel were reshuffled across organic and newly developed teams to form an assorted non-MTOE mix of 97Es and 97Bs within the brigade's THT. Additionally, four theater-level THT were assigned to the brigade in a direct support (DS) role while an additional four theater-level THT were also assigned to the brigade AOR in a non-support role to the brigade. Some theater-level DS THT were assigned to the brigade remained under the control of the brigade through the S2X, while others were assigned in a DS role to subordinate battalions. Each subordinate battalion was generally assigned at least two THT in DS role. THT in a DS role to a battalion take their collection focus from the battalion task force, while THT under DS control at the brigade take their collection focus from the S2 via the S2X. Theater-level THT in a general support (GS) role to the brigade take their collection focus from the theater J2X. Increased HUMINT mission management training is recommended to facilitate commander flexibility in task organizing team assets at Training & Doctrine Command (TRADOC) schools for 35D Military Intelligence (MI) officers, and cross training between 97Es and 97Bs.

Training:

Non-Lethal. The AOR placed greater importance on small unit commanders, especially that of company commanders. Typically, the ground company commander was the voice of the coalition in the minds of the Iraqi people. Therefore, company commanders need training on how to work with CA (contracting for infrastructure, reimbursements for unnecessary damages, leaflets, loudspeakers, etc.), to be more responsive to the brigade commander's Information Operations (IO) campaign. This is not stating that company commanders should be given carte blanche privileges with CA as the approving authority for contracting processes; however, they should receive training, which in turn would increase the non-lethal effects in the overall IO campaign.

Non-Lethal. Battalion commanders and their executive officers worked as resource managers, directorates of contracting, and directorates of public works, without institutional training. One commander built a compound from the ground up for one of the newly formed Iraq National Guard (ING) battalions. More than $3 million was used from Overseas Humanitarian Disaster Assistance Civic Aid (OHDACA)and the Commanders Emergency Response Program (CERP) appropriations. Commanders and executive officers should receive training with contracts and funding sources including as OHDACA and CERP. One recommendation was to include this training in the commander's course.

Operations. The large AOR caused the brigade to task organize and use elements in non-doctrinal economy of force roles. Missions included improved explosive devices (IED) sweeps, convoy escort, cordon and search raids. Home station, pre-deployment training, and the

mission rehearsal exercise (MRE) do not replicate the non-doctrinal missions and conditions for subordinate elements. Leaders recommend non-doctrinal training occur at the Combat Training Centers (CTC) since this is the best and most realistic venue to prepare subordinate elements for the missions they may face in theater.

Stryker Infantry Carrier Vehicle (ICV). Slat armor significantly changes Stryker performance and increases the circumference of the Stryker vehicle. Drivers did not receive any training on driving with slat armor until it was installed in theater. Slat armor placement is recommended on a limited amount of Stryker vehicles at home station for urban and off-road driver training.

Digital Systems. Most S6 personnel did not receive specific training on the digital systems used by the brigade, yet officers and Soldiers performed admirably despite this deficiency. Developing a standard program of instruction is recommended for MTOE communication systems within the brigade. A possible course of action would be to adopt the United States Air Force *Job Book* model, where each task is identified and a certified "master gunner" signs off on the user's ability to perform that task. Units need to sustain train-the-trainer skills by developing master trainers in such areas as the Force XXI Battle Command Brigade, Battalion and Below (FBCB2) and the Maneuver Control System-Light (MCS-L).

Intelligence. The opposing force (OPFOR) at the CTC was described as well trained, extremely competent, and accurate with their weapons; however, the OPFOR was not consistent with the threat array in Iraq. The OPFOR should replicate insurgent and terrorist tactics. The OPFOR should be composed of an array of four-to-five hostile groups with unique motives and influences. The certification exercise (CERTEX) and operational exercise (OE) Joint Readiness Training Center (JRTC) rotation featured a one-dimensional OPFOR. the signal intelligence (SIGINT) environment was based on a legacy threat with frequency modulation (FM) communications used only for tactical control; cell phones are used extensively for communications in Iraq. The SIGINT baseline should reflect realistic communications suggesting relationships and contacts, not just tactical control information.

The *How to Defeat the OPFOR* TTP needs to be reexamined. For example, finding a mortar cache may not result in a decrease in mortar attacks; however, capturing a reconnaissance cell that determines targets and distances, or capturing a cell that trains others in mortar operations may result in decreased attacks. Units are not given sufficient opportunity to train with non-organic assets such as CA or PSYOP teams, nor is there sufficient time for the THT to develop HUMINT networks to provide the actionable intelligence needed in support of search and attack operations. The MRE should replicate the rules of engagement (ROE) within theater and therefore causing the deploying unit to develop other non-lethal and lethal methods to engage the OPFOR.

Note: The brigade's CTC rotation was not a MRE. The rotation was a CE and OE designed to learn operational effectiveness and suitability of the SBCT design. The exercises also accessed aspects and capabilities of the SBCT within Army's training and materiel resource limitations. This was the first SBCT to be fielded. The Congress mandated OE also covered the SBCT National Training Center FTX (Mar-Apr 03) and a deployment exercise (DEPLOYEX) before the JRTC CERTEX. Observations and comments are not intended to imply the JRTC is not

conducting non-doctrinal training, engagement training, and cordon and search STX lanes. The initial impression report (IIR) focus includes observations, insights, lessons learned, TTP, and DOTMLPF implications that can benefit subsequent units, Soldiers, the overall readiness and training of the Army.

Future pre-deployment training should provide additional non-doctrinal training to prepare subordinate elements for the missions they may face in theater. Training should more closely replicate the ROE the deploying unit will probably experience in theater. This can enhance development of other non-lethal and lethal methods to engage the OPFOR. Where the unit receives the additional training is not the issue, though the CTC are by far the best and most realistic venue to address this need.

Materiel:

Command and Control. The brigade provided Army airspace command and control (A2C2) using doctrinal air control measures and tactical radios. The brigade was denied the use of Sentinel radar. The brigade mitigated this by using Blue Force Tracker (BFT) to monitor air traffic. It is recommended future deploying SBCT have Sentinel radar, or be provided Satellite Automatic Tracking Army (SAT A), or Satellite Automatic Tracking Joint (SAT J) connectivity to receive and maintain a digital air common operational picture (COP) for A2C2.

Stryker Infantry Carrier Vehicle (ICV). Stryker crews report slat armor successfully defeated high explosive antitank (HEAT) rocket-propelled grenade (RPG) rounds. Anti-personnel (AP) RPG rounds were not defeated by slat armor since the shrapnel continues to move through the slats and hit exposed personnel. Antitank (AT) RPG rounds are not defeated by slat armor unless the round hits the slat armor directly. Minor modifications of slat armor are needed to improve escape hatch and winch access.

Stryker Infantry Carrier Vehicle (ICV). The Central Tire Inflation System (CTIS) only maintains 80 psi, the prescribed psi; however, with slat armor, the tire pressure must be maintained at 95 psi, which requires air pressure to be maintained by the Soldier. Tire pressures will vary from 75 to 105 psi with changing temperatures and operations. Crews are checking tire pressure more than three times daily to maintain 95 psi. The program manager-Stryker (PM-Stryker) is aware of the CTIS issue.

Stryker Infantry Carrier Vehicle (ICV). In extreme high temperatures, air conditioning is required, for personnel and equipment in Stryker vehicles. Computer hardware slows and overheats at temperatures above 120 F. Stryker vehicle air conditioning has been approved pending funds.

Stryker Infantry Carrier Vehicle (ICV). Remote weapons station (RWS) requires weapon and optical stabilization and laser designation. RWS modifications are programmed for the Stryker Block II upgrades and will be fielded to SBCTs 5 and 6, and provide retrofits to SBCTs 1 through 4.

Digital Systems. The Enhanced Position Location and Reporting System (EPLRS) and FBCB2 provided the best situational awareness for the brigade. A clearer picture can be obtained by keeping the net control station of EPLRS away from the tactical operations center (TOC) and emitters.

Command and Control and Digital Systems. The Initial KU band Satellite System (IKSS) was the best command post communications package used in the brigade. It should be included on the MTOE with an additional IKSS integrated in the brigade tactical command post. Recommend deploying each terminal with an iridium phone to enhance faster linkage. An additional tactical local area network encryption technician is needed for the Non-secure Internet Protocol Router Network (NIPRNET) or the Advanced Encryption System (AES) to encrypt both the Secure Internet Protocol Router Network (SIPRNET) and the NIPRNET.

Digital Systems. The Secure Mobile Anti-Jamming Reliable Tactical Terminal (SMART-T) provided the backbone communications network for the brigade. A theater satellite manager must plan for prioritization of all satellite links, not just echelons above the corps (EAC) in theater, to de-conflict satellite saturation. This will prevent operators from knocking satellite links off the air by establishing links that do not go through the satellite acquisition request process.

Digital Systems. The Near Term Digital Radio (NTDR) operated in the wide band mode for maximum utility. The NTDR had limited utility and range. It was not compatible with any joint systems that use the Joint Tactical Radio System (JTRS) Wideband Network Waveform (WNW) and had no beyond line of sight capability.

Digital Systems. Software shortfalls in the Combat Service Support Control System (CSSCS) and the All Source Analysis System (ASAS) did not allow interoperability with the Maneuver Control System (MCS) for a true Army battle command system (ABCS) COP. The brigade S-2 used MCS for the Red COP and for creating operationally graphics.

Operations. One battalion purchased commercially off the shelf (COTS) digital cameras. Issued to the supporting aviation squadron, they were used for taking pictures of objective areas and to provide close target reconnaissance. These pictures provided better detail than the Unmanned Aerial Vehicles (UAV) were timelier than satellite imagery, and were more covert than driving a combat vehicle through the city block. The unit uses FBCB2 and Falcon View to develop graphics digitally and pass to the USAF so close air support (CAS) has operations graphics down to the necessary company level.

Operations. Class III parts (P) are taking 45-60 days to reach the user through the Army logistics system. Units need to analyze their historical data for unscheduled maintenance for major component replacements to project Class III P out 90 days. The Authorized Stockage Lists (ASL) needs to increase to accommodate long delays in re-supply.

Operations. The heavy expanded mobility tactical truck (HEMTT) wrecker booms cannot roll a Stryker vehicle, equipped with slat armor, back on its wheels. The boom needs to be increased to

a 25-ton capacity. The HEMTT needs to have hydraulic spades added, on the rear of the vehicle; to dig out deeply stuck slat armor equipped Stryker.

Operations. The brigade received a number of non-operational full-up power packs (FUPP) which were . Numerous personnel verified it takes approximately four hours to change an FUPP on a Stryker; however, it is a non-productive effort if the FUPP is non-operational. Quality assurance (QA) and quality control (QC) at the repair depot is lacking. Many quality discrepancy reports (QDR) have been submitted; however, the maintenance personnel state that the problem is not getting better, but is getting worse. Brigade received single-ply sidewall tires with four-ply, soft tread primarily designed for off-road use. The brigade's Stryker vehicles were primarily operated on hard-surfaced roads resulting in a tire replacement rate of approximately nine tires each day.

Operations. Commanders preferred 50 caliber machine guns to the Mark 19s on Stryker vehicles due to the minimum range limitations. On non-doctrinal missions, commanders requested MTOE changes allowing night vision goggles (NVG) and selected other equipment primarily associated with the infantry table of organization and equipment (TOE) to be added to the SBCT MTOE.

Operations. US Army Tank-Automotive Research, Development and Engineering Center (Tardec) add-on armor was effective and should be added to all wheeled vehicles. More emphasis needs to be placed on the rapid fielding and equipping force initiative to enhance Soldier protection, such as add-on armor, ballistic windshields, and robotics.

Intelligence. The theater Web-based portal is an efficient and effective means of developing a repository for HUMINT information. A Department of Defense (DoD) Web-based portal intelligence database is an effective alternative to Army Battle Command System (ABCS) intelligence database systems.

Leadership and Education:

Command and Control. Parallel planning was on-going throughout the brigade. The high tempo of daily missions caused leaders to plan and create TTP to rush fragmentary orders (FRAGO). Synchronization matrices were extremely helpful. As one commander put it, "There is no substitute for the military decision making process; you must go through it."

Intelligence. To create a chain of responsibility, within the brigade S2 staff, restructuring the S2X position to a 35E captain, with prior HUMINT and battalion S2 experience, should be considered.

Personnel:

Non-Lethal. Brigade contractors were being treated and supported as were the Soldiers. Interviewed contractors were happy with receiving the same quality of life support, and security as the Soldiers they were supporting.

Non-Lethal. Commanders must ensure embedded media are provided appropriate access to operations and they understand the ROE and operational security (OPSEC) requirements. As one commander stated, “One violation and they are gone.”

Non-Lethal. There are too many civilians (local nationals, government officials and non government officials) for the brigade to provide direct safety. The brigade provided for a safe environment through IED sweeps and raids. The brigade ensured Iraq police were equipped; physical security measures were assessed at critical infrastructures.

Facilities:

Operations. The Mission Support Training Facilities (MSTF) at home station allowed the subsequent unit leaders to keep abreast of changing conditions and TTP that worked for the deployed unit. The use of MSTF shortened the knowledge gap for the release in RIP and TOA missions.

Summary

The leaders and Soldiers of the 3rd Brigade, 2nd Infantry Division SBCT have worked hard to solve the challenges inherently associated with taking responsibility of a divisional-size AOR. Brigade situational awareness was provided by EPLRS and FBCB2, modifications to Stryker vehicles, task organization that supports economy of force operations, and the ever-present can-do attitude of its Soldiers. Each contributed to the unit's successes during the operations in Mosul, Iraq. Subsequent units conducting RIP and TOA missions must maintain their understanding and training on digital systems, maintenance issues, and the C2 challenges of operating in a large AOR. The non-doctrinal missions, that field artillery (FA) and combat support and combat service support (CS/CSS) units may encounter cannot be overlooked. They should be trained on at home station and at the CTCs to maximize their capabilities during full-spectrum operations, in all types of terrain and conditions, to be successful on future battlefields.

Chapters 1 through 6 contain detailed key observations, discussions, insights-lessons learned, DOTMLPF implications, and recommendations. Hopefully, this information will be useful to the leaders and Soldiers of follow-on SBCTs, and other transformation forces. Other observations may require the attention of doctrine developers, the materiel community, and service schools.

It is CALL’s intent that the information and material contained in this report benefits Soldiers and the readiness and training of our Army.

Chapter 1: Command and Control (C2)

CHAPTER OVERVIEW

Frequency modulation (FM) for voice was the brigade's primary communications system. Microsoft Outlook, the Force XXI Battle Command Brigade and Below (FBCB2), and the Maneuver Control System (MCS) were the brigade's primary data systems. Not all of the ABCS systems were used as designed due to software problems and the tactics, techniques and procedures (TTP) developed by the unit. The brigade provided Army Airspace Command and Control (A2C2) using doctrinal air control measures and tactical radios. The brigade requested a Sentinel radar to provide the digital air common operational picture (COP) for A2C2. The request was denied. Brigade used the BFT system to monitor air traffic in its place. The IKSS was not part of the brigade's modification table of organization and equipment (MTOE); however, it was a critical communication system used throughout the brigade's area of operation (AOR). Command and control would have been severely degraded without the IKSS capability.

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Observations, Discussions, Insights/Lessons Learned and DOTMLPF Implications/Recommendations

Topic A: The Brigade's Primary Digital Command and Control (C2) Systems

(ART 7.1.1 Establish and Conduct CP Operations to Support Tactical Operations)

Observation: The Stryker Brigade Combat Team's (SBCT) primary communications system was FM for voice communication. Microsoft Outlook, the FBCB2 and the maneuver control system (MCS) was used for data.

Discussion: The brigade's area of responsibility (AOR) was approximately 37, 816 square kilometers (14,601 square miles). Their primary means of communications was voice over FM radio. When passing data, the means varied depending upon the communications path. BCB2 was used from vehicle to vehicle or from vehicle to the tactical operations center (TOC). The unit used Microsoft Outlook with attachments when passing information from TOC to TOC. The attachments could be anything from an Excel spreadsheet, a Microsoft Power Point presentation or an overlay created on the MCS. The staffs would send an email with an attachment, or more commonly, post the attachment to a web site through the intranet. Though MCS has a messaging capability, most of the time the staff would use MCS to create the overlay, save it to their desktop, and then use Outlook to forward the overlay to the appropriate users. Another option was to send the overlay from MCS to the FBCB2, in the TOC, and then distribute it to the appropriate personnel.

Insight/Lesson Learned:

- FM was the brigade's primary means of communications and FBCB2, MCS, and outlook were the primary means of moving data across the battle field battlefield.

DOTMLPF Implication/Recommendation: none.

Topic B: Army Battle Command Systems (ABCS)

(ART 7.2 Manage Tactical Information)

Observation: The SBCT was equipped with ABCS. Software problems and tactics, techniques and procedures (TTP) developed by the unit in theater, resulted in not all the ABCS systems being used as designed.

Discussion: Force XXI battle command brigade & below was the SBCT primary means of tracking friendly forces and updating the commander on the unit's current operations. When the

unit initially entered the theater, the battle non-commissioned officer (NCO) was responsible for tying in all ABCS systems before the commander's battle update brief (BUB) conducted twice daily. The battle NCO stated it would take approximately two hours preparation to set up the links to make this type of update possible. As the mission continued, the unit discovered that tailoring the briefing to a Microsoft Power Point presentation allowed more flexibility to last minute changes and feasibility was more efficient. The brigade commander also provided guidance to his battle captain and NCO, which triggered the change in the BUB. The staff briefed the commander with a series of template Microsoft Power Point slides using a large screen display (LSD) in the update center. An FBCB2 screen was set to the right of the LSD and displayed the brigade's current locations in the area of operation. A MCS six-screen display was under the FBCB2 screen and displayed the brigade's entire AOR. Operational graphics were displayed on both the FBCB2 and MCS screens. A third screen was to the right side of the LSD and displayed the Blue Force Tracker (BFT) feeds. This gave the commander situational awareness of the entire country and any of the brigade's vehicles that had departed the AOR. The FBCB2 was unable to provide tracking outside the brigade's AOR. The Advanced Field Artillery Targeting and Detection System (AFATDS) and the All Source Analysis System (ASAS) were used in the brigade TOC, and were not displayed at the commander's BUB. The system's information was briefed to the commander using Microsoft Power Point slides. AFATDS has the capability to interoperate with MCS; however; it was not used in this manner, because of its complexity and the screen being difficult to brief. In addition, ASAS was not interoperable with MCS because of software shortfalls.

Insights/Lessons Learned:

- ABCS was not used in the SBCT brigade TOC as it was designed using MCS as the integrator for the other systems to display a true COP.
- This was because of complexity of the systems and the individual system's software ability to interoperate.
- Simplicity and timeliness was important to the commander during the BUB as shown with the use of Microsoft Power Point slides for updates

DOTMLPF Implication/Recommendation: none

Topic C: Air Defense and Airspace Management (ADAM) Cell

(ART 7.2 Manage Tactical Information)

Observation: The ADAM cell does not provide Army airspace command and control (A2C2) and digital COP.

Discussion: The ADAM cell currently manages the brigade airspace using doctrinal air control measures and tactical radios. The cell does not provide a digital COP. The cell is currently

equipped to provide a digital COP using the Air And Missile Defense Workstation (AMDWS) and the Tactical Airspace Integration System (TAIS) through either the Tactical Digital Information Link Joint (TADIL J), Tactical Digital Information Link Joint Bravo (TADIL B), or Tactical Digital Information Link Alpha (TADIL A). None of these three options is working in the brigade area of operation (AO). TADIL J is not working because of the range of the joint Tactical Information Distribution System (JTIDS). Distance prevents the ADAM cell's JTIDS from receiving the Combined Air Operation Center (CAOC) air picture. TADIL B does not work because of the unreliability of the phone systems. The cell cannot use TADIL A because the CAOC is currently using satellite A. The ADAM cell is not fielded with the Satellite A capability. An unsuccessful attempt was made to task the ADAM cell made to be task organized with sentinel radars before deployment to provide an internal digital COP. With sentinel radar, the ADAM cell would have the ability to digitally track aircraft in their AO and provide the brigade a digital COP.

Insights/Lessons Learned:

- The brigade should be task organized with sentinel radars to ensure a digital COP of the brigade AO is provided.
- The ADAM cell should continue to work to establish TADIL J or TADIL B connectivity.

DOTMLPF Implication/Recommendation:

- Change the MTOE authorization and ADAM cell to include the following items that would allow the cell to establish SAT J connectivity: 1 x PSC-5/1 x AKAT C5592/1 x KIV-7 to PSCS Cable/ 1 x PSC-5 to KIV-7 Cable/1 x KIV-7/1 x ADSI to KIV-7 Cable/ 1 x 2040 Antenna. (Organization)

Topic D: Blue Force Tracker (BFT)

(ART 1 The Intelligence Battlefield Operating System)

Observation: The brigade had limited use of BFT systems.

Discussion: Brigade fielded thirteen BFT systems prior to deployment, the . These systems were installed on each battalion commander's Stryker command vehicle (CV) and one for each TOC. The aviation squadron, civil affairs (CA), and psychological operations (PSYOP) units were enabled with forty-six BFT systems. The CA and PSYOP units were provided a hybrid BFT/FBCB2 that could switch between BFT and the Enhanced Position Location and Reporting System (EPLRS)/FBCB2 once the J3 cable and hard drive were swapped. Although BFT has been very popular with analog units in providing situational awareness (SA), the brigade has not found BFT as beneficial as FBCB2 for SA or executing combat operations. BFT has gone largely unused primarily because of the density of the EPLRS/FBCB2 in the brigade and TTP established by the Soldiers to integrate and use EPLRS/FBCB2 for communications (messaging) and SA on the move. BFT was used to decide positioning of analog units within an area of interest or during movement through adjacent battle spaces. There have been many courses of

action presented on merging the BFT and EPLRS/FBCB2 networks at the lower tactical internet level.

There are many concurrent hurdles to overcome before such a network can exist, mainly the merging of an unclassified BFT network with a secret FBCB2 network. The greatest draw back is the lack of messaging which is one of the primary methods of SBCT communications over dispersed platforms. A new long-range band (L-band) enhanced EPLRS and FBCB2 COA has been presented to the brigade. The same question remains concerns security, messaging, and distribution of these radios in an EPLRS network. Careful consideration must be taken when attempting to integrate new systems into the SBCT architecture vice injecting them into an analog unit. The SBCT architecture does not easily accept changes or additions to routing, internet protocol addressing, or databases of the existing network. One Brigade merged the BFT on the commander's CV with a Satellite On-The-Move (SOTM) antenna array. The commander was then able to communicate through long road marches, when no other means was available (including the combat net radio, EPLRS and FBCB2) without stopping to erect a spitfire antenna. This was the battalion's only means of communicating with the brigade on extended road marches covering more than 400 km, according to the battalion S6.

Insight/Lesson Learned:

- Purchase and retrofit a SOTM antenna for key vehicles to enhance command and control over extended distances.

DOTMLPF Implications/Recommendations:

- With the implementation of the following recommendations, the BFT has a greater potential to provide SA over a larger geographic area than EPLRS/FBCB2. The terrestrial nature of EPLRS would reduce the BFT retransmission station requirements.
- Integrate a communications security (COMSEC) module with all BFT systems. The information is the same as carried over EPLRS/FBCB2 without any encryption. With greater density of systems and usage, this could give enemy forces access to all friendly force positions. (Materiel)
- Install all vehicle BFT systems with a SOTM antenna as a standard installation kit. The capability provided by this retrofit greatly enhanced the ability of the battalion to communicate with higher headquarters and at times provided the only means to do so. (Materiel)
- Examine the necessity of fielding both EPLRS/FBCB2 and BFT. (Organization)

Topic E: Initial Ku-band Satellite System (IKSS)

(ART 1 The Intelligence Battlefield Operating System)

Observation: IKKS was the best Command Post (CP) communications package used in the brigade.

Discussion: At the conclusion of the National Training Center (NTC) Certification Exercise I (CERTEX I), brigade identified a data gap between the power of the automated systems and the limited digital transmission capabilities fielded to battalions compared with the relatively high bandwidth capable systems available to the brigade headquarters. The brigade possesses incredibly powerful intelligence collection assets, video, voice, and unclassified internet protocol routing network (NIPRNET) and secret internet protocol routing network (SIPRNET). These assets provide the brigade commander with a virtually limitless situational understanding (SU) and situational awareness (SA); however, a data bottle neck exists from the brigade down to battalions. The Near Term Digital Radio (NTDR) was incapable of transmitting the volume of digital traffic at an acceptable speed and with reliability to the battalions. Days after CERTEX I the brigade S6 began working with the Battle Command Battle Lab-Fort Gordon (BCBL-G) and the Program Executive Office – Command, Control, and Computers, Tactical (PEO-C3T) to develop a potential solution. Two weeks after the conclusion of CERTEX II (31 July 03) at the Joint Readiness Training Center (JRTC) a rudimentary concept of a time division multiple access (TDMA), a Ku satellite system based on link-way network secured with tactical local area network encryption (TACLANE), was developed and presented to the brigade. After an operational needs statement (ONS) was approved and funding secured through Headquarters, Department of the Army (HQDA), procurement was initiated through Data Path, Inc.

Signal Soldier training in brigade was initiated on 8 September 2003, at Fort Lewis, with the surrogate Ku systems. The final materiel solution and technical architecture was still forming while the brigade was receiving training from PEO-C3T, BCBL (G) and Mitre. Once training was complete, the surrogate systems were returned to the manufacturer and the brigade deployed to Kuwait. The IKSS was expected to be delivered in theater due to the long lead times for certain satellite components. The engineering, approval, procurement and training process was truly remarkable considering a time line of less than ninety days from concept to employment in the field. this was a first for the signal community. The brigade's IKSS operated under a hub and spoke concept with two master reference terminals (MRT) controlling eleven traffic terminals (TT). Over seven megabits per second aggregate data rate were shared between end stations, though TTs are limited to a 800 kilobits per second uplink. Each TT was comprised of a link-way modem, a Cisco 1760 virtual private network (VPN), a KG-175, a Cisco 3725, and an uninterruptible power supply (UPS) in a transit case with a 1.5-meter satellite dish. Set up time was typically forty-five minutes or less. The MRT was essentially a TT with the addition of a second link-way modem, via-sat combiner, and Sun System computer management terminal hosted from a 2.4-meter satellite dish. Only one MRT could control the link-way network, thus the second MRT was traditionally identified as an Alternate Master Reference Terminal (AMRT). Each IKSS terminal was fielded with one TACLANE for encryption of the Ku link into SIPRNET, tunneling of NIPR through a second TACLANE was achieved by harvesting an existing TACLANE that resided in each S1/S4 vehicle within the battalions.

Internal asset leveraging within the battalions was not possible for attached units (Air Calvary) which did not have organic TACLANE. As a result, analog units were resourced with two TACLANE, one from the fielded IKSS, and an additional TACLANE from one of the spare systems. This created a capability shortfall if the brigade ever had to employ the spare IKSS terminals. Early in the development and training of the IKSS, the brigade began the process of obtaining accreditation of the IKSS network for SIPRNET and NIPRNET traffic. The primary

encryption issue concerned a KG-175 providing bulk encryption for a tactical network over a commercial circuit. After working with theater and the Defense Information Systems Agency (DISA), to validate the security protocol and acknowledgment of the TACLANE as a primary encryption standard, the brigade was approved to use the IKSS in theater. Once fielded in Udari, Kuwait, the importance of IKSS became immediately apparent in providing battalions wide band data links to the brigade command and control (C2) nodes.

Each battalion received a set number of NIPRNET internet protocol (IP) addresses (approximately 6 IP per battalion) based on an IP pool provided by higher headquarters. A total of sixteen SIPRNET IP were dispersed throughout the IKSS network. Each TT facilitated four voice over IP (VOIP) red side phones, hosted off of the brigade subscriber node (BSN) and an order-wire line. Though the IKSS provided immense capability to the battalions, the actual data that passed through gateways, out of the brigade, was predicated on what was being provided from higher headquarters. This issue, along with Vantage switch inconsistency, problems with mobile subscriber equipment (MSE) call outs, and link stability resulted in initial questions about IKSS by brigade leadership as to whether it was operating as advertised. This perception was solely-based on the systems that facilitated inter-brigade network connectivity (MSE, Vantage) and not necessarily the IKSS. What must be understood is that IKSS is a transmission medium and data path dependant being passed to other customers in the network.

Once the Vantage and MSE stability improved, and the capability of the system fully realized, the brigade fully endorsed IKSS as the most valuable upper tactical internet (T/I) asset for network access and the war fighter. Early in deployment, the brigade worked with PEO-C3T to devise a sanctuary IKSS node outside of the brigade's battle space. Given the mobility of the brigade and changing mission sets, placing a MRT in Camp Doha, Kuwait connected to a Deployable Ku Earth Terminal System (DKETS) would provide SIPRNET on demand to TTs. It would also provide a control and management location external of the brigade. After a significant period, the coalition forces land component commander (CFLCC) approved the network accreditation to integrate the IKSS into the theater network. The brigade agreed to position a MRT with PEO-C3T and Data Path support staff at Camp Doha connecting the IKSS into the DKETS. This network connection enabled the brigade to receive SIPRNET connectivity, external of MSE theater assets, and significantly improved the speed and reliability for the brigade. The IKSS has been the biggest C2 force multiplier within the brigade and has demonstrated a capability that must be included for all follow-on SBCTs and signal transformation architectures. The brigade successfully demonstrated the feasibility, viability, and flexibility of IKSS for any unit operating in a non-contiguous battle space. The use of commercial satellite networks lessens the impact upon military satellite networks and in some cases can provide a cleaner, more reliable, footprint in an AO. Being the first unit to ever receive and utilize a Ku satellite system, to the extent the brigade did and the speed at which it was developed and deployed, there were several recommended changes that the brigade has noted. Specific to IKSS, all systems should be fielded with E100 model TACLANE and the potential incorporation of advanced encryption standard (AES) Cisco routers. Such a configuration may negate the need for a second TACLANE for tunneling NIPR (as is the current configuration). Using an AES router could potentially facilitate a NIPRNET path directly from router to router and a single TACLANE would tunnel the SIPRNET. Each IKSS terminal provides four,

two-wire VOIP phones for voice services. As the deployment progressed, it was evident end-users require additional phone capacity.

Future systems should include at least ten VOIP phone ports per system (operations and future expansion). All TTs should be fielded with a satellite iridium phone in order to place calls to the satellite controller during registration of the satellite. This empowers the operators to set up the satellite virtually anywhere in the world with the confidence of successfully registering on the satellite without external communications support. All TTs need to be fielded with an auto-acquire and auto tracking satellite dish. Though set up times are usually under forty five minutes, having such a capability would enable the operators to complete set up of the modem, routers, and TACLANE while the dish acquires the satellite which would facilitate set-up times of under twenty minutes. In addition to an auto-track/acquire dish for fixed locations, serious consideration should be made to incorporate this technology on the Stryker CV platforms. The brigade conducted some analysis with PEO-C3T on the feasibility of placing an auto-track and acquire dish on a Stryker vehicle. The size, weight, and power requirements were beyond the thresholds of the vehicle. Potentially, as improvements are made to mobile satellite systems, such problems may be overcome. The concept of a sanctuary IKSS should be expanded where all MRT are placed in a safe haven where access to Standardized Tactical Entry Point (STEP) capabilities could be ported into the network (SIPRNET, NIPRNET, voice/defense switching network). This would allow for quick deployment of the brigade worldwide in virtually any size or composition without a reliance on externally provided forced entry communications systems for support.

Finally, in addition to integrating the IKSS into the Network Operations Center-Vehicle (NOC-V) platform, the power of the BSN and the IKSS can be fully leveraged, rather than utilizing two separate systems, by engineering IKSS equipment into the BSN parallelling the logic of incorporating existing routers, TACLANE, and switches. This could be accomplished by transit case mounting one of the high capacity line of sight (HCLOS) radios in the BSN and replacing it with IKSS components.

Insights/Lessons Learned:

- Deploy IKSS traffic terminals with an iridium phone to facilitate rapid acquisition of the satellite and speed up establishing the communications net.
- Acquire an additional TACLANE to tunnel NIPRNET connectivity through the IKSS over the SIPRNET connection.
- IKSS provides NIPRNET, SIPRNET, and VOIP phone systems in a quick period of time to rapidly establish C2 over a large AO.

DOTMLPF Implications/Recommendations:

- IKSS is not part of the SBCT MTOE; however, was one of the most critical communications systems used throughout the SBCT AOR. C2 is severely degraded without this capability. (Organization)
- As with any satellite system the technology exists to equip the system with an auto-acquire auto-tracking capability based on global positioning system (GPS) input. IKSS currently

does not possess this capability. Also, incorporate the store function so that the terminal remembers its last known orientation for power outages or cold starts. (Materiel)
- Incorporate IKSS into the BSN provided to Stryker brigades for standardization to enhance the C2 package. (Materiel)
- Deploy TACLANE with the AES so that only one encryption device is required to encrypt both SIPRNET and NIPRNET. (Materiel)
- Employ a sanctuary MRT outside the combat theater to provide constant connectivity as forces reconfigure tactical operations centers in support of operations. (Doctrine)

Topic F: Tactical Command Post (TAC) Communications

(ART 7 The Command and Control Battlefield Operating System)

Observation: Tactical (TAC) Command Post (CP) Initial Ku Satellite System (IKSS) Traffic Terminal (TT) only works in a fixed location.

Discussion: The 3rd Brigade, 2nd Infantry Division SBCT IKSS Traffic Terminal (TT) assigned to the tactical command post. This system is excellent for long-range communications, and only works in a fixed location. The coordination required, with the controlling authority for the IKSS, resulted in strict positional information required before putting the system on the satellite. This system also requires an additional power source to operate. A Stryker CV variant does not have the power generation capability to support this system. The brigade has no Mobile Subscriber radio terminals (MSRT) to connect into the MSE network. Even though the CP is equipped with FM, High Frequency (HF), NTDR, and EPLRS communications systems, often the only reliable means of communications, down to battalion level, was through the IKSS TT. This system is not on the SBCT MTOE. The biggest shortfall with the IKSS TT is that it does not have an On-the-Move (OTM) capability. The system should be enhanced by a SOTM antenna and an auto-acquire auto-track function.

Insight/Lesson Learned:

- IKSS provides a long-range reliable communications method for command and control in the tactical command post.

DOTMLPF Implication/Recommendation:

- Modify the IKSS with a SOTM antenna with built-in auto-acquire and auto-track functions. (Materiel)

Chapter 2: Digital Systems

Chapter Overview

Systems (Topics A-I): The Network operations center - vehicle (NOC-V) as an extremely flexible communications platform for the commander. It was capable of providing high bandwidth data, voice, and imagery at any decisive point on the battle space in a very limited amount of time. The Secure Mobile Anti-Jamming Reliable Tactical Terminal (SMART-T) provided the communications network for the brigade. A theater satellite manager must plan for all satellite links priorities, not just echelons above corps (EAC), to de-conflict satellite saturation. The brigade battle staff used the Force XXI battle command brigade & below (FBCB2) component of the Army battle command systems (ABCS) as its primary way of distributing operational products across the battlefield. A combination of FBCB2 and Blue Force tracker (BFT) provided the commander with vehicle locations in and outside the area of operation (AO). The near term digital radio (NTDR) operated in the wide band mode for maximum utility. The NTDR had limited utility and range. It was not compatible with any joint systems that use the joint tactical radio system (JTRS) wideband network waveform (WNW) and had no beyond line of sight capability. Software shortfalls in the combat service support control system (CSSCS) and the all source analysis system (ASAS) did not allow interoperability with the maneuver control system (MCS) for a true Army battle command system (ABCS) common operating picture (COP). Commercially purchased international maritime satellite (INMARSAT) systems were used with secure telephone units (STUs) or secure telephone equipment (STEs) to disseminate communications security (COMSEC) keying materiel (KEYMAT).

Training (Topics J and K): The brigade staff received adequate training on digital systems, prior to operations in Iraq; however, most S6 personnel lacked specific training on the digital systems used by the brigade, prior to deployment. Units need to sustain train-the-trainer skills by developing master trainers in such areas as the FBCB2 and the Maneuver Control System-Light (MCS-L).

Maintenance (Topics L and M): The high temperatures and large amount of dust significantly impacted computer failure rate; however, the FBCB2 is being maintained above 90 percent operation readiness.

Observations, Discussions, Insights/Lessons Learned and

DOTMLPF Implications/Recommendations

Topic A: Network Operations Center - Vehicle (NOC-V)

(ART 1 The Intelligence Battlefield Operating System)

Observation: The NOC-V as an extremely flexible communications enabler for the commander, capable of providing high bandwidth data, voice, and imagery at any decisive point on the battle space in a limited amount of time.

Discussion: The NOC-V was a potent command, control, communications, computer, and intelligence (C4I) platform. It incorporated the FBCB2, the tactical internet management system (TIMS), the NTDR, the single channel ground/airborne radio system (SINCGARS), twenty telephones, SIPRNET, and battlefield video teleconferencing center (BVTC) capabilities. Even in its original form, the NOC-V provided the commander an exceptional tool for command and control (C2). Under the original concept, the NOC-V was limited to supporting the Tactical Operations Center Alpha (TOC A) and the IP. The NOC-V package was used to support the forward tactical operation center bravo (TOC B) on the initial movement north during the deployment to Iraq. Later, the NOC-V was used to support the tactical command post on the brigade's first assault mission in Iraq and again on the movement to Mosul. The NOC-V provides the war fighter voice, data, NIPRNET and SIPRNET, video communications, and constant situational awareness (SA) between his battalion commanders and command posts (CP) anywhere on the battlefield. Typically, the NOC-V deploys with an associated SMART-T assemblage to provide intra-nodal links to the brigade main CP or the brigade support battalion (BSB). With the IKSS, subsequent installation of the system into the shelter, and a host of other minor modifications, the NOC-V had two redundant brigade intra-nodal satellite links to facilitate C2. The installation of the TOC B IKSS made the NOC-V a true standalone C2 multiplier for the brigade commander. The NOC-V's flexibility is in its ability to operate multiple virtual local area networks (VLAN) and the two subnets programmed into the routers and switches. The multiple subnets allow the NOC-V to have its' management local area network (LAN) separate from the TOC LAN. This way the NOC-V is part of the wide area network (WAN) and not limited to supporting the forward TOC.

The ability to place this vehicle anywhere in the brigade makes it the most valuable asset in the brigade's communication structure. During rotations to the National Training Center (NTC), the Joint Readiness Training Center (JRTC), and deployment to Iraq, the ability to interface directly with the mobile subscriber equipment (MSE) was a significant limitation. The NOC-V is not the signal-planning cell for the brigade, as originally thought, and had achieved a larger operational role in combat operations than initially envisioned. The NOC-V has always been called to push forward in the battle space initially to establish communications in the brigade's AOR. The ability to interface with MSE was the optimal solution. A Vantage switch, installed in the shelter, would give the network planners the flexibility to sequence assets into to the AOR as well as

giving the brigade the ability to deploy any of its CP into theater and still interface with a higher control via MSE. If implemented, the NOC-V must be retrofitted with an option for voice long locals as part of the upgrade. The NOC-V needs another organic means to interface into the brigade network and/or MSE other than SMART-T or IKSS. Specifically the NOC-V needs to possess the ability to establish line-of-sight (LOS) radio links. The brigade subscriber node (BSN) already has the high capacity LOS (HCLOS) radio internal to its shelter and base lining the brigade with a common high capacity radio system in all primary signal nodes would facilitate an alternate means of establishing connectivity. The HCLOS radio has the ability to push data rates up to 8.192 megabits per second, which will increase the bandwidth between the two main Tactical Operation Center's (TOC A and TOC B), are well as into the BSN located at the BSB. With the ability to interface with AN/GRC-226 radio, the HCLOS radio could seamlessly interface with legacy MSE networks and the NOC-V. The NOC-V provides sensitive, but unclassified (SBU) data to the users via KG-175 Tactical Local Area Network Encryptor (TACLANE). This was a much-needed upgrade, and the next step is to add an SBU router in the shelter. Currently a 3620 router has been installed, in the NOC-V. The router provides the ability to do dynamic host configuration protocol (DHCP) and the ability to network address translator (NAT) when fewer addresses are available. The shelter also had a SBU port installed in the signal entry panel (SEP). The connection is a BNC (type of connector associated with Bayonet Neill-Concelman, the inventors). The issue with BNC is that the brigade only uses category (CAT) 5 cable or fiber therefore putting a registered jack (RJ) -45 or a fiber connection on the SEP panel instead of BNC would provide seamless connectivity. The concept is already in the BSN and should be implemented during the next NOC-V upgrade. As a component to upgrading the NOC-V at Fort Lewis, a global broadcasting system (GBS) was installed. During deployment, the GBS was not utilized because of the power requirements of the rest of the brigade's network to obtain the same information, such as Trojan Spirit, Cable Network News (CNN), American Forces Network (AFN), and other Web-based products. The GBS is not doing anything for the brigade installed in the shelter. The brigade needs the capability, in the dismounted configuration, and not installed in the NOC-V. The GBS needs to be a component of the brigade main TOC in addition to saving weight and room in the NOC-V for other useful upgrades such as IKSS. In the final set for the brigade at Mosul, the NOC-V has been largely static though provides a valuable mission as a spoke for IKSS, a secondary C2 node for network changes involving the BSNs, and a network management/troubleshooting platform. Typically the NOC-V and its associated SMART-T can be configured for mission and prepared to support any operation within the brigade's battle space within one hour.

Insights/Lessons Learned:

- The NOC-V worked well with IKSS to provide two separate connections within the brigade network.
- The NOC-V provided both voice and data connectivity throughout the AOR.

DOTMLPF Implications/Recommendations:

- Give the NOC-V a transit case or integral LOS capability so that it does not always have to co-locate with a transmission system such as START-T. (Materiel)

- Upgrade the NOC-V with a direct MSE interface such as the Vantage with the software and firmware proven to work from the BSN. (Materiel)

Topic B: Secure Mobile Anti-Jamming Reliable Tactical Terminal (SMART-T)

(ART 7.1.1 Establish and Conduct CP Operations to Support Tactical Operations)

Observation: The SMART-T provided the backbone communications network for the brigade.

Discussion: Three SMART-T terminals were fielded and were closely associated with TOC A, TOC B, the BSB, and provided the brigade with an intra-nodal backbone for data and voice traffic. The SMART-T is a Ku-band satellite system capable of low data rate (LDR) and medium data rate (MDR) links via the military strategic, tactical and relay (MILSTAR) satellite constellation. It supports data rates up to 1544 kbs (typically operating 512 and 1024 kbs). Brigade utilized the SMART-T and the network operations center vehicle (NOC-V) in a communications package to support the brigade commander's tactical (TAC) CP. The SMART-T has consistently provided reliable connectivity to the brigade. Once deployed the brigade experienced limited available satellite links in theater. This resulted in only two of three terminals being in system at any one time. The saturation of SMART-T assets in Iraq (4th Infantry Division and 1st Armored Division) resulted in the brigade being limited to two satellite links with data rates limited to 512 kbs and 1024 kbs. During operations in Samarra, the network structure for the SMART-T was 1024 kbs from TOC A to 4th Infantry Division and 512 kbs from TOC B to TOC A. This architecture benefitted the brigade by employing the SMART-T as both an intra-brigade and inter-nodal (to 4th Infantry Division) communications system. Once the brigade moved to its final location in Mosul the SMART-T supported an intra-nodal link between TOC A and the BSB at 1024 kbs and a 512 kbs link for the NOC-V. Prior to deployment, after action review (AAR) comments from the 4th Infantry Division (4ID) and the 1st Armored Division (1AD) indicated severe equipment reliability issues with the SMART-T primarily related to the medium power transmitter (MPT) and cooling fans on the transmitter. To date, the brigade has not experienced similar equipment issues though cooler weather during the initial deployment may have been a factor. The brigade's requirements, in addition to the proliferation of SMART-T assemblages in theater, added strain on an already saturated military satellite network. The brigade was consistently limited to only two links at 1024 kbs and 512 kbs even though additional links were requested numerous times. Eventually the link structure was modified to three links at 512 kbs each.

The SMART-T has performed exceptionally well throughout deployment. Some physical improvements to the assemblage would enhance operational capability. Enabling an auto tracking memory function would improve satellite acquisition time. When shutting down the SMART-T and reinitializing the acquisition process, the SMART-T needs to possess the ability to remember the last known location of the MILSTAR satellite in relation to global positioning system (GPS)/latitude/longitude position. This would preclude a start-up, acquisition, and lock of the satellite lasting twenty minutes or more. The Trojan Spirit Terminal has such a capability enabling restarts and acquisition of less than five minutes. Frequently the brigade's SMART-Ts

were knocked off the satellite by other terminals that obtained a higher priority for links. Further investigation revealed that management of the military satellite constellation, terminals enabled operators, and MILSTAR communications planning terminal integrated (MCPTI) managers to configure images on the fly external of the satellite acquisition request (SAR) process that resulted in certain links to lose priority. This procedural issue resides in the management tactics, techniques, and procedures (TTP) of the theater and is not with the assemblage though consideration should be made for the level of reconfiguration that can be accomplished at the terminal level. As mentioned, the SMART-T is an exceptional workhorse for the intra-nodal links within the brigade (and in some cases to higher elements). Due to the saturation of terminals and limited segments available on the military satellite constellation, it is recommended the community revisit the implementation of a tri-band satellite system. The flexibility and utility of a tri-band satellite terminal would significantly enhance the capability of the brigade to establish connectivity both internally and externally of the network. Incorporate both tri-band and SMART-T systems in the brigade for a more robust network.

Insights/Lessons Learned:

- A theater satellite manager must plan for prioritization of all satellite links in the theater network to de-conflict satellite saturation. This will prevent operators from knocking satellite links off the air by establishing links that do not go through the satellite access request (SAR) process.
- Establish at least two SMART-T links to provide for redundant command and control preferably one link within the brigade and at least one link external to the brigade.

DOTMLPF Implications/Recommendations:

- The SMART-T needs to possess the ability to "remember" the last know location of the MILSTAR satellite in relation to GPS/latitude/longitude position. This would preclude a start-up, acquisition, and "lock" of the satellite lasting 20 minutes or more; the Trojan Spirit Terminal has such a capability enabling restarts and acquisition of less than 5 minutes. (Materiel)
- Establish specific TTP for satellite acquisition and link establishment to prevent saturated MILSTAR networks. Satellite communication is the preferred method for deployed forces and must be planned for accordingly to prevent loss of command and control during critical operations. Contingency plans must be built into the theater satellite network. (Doctrine)

Topic C: The Army Battle Command System (ABCS) Product Distribution TTP

(ART 7.2.5 Disseminate Common Operational Picture and Execution Information)

Observation: The SBCT uses the Army Battle Command System (ABCS) and Outlook to distribute operational products across the battlefield.

Discussion: The SBCT battle staff used the FBCB2 component of the ABCS as its primary method of distributing operational products across the battlefield. Using FBCB2 to disseminate

products to Stryker vehicles to execute the mission became the standard, according to the battle captain. Battle NCOs explained units were directed to adhere to certain procedures when sending the products, especially overlays. Bandwidth limitations caused overlays to be sent in layers, or in pieces, in order to make it through the communications infrastructure. When sending operational products between tactical operation centers, the primary means switched to Outlook email with an attachment. TOC-to-TOC communications were not as restricted and allowed for larger file size and faster dissemination. For routine battle rhythm products, dissemination was accomplished by posting the product to a designated web site for other individuals to access and pull down. This made it easier for staff sections to make last minute changes, to their status charts, prior to the battle update brief (BUB). This allowed staffs at different echelons to have access to products at all levels without bothering subordinate units for the information. The battle captain described the process for disseminating an overlay to the Stryker vehicles, if the staff received an overlay from higher, it would come via Outlook email with a MCS overlay attachment. The staff would then save the overlay onto the desktop of the computer. Using MCS, the staff would import the overlay and then use the messaging capability to send the overlay to the FBCB2 box in the brigade TOC. When overlays were sent between MCS and FBCB2 all graphics would change to black, which made it harder for the individuals executing the mission to depict between the graphics and therefore the TTP of sending the overlays to the brigade FBCB2 first was adopted. The brigade staff would make the necessary color changes on the FBCB2 box and then disseminate the overlay to the appropriate individuals. The battle captain also explained that if the staff had to create an overlay to disseminate, they would do it on MCS because of the ease the MCS software lends to developing overlays. They would then revert to sending the overlay to the brigade FBCB2 for color adjustments and for final dissemination. The brigade reallocates FBCB2 systems, from within their organization, and equips non-digital units that are attached to the brigade. This gives non-digital units the capability to communicate within the brigade via FBCB2. Loss of capability from using this method was not a factor due to the number of available spares in the unit and systems were taken off of non-essential vehicles. Posting operational products to a web site was the preferred method of distributing products. This allowed all echelons access to all products.

Insights/Lessons Learned:

- ABCS does not efficiently provide the technology to disseminate operational products within the TOC.
- Microsoft Outlook email was the preferred method used by the brigade staff to pass information and overlays between the TOC, because of its familiarity and ease of use.
- MCS has a better graphics tool for creating overlays and graphics. To make the brigade more efficient, the FBCB2's graphic tool needs to be improved.
- Even though the SBCT realized the end state of product dissemination was FBCB2, they could not achieve top efficiency since they had to adjust product colors when transferring between MCS and FBCB2.

DOTMLPF Implication/Recommendation:

- Upgrade FBCB2 overlay/graphic's tool to accommodate color transfers between MCS and FBCB2 (Materiel)

Topic D: Battle Field Situational Monitoring

(ART 7.3.1 Monitor Situation or Progress of Operations)

Observation: The SBCT used the FBCB2 component of the ABCS to monitor the battlefield.

Discussion: FBCB2 systems were reallocated, from within the brigade, to key vehicles within non-digital attached units providing the commanders with at least some visibility of the units on the battlefield; however if these vehicles leave the AOR, they were fitted with Blue Force Tracker (BFT) until the vehicles returned to their unit. Displaying the BFT on a monitor in the TOC gave the commander visibility of his vehicles once they left his AOR. There were a limited number of BFT so they were moved between vehicles as situation dictated.

Insights/Lessons Learned:

- FBCB2 was limited by communication networks.
- Equip vehicles leaving network ranges with BFT to insure countrywide coverage of vehicle movement.

DOTMLPF Implication/Recommendation:

- Fit key vehicles of non-digital units attached to SBCTs with FBCB2 and BFT systems to address communication and tracking shortfalls. (Materiel)

Topic E: Near Term Digital Radio (NTDR)

(ART 7.1.1 Establish and Conduct CP Operations to Support Tactical Operations)

Observation: Near Term Digital Radio assessment within the SBCT.

Discussion: The NTDR was originally fielded to the SBCT to enable Army Battle Command System (ABCS) information to be passed from brigade to battalions. Since the NTDR did not meet the requirements of the commander on the ground, a supplemental Ku satellite system (IKSS) was purchased to fill this specific need. Of the 44 NTDRs fielded approximately ten have been in operation at any time during the deployment. Stryker command vehicles have utilized the NTDR during operations in order to maintain an ABCS link with a command post (CP). Typically, NTDR is utilized as a link from the combat training command post (CTCP) to the brigade support battalion (BSB) within a three km footprint on a forward operating base (FOB). All NTDR have been operating on wide band mode. Several units utilized the NTDR for connectivity from their TOC to relay/retransmission sites to CV Stryker vehicles. The longest line of sight (LOS) link obtained during deployment was forty km from a battalion TOC to a relay/retransmission site. The NTDR does provide minimal data processing to CVs and has been

beneficial for ABCS common operational picture (COP) development. It did not pass large data files. A procedure brigade developed during the NTC and JRTC rotations was to place the antennas on an equal plane in a three dimensional space. Essentially, all the antennas should be within a height tolerance of equal to (+/-) two meters and 10 to 20 km apart to achieve a good link. During NTC and JRTC rotations, the brigade consistently achieved 12 km links with the longest being a 45 km link. This was exceptionally hard to achieve in a deployed battle space over 200 km-by-400 km where a majority of forces were occupying cities or air bases. With such an AO, the brigade utilized the NTDR in a reduced role utilized primarily as a short-range link for elements within range of a tactical operations center (TOC). The NTDR and the IKSS created a subset of the upper tactical internet (T/I). The NTDR filled a role as a low level, or degraded upper T/I, and the IKSS provided true upper T/I connectivity.

The antenna and mounting base needs to be re-engineered to be more durable in a field environment. Specifically the antenna base O-ring consistently failed resulting in the antenna becoming off center and not 90 degrees in orientation to the ground. Contact pins internal to the antenna frequently broke leading to intermittent data links. Overall, the performance of the NTDR, since its fielding, has been below expectations. This is especially the case in light of the data requirements of the brigade. The relatively low data rate, of 28.8 kbs, caused difficulty in obtaining a reliable link in the large battle space. Emphasis on other systems has resulted in the radio not being extensively used during deployment. Finally, the NTDR is no longer a viable system for the war fighter to solely rely on for digital connectivity. The expectations of today's commanders and Soldiers demand a system that provides high data rates, consistent reliability, and mission flexibility. Serious consideration must be made whether to continue this program beyond the current fielding and replace it with a beyond line of sight (BLOS) high data system. If this program does continue, the waveform should be replaced with the next generation joint tactical radio system (JTRS) wideband network waveform (WNW) in order to better facilitate higher data rates and longer ranges.

Insights/Lessons Learned:

- Limited utility with this radio with current capabilities.
- No beyond line of sight (BLOS) capability.
- Is not compatible with any joint systems that use the Joint Tactical Radio System (JTRS) Wideband Network Waveform (WNW).

DOTMLPF Implication/Recommendation:

- Erect the NTDR antennas within +/- two meters of each other to establish connectivity. (Training)

Topic F: Combat Service Support Command System (CSSCS)

(ART 6 The Combat Service Support Battlefield Operating System Indicators)

Observation: The SBCT S1, S4 or Engineer Officer do not use the CSSCS or any other Army Battle Command System to provide support to the commander.

Discussion: The brigade S1 or S4 do not use CSSCS to provide information to the commander. CSSCS has not been used since the brigade has been in theater because of software shortfalls. The S1 and S4 developed the tactics, techniques and procedures (TTP) of developing their information on a Microsoft excel spreadsheet and posting it to the web site since there is no requirement to use CSSCS. This TTP holds true for the brigade Engineer officer as well. The brigade engineer officer has a data replicator, borrowed internally from the unit, in his section to monitor the FBCB2 feed; however, this piece of equipment does not provide the engineer officer with any means of providing information. If the S1, S4 and engineer officer were required to provide products for an operation, they would use the MCS to create the product and then either post the product to the web site or send it as an attachment using Outlook.

Insights/Lessons Learned:

- The Army Battle Command System (ABCS) is not required for the brigade S1, S4 or Engineer Officer to support the commander.
- Posting reports to the web site is the S1, S4, and the Engineer Officer's TPP for disseminating information.

DOTMLPF Implication/Recommendation: none

Topic G: Digital Common Operational Picture (COP)

(ART 7.2.2 Process Relevant Information to Create a Common Operational Picture?)

Observation: The SBCT did not use the ABCS, as it was designed, to display the COP because of software and communication limitations.

Discussion: ABCS was designed to have the MCS as the centralized tool where all other battle command systems would integrate their products and give the commander a current COP. ABCS components were not interoperable with MCS because of software shortfalls, mission environment, and communications links. This forced the brigade to create tactics, techniques and procedures (TTP) to workaround the system and give the commander the COP. The brigade initially entered the war using all ABCS systems to display the COP. This would take the battle NCO approximately two hours to prepare before each battle update brief (BUB). Even after extensive preparations, the systems still had trouble inter-operating. The product displayed was not what the commander wanted, resulting in the decision to alter the BUB to the format of Microsoft Power Point slides. The brigade switched to using the FBCB2 for displaying the COP. The majority of the staff was trained on the system and found it easier to use. It was the main conduit between the staffs at all levels and the Stryker vehicles. The commander wanted to see where all his vehicles were within his sector at all times. FBCB2 afforded him this capability. MCS had the capability to show a live Blue Feed, but the brigade found it easier to display the

FBCB2 because of its' familiarity and ease of use. The brigade TOC displayed the brigade AOR. It did have the live feed turned on; however, the frequency rate was set to a time where it was not relied on as an accurate picture. This was not a shortfall on MCS, but a preference of the commander. The All Source Analysis System (ASAS) was not used to provide the red picture to the COP. Red icons were displayed on the COP by FBCB2. Enemy activity was briefed to the commander using Microsoft Power Point slides made off MCS screen shots. Combat service support command system (CSSCS) was not interoperable with MCS because of software shortfalls. The appropriate information from the system was provided from Microsoft Power Point screen shots off the MCS. The brigade developed a TTP using color codes to represent actions on the battlefield. Yellow was used to show suspected improvised explosive devices (IED) or mortar attack locations and red to depict actual IED or mortar attacks. Green was used to represent the Iraq National Guard (ING) locations. This does not correlate with FM 2525B standards, and the color-coding proved to be valuable for grasping situational awareness from the COP.

Insights/Lessons Learned:

- ABCS software was not interoperable and forced the unit to switch to using FBCB2 to display the COP.
- Simplicity of systems, commander's preference, and mission environment are keys to which digital systems are used in the TOC to display the COP.
- Color-coding icons on the COP is an important aspect of situational awareness.

DOTMLPF Implication/Recommendation:

- Allow units to change colors of icons to their preference. (Doctrine)

Topic H: Communications Security (COMSEC) Dissemination

(ART 7.1.1 Establish and Conduct CP Operations to Support Tactical Operations)

Observation: Commercially purchased international maritime satellite (INMARSAT) systems were used with secure telephone units (STU), or secure telephone equipment (STE) to disseminate COMSEC keying materiel (KEYMAT).

Discussion: The Nera Mini INMARSAT sat-phone is a small lightweight phone that the brigade used for COMSEC up/download to battalions through secure telephone equipment (STE). By successfully passing COMSEC via STE and INMARSAT Soldiers and equipment are not placed at risk by traveling to a central location for COMSEC issue.

Insight/Lesson Learned:

- Use a commercial INMARSAT, with a STE, to disseminate COMSEC from brigade to battalion. This prevents convoy movements strictly for supporting COMSEC issues.

DOTMLPF Implication/Recommendation:

- Develop a military system that provides the same remote COMSEC issue functions as a commercial INMARSAT, with a STE, and to Stryker brigade MTOE. (Materiel)

Topic I: Digital Sustainment Training

(ART 7.2 Manage Tactical Information)

Observation: The SBCT brigade staff received adequate training on the digital systems prior to entering operations in Iraq and maintained their proficiency through daily use of the systems and on the job (OJT) for new Soldiers coming into the unit.

Discussion: Training on digital systems such as the ABCS was provided to the brigade Soldiers prior to entering Iraq. Blocks of instruction were conducted at the Mission Support Training Facility (MSTF) in Ft. Lewis, WA. Once in theater, everyday use of the MCS and the FBCB2 systems allowed the staff to maintain their proficiency. Other systems, such as the All Source Analysis System (ASAS), the CSSCS and the Advanced Field Artillery Targeting and Detection System (AFTADS) were not used as often because of software deficiencies and mission requirements. Since field artillery weapon systems were not used extensively proficiency in AFTADS suffered. The CSSCS software issues eventually led to a decision not use the system at all. ASAS interoperability issues with MCS and its inability to synchronize with higher-level databases limited its use as well.

Subject matter experts (SME) on MCS and FBCB2 were identified and served as the primary trainers for new members of the unit. The brigade experienced a large turn over of personnel resulting in a low percentage of Soldiers trained at the MSTF and the majority of the personnel in the TOC, by the end of the mission, mostly in-theater trained.

Insights/Lessons Learned:

- Constant use of digital equipment allows unit to maintain its proficiency.
- Soldiers training Soldiers on digital equipment is main stay for the brigade.

DOTMLPF Implication/Recommendation: none

Topic J: S6 Training

(ART 7.1.1 Establish and Conduct CP Operations to Support Tactical Operations)

Observation: Most S6 personnel received no specific training on the digital systems used by the brigade.

Discussion: In discussions with brigade and battalion S6 personnel the overriding theme was that other than familiarization with the myriad systems used by a digital brigade combat team (BCT), there was no formal training sessions. Two separate Certification Exercises (CERTEX) conducted at the NTC and JRTC closely resembled each other. Neither CERTEX fully replicated the network in the Iraq theater. Many of the Soldiers that took part in these CERTEX are not the same Soldiers using the systems today. The 25C enhanced position location and reporting system enhanced position location and reporting system (EPLRS) planners did receive the T1 additional skill identifier (ASI) course that allowed them to control and manage a long-range EPLRS network. In addition, the officers did not received extensive formalized training to the same level as the operators. The Fort Gordon S6 course lacks in combat net radio procedures, wave propagation theory, antenna construction, and ABCS certification. The computer based training (CBT) modules available and the FBCB2 self-contained training module was referenced as good enough for users. In addition, whenever attrition or turnover would occur with an operator that was trained on the ABCS, such as a battle captain or NCO, on the job training would fill the training gap. The EPLRS planner indicated that the reason his course had been so successful in teaching the necessary skills was the amount of time spent in a hands on laboratory troubleshooting radio systems. It is impractical to export that sort of lab facility or to replicate it in a CBT module.

Insights/Lessons Learned:

- Soldiers performed well; however, the training provided to the brigade, on their complex systems, was overall in adequate.
- Fully trained and certified personnel should increase performance.

DOTMLPF Implication/Recommendation:

- Develop a standard program of instruction (POI) for the Modification Table of Equipment (MTOE) communication and data systems within a SBCT and develop, as much as possible, CBT modules. A possible course of action (COA) is to adopt the Air Force job book model where each task is identified and a certified trainer signs off on the user's ability to perform that task. (Training)

Topic K: Individual Operator Skills and Proficiency

(ART 7.2 Manage Tactical Information)

Observation: Following new equipment training (NET) and deployment, NCOs must ensure that FBCB2 operators maintain an acceptable level of proficiency.

Discussion: Nearly all operators received NET team training prior to deployment. Sustainment training was based on individuals reading the manual and conducting training through the train-the-trainer processes. Contractor support was available only for repairs and maintenance, and they did not provide any training.

Insights/Lesson Learned:

- Units should continue to maintain skills proficiency through the train the trainer processes.
- Units have resources available to create sustainment-training courses.

DOTMLPF Implication/Recommendation:

- Enforce FBCB2 train-the-trainer processes. (Leadership and Education)

Topic L: Computer Hardware Maintenance and Evacuation Procedures

(ART 1 The Intelligence Battlefield Operating System)

Observation: The high temperatures and large amount of dust significantly impacted the computer failure rate.

Discussion: The Reconnaissance, Surveillance, and Target Acquisition (RSTA) Squadron S6 attempted to order replacement parts for the squadron's garrison laptops (Compaq and Dell); however, such orders were not adequately tracked and were subsequently dropped. To address this problem, a squadron point of contact (POC) was identified in the rear detachment, who was responsible for tracking evacuated items. This provided a direct conduit from theater to the Continental United States (CONUS) and eliminated an additional step of having to go through the brigade Information Management Officer (IMO). One item that significantly aided against damage, by dust and sand, was the keyboard dust covers that were purchased from Pro-Tect, and issued, by brigade S6. The Pro-Tect Web site is www.protect covers.com. During deployment, six computers, beyond the section's capability for repairs, were evacuated back to the US; however, as of August, only one computer was returned to the squadron. The 25B Soldiers in the squadron are capable of accomplishing repairs to keyboards, monitors, and central processing units (CPU). Turn around time for computer repairs must be improved with a target of no more than three months.

Insights/Lessons Learned:

- External/internal hard drives and CD/DVD drives should be purchased to aid in repairing computers during deployment.
- Dust protective covers should be purchased for computer keyboards.

- Computers should be evacuated to the squadron POC instead of the brigade information management officer to expedite turn around.

DOTMLPF Implication/Recommendation:

- Assign and train a Soldier, in the rear detachment, on computer evacuation procedures. (Training)

Topic M: FBCB2 Maintenance

(ART 7.2 Manage Tactical Information)

Observation: FBCB2 was being maintained above a 90 percent operation readiness rate.

Discussion: FBCB2 held up very well. The most common equipment issues were broken screens and cables. Mission related problems included the range of the radio supporting the system. If an FBCB2 is re-booted outside of range of its originating signal, it will only show the vehicle it is installed in on the operator's map.

Insights/Lessons Learned:

- When a brigade is operating in a larger area than its communication can support, FBCB2 operators must be trained not to turn off the system when they are in communication dead space.
- When an element must operate in an area larger than its communication system can support, additional augmentation is required to prevent battle space communication dead space.

DOTMLPF Implication/Recommendation: none

Chapter 3: Non-Lethal Operations

Chapter Overview

Information Operations (Topics A-D): The brigade area of responsibility (AOR) inherited from the 101st Division placed greater importance on small unit commanders. The situation clearly identified a need for training for working with civil affairs (CA) to be more responsive to brigade commander's information operations (IO) campaign and increase the non-lethal effects in the overall plan. CA included contracting for infrastructure, reimbursements for unnecessary damages, leaflets, loudspeakers, etc. Commanders must apply the same rigor to the targeting of non-lethal effects as they do for lethal. Soldiers should be trained on the appropriate measures of success in order to assess effectiveness. Integration of multiple elements of information operations is a force multiplier in conducting urbanized operations. Approval of civil affairs projects need to be included in the IO targeting process. In operations where lasting effects were achieved, multiple non-lethal forces were used.

Interpreters and Detainee Operations (Topics E-H): Interpreters can be more effective by considering ethnicity, age, gender, and development of a close relationship. An inadequate number of available brigade interpreters restricted units to move interpreters to various elements across a spectrum of functional disciplines (civil affairs, intelligence, PSYOPS), and area of responsibility to meet mission requirements. Detainee operations were not conducted at the brigade level. The brigade did establish battalion detainee holding facilities; however, some were inadequately configured. Inadequate configuration limited the use of interrogation techniques, possibly impacting the quality, consistency, and level of information gleaned from detainees.

Non-lethal Training for Stability Operations and Support Operations (Topics I-N): Battalion commanders, and their executive officers (XO), faced with the resource manager responsibilities. They acted as directorates for contracting and public works with out significant institutional training. In one case, the commander literally built a compound from the ground up for one of the newly formed Iraq National Guard (ING) battalions. He managed over $ 3 million in Overseas Humanitarian Disaster Assistance Civic Aid (OHDACA) and Commander Emergency Response Program funds. Host nation facilities were being protected by contracted facility protection services (FPS) and ING. Family readiness groups (FRG) should receive adequate resources to ensure families are appropriately informed, keeping rumors at a minimum. Commanders must ensure embedded media receive appropriate access to operations, understand the rules of engagement (ROE), and operational security (OPSEC) requirements. The large number of civilians in the brigade AOR significantly stressed capabilities to provide direct safety. Civilians included local nationals, government and non-government officials. The brigade provided improvised explosive devise (IED) sweeps, ensured Iraq police were equipped and directed to where they should be located, and assessed physical security measures at critical infrastructures. Many local nationals were not coming to work because of threats they, or their family, received because they work for United States forces.

Logistic Support Element and Contractors (Topics O-U): Contractors, supporting the brigade, were being treated and cared for in the same manner as the Soldiers in the brigade. A specific period should be established for the transition from contractor to Soldier maintenance responsibilities. This time line should reflect the contractor's work in order to maximize funding and allow Soldier to assume the workload. Contractors and military personnel must use the same tracking systems so the command remains fully aware of the overall status. Parts and job orders used by contractors need to be merged with the Army system. The commander would then have a single document for all equipment.

Observations, Discussions, Insights/Lessons Learned and DOTMLPF Implications/Recommendations

Topic A: Non-lethal Targeting, Offensive Information Operations (IO)

(ART 3.3.2 Conduct Non-lethal Fire Support)

Observation: Units must apply the same rigor to the targeting of non-lethal effects as they do for lethal ones.

Discussion: Several units are using a good targeting methodology, but not incorporating non-lethal effects until the lethal targeting process is complete. For example, a normal sequence might include an anti-Iraq force leader is identified and located with targetable intelligence. The brigade-targeting cell then meets and assigns responsibility for the target and the target folder is given to the unit. This is the first step in the unit planning process. After the unit completes the plan, a call is placed to the brigade requesting PSYOP, and possibly combat camera support, to assist in the cordon and search operation. While these elements contribute to the overall success of that mission, they are not employed to target the trust and confidence of the local population. In the long term, emphasis on building trust and confidence might negate the need to conduct future cordon and search operations as the nation becomes more self-policing.

Insights/Lesson Learned:

- Targeting should be supported by sound and detailed intelligence.
- Targets should be nominated and vetted at the targeting cell meetings.
- Targeting folders should be prepared detailing target vulnerabilities.
- Measures of success should be developed so that the tasked unit understands the first and second orders of effect and the standard by which the mission is to be accomplished.
- As in lethal targeting, a combined arms approach is best when weaponizing the target.
- Incorporating multiple non-lethal effects generators normally have better target results than using only one system such as PSYOP.
- The importance of properly planned and executed non-lethal effects, what to expect from the staff when they are planning it, should be emphasized since there is only one targeting process within the command and that process should include both lethal and non-lethal effects integration. Key areas of responsibility, in this process, reside with the Fires and Effects Coordination Cell (FECC) chief and supported by the non-lethal effects officer who is, functional Area 30, qualified.

DOTMLPF Implication/Recommendation:

- Ensure leadership knows key elements of non-lethal effects, how they can help achieve the mission, and what is needs to be done to prepare the commander for success. (Leadership and Education)

Topic B: Development of Measures of Success, IO Indicators

(ART 3.3.2 Conduct Non-lethal Fire Support)

Observation: At the tactical level, units were untrained in the development of measures of success.

Discussion: Without established measures of success, units may find it difficult to understand the effectiveness of their efforts. These measurements can also serve to guide the collection effort. For example, a PSYOP team goes into a neighborhood to deliver leaflets to announce the opening of a new school. The first order of effects could be measured as successful if 700 leaflets, represent a leaflet to 50 percent of the males within that neighborhood (a figure that has been established as the saturation point), were distributed. The second order of effect measurement for success could be if 1,000 students show up for the opening day of school (a figure that represents a majority of students illegible for school). And a third order of effect measurement for success could be if the neighborhood had increased its level of support for the newly established government and education system.

Insights/Lesson Learned:

- Measures of success can be tracked back to the commander's intent and assist in validating and justify the expenditure of resources.
- Measures of success serve as a key indicator to the unit, when assessing if they have been successful and determine if resources should be moved to other efforts (establishing a track record of weapons effects to audiences), to change weapon system, delivery method, target audience or the message, to achieve the desired effect.

DOTMLPF Implications/Recommendations:

- Soldiers, conducting planning, execution and analysis of non-lethal effects, must be trained on what looks "right" and how to develop appropriate measures of success in order to assess if they have been successful in their efforts to achieve the desired effect of their IO campaign. (Training)

Topic C: Assignment of Non-lethal Effects to Targets, IO Indicators

(ART 3.3.2 Conduct Non-lethal Fire Support)

Observation: The approval process, of the task force commander as the approval authority, for psychological operations (PSYOP) products worked very well.

Discussion: The Joint Psychological Operations Task Force (JPOTF) previously retained approval authority for PSYOP products. This process unnecessarily delayed the responsiveness

and timeliness of products and prevented regional focus and legitimacy. With approval authority at the task force level products could be produced locally and shipped to the subordinate battalions within a week to two weeks. PSYOP was centralized at the brigade level, while Civil Affairs (CA) was decentralized and pushed down to the battalion level. The brigade ensured that CA process was equitable across the brigade battle space. CA projects did not appear to be used effectively as tools to leverage the information operations (IO) objectives and utilized an approval process not linked with the formal targeting process. Non-lethal effects were integrated into cordon and search operations. Specifically, tactical commanders found it very useful for loudspeaker teams to accompany the inter cordon as a method for informing the local population of what was going on and how to comply. Once the operation was completed, the media was alerted and moved to the location to provide coverage of the event. Soldiers also used combat camera to document damages occurring during the raid to provide a method for reimbursement, if no detentions were made. The documentation and media access were executed as defensive counter-propaganda operations.

Insights/Lessons Learned:

- The integration of multiple elements of information operations is a force multiplier in conducting urbanized operations.
- Local approval authority and the development for PSYOP products, expedites products and makes them better targeted for the local area / problem set.
- Approval of civil affairs projects need to be included in the information operations targeting process.

DOTMLPF Implications/Recommendations:

- Change PSYOP doctrine to allow for local approval and reproduction of products at the task force level. (Doctrine)
- Use non-lethal force multipliers to increase the effectiveness of cordon and search operations. (Leadership and Education)
- Change CA doctrine to ensure their projects are included into the information operations targeting process. (Doctrine)

Topic D: Massing of Non-lethal Effects, IO Indicators

(ART 3.3.2 Conduct Non-lethal Fire Support)

Observation: In operations, where lasting effects were achieved, multiple non-lethal forces were used.

Discussion: The United States forces and Iraq National Guard (ING) combined cordon and search operations. Non-lethal forces supporting these raids included psychological operations (PSYOP) loudspeaker teams and media. Forces used digital cameras to record the actions of the Soldiers to protect against adversary propaganda claims of excessive force or wanton damage. These recording were also used by finance officials in supporting and paying damages in cases

where suspects were not apprehended and property damage occurred, once again preventing anti-Iraq forces from using the destruction to strengthen their cause. A great deal of effort was expended to support defensive IO including the public affairs officer (PAO) battle drill requiring all incidences within the area of operation (AOR), especially incidence of Iraq on Iraq violence, to be immediately reported to the media. Units learned that failure to document there activities often fed the anti-Iraq forces propaganda machine allowing the anti-Iraq forces to alter the details of the incidents to their benefit. It is safe to assume that operations that do not mass multiple non-lethal forces is unlikely to have any lasting effect since the anti-Iraq forces uses a creditable message, followed by the application of ruthless force, to reinforce the sincerity of their message. Often the delivery of the message is more important than the message itself. Coalition force messages are often discounted; however, the same message delivered from a member of their tribe is much more effective and caries more weight than a message from a different tribe. Effective targeting will include a good understanding of the cultural aspect of non-lethal effects employment.

Insights/Lesson Learned:

- Non-lethal effects should be massed in order to achieve maximum effect.
- Efforts that do not mass multiple elements could have minimal effect, other than expending limited resources to no avail.

DOTMLPF Implication/Recommendation:

Train Soldiers on how non-lethal effects can be nested together to strength the message and obtain intended outcomes. (Training)

Topic E: Interpreters Effectiveness

(ART 1.4.2 Provide Intelligence Support to Information Operations)

Observation: Interpreters can be effective with consideration for ethnicity, age, gender, and development of a close relationship.

Discussion: Problems occur with Muslim interpreters during religious holidays. Many quit prior to the holiday, or did not show-up to work during the holidays. Many of the interpreters were threatened by anti-Iraq forces and insurgents which was particularly dangerous for part-time interpreters who do not live on the secure forward operating bases (FOB). The number of interpreters a unit can retain depends on the ability to develop a personal relationship with them. Units that develop trust, a sense of safety, and loyalty with their interpreters are more successful in keeping the ten to twelve for an operation and rotate their work schedules. Interpreters are used with each platoon sized element, the casualty evacuation (CASEVAC) element, and separate teams (sniper teams) providing over watch for an operation. The best interpreters appeared to be middle-aged men who were respected in the local culture where as female and young male interpreters proved to be less effective. Interpreters are also chosen specifically for certain operations. If the operation is to make contact with local law enforcement or tribal or

community leadership, interpreters are chosen with the same ethnicity as the group being contacted. During offensive operations, or questioning of suspected anti-Iraq forces, selected interpreters, not of the same ethnicity, were chosen. This precluded social ties, between the interpreters and the suspects, and improved their results. To protect operational security (OPSEC), interpreters were not provided any information about the missions and were given very little notice of when their support was required since some had been suspected of providing information to the anti-Iraq forces. To reduce this tendency, units preferred full-time interpreters who lived on the FOB and were of a different ethnicity to the majority of anti-Iraq forces. There was no progressive pay scale for interpreters (they were all paid the same) and therefore no system for rewarding those who were better English speakers with demonstrated dependability.

Insights/Lessons Learned:

- Interpreter performance is inconsistent because of age, gender, ethnicity, and full or part-time employment.
- Units are more successful with interpreter performance if a sense of trust, safety, loyalty and a personal relationship is developed.

DOTMLPF Implication/Recommendation:

- Develop a pay scale to reward interpreters for quality performance. (Leadership and Education)

Topic F: Interpreter Support

(ART 1.4.2 Provide Intelligence Support to Information Operations)

Observation: Interpreter support to the brigade is inadequate.

Discussion: The number of interpreters available within the brigade is inadequate. Units have dynamically moved interpreters, based on mission requirements, to various elements across a spectrum of functional disciplines (civil affairs, intelligence, PSYOPS) and areas of responsibility in order to meet mission requirements. The brigade had to rely on non-cleared linguists, for key positions such as PSYOPS and CA team support, because of the shortage and availability of linguists and their clearance levels. The screening process for linguists is limited and the veracity of their work sometimes goes without substantiation.

Insights/Lessons Learned:

- The Army linguist pool was inadequate and therefore reliance on contracted interpreter support was necessary.
- Units must exercise and retain flexibility to employee interpreters based on mission requirements.

DOTMLPF Implications/Recommendations:

- Units require sustained level-two contract support. (Organization)
- Contracted interpreters should be required to remaining with the unit until redeployed. (Organization)
- National-theater level counter-intelligence screening support (i.e. United States Army Intelligence & Security Command INSCOM) should be required for interpreters deployed in theater. (Organization)
- DA should ensure attached PSYOP teams have at least one level-two linguist. (Organization)

Topic G: Detainee Operations

(ART 8.4 Conduct Support Operations)

Observation: Detainee operations are not conducted at the brigade level.

Discussion: Suspects were initially detained and processed at the unit level and transferred to the detainee facility operated at I Corps and Task Force (TF) OLYMPIA. The brigade had fewer Military Police (MP) Soldiers than the 101st Division, some of which were converted Field Artillery (FA) National Guard (NG) units that did not have the opportunity to train with the brigade prior to deployment. The MP support, in the AOR went from an MP battalion and staff, with two companies, to one company headquarters and four platoons consisting of one platoon of NG converted FA and three platoons of MP Soldiers from the 3rd Infantry Division. Reduction in MP support resulted in a loss of contact with some Iraq National Guard (ING) elements and Iraq police. There was less staff planning and lower ranks were tasked to coordinate with local officials across the board. The MP units, attached to the brigade, were not digital and had difficulty integrating into the digital systems of the brigade. The brigade reallocated digital systems, to provide systems to the MP platoons, once in theater. The training conducted to prepare the attached units for the MP mission, was conducted in theater. The theater Coalition Provisional Authority (CPA) detainee forms, the standard in the theater, were very easy to use and proved to be a great benefit to detainee operations.

Insights/Lessons Learned:

- No detainee operations at the brigade level (operated at I Corps & TF OLYMPIA).
- The reduction in MP support (from a MP battalion with staff and two companies to one company headquarters and four platoons) caused a loss of contact with some ING and Iraq police, as well as, a reduction in staff planning and tasking lower ranks to coordinate with local officials.
- Attached MP units were not digital equipped, and had difficulty integrating into the digital systems, causing the brigade to reallocated digital systems, within the brigade, to provide integration.
- Training of attached units was conducted in theater.
- CPA detainee forms were the standard in theater, were very easy to use and proved to be a great benefit to detainee operations.

DOTMLPF Implication/Recommendation: none

Topic H: Detainee Holding Facility

(ART 8.4 Conduct Support Operations)

Observation: The brigade has developed some excellent detainee holding facilities; however, some are inadequate.

Discussion: Each subordinate battalion task force, of the brigade, was responsible for establishing a detainee holding facility within their respective forward operating base (FOB). The 2nd Battalion, 3rd Brigade FOB had a large holding facility with separate holding areas, a separate interrogation room, and space for interrogators to confer and develop interrogations, an entrance way to the facility equipped with flood lights, and a location that offered cover and concealment. The battalion designed, contracted for, and supervised the completion of its own holding facility. Conversely, 1st Battalion, 14th Cavalry Squadron's FOB holding facility was established on an existing structure, approximately twenty feet from the perimeter. This structure had no cover or concealment from the Baghdad highway. In addition, there was a large abandoned school just two hundred meters away, and overlooking, the selected structure. This facility consisted of a single room approximately twenty by forty feet in diameter with no room to conduct detainee screening or keep detainees separated. This configuration limited interrogation techniques, and jeopardized the discovery of the detainees' identities.

Insights/Lesson Learned:

- Tactical HUMINT Teams (THT) must be able to recognize how the design and location of detainee holding facilities affect the interrogation screening process and intelligence collection and be prepared to adjust tactics, techniques and procedures (TTP) used in order to compensate for any deficiencies.
- An adequately configured holding facility allows for a broader array of interrogation techniques used in the screening of detainees.
- A facility with adequate space, security, and privacy speeds up the screening process and preserves the ability to turn information into actionable intelligence.
- Inadequate configured holding facilities limit the use of interrogation techniques and can adversely impact the quality, consistency, and level of information gleaned from detainees.

DOTMLPF Implication/Recommendation:

- Establish and enforce holding facility structure criterion and assign the detainee-holding mission to a single agency to support units engaged in support operations and stability operations. (Facilities)

Topic I: Contract Training for Support Operations and Stability Operations

(ART 8.4 Conduct Support Operations)

Observation: Infantry battalions were not trained nor particularly suited to conduct contracting functions during support operations and stability operations.

Discussion: Battalions had limited or no contracting training prior to deploying. In one battalion, on any given day, there was in excess of $100,000 in cash for local contracts. A lieutenant or sergeant first class drew, secured, and disbursed the money to support approved contracted projects. The battalion had no training, or any dedicated office support, pertaining to the specific ways and means for letting contracts.

Insights/Lessons Learned:

- Contracting the repair, development, or construction of facilities is a critical part of support operations and stability operations.

DOTMLPF Implication/Recommendation:

- Integrate and evaluate contract training into the unit's training during pre-deployment exercises or Mission Rehearsal Exercises (MREs) prior to executing support operations and stability operations. (Training)

Topic J: Contracting

(ART 2.1.4 Conduct Rear Detachment Activities)

Observation: Units are not trained in the contracting process.

Discussion: Several units expressed concern about the battalion level contracting they were required to initiate without prior training. They were also concerned about the amount and legality of the contracts preformed. The battalions about $4.5 million during the year they were in country. The funds were spent on civil affairs projects, construction projects for the Iraq National Guard (ING), and force protection improvements. A majority of that funding was handled through the contracting office at the brigade or task force levels.

In one case, the battalion commander initiated a contract for up-armoring his canvas high mobility multipurpose wheeled vehicle (HMMWV). After looking at several vendors, he selected the vendor with the most experience, the materiel (that had been tested to do the job), and the workforce to accomplish the job. The commander submitted a sole source contract request to protect his Soldiers as quickly as possible. The contracting office rejected the sole source request. The competed contracts resulted in an additional 30 days to process the request. Ultimately, the same vendor requested by the commander was selected. This process unnecessarily exposed Soldiers to direct harm for an additional thirty days. In other cases staff members complained about the constant changing standards required for contracts, turnover of contracting officers, and that the process did not support the commander's time line. Commanders felt they need more flexibility to fund projects quickly, to support their objective,s and to show immediate good will toward target Iraq audiences. Another serious deficiency is in

writing contracts to ensure that applicable assessment is applied to contractor selection and quality control once the job has started. Many individuals claimed to be contractors to get American money; few had the experience and work force to complete the project.

Insights/Lessons Learned:

- Leadership should be funded and have the appropriate resources to ensure success.

DOTMLPF Implications/Recommendation: none

Topic K: Protecting critical host nation facilities

(ART 8.4 Conduct Support Operations)

Observation: Host nation facilities are protected by contracted Facility Protection Services (FPS) and Iraq National Guard (ING).

Discussion: One of the brigade's initial missions was to determine which infrastructures required protection. This mission was tasked to the fire effects coordination cell (FECC) forcing field artillery officers to think non-doctrinally about what to protect, and how to protect versus what and how to destroy. Oil refinery and distribution centers were among the top of the list. Others included granaries and hospitals. Many key infrastructures where identified to the brigade from the previous units that occupied the AOR and higher headquarters such as the 101st Airborne Division Air Assault and the Multi-National Coalition-Iraq (MNC-I). There were over 375 critical facilities identified within the brigade's AOR. These high-risk targets (HRT) where identified through an analysis of the criticality, accessibility and vulnerability of each potential target. The brigade assisted the sovereign government with setting up contracts for security forces to secure these areas. The brigade also assisted security forces in the areas of equipment and barriers. The brigade conducted periodic security assessments of key infrastructures in their AOR. Battalions would go to sites and determine what type of forces would be required and plan contingencies if United States forces were required to defend the site. In some cases, battalions would report that contracted security forces had quit because they were not being paid. Because of the reduction in security support, the vulnerability posture of that infrastructure changed. This issue is the same for oil distribution centers. Prior to the sovereignty of the Iraq government, command and control (C2), for security, was handled by the brigade. With the establishment of a sovereign Iraq government, the security of key infrastructures is the responsibility of the Minister of the Interior and his deputies such as the Minister of Oil, and the Minister of Finance. The Minister of the Interior is responsible for the training, equipping, and payroll of all force protection services (FPS) for the various sub-ministries. The brigade relationship, with the Minister of the Interior, is that of an assessor for determining what physical security requirements are needed to protect key infrastructures within their AOR.

Insights/Lessons Learned:

- Units must know what key infrastructures are within their AOR. This comes from assessments done at the MNC-I and unit level.
- The criticality, accessibility, recognizable, vulnerability, effects, and recoverability (CARVER) approach is a good methodology in assessing infrastructure that may be a HRT.
- Units must continue to assess physical security measures at key infrastructures since the situation will change as security personnel leave or loose vigilance.
- Units must work with the Iraq sovereign government in providing physical security assessments of key infrastructure.

DOTMLPF Implication/Recommendation:

- Incorporate vulnerability assessment training into the Officer and NCO Education System (Training)

Topic L: Family Readiness Groups (FRG's)

(ART 6.11 Provide Contracting Support)

Observation: FRG's require resources in order to support deployed forces.

Discussion: Officer leadership/command changes, while Soldiers are deployed, can cause significant disruption regarding the traditional role of the commander's wife as the FRG leader. The duties and stresses on the FRG lead are significant and can be overwhelming if not properly supported. This unit was able to fund some of the FRG positions to help support this operation. While interviewing the subordinate commands, Soldiers reported problems with the notification process. When a Soldier is injured or killed and after official notification is sent, the FRG leader is notified. In turn, the FRG leader would distribute the email to the membership. Several Soldier commented that even when they asked that no notification be sent (such as for a minor injury) the notification was still made. Soldiers reported that such notifications also resulted in undue worry to those left behind. Notifications must strike a balance between to much information that unsets and worries families and too little information that provides fertile ground for rumors.

Insight/Lesson Learned:

- Family Readiness Groups (FRG) notifications need to balance too much and too little information to ensure families are informed keep rumors at a minimum.

DOTMLPF Implication/Recommendation:

- Fund FRG's leadership and have the appropriate resources to ensure success. (Leadership and Education)

Topic M: Media Support to the Fight

(ART 7.10.2 Facilitate Media Operations)

Observation: No issues, with embedded media, were identified.

Discussion: The brigade did not specify any major issues with embedded media, but it did emphasize the importance of developing a good media plan as detailed by the following actual event. An embedded media representative was with elements of the brigade and granted access to an event where school supplies were to be handed out to needy students. The unit took the reporter to a school, which they had recently built. When they arrived, they were surprised to find that no children were present and that an Iraq family was homesteading in the building. The Iraq police were unwilling to remove the family and no school supplies to be issued. Fortunately, the reporter elected not to cover the event, which could have made us look bad, since we did not know what was going on with the school after we funded its construction. The Iraq police were unwilling or unable to support us and the supplies that we purchased were never distributed to the children. The reporter understood what had happened and had other good coverage to use and rather than airing any of this event.

Insights/Lessons Learned:

- Make sure you have a good media plan for embedded media so they can cover the types of articles they are interested in and have appropriate access to Soldier and events.
- It is wise to have a plan in advance and events for the media to choose.
- Assisting the media in getting the type of coverage they want will ultimately enhance the opportunity for more favorable coverage.

DOTMLPF Implication/Recommendation: none

Topic N: Use of Local Nationals on the Battlefield

(OP 1.2.3.1 Coordinate DOD Civilian and Contractor Support)

Observation: Many local nationals are not coming to work because of threats they, or their family, receive because they work for US Forces.

Discussion: Many in the local work force, employed by US Forces, received threats and many did not return to work because of these threats. The Army employs local nationals as truckers, on and off Forward Operating Bases (FOB), Mechanics, Plumbers, Material Handling Equipment

(MHE) with operators, and electricians. The local national employees are vital to the success of the mission especially in quality of life issues. The electricians and plumbers are familiar with the local infrastructure in which much of the living and workspace of the Forces are located.

Insights/Lessons Learned:

- To combat the loss of skilled workers, many units are teaching force protection classes on how to avoid the ones who are threatening them and their families.
- The Locals are told that if they report those who threaten, the Army will do what they can to protect them.
- Not many of the locals report the threats because they do not trust the US Forces to protect them.

DOTMLPF Implication/Recommendation:

- Force protection classes need to include the local population to enhance trust in US Forces. Trust is the key in getting the locals to report those who are working counter to US/Iraq interests. (Leadership and Education)

Topic O: Accountability of Contractors on the Battlefield

(OP 1.2.3.1 Coordinate DOD Civilian and Contractor Support)

Observation: Contractors are being accounted for and managed by multiple elements.

Discussion: The units that the contractors are embedded with submit Personal Status (PERSTAT) reports consolidated at the brigade. The Logistic Support Element (LSE) also tracks the contractors. Contractors periodically report their status, to the LSE, if they change locations for more than the workday. The individual contractor's company pays and arranges for their leave. Leave is coordinated through the Combat Repair Team (CRT) chief or whatever other manager that the contractor falls under. The contractor's production is tracked in much the same way. The LSE chief receives reports from the different managers and the CRT chief reports to the Support Operations Officer. The individual contractor is well taken care of, but the multiple reports can be confusing and burdensome.

Insight/Lesson Learned:

- A single source manager and a single medium for contractor personnel tracking are necessary for optimal efficiency.

DOTMLPF Implication/Recommendation:

- Develop a single source Army database to track production of the contractors. (Doctrine)

Topic P: Embedded Contractors

(OP 1.2.3.1 Coordinate DOD Civilian and Contractor Support)

Observation: Contractors are fully integrated into the brigade and cared for as Soldier.

Discussion: Contractors are being supported in the same manner as U.S. Soldiers. They are tracked by the unit where they are embedded. Their living quarters and workplaces are virtually the same as the Soldiers, other than contractors are more likely to live in trailers. The same security forces that protect Soldiers provide contractor security. Contractors do not move around the battle space without security escorts. Their movement is much less than their Soldier counterparts; if they move, they move with their unit forces.

Insight/Lesson Learned:

- Contractors on the battle space must be treated the same as Soldiers in concerns to life support, force protection, and accountability.

DOTMLPF Implication/Recommendation:

- Contractor's Statements of Work (SOW) need to clearly state that they will be treated similar to the Soldiers they support regarding life support, force protection and accountability. (Leadership and Education)

Topic Q: Contractor/Soldier Interaction

(OP 1.2.3.1 Coordinate DOD Civilian and Contractor Support)

Observation: Soldier assigned to maintenance tasks are being taught and allowed to work on brigade equipment.

Discussion: Contractors are teaching and allowing the Soldiers to repair the equipment. In some cases the Soldiers are performing 90 percent of the maintaining/repairing of the equipment with the contractors primarily ordering parts that are not in the Army system and trouble shooting the equipment. This system is working great for the Soldier's training; however, an issue does exist with the parts visibility since the contractor is controlling the parts outside the Army system.

Insight/Lesson Learned:

- A time-frame for the transition to Soldier maintenance should be established in the statement of work for the contractors in order to maximizing funding resources by

releasing contracted personnel, that are no longer required, as Soldier maintenance takes over the work load.

DOTMLPF Implication/Recommendation:

- Modify statements of work to contain specific period for the transition of maintenance/repair responsibility between contractors and Soldiers. (Leadership and Education)

Topic R: Class IX System for Contractors

(OP 1.2.3.1 Coordinate DOD Civilian and Contractor Support)

Observation: Contractors are receiving and tracking their Class IX through the Army system if it is a common part; however, contractors are using their own system if it is not in the Army inventory.

Discussion: The shipping of non-inventory parts is through Federal Express (FEDEX), Dalsey, Hillblom, and Lynn (DHL) Worldwide Express, and the Army Logistics Package (LOGPAC). In some cases, FEDEX or DHL would deliver directly to the contractor who ordered the part and in others the part will be delivered to a central location, and then forwarded through LOGPAC to the contractor who ordered the part. This system, for the most part, is much faster than the Army logistic system, but visibility on the location of the part can be much more challenging to the command. The support operation's maintenance officer has, on occasion, met with resistance when asking for the status or tracking a number of a particular part. Some rivalry has developed between the agencies.

Insight/Lesson Learned:

- Contractors and military personnel must use the same tracking systems so that the command remains fully aware of any part status as these statuses can directly equate to future combat power.

DOTMLPF Implication/Recommendation:

- Direct contractors to use the Statement of Work Tracking System to comply with the Army system. (Leadership and Education)

Topic S: The Integration of Contractor's Job Orders and Class IX

(OP 1.2.3.1 Coordinate DOD Civilian and Contractor Support)

Observation: Contractors are not integrating their job orders or class IX into the Standard Army Management Information System (STAMIS).

Discussion: The tracking of contractor job orders and CL IX is not integrated into Army STAMIS. The combat repair team chief is tracking/briefing the command from Army STAMIS reports and contractor spreadsheets, in addition to having to get a report from the S6, to track/brief the status of one combat system. This is a confusing and lengthy process.

Insight/Lesson Learned:

- To optimize maintenance management all aspects of maintenance needs to be tracked and managed through one data base system.

DOTMLPF Implication/Recommendation:

- Direct contractors to use the Statement of Work Tracking System to comply with the Army system. (Leadership and Education)

Topic T: Logistic Support Element (LSE) Management

(OP 1.2.3.1 Coordinate DOD Civilian and Contractor Support)

Observation: Contractors are only loosely task organized and managed by the Logistic Support Element (LSE).

Discussion: A discussion with the LSE chief revealed that the LSE is loosely controlling/monitoring the contractors in the Area of Operation (AO); however, this method of management has not appeared to adversely impacted mission support. The LSE task organization is 25 personnel, including the chief. These 24, remaining personnel, include representatives from the Communications and Electronics Command (CECOM), the Tank and Automotive Command (TACOM), and the Multi-Media Communication System (MMCS). There are about 120 contractors, supporting the brigade, that are managed by other agencies. The General Dynamics Land Systems (GDLS) is self-contained. The S6 manages the digital and communication contractors. The LSE monitors where the contractors are located, what system they repair, what company they work for, whom they are embedded with, and when they go on leave. This tracking does not include their workload nor is it a parts tracker. The General Dynamics Land Systems (GDLS) and the S6 provide a report to the LSE pertaining to production control and parts ordered. The LSE chief recommends that only one database is used to track personnel, production, status of parts and job orders for both the Army and contractors. That contractors have different managers not has not been identified as being a problem.

Insight/Lesson Learned:

- One standardized system is required to track personnel, production, status of parts and job orders.

DOTMLPF Implication/Recommendation:

- Require parts and job orders to be merged with the Army system so that the commander has a single source document for all equipment. (Doctrine)

Topic U: Location of the Logistic Support Element (LSE)

(OP 1.2.3.1 Coordinate DOD Civilian and Contractor Support)

Observation: The LSE has been located at the Brigade Support Battalion (BSB) for the entire deployment.

Discussion: Locating the LSE with the BSB has allowed the support operations section to rapidly collaborate with the LSE chief on any support issue and resolve it face-to-face.

Insight/Lesson Learned:

- Collocating logistic managers has been a force multiplier. This concept should be extended to all maintenance managers if the support operations staff is not managing all aspects of the maintenance for the brigade.

DOTMLPF Implication/Recommendation:

- Collocate logistic managers and support operations staff, if staff is not directly managing all aspects of maintenance for the brigade, to optimize the management of logistics for the commander. (Organization)

Chapter 4: Stryker Vehicle Performance and Survivability

Chapter Overview

Slat Armor (Topics A-G): Stryker crews report slat armor successfully defeats the high explosive anti-tank (HEAT) rocket propelled grenade (RPG) round. The anti-personnel (AP) RPG and the anti-tank (AT) RPG round was not defeated by slat armor. Shrapnel from the round passes through the slats hitting exposed personnel. The AT APG round may not be directly hitting the slat armor. Slat armor significantly increases the circumference, weight, and performance of the Stryker vehicle. It caused multiple problems associated with safety and the operation of the vehicle. Minor modifications are needed to improve escape hatch and winch access. The additional weight of slat armor (5,000 lbs) significantly affects the operational capability of the Central Tire Inflation System (CTIS). The CTIS is designed to maintain an 80 psi; however, with slat armor, tire pressure must be maintained at 95 psi. This requires Soldiers to disable the CTIS and maintain the pressure manually. Tire pressures will vary from 75 to 105 psi with changing temperatures and operations. Crews are checking tire pressure more than three times daily to maintain 95 psi. The program manager (PM) for Stryker is aware of the CTIS issue. Brigade was fielded one set of slat armor per company prior to deployment. Installation of the majority of slat armor was completed in Kuwait, prior to moving to Iraq. Slat armor should be installed prior to deployment. Crews can then be trained to reduce accidents; the transportation system can adapt to the armor configuration.

Systems (Topics H-Q): The Vehicle Commander Heads-up Display (NOMAD) is not being used because of design and functionality issues. Improvements to the driver vision enhancer (DVE) are required to address sensor positioning, the image intensifier mode, screen size/location/mounting, and the DVE external adjustment. The Force XXI Battle Command, Brigade, and Below (FBCB2) computer should be upgraded to increase speed and performance. The digital systems tend to overheat in a desert environment. The squad leader's FBCB2 display is too slow to maintain adequate situational awareness at the same rate as the vehicle commander. Therefore, the squad leader relies on the commander's display. The vehicle commander also requires increased freedom of movement to operate the FBCB2, and conduct security requirements from the hatch in an urban environment. Smaller moveable screens would greatly enhance situational awareness. The smaller screens should display FBCB2 map information. A remote operation devise is needed to control vehichle commander FBCB2 functions.

The remote weapon station(RWS) was effective as an area suppression weapon when the vehicle was not moving; however, technical and functional changes to the RWS (including weapon system stabilization, site, scopes, sensors, and zoom capability, laser designation, slewing speed, and grenade launcher placement) need to be addressed. RWS modifications are programmed for Stryker Block II upgrades and should be fielded to SBCT's 5 & 6 while providing retrofits to SBCT's 1 through 4. There were no gunnery standard tables developed for the Stryker weapon system. Standard gunnery ranges are not available in Iraq making it difficult for squad leaders and platoon sergeants to identify and validate trained crews. Crews have adopted the concept of

fighting in pairs. The first vehicle engages the target, while the second vehicle spots and adjusts the fire.

Maintenance and Equipment Shortfalls (Topics R-W): Brigade was receiving Stryker full-up power packs (FUPP) that were non-mission capable (NMC). The single ply sidewall/four-ply soft tread Stryker tires supplied to the brigade were not designed for hard-surfaced roads. As a result, approximately nine tires were replaced each day. The stryker reconnaissance vehicle (RV) variant was not an adequate replacement for the Infantry Carrier Vehicle (ICV). The squad leader's position and the size of the vehicle commander's cupola is less than optimum. Various equipment issues (inadequate fuel pump, J-box location, and passenger compartment speaker location) need to be addressed.

Driver Training and Safety Topics X-Z): It was difficult to conduct driver and sustainment training in theater. Few secure areas replicate conditions Stryker drivers must operate in during stability and support operations. All passenger's are required to use seat belts while traveling in a Stryker vehicle; however, body armor and other gear make it difficult to access seatbelts, or to close and latch the fastener located at the hip once seated in the vehicle. One company was using a center belt release device, which appeared to address this design shortfall.

Observations, Discussions, Insights/Lessons Learned and

DOTMLPF Implications/Recommendations

Topic A: Slat Armor Performance

(ART 5.3.1.1 Protect Individuals and Systems Indicators)

Observation: The majority of attacks faced from RPG systems can be defeated. Slat armor performance; however, is less then expected against certain types of Rocket Propelled Grenades (RPG).

Discussion: Soldiers were briefed that slat armor would protect them against eight out of eleven strikes from rocket propelled grenade (RPG) attacks. In the field, Soldiers say the slat armor is effective against half of the RPG attacks. Three types of RPG attacks have been encountered: anti-personnel (AP); high explosive anti-tank (HEAT); and anti-tank (AT). The AP RPG attacks were not reduced by slat armor. Rocket shrapnel is dangerous to the exposed Stryker vehicle commander (VC) and air guards, regardless of where it hits the vehicle or the slat armor. HEAT RPG attacks can be successfully defeated if the rocket hits between the slats, because the slat armor affects the shaped charge and prevents it from working properly. AT RPG attacks are not be defeated, in most cases, because the round is not affected by the slat armor. In one case, a Stryker VC was struck by the AT round after it went through the slat armor, Stryker vehicle armor, Kevlar lining, and the Soldier's body armor lodging in the Soldier's chest. In another mission, a Stryker vehicle with slat armor was attacked and hit with nine RPGs. The locations of the hits on the vehicle were sporadic. The crew escaped with minor injuries. The vehicle moved under its own power to the nearest operating base for assessment and repair. The RPG attacks were thought to be AP RPG. The crew escaped injuries because of their personal body armor and reduced exposure.

Insights/Lessons Learned:

- Rocket propelled grenades are used in conjunction with IED and small arms during ambush attacks.
- Slat armor is successful in about half of the (HEAT Rocket Propelled Grenade attacks.
- Slat armor is not successful in defeating most of the AP RPG attacks; however, Soldier body armor and minimal exposure outside the vehicle has been effective in preventing many significant injuries.
- Slat armor is not effective against AT RPG attacks.

DOTMLPF Implication/Recommendation:

- Continue to install slat armor on all Stryker vehicle variants. (Materiel)

Topic B: Stryker Vehicle Slat Armor

(ART 5.3.1.1 Protect Individuals and Systems)

Observation: Stryker slat armor causes multiple problems for safe and effective ease operation of the vehicle.

Discussion: A number of design and safety issues have been identified with slat installed on the Stryker vehicle. Fuel can spouts and tow bars are not long enough to fit past the slat armor. This presents a safety hazard to Soldiers. Lowering the rear troop ramp causes a loud noise reducing stealth operation effectiveness. The installation a rubber stopper could possible address this noise issue.

Slat armor did not significantly affect Stryker handling, on or off road, during the dry season; however, the additional weight significantly affects the handling and performance during the rainy season. Mud appeared to cause strain on the engine, the drive shaft, and differentials. During a mission in Tall Afar, one Stryker had two drive shafts and a differential broken while trying to maneuver in the mud. The bolts on the rear ramp of the slat armor tend to break off frequently with the normal use of raising and lowering the rear troop ramp. Slat armor bends with continued operation. During accidents and rollover incidents, covering vehicle escape hatches and can block the rear troop door in the ramp. Slat armor placement in the front of the vehicle causes heat glare on the driver vision enhancer (DVE). The sensor for the DVE is directly behind the slat armor, in the front, and does not provide the driver a clear visual picture resulting in a possible safety hazard. The slat armor on the Stryker vehicle is difficult for civilian drivers to see at night and can cause accidents in civilian traffic. Reflectors mounted on the slat armor were used to address this issue.

Insights/Lessons Learned:

- The fuel spouts are not long enough with slat armor installed.
- The tow bars are not long enough to clear the slat armor and present hazard to Soldiers trying to hold the tow bar and install it.
- The ramp makes loud noise when let down causing a significant noise signature (suggest use of rubber stopper).
- Slat armor works great on roads and during the dry season; however a significant maneuver and maintenance issue operating off-road in the rainy season. Mud causes strain on engine, drive shafts, and differentials.
- Bolts on the rear ramp slat armor break off and the slat armor bends and could block troop door. Accidents and rollover incidents cause armor to bend and cover vehicle escape hatches.
- Slat armor reflects heat and lights which interferers with the driver vision, need an elevation or modification kit and place the sensor on the same side as the driver.
- Stryker vehicle slat armor on the rear ramp bends and shears the bolts during normal use of the ramp.
- Other vehicle operators cannot see the slat armor at night; reflectors needed on slat armor.

DOTMLPF Implication/Recommendation: none

Topic C: Rear Ramp and Slat Armor

(ART 5.3.1.1 Protect Individuals and Systems Indicators)

Observation: The slat armor can cause difficulties in closing the rear ramp.

Discussion: The slat armor is attached to the rear ramp that allows the ramp to open and close with the slat armor section attached. Manufacture or installation imperfections result in friction between the fixed-in-place slat armor and the slat armor attached to the ramp. Crew members must occasionally assist the lifting mechanism to move the ramp to the closed position. There were no follow-up inspections by the contractor to inspect the slat armor after delivery and installation.

Insights/Lessons Learned:

- Operators should correct improperly installed slat armor ramp sections at the time of installation.
- The contractor is responsible to deliver a defect free product.

DOTMLPF Implications/Recommendations:

- Contractors should develop quality assurance procedures to ensure that slat armor defects are corrected. (Materiel)
- Contractors should make follow-up inspections to correct problems that develop over time. (Materiel)

Topic D: The Additional Weight of Slat Armor

(ART 5.3.1.1 Protect Individuals and Systems Indicators)

Observation: The additional 5,000 lbs of slat armor creates some problems for vehicle crew and operators.

Discussion: The additional weight of the slat armor was not accounted for in the design of the central tire inflation system (CTIS). Operators must frequently check the tire pressure is maintained at 95 psi throughout the day. The vehicle encounters soil-bearing difficulties. It is frequently mired when operating off of improved roads. The additional weight of the slat armor greatly reduces the initial speed, but does not affect the braking characteristics of the vehicle. Slat armor attached to the rear ramp places a weight exceeding the normal capacity of the lifting equipment, that raises and lowers the ramp. The lifting equipment (ramp lift diaphragm) becomes inoperable over time. When the rear ramp is dropped on an improved road surface, the

slat armor causes a loud clanging sound that is counter-productive during operations when noise discipline is required. The slat armor attached at the rear of the vehicle interferes with the use of refuel cans fitted with the standard hose extension. A longer hose works. The slat armor attached to the driver side escape hatch makes the hatch extremely difficult to lift when the vehicle is in an inverted position following a rollover. Slat armor attached to the escape hatch hits the tires prior to the hatch being fully open. The slat armor section, attached at the front of the vehicle, swings open to permit winch operations. The swing gate cannot be secured to prevent the gate to close and hit either a crew member standing at the winch payout point, or the cable. The slat armor attached to the front of the vehicle causes a glare from the front light cluster because the slat armor extends vertically above the level of the lights. The slat armor prohibits the normal use of the exterior side storage racks. This is a burden to the crew when the crew is self-transporting all issued individual equipment. Operators believe that the tires are too narrow and that the problem can be solved by installing wider tires at the time slat armor is installed. When using the front winch to recover the vehicle, the operators use single straps to secure the front slat armor section in an open position.

Insights/Lessons Learned:

- The CTIS is unable to operate as intended, denying the operator the ability to adjust the tire pressure based on the terrain.
- Leaders and Soldiers should be aware of the auditory signature created by dropping the rear ramp with slat armor attached.
- The ramp lift diaphragm requires more frequent maintenance checks and services that specified in the TM.
- The escape hatch will open with slat armor attached, but crews must be aware of the additional effort required to lift the hatch when the vehicle is inverted.
- Units have installed ‘home-made’ brackets to raise the vertical position of the forward light cluster above the top of the slat armor. Engineer units have developed a bracket mount extension that can be ordered through the normal supply system.
- Units have installed a plywood ‘shelf’ on the top of the side slat armor sections to create storage space for individual equipment.
- Off-road capabilities are reduced when slat armor is attached.
- The front slat armor section should be secured in the open position during winching operations.

DOTMLPF Implications/Recommendations:

- Re-engineer the ramp lift diaphragm to increase the lifting capacity and service life. (Materiel)
- Attach a foam or rubber fitting to the rear ramp slat armor to prevent the auditory signature created by dropping the rear ramp with slat armor attached. (Materiel)
- Design a dependable storage area located on top of the side slat armor. (Materiel)
- Re-engineer the CTIS to operate normally with slat armor attached. (Materiel)
- Consider installing wider tires at the time of slat armor installation. (Materiel)

Topic E: Receiving and Installing Slat Armor

(ART 5.3.1.1 Protect Individuals and Systems)

Observation: The brigade was fielded one set of slat armor per company prior to deployment. Installation of majority of slat armor was completed in Kuwait, prior to the onward movement of the unit to Iraq.

Discussion: When the brigade arrived in theater, the remainder of the slat armor was received and installed. Receiving the armor in country greatly improves the transportation of the brigade to theater, but adversely affects the training of the crews in the different handling capabilities of the Stryker with slat armor. The receiving unit provided a work detail of two Soldiers per vehicle to install slat armor sections with contractor support. Contractors provided all material and special tools. Depending on the manpower provided, estimates of work completion range was two days per vehicle, about forty vehicles per day. Information provided to Stryker crews was indicated the slat armor was intended to defeat rocket-propelled grenades. Typically, no information was provided regarding number of hits prior to failure of the system, vehicle handling changes, changes in recovery methods, or changes in the Central Tire Inflation System (CTIS) operation. CTIS information was later provided by the brigade safety officer.

Insights/Lessons Learned:

- The installation of slat armor, prior to deployment, could adversely affect the transportation of the Stryker vehicles; however, the training of the crews would be maximized.
- Crews should receive information concerning slat armor performance expectations, vehicle handling changes, and maintenance/operational changes/requirements prior to deployment.

DOTMLPF Implication/Recommendation:

- Install slat armor prior to deployment. Crews can be trained to minimize accidents and the transportation system can adapt to the additional weight and size requirements of the armor configuration. (Materiel)
- Provide an unclassified fact sheet should be provided to the crews during the installation of slat armor. (Materiel)

Topic F: Stryker Armor Improvements

(ART 5.3.1.1 Protect Individuals and Systems Indicators)

Observation: The Stryker hatches are not protected adequately.

Discussion: Units have modified the Stryker to add protection for the rear and gunner's hatches. Soldiers are exposed to fire and shrapnel when they are using the hatches, therefore, some units have built a wooden platform over the ramp to hold sand bags and protect the rear hatch. This wooden box has stopped numerous shrapnel pieces, one of which would have clearly injured a platoon leader had the added protection not been there. Units have also added ammunition cans filled with sand around the gunners hatch. Before ammunition cans were added as protection, one unit had two gunners hit with shrapnel exploding upward. Units are concerned with the exposure of the rear hatches to RPG fire and recommend slat armor be raised higher on the rear of the vehicle. Soldiers using the rear hatch for observation and fighting stand on the bench seats. Tall Soldiers are exposed to fire from the waist-up in some situations. Units have recommend addition of adjustable platforms to stand on.

Insights/Lessons Learned:

- The rear hatches are over exposed to fire and need additional armor/protection.
- A modification to the rear of the vehicle needs to be made to hold a 2x2 configuration of sand bags.
- An armored ring needs to be installed around the gunner's hatch to protect from upward flying shrapnel.
- Height adjustable platforms need to be installed for the rear hatches to limit exposure of the Soldiers.

DOTMLPF Implications/Recommendations:

- The Stryker vehicle should be modified to include a standard rear box that will hold 2x2 sandbags across the rear of the vehicle. (Materiel)
- The gunner's hatch should be modified to provide an armored ring to protect the gunner from upward exploding shrapnel. (Materiel)
- Adjustable platforms should be added under the rear hatches. (Materiel)

Topic G: Central Tire Inflation System (CTIS)

(ART 5.3.1.1 Protect Individuals and Systems Indicators)

Observation: The additional weight from the slat armor renders the Central Tire Inflation System (CTIS) unable to operate as intended.

Discussion: Slat armor weight added to the Stryker vehicle causes significant tire wear and eliminates the use of the CTIS. Soldiers must turn-off the CTIS and manually inflate the tires to get the proper psi. The tire pressure should be adjusted based on the terrain and road conditions. The CTIS is rated to 87 psi and the tires need a 95 psi tire pressure to work effectively during short missions. During extended vehicle movements, greater than 100 miles, tire pressure was reduced to 85 psi to account for the heat and increased pressure the tires experience during the movement. Operators report that the tire pressure varies from as low as 75 psi to 110 psi prior to

adjustment by the operator. Soldiers continue to check tire pressure for before, during, and after operation Preventive Maintenance Checks and Services (PMCS).

Insights/Lesson Learned:

- The Central Tire Inflation System (CTIS) is not operational with the Stryker vehicle slat armor.
- Not only will the CTIS only inflate the tires to 80 psi, but they will lower a higher pressure back to 80 psi.
- Operators and their supervisors must check the tire pressure frequently throughout the day.

DOTMLPF Implications/Recommendations:

- CTIS must be modified to accommodate a range of pressure setting up to the maximum needed for the heaviest variant. (Materiel)
- Operators and supervisors should continue to check tire pressure prior to and immediately following missions and at least three times daily. (Training)

Topic H: Vehicle Commander's Heads-up Display (NOMAD)

(ART 5.3.1.1 Protect Individuals and Systems Indicators)

Observation: Vehicle Commander's Heads-up Display (NOMAD) was not being used in theater.

Discussion: The vehicle commander heads-up display (NOMAD) permits the squad leader to view other displays, such as DVE or FBCB2. The brigade was issued 100 NOMAD sets for squad leaders; however, because of design problems, the heads-up display was not being used in theater. NOMAD sets were issued one per platoon. The helmet bracket breakaway pressure was too high and could cause neck injury if it gets caught on something and doesn't pull off. The NOMAD was too large and difficult to use inside the vehicle, especially when getting out for security and then coming in the vehicle to toggle the functions of the FBCB2. The NOMAD was not that useful in an urban environment since the display caused a blind spot, to the vehicle commander's vision, while trying to pull local security. The NOMAD does work well for long movements when local security and moving in and out of the vehicle is not required as often. Overall, the NOMAD should be smaller and wireless, and a toggle remote to control the FBCB2, see the driver's view, and see the gunner's view without moving in and out of the vehicle.

Insights/Lessons Learned:

- The NOMAD system is neither functionally nor ergonomically adequate as fielded and was not being used because they are difficult to wear and use.
- Helmet bracket breakaway pressure was too high and could cause neck injury.
- NOMAD interferes with the squad leader's ability manage tactical information at the squad level and is difficult to use inside the vehicle.

- It was not good in urban environment. The display projection is too small, is distracting for the squad leader to simultaneously scan his surroundings, and causes a blind spot for the vehicle commander.
- It seems to work well; however, for long convoy movements.
- Should be smaller and wireless, and toggle remote to see the driver view and gunner view and control the FBCB2

DOTMLPF Implication/Recommendation:

- Re-design the NOMAD system to accommodate the squad leader's personal comfort and information requirements. (Materiel)
- Re-engineer the NOMAD system to provide platoon level information. (Materiel)
- Re-engineer the NOMAD system to be wireless. (Materiel)

Topic I: Stryker vehicle Driver Vision Enhancer (DVE)

(ART 5.3.1.1 Protect Individuals and Systems Indicators)

Observation: DVE improvements are required for the sensor positioning, image intensifier mode, screen, size/location/mounting, and DVE external adjustment.

Discussion: The sensor for the DVE is mounted in the center of the vehicle while drivers sit on the left. This "centered" view requires time for the driver to adjust to the picture making it difficult to drive and to train new drivers. The DVE is reported to operate at an acceptable level in a thermal setting; however, the site should have an image intensifier infrared mode. When it rains the temperature of the surrounding environment is level. This impedes the thermal sight and the driver cannot discern the road and other vehicles. The DVE system was upgraded during the course of installing slat armor, but operators report the earlier DVE system is superior in terms of projecting depth perception. The screen for the driver is too small and poorly located behind the driver's steering wheel. This makes sharp turns difficult. The DVE screen is occasionally obscured by portions of the steering wheel when the steering wheel is in a certain position. The DVE sensor is mounted on the outside of the Stryker requiring Soldiers to change elevation and direction manually, from the outside of the vehicle resulting in adjustment time consumption and other difficulties if the site is moved during operation.

Insights/Lessons Learned:

- The DVE sensor is in the center of the vehicle and makes it hard to drive; more difficult to train new drivers.
- The DVE should have an image intensifier mode to enhance the driver's ability to see with thermals when the temperature of the surrounding environment is level (high humidity or rainy conditions).
- Screen size, location and mounting bracket interfere with driver steering wheel

- DVE can't be adjusted from the inside, have to change elevation and direction manually form outside the vehicle

DOTMLPF Implication/Recommendation:

- Improve DVE sensor positioning, the image intensifier mode, screen size/location/mounting, and DVE external adjustment (Materiel)

Topic J: FBCB2

(ART 7.2 Manage Tactical Information)

Observation: The FBCB2 computer should be upgraded.

Discussion: The computer processor speed in Force XXI battle command brigade and below is too slow, especially when large units are moving at high speeds simultaneously causing the FBCB2 to often lock up. The overhead photos used in the FBCB2 are from old data and need to be updated. The functions and controls on the FBCB2 are difficult to use to produce planning products and refined graphics especially with names to label objectives and routes. The digital systems in the Stryker vehicle overheat often in the desert environment. Air conditioners are required to address this issue.

Insights/Lessons Learned:

- Computer in FBCB2 too slow, locks up, overhead pictures are from old data
- Difficult to produce planning products and refined graphics with names on FBCB2
- Digital systems overheat in this environment; vehicle air conditioners are needed.

DOTMLPF Implications/Recommendations:

- The FBCB2 should be upgraded to increase processor speed and performance. (Materiel)
- Air conditioners should be added, to the Stryker vehicles, to prevent electronic overheating problems. (Materiel)

Topic K: FBCB2 Squad Leader Display

(ART 7.2 Manage Tactical Information)

Observation: The squad leader uses the vehicle commander's display, to access FBCB2 information, because of the slow speed of the squad leader's, display for FBCB2.

Discussion: The squad leader can access FBCB2 on the squad leader display; however, the processing speed is significantly slower than the vehicle commander's FBCB2. In addition, he

must use his finger to operate the squad leader touch screen display. The squad leader cannot maintain situational awareness at the same rate as the vehicle commander and therefore often abandons using the squad leader display for FBCB2.

Insight/Lesson Learned:

- The squad leader using the squad leader display for FBCB2 is unable to maintain up-to-the-second situational awareness because of the slow processor speed.
- Hardware changes to the squad leader display would greatly enhance the squad leader's ability to maintain timely situational awareness.

DOTMLPF Implication/Recommendation:

- Upgrade processing speed of the squad leader FBCB2 display to enhance the squad leader's ability to maintain timely situational awareness. (Materiel)
- Modify the squad leader's FBCB2 touch screen display to respond to both finger and stylus inputs.

Topic L: Stryker Crew Situational Awareness (SA)

(ART 7.2 Manage Tactical Information)

Observation: FBCB2 screen upgrades are required to enhance crew situational awareness.

Discussion: The FBCB2 system could greatly enhance crew situational awareness if the driver and gunner had additional smaller moveable screens that display the FBCB2 map information and the Vehicle commander had a wireless remote operation device to control the FBCB2 functions.

Insight/Lesson Learned:

- Vehicle commanders cannot operate the FBCB2 and pull security from their hatches in an urban environment.

DOTMLPF Implication/Recommendation:

- Provide a smaller moveable screen that displays FBCB2 info and a remote operation device for the driver and gunner. (Materiel)

Topic M: Stabilization of Remote Weapon Station(RWS)

(ART 8.5.27 Suppress a Force/Weapon System)

Observation: Technical functional changes would improve the effectiveness of the RWS.

Discussion: Vehicle commanders find that the RWS control stick is not as ergonomic as the Bradley Infantry Fighting Vehicle (IFV) control stick for controlling the weapon. The lack of stabilization of the weapon and sight makes the RWS ineffective when the vehicle is moving. When shooting on the move, the sight zoom is most effective when set to the 'full out' (lowest magnification) setting.

Insights/Lessons Learned:

- The RWS is effective, as an area suppression weapon, when the vehicle is not moving.

DOTMLPF Implications/DOTMLPF Implication/Recommendation:

- Ergonomically redesign the control stick to incorporate features from the Bradley IFV. (Materiel)
- Improve the stabilization of the RWS. (Materiel)

Topic N: Remote Weapon Station (RWS) During Night Operations

(ART 8.5.27 Suppress a Force/Weapon System)

Observation: Remote Weapon Station (RWS) can be effective during nighttime operations.

Discussion: The Stryker Remote Weapon Station(RWS) has only a thermal mode for night operations. In general, the quality is comparable to the Bradley IFV, but lacks the ability to zoom magnification to discriminate targets out to the max range of the weapon system. When combined with the lack of stabilization, the gunner is required to "rough aim" the weapon. Accurate fire using the thermal sensors during nighttime operations is not possible. An Image Intensifier infra-red (IR) mode would allow visual communication between the Vehicle Commander (VC) and gunner by using Ground Commander Pointers (GCP) and infra-red flashes from night vision devices that the squads use. In addition, with an infra-red capable site squads could paint targets with Priority Egress Queuing (PEQ-2) or use of a regular and infrared (IR) flood lights could help in identifying targets in an urban environment.

Insight/Lesson Learned:

- The RWS is marginally effective during nighttime operations.
- The RWS site is thermal only, an image intensifier infrared mode should be added that. The gunner could paint targets with PEQ-2 or regular/IR flood light if RWS had an IR mode.
- The RWS has an inadequate zoom.

DOTMLPF Implication/Recommendation:

- Modify the RWS to include an IR mode.
- Improve the RWS zoom magnification capability. (Materiel)

Topic O: Remote Weapon Station (RWS) Performance

(ART 8.5.27 Suppress a Force/Weapon System)

Observation: Modifications are needed to improve the performance of the Remote Weapon Station (RWS).

Discussion: The vehicle commander is unable to detect color observations with a black and white screen. It is difficult in urban environments to communicate colors of vehicles and possible targets without color. A typical warning is to watch for a certain color automobile. The lack of stabilization prevents the vehicle commander from tracking and engaging targets while on the move. Vehicle commanders must maintain the weapon in the direction of the greatest potential threat. The weapon turret slews too slowly. It takes 15 seconds for the turret to slew 360 degrees. This is too slow to rapidly and accurate engage targets. The turret bolts vibrate loose and require frequent tightening. If not tightened, the turret will not slew smoothly. M6 grenade launchers located on the weapons cluster are poorly located. When the cluster is directed between the eight O'clock and twelve O'clock position, the left side grenade launchers are directed at the squad leader creating a hazard.

Insights/Lessons Learned:

- Need full color day sight to ease target identification in urban environment.
- The lack of stabilization prevents the vehicle commander from tracking and engaging targets while on the move.
- The slow slewing action prevents the vehicle commander from actively scanning other areas.
- Some units removed the left side grenade launchers to mitigate the safety hazard to the squad leader.

DOTMLPF Implications/DOTMLPF Implication/Recommendation:

- Provide color displays (day scope) for the vehicle commander. (Materiel)
- Re-engineer the mechanical slew assist to rotate the turret more rapidly. (Materiel)
- Improve the weapon stabilization. (Materiel)

Topic P: Day Scope Function of the Remote Weapon Station (RWS)

(ART 8.5.27 Suppress a Force/Weapon System)

Observation: Under partial illumination, the day scope of the Remote Weapon Station (RWS) sometimes functions better than the thermal sensors.

Discussion: During conditions of partial illumination, vehicle commanders frequently switch back and forth between thermal sensors and day scopes. The day scopes are preferred when possible because of the ability to zoom magnification. Thermal sensors do not have zoom magnification.

Insight/Lesson Learned:

- Vehicle gunners become accustomed to switching between day scopes and thermal sensors.

DOTMLPF Implication/Recommendation:

- Train vehicle commanders to toggle quickly between day scope and thermal sensors during partial illumination conditions often found in urban environments. (Training)

Topic Q: Stryker Gunnery Standards

(ART 8.5.27 Suppress a Force/Weapon System)

Observation: The gunnery standards manual for the weapon system in Stryker vehicles is out for comment and review, but has not been published.

Discussion: Currently, no gunnery standard tables have been developed for the Remote Weapon Station(RWS). There are no qualification standards or a Gunnery Skills Test (GST) equivalent like other vehicle weapon systems in the Army. Crews bore sight at 900m and engage other stationary targets at various ranges from a stationary position. There is no established qualification table. Training did not include shooting on the move. Crews have adopted the concept of fighting in pairs of vehicles. The first vehicle engages the target while the second vehicle “spots” the rounds and assists the firing vehicle to adjust fire. Communication is via FM mode. Available reticules can be used to develop a “feel” for range to targets; the lack of a laser range finder makes initial rounds more inaccurate.

Insights/Lessons learned:

- No Gunnery tables developed
- No qualification or GST equivalent.
- Fighting in pairs of vehicles works.

- It is difficult for squad leaders and platoon sergeants to identify trained and qualified crews.
- Standard ranges are not available in Iraq.

DOTMLPF Implications/DOTMLPF Implication/Recommendation:

- Develop field expedient qualification tables to identify qualified vehicle commanders. (Leadership and Education)
- Publish the gunnery manual as soon as possible. (Doctrine)
- Conduct orientation ranges for shooting on the move. (Training)

Topic R: Full-Up Power Pack (FUPP) Replacement

(ART 6.2 Provide Maintenance)

Observation: The brigade has been receiving Stryker Full-Up Power Pack (FUPP) that is non-mission capable (NMC) out of the box. A close second maintenance issue is tires.

Discussion: It takes approximately 4 hours to change a FUPP for a Stryker; however, in some cases, after the change out is complete FUPP is not operational. The quality assurance (QA)/ quality control (QC) for the repair depot is greatly lacking. Many quality discrepancy reports (QDR) have been submitted; however, the maintenance personnel state that the problem is getting worse, not better. In addition, the tires, that the brigade is getting, are single-ply sidewalls with four-ply soft tread. These tires are made for off road use. The vehicles are primary running on the road, which has resulted in the brigade replacing approximately nine tires a day.

Insights/Lessons Learned:

- QA and QC for FUPP coming from the depot are lacking.
- A hardier, higher speed-rated tire is needed for this environment.

DOTMLPF Implication/Recommendation:

- Review the QA and QC procedures/processes, for repair parts. (Materiel)
- Obtain a hard surface/higher speed-rated tire for this operating environment. (Materiel)

Topic S: Stryker Recovery and Transportation Requirements

(ART 6.2 Provide Maintenance)

Observation: Slat armor effects recovery and transportation.

Discussion: The heavy expanded mobility tactical truck (HEMTT) wrecker boom is not capable of recovering a Stryker that has rolled off its wheels. The boom needs to be capable of lifting 25 tons. The wrecker also needs a hydraulic spade to assist in digging out a Stryker vehicle that is stuck in deep mud. The Stryker cannot be loaded on a C130 with the slat armor applied.

Insight/Lesson Learned:

- The HEMTT wrecker's boom is not designed adequately to recover a slat equipped Stryker and does not have the capability to dig out Stryker vehicles mired in mud.

DOTMLPF Implication/Recommendation:

- Improve HEMTT wrecker with a boom rated for 25 tons and a hydraulic spade to assist in digging out Stryker vehicles mired in deep mud. (Materiel)

Topic T: Stryker Reconnaissance Vehicle (RV) Design Shortfalls

(ART 6.2.3 Diagnose Equipment Faults)

Observation: The Stryker recon vehicle is poorly designed for stability operations and support operations in Iraq.

Discussion: The location of the squad leader in the Stryker reconnaissance vehicle (RV) is in the rear air guard position. The squad leader should sit/stand further forward to better control the movement of the vehicle. The vehicle commander does not have a remote weapon station and must stand. The step provided for the vehicle commander is the seat and the vehicle commander is much higher than "name tape" defilade. By not standing on the seat the vehicle commander stands too low and cannot operate the main weapon system. The vehicle commander's cupola is too small for the average Soldier to fit through while wearing body armor with armor plates.

Insight/Lesson Learned:

- Stryker recon vehicles are not adequate replacements for the Stryker ICV in Stability and Support Operations.

DOTMLPF Implication/Recommendation:

- Install an adjustable step or stand for the vehicle commander and ballistic shields for the vehicle commander cupola. (Materiel)

Topic U: Fuel Pump Performance

(ART 6.2.3 Diagnose Equipment Faults)

Observation: The Stryker fuel pump is inadequate.

Discussion: The Stryker vehicle has a left and right fuel tank system. Fuel pumps are designed to cross-level the two fuel tanks. The fuel gage reads only the left fuel tank and is supposed to indicate the total fuel available in both tanks. The fuel pump that cross-levels the fuel to maintain equal levels in both tanks is inadequate and does not maintain both fuel tanks at the same level. The vehicle operator is confused about the true fuel level status of his vehicle.

Insight/Lesson Learned:

- Operators must frequently 'top off' their vehicle and maintain a log of fuel added in comparison with the fuel gage reading. This helps the operator develop a better feel for the true fuel status based on the fuel gage reading.

DOTMLPF Implication/Recommendation:

- Re-design and replace the fuel pumps to provide fuel tank cross leveling as intended by design. (Materiel)

Topic V: Stryker Vehicle J-box Location

(ART 6.2.3 Diagnose Equipment Faults)

Observation: The J-box at the vehicle commander's position needs to be relocated.

Discussion: The J-box is located at the base of the vehicle commander's seat post. This is adequate for accessibility for the Infantry Carrier Vehicle (ICV) variant, but is poorly located for the Reconnaissance Vehicle (RV). The RV crew members can better access the J-box if it is located at the top of the seat post near the ceiling of the compartment.

Lesson Learned:

- The J-box is poorly located.

DOTMLPF Implication/Recommendation:

- Relocate the J-box located by the vehicle commander position to the top of the seat post near the ceiling on Stryker reconnaissance vehicles. (Materiel)

Topic W: Stryker Passenger Compartment Speaker Location

(ART 6.2.3 Diagnose Equipment Faults)

Observation: The Stryker passenger compartment speakers are inadequate.

Discussion: Two speakers are installed at the back of the passenger/crew compartment. These speakers are intended to improve the squad's situational awareness by allowing the squad to listen to communications between the crew members and communications on the FM radio. Despite the relatively low noise from the vehicle, the speakers are inadequately powered to broadcast to the passenger squad.

Insight/Lesson Learned:

- At least one passenger can eavesdrop on communications via a Combat Vehicle Crewman (CVC) helmet located in the rear compartment.

DOTMLPF Implication/Recommendation:

- Replace the speakers system with speakers that are more powerful so the entire squad can listen to communications without the use of a CVC helmet. (Materiel)

Topic X: New Soldiers Assigned as Vehicle Drivers

(ART 5.3.1.1 Protect Individuals and Systems Indicators)

Observation: New Soldiers arriving in Iraq are being assigned as vehicle operators. They require training to become licensed.

Discussion: The unit deployed with up to three licensed drivers per vehicle and established a master driver-training program to train new arrivals. New drivers are given the basic instruction on operating and maintaining the vehicle through videotapes and manuals. Actual driving experience is obtained through on-the-job training during real world patrol or convoy missions. Training and Doctrine Command (TRADOC) schools do not conduct Stryker drivers training courses, so virtually all driving skills are developed in Iraq during regular operations.

Insights/Lessons Learned:

- Units must account for the availability of drivers at all times, especially during rest and relaxation rotations which peak at mid-tour.
- Units should have drivers training programs at the company level. When possible, practical exercises should take place within the confines of the Forward Operating Base.

DOTMLPF Implications/Recommendations:

- Conduct driver training with new drivers at the unit's home station prior to the individual's deployment. (Training)
- Conduct driver training and licensing immediately following AIT for Soldiers designated to report to Stryker Brigades. (Training)

Topic Y: Stryker Driver Training and Sustainment

(ART 5.3.1.1 Protect Individuals and Systems Indicators)

Observation: It is difficult to conduct Stryker driver training and sustainment in AOR.

Discussion: There are few secure areas that replicate the conditions drivers must operate the Stryker vehicle in during operations. Therefore, it is difficult to conduct adequate driver training in theater except on operations.

Insights/Lessons Learned:

- Difficult to conduct driver training in theater.
- An Army level driver school, for Soldiers going to Stryker units, is required to Soldiers arrive to the unit already trained for Stryker units.

DOTMLPF Implication/Recommendation:

- Conduct an Army sponsored driver school prior to deployment. (Training)

Topic Z: Use of Passenger Seat belts in Stryker Vehicles

(ART 5.3.1.1 Protect Individuals and Systems Indicators)

Observation: Brigade policy requires the use of seat belts by all passengers while traveling on Stryker vehicles. Two Stryker vehicle rollovers resulted in the deaths of three Soldiers. Neither the policy nor the rollover deaths resulted in any change in seat belt usage.

Discussion: The primary reason given for failure to use the seatbelt is the difficulty in closing the latch or fastener, which is located at the hip of the passenger. Passengers wearing body armor and other gear are unable to maneuver the body in the seat to access the belts once seated. One company in the brigade received and installed center release seat belts resulting in greater usage.

Insight/Lesson Learned:

- Center release seat belts are convenient to use and encourage greater use by passengers.

DOTMLPF Implication/Recommendation:

- Request and install center release seat belts in all Stryker vehicles. (Materiel)

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Chapter 5: Intelligence

Chapter Overview

Priority Intelligence Requirements (Topic A): Doctrine should recognize and distinguish the simultaneous existence of short and long-term PIR in a stability and support operation environment. The nature of the commander's Priority Intelligence Requirements (PIR) in stability operations are partially answered. Static PIR and other information requirements for current operations are valid, but have distinctly different information requirements.

Tactical HUMINT Teams (Topics B-G): The brigade's tactical HUMINT teams (THT) were organized to support large AOR tasks. The brigade has five organic THT by MTOE. The size of the AOR caused the brigade to constitute an additional four THT from 97Bs, which are organic in the troops in the reconnaissance, surveillance, and target acquisition (RSTA) squadron. THT personnel were reshuffled across both organic and newly developed teams to form an assorted non-MTOE mix of 97Es and 97Bs within the brigade's THT. Four theater-level THT was assigned in a non-support role to a brigade direct support (DS) role. A four theater-level THT operated within the brigade AOR . Some of the theater-level DS THT assigned to the brigade remained under the control of the brigade through the S2X, while others were assigned in a DS role to subordinate battalions. Each subordinate battalion was generally assigned at least two THT in DS role. THT in a battalion DS role take their collection focus from the battalion task force. THT under DS control at the brigade level takes their collection focus from the S2 via the S2X. Theater-level THT, in a GS role to the brigade, take their collection focus from the theater J2X. THT reports are correlated at theater-level though a theater Web-based portal. This theater Web-based portal is an efficient and effective means of developing a repository for HUMINT information.

Forward operating base (FOB) employee screening operations bring a large percentage of the brigade's human intelligence (HUMINT) assets to light. Brigade augmentation with contracted, national and theater support was needed to support employee screening. Junior 97Bs generally lack the skills to be fully utilized in troop platoons at the RSTA. Opportunities for development and mentor ship are limited at the troop platoon level, because of the tactical employment and mission requirement constrained. Interpreter and linguist support to the brigade was inadequate. Many local interpreters quit because of threats to them or their family from anti-Iraq forces. Keeping interpreters employed and alive was a key issue with the brigade. The number of interpreters available within the brigade made it necessary to move interpreters to various elements across a spectrum of functional disciplines based on mission requirements. The disciplines included: Civil Affairs (CA), intelligence, psychological operations (PSYOPS) and areas of responsibility in order to meet mission requirements. The screening process for linguists is limited. Brigade relied on non-cleared linguists for key positions such as PSYOPS and CA team support. At times collection was limited by the number of linguists available and their clearance levels. Detainee interrogation reporting was decentralized and timely throughout the brigade.

Opposing Force (OPFOR) Training (Topic H): CTC described the unit as well trained , extremely competent, and accurate with their weapons. Overall, the OPFOR was not consistent with threats encountered in Iraq. The Joint Readiness Training Center (JRTC) rotation featured a one-dimensional OPFOR. The signal intelligence (SIGINT) environment was based on a legacy threat. FM communications used only for tactical control. Cell phones are the preferred method of communications in Iraq.

The SIGINT baseline should reflect realistic communications indicating relationships and contacts, not just tactical control information. The OPFOR should replicate insurgent tactics. The OPFOR should be composed of an array of 4-5 insurgent groups with unique motives and influences. The TTP covering how to defeat the OPFOR needs to be re-examined. For example, finding a mortar cache may not result with a decrease in mortar attacks; however, capturing a reconnaissance cell that determines targets and distances, or capturing a cell that trains others in mortar operations, could result in decreased attacks. Units are not given sufficient opportunity to adequately train with non-organic assets such as CA or PSYOP teams, nor is there sufficient time for the THT to develop HUMINT networks in order to provide the actionable intelligence needed in support of search and attack operations. Finally, CTC should replicate the Rules Of Engagement (ROE) within theater, thus forcing the deploying unit to develop other non-lethal and lethal methods to engage the OPFOR.

Note: The brigade's CTC rotation was not a MRE, but a certification exercise (CERTEX) and operational exercise (OE). It was designed to ascertain the operational effectiveness and operational suitability of the SBCT design. As the first SBCT to be fielded, it assessed all aspects and capabilities of the SBCT within the limitations of the Army's training and materiel resources. The Congress mandated OE covered the SBCT National Training Center FTX (Mar-Apr 03), as well as, a deployment exercise (DEPLOYEX) prior to the JRTC CERTEX. Observations and comments are not intended to imply that the JRTC is not conducting non-doctrinal training, engagement training, or cordon and search STX lanes. The initial impression reports (IIR) focus is on observations, insights, lessons learned, TTP, and DOTMLPF implications that can benefit subsequent units, Soldiers, and the overall readiness and training of the Army. Future pre-deployment training should provide additional non-doctrinal training to prepare subordinate elements for the missions they may face in theater. Training should closely replicate the ROE deploying units will probably experience in theater to enhance development of non-lethal and lethal methods to engage the OPFOR. Where units receive additional training is not the issue, even though the CTCs are the best and most realistic venue to address this need.

Intelligence Battlefield Operating System (Topics I-M): Brigade S2 experience and background are keys to IBOS effectiveness. Entry-level all-source analysts (96B10) must possess the analytical skills. Entry-level training should focus more on collection plan development, analyzing raw information and critical thinking. Units should train with reach-back support (national intelligence support team), prior to deployment, and to learn how to fully utilize their support. Patrol debriefs are conducted as AAR and rolled into the unit operations summary (OPSUM). Cultural understanding is an endless endeavor that must leverage whatever assets are available. Cultural training prior to deployment, reach-back capabilities, and a

resourceful and knowledgeable use of assets available in country is the key to overcoming challenges.

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Observations, Discussions, Insights/Lessons learned and DOTMLPF Implications/Recommendations

Topic A: Commander's Priority Intelligence Requirements (PIR) in Stability Operations

(ART 1.3 Conduct Intelligence, Surveillance, and Reconnaissance [ISR])

Observation: The nature of the commander's PIR in stability operations often do not lend themselves to ever being more then partially answered.

Discussion: The nature of the commander's PIR in stability operations do not lend themselves to be more then partially answered. As a result, the brigade's PIR remain outstanding for several months at a time. Standing requirements are developed for tasking of organic assets and for requests to higher from the static PIR list, but the brigade daily collection focus is driven by near term operations, primarily direct action target sets, cordon or raid operations ,and counter-Indirect Fire (IDF) operations. Collection is often shifted to fulfill information requirements for the targeting of facilities or individuals or the exploitation of evidence found at targeted sites. Sometimes these requirements are satisfied through national-level agency support individuals or teams that are attached to the brigade and have reach-back capability with their parent agency. While these requirements often fall under the umbrella of an existing PIR, the breadth and nature of these requirements are not reflected in the brigade's collection plan.

Insights/Lessons Learned:

- The nature of the commander's PIR in stability operations often due not lend themselves to ever being more then partially answered.
- A PIR ability to provide a collection focus in stability operations is limited.
- A unit's collection focus in stability operations is more likely to be derived from the dynamic collection requirements associated with current operations.

DOTMLPF Implication/Recommendation: none

Topic B: Tactical HUMINT Teams (THT) assigned Direct Support (DS) to Battalions

(ART 1.3 Conduct Intelligence, Surveillance, and Reconnaissance [ISR])

Observation: THT assigned DS to battalions conducted decentralized reporting to higher command though theater web-based portal.

Discussion: THT assigned in a DS role at the battalion task force level established reporting procedures through the brigade HUMINT Operations management team (OMT) to the S2X.

Required reports, including contact/source reports, HUMINT Field Information Reports (FIR) and detainee interrogation reports, were forwarded to the S2X via the OMT. Once approved and edited the reports were submitted back to the THT in DS role for correction. The DS team would then input the corrected reports into the theater web-based portal. The theater HUMINT database manager would post the report, assigning a new source code and report number to the brigade report; however, THT submission of reports via the OMT to the S2X was inconsistent. Some THT reported directly into the theater web-based HUMINT database prior to the brigade review process.

Insights/Lessons Learned:

- The theater web based portal is an efficient and effective means of developing a repository for HUMINT information; however, the brigade report review process is necessary for effective quality control and asset management.
- Unless the THT utilize the OMT to submit reports for review through the S2X to the S2, the brigade may have no record of the collection from a particular source.
- When the theater HUMINT database manager receives the brigade's reports, it changes the source code of the source before it posts the report to the portal.
- Without knowledge or oversight of the original report, the brigade's ability to cross reference information from a particular source on the theater-level HUMINT portal in a timely matter is at risk.

DOTMLPF Implications/Recommendations:

- DA develop a DOD web-based portal intelligence databases as an alternative to ABCS intelligence database programs and implement it DOD wide. The database must include a sophisticated auditing method that can track the source despite multiple source codes, while protecting the sources identity. (Materiel)
- Disciplined THT reporting channels are followed in order to facilitate asset management and quality control. (Training)

Topic C: Tactical HUMINT Teams (THT) Used to Conduct Non-Doctrinal Missions

(ART 1.3 Conduct Intelligence, Surveillance, and Reconnaissance [ISR])

Observation: THT are used to conduct non-doctrinal missions and are sometimes employed down to the individual troop level in order to conduct multiple missions simultaneously.

Discussion: THT at the brigade are used to conduct non-doctrinal missions, such as forward operating base (FOB) employee screening, Iraq National Guard (ING) member screening, and document exploitation. While THT also conduct traditional missions, such as source operations, a disproportionate effort is spent conducting FOB employee screening, walk-ins, one-time solicitation operations, and detainee screening at detention holding facilities. A THT augmented with additional personnel is permanently assigned to the brigade detention facility to conduct interrogations. It was headed by an interrogation warrant officer from the brigade S2, Military Intelligence Company (MICO) staff. The variety of missions and decentralized disposition of the

brigade's assets over such a vast AOR, caused the brigade to employ THT as individuals conducting their own missions. In some instances, a team may have two members of a team on a patrol to conduct solicitation operations, one member at the front gate of a FOB to conduct walk-ins; another is at a different location on a FOB conducting employee screening, or on stand-by for detainee screening. The employment of a team is also affected by language skills and the level of interpreter support available.

Insights/Lessons Learned:

- THT are an invaluable, but limited resource that must be employed creatively, be on-call 24/7 and remain flexible.
- FOB employee screening operations exhume a large percentage of brigade HUMINT assets.

DOTMLPF Implications/Recommendations:

- Augment the Brigade with contracted, national, and/or theater support to conduct employee-screening operations. (Organization)
- FOB employee screening operations become doctrinal corps-level task. (Doctrine)

Topic D: THT are not Composed as per MTOE

(ART 1.3 Conduct Intelligence, Surveillance, and Reconnaissance [ISR])

Observation: The brigade constituted additional teams from assets organic to its RTSA squadron. Many of the THT operating within the brigade AOR (weather organic, constituted, or attached) serve in a direct support (DS) role at the battalion task force level.

Discussion: The brigade's THT were not composed of one 97E and three 97Bs as per MTOE. The brigade has five organic THT by MTOE; however, the brigade constituted an additional four THT from 97Bs that are organic in each platoon in the troops at the RSTA squadron. The THT personnel were reshuffled across both organic and newly developed teams to form an assorted mix of 97Es and 97Bs within the brigade's THT. At least one of the brigade's THT included a 19D. In addition, four theater-level THT were assigned to the brigade in DS role while an additional four theater-level THT operated within the brigade AOR in a non-support role to the brigade. Some of the theater-level DS THT assigned to the brigade remained under the control of the brigade through the S2X, while others were assigned in a DS role to subordinate battalions. Each subordinate battalion was generally assigned at least two THT in DS role. THT in DS role to a battalion take their collection focus from the battalion task force, while THT's under DS control at the brigade take their collection focus from the S2 via the S2X. Theater-level THT in a GS role to the brigade take their collection focus from the theater J2X.

Insights/Lessons Learned:

- The DS role of THT at battalion-level provides integrated and responsive HUMINT support to the brigade's battalion task forces, but requires that battalion S2's have working knowledge of HUMINT capabilities.
- The DS role of THT at the battalion-level risks the mismanagement of HUMINT assets. This can be mitigated by support from the S2X and additional HUMINT management training for battalion S2s.

DOTMLPF Implication/Recommendation:

- Increase HUMINT mission management at TRADOC schools for 35D MI officers. (Training)
- Greater cross training between 97Es and 97Bs facilitate commander's flexibility in task organizing team assets. (Training)
- S2X should have practical (real-world) HUMINT experience. (Training)

Topic E: Junior 97Bs in RSTA Troop Platoons

(ART 1.3 Conduct Intelligence, Surveillance, and Reconnaissance [ISR])

Observation: Junior 97B in the troop platoons at the RSTA are not fully utilized to conduct tactical HUMINT missions.

Discussion: Many of the 97Bs assigned to the brigade are junior in rank and tenure in the Army. Most do not have language skills. Some 19D troop platoon leaders and platoon sergeants collect information themselves using the THT attached interpreters. As a result, 97Bs have limited opportunities to develop their skills. Junior analysts are not able to learn from the senior 97B while at a different location, in a convoy, or when tasks are organized and deployed as split teams. RSTA troop platoon missions often require 97Bs to perform tasks of a 19D resulting in 97Bs gaining more experience performing scout and infantry tasks than counter-intelligence tasks.

Insights/Lessons Learned:

- Junior 97Bs in the troop platoons at the RSTA generally lack the skills to be fully utilized.
- Opportunities for development and mentorship are limited, at the troop platoon level, because of the tactical employment and mission requirement constrained.

DOTMLPF Implication/Recommendation:

- Change the MTOE by replacing junior 97Bs with 19Ds or senior 97Bs. (Personnel)

Topic F: Tactical HUMINT Teams (THT) Reports

(OP 2 Provide Operational Intelligence, Surveillance, and Reconnaissance, [ISR])

Observation: THT reports are correlated at theater-level though a theater web-based portal.

Discussion: THT assigned in a DS role at the battalion task force level established reporting procedures through the brigade HUMINT operations management team (OMT) to the S2X. Required reports, including contact/source reports, HUMINT field information Reports (FIIR) and detainee interrogation reports, were forwarded to the S2X via the OMT. Once approved and edited the reports were submitted back to the THT in DS role for correction. The DS team would then input the corrected reports into the theater web-based portal. The theater HUMINT database manager would post the report, assigning a new source code and report number to the brigade report; however, THT were inconsistent with the submission of reports through the OMT to the

S2X and the input of reports went directly into the theaters web-based HUMINT database.

Lesson Learned:

- The theater web based portal is an efficient and effective means of developing a repository for HUMINT information.
- The brigade report review process is necessary for effective quality control and asset management.
- THT must utilize the OMT to submit reports for review through the S2X to the S2 to ensure the brigade has record of the collection from a particular source. In addition, when the theater HUMINT database manager receives the brigade's reports the source code is changed before the report is posted to the portal. Without knowledge or oversight of the original report, the brigade's ability to cross-reference information from a particular source on the theater-level HUMINT portal in a timely matter is at risk.

DOTMLPF Implication/Recommendation:

- Develop DOD web-based portal intelligence databases as an alternative to ABCS intelligence database programs. (Materiel)
- Develop a sophisticated method of tracking original source numbering without compromising source identity. (Materiel)
- Continue to practice disciplined THT reporting channels through OMT, for quality control and accountability purposes. (Leadership and Education)

Topic G: Detainee Interrogation Reporting

(OP 2 Provide Operational Intelligence, Surveillance, and Reconnaissance, [ISR])

Observation: Detainee interrogation reporting was decentralized and timely throughout the brigade.

Discussion: Detainee interrogation reporting was submitted from THT to the brigade and higher headquarters using a theater-level web based web portal, aiding in the timely submission of intelligence from the brigade. Detainee interrogation reports were submitted by the THT assigned to the brigade detention facility who conducted the interrogations. The reports were input directly into the Multi–National Force–Iraq (MNF-I) theater-level though a theater web-based portal by the team after review by the Operational Management Team (OMT). Each THT has an account that allows them to input reports directly into the theater-level web-based portal. Once the OMT reviews and approves the interrogation, report a copy is sent to the S2X. The timeline for this process is usually within a few hours, from the time the team completes its interrogation to the time the report is reviewed, approved, and sent to both the S2X and the theater web-based portal.

Insight/Lesson Learned:

- Decentralized and parallel reporting is an effective and functional method of sharing interrogation reports and preserving the timeliness and relevance of intelligence gleaned from detainees.

DOTMLPF Implication/Recommendation:

- DA develops a DoD web-based portal intelligence databases as an alternative to ABCS intelligence database programs. (Materiel)
- Emphasize disciplined reporting practices in order to facilitate effective asset management and quality control. (Leadership and Education)

Topic H: Pre-Deployment Opposing Force (OPFOR) Training

(ART 1.1 Supports to Situational Understanding)

Observation: The OPFOR threat array was not consistent with the threat array in Iraq.

Discussion: The brigade CTC rotation featured a one dimensional OPFOR. The Signal Intelligence (SIGINT) environment was based on a legacy threat with primarily FM communications and tactical control traffic. During training Military Operations on Urban Terrain (MOUT) operations focused on clearing buildings and conducting cordon and search operations, but did not replicate the long periods where a lull in activity and no actionable intelligence existed, despite the conduct of numerous presence patrols or cordon and knock operations.

Insights/Lessons Learned:

- The OPFOR at national training centers did not prepare the unit for the threat array in theater.
- Deployed intelligence organizations face a steep learning curve once in theater.
- Units are not given the sufficient opportunity to adequately train with non-organic assets such as Civil Affairs (CA) or Psychological Operation (PSYOP) teams.
- The CTC training assault (Shugart-Gordon) at was not realistic to the threat tactics used in Iraq.

DOTMLPF Implications/Recommendations:

- OPFOR should be composed of an array of four to five insurgent groups with unique motives and influences. (Doctrine)
- The SIGINT baseline should be composed of various communications systems used in theater and include realistic communications traffic indicating relationships and contacts, not tactical control information. (Materiel)
- OPFOR should replicate insurgent tactics; a CTC rotation should not culminate in a company to battalion sized assault. There should be no "golden nuggets". The finding of a mortar cache should not be rewarded with a decrease in mortar attacks. (Training)
- Training center rotations should be extended to a 30 day period and be a continuous scenario not an array of lanes. (Training)

Topic I: S2 Experience and Background

(ART 7.2 Manage Tactical Information)

Observation: The Stryker brigade S2 experience and background is the key to IBOS effectiveness.

Discussion: Stryker brigade S2s must have tactical experience, division and below, with an understanding and working knowledge of national-level databases and/or have served as a division ACE Chief. The Stryker IBOS is composed of nearly the same complexity of intelligence assets and the same reach-back capability. A Stryker S2 must know both the nature of a tactical commanders intelligence requirements and the ability to bring national/theater assets to bear on those requirements.

Insight/Lesson Learned:

- The S2's experience and background is instrumental to the effectiveness of the units

DOTMLPF Implication/Recommendation:

- Recommend DA carefully screen assignment of Stryker S2 to ensure candidates have tactical experience, division and below, with an understanding and working knowledge of national-level databases and or have served as a division ACE Chief. (Personnel)

Topic J: S2 Staff

(ART 7.2 Manage Tactical Information)

Observation: 3rd Brigade, 2nd Infantry Division has adequate rank structure and experience within the brigade S2 section.

Discussion: The brigade S2 shop was resourced with the appropriate rank and authorizations, other than a CW2 all-source analyst; however, two main areas of concerns surfaced.

1) Skill level one intelligence analysts were inexperienced in reaching conclusions from analyzed information, because of their limited experience, and therefore fearful of making the wrong assessment. On-the-job experience was the principal method for training and maturing this predictive analysis skill. Initially analysts were not focused on answering the commander's PIR and spent too much time "surfing the web" looking for information. Lack of direction and focus could result in wasted intelligence efforts on the part of the analyst. Recommended the United States Army Intelligence Center (USAIC) provide additional training, to skill level one analyst, in critical thinking techniques and procedures. This additional training could provide the necessary skills for the stability operation and support operation environment where the enemy does not array itself to a typical organization nor abide by a developed doctrine as the analysts are taught.

2) The rank of the S2X, as a field grade officer, can lead to competition between the S2X and the brigade S2 since both officers are of the same grade; however, the S2X works for the S2. Command emphasis can address this issue; however, recommend the intelligence community consider restructuring the S2X position to a 35E captain and ensure that the S2X has attended the REID course on interrogation taught by the United States Army Intelligence Center.

Insights/Lessons Learned:

- Entry level all-source analysts (skill level one) are inexperienced and lack analytical skills.
- The grade of the S2X could be reduced to a 35E trained captain with REID course training.

DOTMLPF Implications/Recommendations:

- Entry level training at MOS producing courses for 96B's should focus more on how to develop a collection plan, how to analyze raw information, critical thinking on incoming information and to think out of the box. (Training)
- The intelligence community should consider restructuring the S2X position to a 35E captain and ensure that the S2X has attended the REID course on interrogation taught by the United States Army Intelligence Center. (Organization)

Topic K: S2X Input to High Value Targets (HVT)

(ART 1.4 Provide Intelligence Support to Effects)

Observation: S2X provides the seed to 80 percent of the actionable HVT the brigade IBOS develops through all-source analysis.

Discussion: The brigade S2X provides the seed to 80 percent of the HVT that are developed via initial HUMINT reporting. Potential targets are derived through detainee interrogation reports and other HUMINT field information reports from walk-ins, source operations and solicitations. The reports are correlated by the MICO and vetted using national/theater databases and National Intelligence Support Team (NIST) channels from agencies that have representatives augmenting the unit on the ground.

Insights/Lessons Learned:

- HUMINT operations are the center of gravity for stability operations and support operations, but are only the seed to HVT development.
- Brigade must have access to the full spectrum of intelligence and direct channel access to request immediate information requests in order to develop and preserve targetable intelligence.

DOTMLPF Implications/Recommendations:

- The deployment of custom tailored NIST support with reach-back capability should become DOD standard for the deployment of a Stryker Brigade. (Organization)
- Units should train with reach-back support in order to learn how to utilize their support before deploying fully. (Training)

Topic L: Patrol Debriefs and After Action Reviews (AAR)

(ART 7.2 Manage Tactical Information)

Observation: Patrol debriefs are conducted as AAR and are rolled into the unit Operations Summary (OPSUM) through operations.

Discussion: Patrol debriefs are conducted primarily as AAR by platoon leaders and platoon sergeants. These reports are handled via operations channels and are forwarded to the brigade. Significant information is included in the brigade OPSUM. This includes detainee captures and significant or unusual activity. The brigade S2/MICO reviews the OPSUM and follows up on any actionable information. In addition, the S2/MICO uses information from the OPSUM for atmospheric data, in order to develop early warning of an area or group that may becoming more or less hostile toward coalition forces. The use of the OPSUM as a vehicle for patrol debrief streamlines reporting within the brigade and avoids potential confusion and unnecessary message traffic.

Insights/Lessons learned:

- Sometimes less is more in terms of creation of separate reports.
- The brigade has an excellent handle on actionable information derived from patrols.

DOTMLPF Implications/Recommendations:

- Roll back the number of report types available on ABCS systems to those necessary. (Doctrine)
- Streamline programs to reduce initial and sustainment training requirements. (Materiel)

Topic M: Cultural Differences

(ART 7.2 Manage Tactical Information)

Observation: Cultural differences have created a challenging environment for the Stryker brigade.

Discussion: Real-world experience for intelligence analysts and collectors is irreplaceable. Cultural differences have created a challenging environment for the Stryker brigade. The tribal, multi-ethnic, and historical alliances and allegiances have made it difficult for HUMINT and SIGINT collection. Communications channels, linguistic dialects, slang terms, cultural customs, and courtesies make collection even more challenging. These barriers also affect the analysis of intelligence. Use of theater and national level assets has helped the brigade overcome many challenges. Attached and reach-back capabilities aided analysts and collectors overcome a steep learning curve. Many analysts and collectors argue no training could fully prepare an intelligence professional for these challenges. Real-world experience for intelligence analysts and collectors is irreplaceable. Training of this caliber cannot be replicated at national training centers. Hired interpreters have enhanced the capability of intelligence professionals in both collection and analysis. Databases developed in country and via production from theater and national level assets in CONUS on topics such as tribes, the spelling of names and regional affiliations were used as resources to assist the brigade with intelligence production.

Insights/Lessons Learned:

- Cultural understanding is an endless endeavor that must be overcome leveraging whatever assets are available.
- Cultural training prior to deployment, reach-back capabilities, and a resourceful and knowledgeable use of assets available in country is the key to overcoming challenges.

DOTMLPF Implication/Recommendation:

- Promote and leverage intelligence REDTRAIN Live Environmental Training (LET) at places such as Regional Security Operations Center (RSOC) to allow analysts and other low-density MI MOS to work on real-world missions prior to unit deployment. (Training)

Chapter 6: Operations

Chapter Overview

Non-Doctrinal Missions (Topics A and B):

The brigade task organized elements in non-doctrinal economy of force roles due to the large area of responsibility (AOR). Mortar platoons, field artillery batteries, and the air defense battery were re-tasked to conduct improved explosive devices (IED) sweeps, convoy escort, cordon , search and raids. Home station pre-deployment training and mission rehearsal exercises (MRE) did not replicate the non-doctrinal missions and conditions encountered by subordinate elements. One key concern expressed by the commanders was the lack of equipment normally afforded to a maneuver battalion. Equipment necessary for the execution of the mission included radios, digital systems, weapon systems, and force protection. Commanders need opportunities to maintain Soldier proficiency with assigned weapons. For example, the FA battalion fired area denial missions with their organic 155mm howitzers. These missions, not only resulted in denying the enemy usage of that area to launch attacks, but also displayed a show of force.

Stability Operations and Support Operations (Topics C-L): Conducting combat operations in a stability operations and support operations environment, with restrictive rules of engagement (ROE), has altered the targeting process. The emphasis has changed from maneuver warfare to manhunting. Combat assault operations often become opportunities to question inhabitants. The battalion uses commercial off-the shelf technology (COT) digital cameras to support close target reconnaissance. UAV optics and satellite imagery are not sufficient for the details needed for urban operations. Inner and outer cordon techniques, with over-watch positions, are effective methods of isolating objectives in urban environments. Stryker vehicles drop off the squads and then rove the perimeter. Improvised explosive devices (IED) is the primary threats to civilian traffic, pedestrian and vehicular movement. The brigade is not responsible, and does not assure, safe movement of civilian and pedestrian movement in the AO.

Close Air Support (Topics M-O): Fixed wing Close Air Support (CAS) is rarely used. AH-64 and Special Weapon Teams (SWT) OH-58D are used sporadically to support operations. If CAS missions are used, they are flown in support of company level operations and are planned at the battalion level. The brigade's primary mission for CAS was a resource provider and A2C2 coordinator. Pre-planned CAS strikes, other than troops in contact, require Multi-National Coalition (MNC) approval. The show of force by CAS was an effective Information Operations (IO) tool. Digital C2 was used to disseminate plans early and quickly to improve accuracy and effectiveness during operations.

Brigade Support Battalion (BSB) Operations (Topics P-Y): BSB provided good expeditionary support to the brigade, which is not capable of sustaining a brigade AOR of 38,000 sq km, nor equipped and staffed to sustain the brigade for a pro-longed time in theater. The CSB performed its legacy mission of area support and supporting corps elements in the brigade AOR; however, it did not provide dedicated support to the brigade. Logisticians, within the BSB, recommend creating a dedicated Stryker support group to support the brigade. Brigade

operations were dependent on non-US contractor support for timely acquisition of certain materials and services. Class III (P) is taking 45-60 days to reach the user through the Army logistics system. Units need to analyze their historical data for unscheduled maintenance for major component replacements in order to project Class III (P) out 90 days. The authorized stockage list (ASL) needs to increase to accommodate long delays in supply.

Surge capabilities are limited by the size of the battle space. One logistic package (LOGPAC) can use all of the BSB transportation personnel assets. The METT-TC arrangement of support gives the BSB the ability to surge support as necessary with the limiting factor being the habitual relationship of the CRTs. Without a brigade level system, that FBCB2 can feed, FBCB2 was not a viable logistic tracking asset therefore the brigade utilized a daily logistic synchronization (LOGSYNCH) meeting to meet the logistic needs of the mission. The Standard Army Maintenance System 2 (SAMS2) should be required to track the status of all critical equipment and systems. Any subsystem changes need to be reflected in unit level logistic system-ground (ULLS-G) so that the system can be tracked correctly. Local national trucks and operators were contracted to supplement BSB assets. Their trucks were not armored or armed and were not as fast or agile as US tactical vehicles. Recovery operations are difficult since our equipment is not designed for recovery of these local nation civilian trucks. The use of local national trucks can be a great logistic multiplier; however, their use in high threat areas needs to be as limited as possible.

Observations, Discussions, Insights/Lessons Learned and DOTMLPF Implications/Recommendations

Topic A: Field Artillery Battalion Economy of Force Operations

(ART 2.4.1 Conduct Lethal Direct Fire against a Surface Target)

Observation: The field artillery can be used to conduct economy of force operations.

Discussion: The brigade tasked the field artillery (FA) battalion with an economy of force mission and augmented the battalion with a few Stryker vehicles. The FA commander believed his Soldiers could be retrained and employed in this role with adequate resources. The commander's main concern was the lack of equipment, normally afforded to a maneuver battalion, necessary for this mission such as radios, digital systems, weapon systems and force protection. In order to maintain Soldier proficiency, with their assigned weapons, the FA battalion fired area denial missions with their organic 155 mm howitzers. These missions targeted areas between the inter and outer security perimeter of the base which resulted in denying the enemy usage of that area to launch attacks as well as displaying a show of force.

Insights/Lesson Learned:

- Provided the appropriate resources (the most critical is time) units such as the Field Artillery Battalion can be employed as an economy of force.

DOTMLPF Implication/Recommendation: none

Topic B: Counter-Fire Operations

(ART 3.3 Employ Fires to Influence the Will and Destroy, Neutralize, or Suppress Indicators)

Observation: 3rd Brigade, 2nd Infantry Division does not conduct counter-fire operations in the traditional sense as we would assume counter-fire operations are conducted because of the Rule of Engagement (ROE).

Discussion: The brigade has three critical sets of counter-fire operations: counter-mortar, personnel, and improvised explosive device (IED). Task Force-Olympia (TFO) is the approval authority for all lethal indirect fires in Mosul. Negative secondary effects, created by indirect fires, are of critical concern to the TFO. This subset ROE limitation created by TFO for the city of Mosul, resulted in indirect fires, largely taken out of play, and caused the brigade to us other methods (UAV, HUMINT, aviation, maneuver) to provide non-lethal and lethal fires. Enemy mortars have a tendency to fire at certain locations, times, and days until the brigade forces them

to change. The ROE has not changed the role of the fire effects coordination Cell (FECC). Brigade counter-fire radars have effectively acquired enemy mortars and the FECC has brought in a presence and integration of non-lethal and lethal fires to destroy or neutralize the target. Even a brigade presence forces the enemy to change locations, reacquire the range to target, and adjust their TTP. This process results in a continuous adjustment for both the brigade and anti-Iraq forces in which the enemy will move, reacquire range through tabular firing tables, ingress/egress routes, establish security and the brigade will either destroy or in most cases cause the enemy to move to a new location and repeat the process. Counter-mortar operations in a stability operations and support operations environment is manhunting vs. maneuver warfare. Therefore, the approach, in the targeting process, is different. For example, brigade and battalions do very well with the find-fix-finish methodology in a conventional environment where counter-fire radars acquire and counter-battery artillery destroy the opposing indirect-fire systems. In a manhunting environment (with specific ROE limitations as is in Mosul), counter-fire operations do not need to center on the mortar crew. Counter-fire operations should be used against reconnaissance elements and crew training. In addition, the brigade believes that the exploit-analyze-disseminate portion of the targeting process must be practice more at the Combat Training Centers (CTC's) for this type of operating environment.

The majority of mortar attacks are harassment with one to three rounds fired. Most attacks are not on target. The brigade has discovered most enemy attacks are inaccurate due to the expedient firing techniques used from vehicles, and the skill-level of the operator. This could explain the delays between attacks after a counter-mortar mission.

Insights/Lessons Learned:

- While the ROE restricts indirect fires within Mosul, it does not restrict the use of other non-lethal and lethal fires.
- Counter-mortar operations are a constant adjustment by the brigade to adapt to the enemy's TTP.
- anti-Iraq forces are using second tier personnel to execute mortar fires and first tier personnel to train and equip them, which is a large factor in the ineffectiveness of enemy mortar fires.
- Most, if not all, counter-mortar operations arrive too late to achieve desired the effects because the anti-Iraq force are capable of displacing within 30 seconds of firing.
- The mere presence of coalition forces will cause the enemy to move to another location and force him to repeat his process of target selection and delivery.
- The best way to catch a mortar team is not after they have fired but by catching them in their homes.

DOTMLPF Implication/Recommendation:

- Focus officer training at MOS producing courses, for intelligence Soldiers on how to develop the targeting process (exploiting, analyzing, and disseminating targetable data) in a stability operation and support operation environment. (Training)

Topic C: Stability Operations and Support Operations

(ART 3.3 Employ Fires to Influence the Will and Destroy, Neutralize, or Suppress Indicators)

Observation: Conducting combat operations in a stability operations and support operations environment with a restrictive Rules of Engagement (ROE) has altered how we target and have changed maneuver warfare to man hunting.

Discussion: In a force-on-force environment, the CTCs provide necessary conditions for training units to use the decide, detect, deliver, and assess (D3A) targeting methodology. This is used to neutralize, defeat or destroy enemy capabilities, units, and sub-elements; however, units going in support of Operation Iraqi Freedom (OIF) find themselves in a stability operations and support operations environment. Restrictions within the ROE and the contemporary operational environment (COE) limit the effectiveness of doctrinal targeting. The ROE restricts the use of indirect fires in an urban environment because of secondary effects. This increases the importance of other non-lethal and lethal delivery methods to engage anti-Iraq forces and places a greater dependence on other sources of intelligence such as HUMINT and imagery intelligence (IMINT) to find the anti-Iraq forces. Stability operations and support operations training at the CTCs is limited (around four days) and does not allow sufficient time for the training unit to develop HUMINT networks in order to support the find-fix-finish methodology for search and attack operations. The COE and the stability operations and support operations mission that deploying units find themselves in is more oriented towards finding a certain individual or groups than it is maneuver warfare. The commander interviewed expresses this as man hunting and would like to see units train more, at the CTCs, on search and attack operations.

Insights/Lessons Learned:

- Force on force targeting methodology works for maneuver warfare but not necessarily for man hunting.
- Commanders want greater time devoted, at CTCs, for stability operations and support operations and training on search and attack operations.
- Theater ROE limits how units conduct targeting.

DOTMLPF Implications/Recommendations:

- CTCs need to replicate the conditions (large urban settings, ROE in theater, non-uniformed enemy) that deploying units will face. (Training)
- CTC's need to incorporate additional scripting that gives the training unit a more detailed HUMINT network than what could be developed in a four-day stability operations and support operations exercise. (Training)

Topic D: Counter-mortar Operations

(ART 3.3 Employ Fires to Influence the Will and Destroy, Neutralize, or Suppress Indicators)

Observation: Counter-mortar operations are conducted by denies, control, and destroy operations resulting from pattern analysis and targeting.

Discussion: Counter-mortar operations are not conducted in the traditional manner with radar and indirect counter-fire assets. While the assets (radars, mortars and howitzers) are available to conduct this type operation, the targets are too perishable compared to the time required to clear fires. The enemy is currently using mortars to harass our FOB by loading mortars (60 mm, 82 mm, and 120 mm) in vehicles and driving to a preplanned firing location. Three to four rounds are fired and then the crew loads the weapon and departs. The suspected elapsed time from first round fired to departure is less than one minute. Clearance of lethal, indirect fires, in and around Mosul, does not reside with the brigade, so clearance time is considerably longer than the target is presented, thus preventing a response. To counter this employment of mortars the brigade has used a process to deny, control and destroy mortars using active patrols with direct fire weapons based on pattern detailed analysis and targeting. The targeting process includes a large HUMINT effort in the community to determine and uncover cells. Since developing and employing this TTP, the brigade has reduced mortar attacks by 80 percent. A military police (MP) squad destroyed (by direct fire) one 60 mm team in an ambush established in the pattern analysis and targeting process and has denied the 120 mm team the opportunity to fire.

Insight/Lesson Learned:

- Detailed study of the enemy and his patterns of operations allow “non-conventional” means of combating specific enemy tactics.

DOTMLPF Implication/Recommendation:

- Train leaders to be innovative and persistent in the analysis and targeting processes. (Training)

Topic E: Integration of Effects (lethal and non-lethal)

(ART 7.4 Plan Tactical Operations Using the Military Decision Making Process?)

Observation: Methodology of incorporating internal lessons learned can be more effective. Incorporating CALL-produced lessons learned is a work in progress and results have yet to be seen.

Discussion: Units are not using the MDMP process to plan for steady state operations. The planning process is not as important as ensuring that the integration of lethal and non-lethal effects are incorporated within the plan or order. Most units appear to be using the decide, detect,

deliver, assess (D3A) methodology to develop a fragmentation order (FRAGO) for execution. Staying within the *one third-two thirds rule*, when working MDMP for daily FRAGOs, is excessive, and did not support the unit's operational rhythm. The non-doctrinal employment of the battalions caused individuals that would normally support the tactical operations center (TOC), such as the brigade fire support officer (FSO) to be tasked with other staff assignments, which, in turn, left many positions to the deputies. This may have contributed to a less than doctrinal approach to mission planning as the staff fell into their comfort zone for planning. The brigade staff members reported that the deputy commanding officer (DCO) was a great supporter of the integration of lethal and non-lethal effects. Each staff member reported that the integration of effects was done poorly and given the opportunity to do over; they would have done a better job. Integration of effects (lethal and non-lethal) is a function that must be accomplished through the proper staffing and cohesive planning.

Insight/Lesson Learned:

- The fires and effects coordination cell (FECC) section should integrate both lethal and non-lethal effects and should not operate in their individual stovepipe areas of comfort. Proper integration is occurring when one person briefs both lethal and non-lethal effects at the BUB.

DOTMLPF Implication/Recommendation:

- Provide additional training to the FECC focusing on the effective integration of effects. (Training)

Topic F: Cordon and Knock Tactics, Techniques, and Procedures (TTP)

(ART 7.6 Execute Tactical Operations)

Observation: Often, a combat assault becomes an operation to knock and question inhabitants.

Discussion: This technique depends on intelligence about the target and what you are trying to find. The time of the intelligence can vary up to six days. If the intelligence is too old, it usually requires questioning inhabitants about the location of suspected anti-Iraq forces in the area as well as isolating the objective and having blocking positions equipped to provide traffic control point (TCP) functions to get traffic moving again and to bypass the objective area. Planning traffic flow prior to the mission and assigning isolation and blocking points is very effective in urban operations. Mission planning using brigade targets and refined by company level leadership into a PowerPoint briefing is the quickest planning technique at the company level. Map overlays are done with Falcon View for the brief and then given to the Battalion S3 to submit into MCS light. The mission graphics are then processed into the FBCB2 for the unit to use on the Stryker vehicle. Close quarters battle (CQB) and reflexive firing techniques are very beneficial (squads need to know standard breaching and, in some cases, less lethal breaching techniques. More surgical and discriminating techniques are used rather than standard military operations in urban terrain (MOUT) techniques are very beneficial. Soldiers write sworn

statements of what happened immediately after the missions so if there are questions, several days later; they already have references to what happened at the time. This technique is effective at reducing investigations into use of deadly force. Digital cameras on the scene help in investigations later. Units need more digital cameras and digital flash drives for transferring information within the company and to battalion. Often a combat assault becomes a knock to question inhabitants. This technique depends on target intelligence and what you are trying to find. Intelligence time can vary up to 6 days. If the intelligence is too old it is usually time to question inhabitants of location of suspected anti-Iraq forces, isolate the objective and have blocking positions equipped to provide TCP function to get traffic moving again to bypass area.

Insight/Lesson Learned:

- Plan traffic flow, prior to mission, when assigning isolation and blocking points.
- Mission planning using brigade target's, and refined by company level on a PowerPoint briefing, is the quickest planning technique, with map overlays included in the brief and given to the battalion to submit into MCS light and then processed on FBCB2.
- CQB firing techniques are very beneficial. Squads need to know standard breaching as well as techniques less lethal, like a SWAT team, in some cases.
- More surgical and discriminating techniques are used than standard MOUT techniques trained at the CTC.
- Soldiers write sworn statements of what happened immediately after the missions so if there are questions several days later they already have references to what happened at the time, effective at reducing number of investigations into use of deadly force.
- Digital cameras on the scene help in investigations later. Units need additional digital cameras and flash drives for moving information within the company and to battalions.

DOTMLPF Implication/Recommendation: none

Topic G: Improvised Explosive Device (IED) Tactics, Techniques, and Procedures (TTP)

(ART 7.6 Execute Tactical Operations)

Observation: The brigade developed a specific methodology to assure mobility in the AO.

Discussion: In addition to its organic engineer company, the brigade has an attached engineer battalion. The battalion developed a TTP and provided a paper copy of a slide presentation used to brief the 1/25 ID "The counter IED process is to restrict IED emplacement and to detect and clear IED".

There were several measures identified to restrict IED emplacement:

1) Develop actionable intelligence and predict IED emplacement. Use engineer equipment to clear potential IED hiding locations. Clearing and paving medians has been most effective. All overpasses are controlled and patrolled to prevent an IED emplacement in a location with tamping.

2) Employ active combined-arms patrolling to look for suspicious activity. Actively check and clear potential threats. Broken-down cars have become a favorite IED plant.

3) Use UAVs and sniper teams to monitor roads during times of likely emplacement.

4) Place Remote TV Cameras (RTV) at known trouble areas. 5) CA must work with local nationals.

There were several measures identified to detect and clear IED:

1) Forces use aggressive right of way clearance and maintenance of cleared routes. This is primarily an engineering effort.

2) Employ a systematic sweep program. Use dedicated resources which act as one team with one C2 element with well rehearsed SOPs, and employ command-detonated jamming devices. The IED sweep team is a reinforced infantry platoon composed of three infantry squads as security elements, a C2 element and a counter-IED vehicle; EOD is on call. The counter-IED vehicle is a Meerkat, Husky or a Buffalo. The platoon moves in column with 50 m intervals. Security Team 1 leads with the IED vehicle following, then C2 and Security Teams 2 and 3. The rate of travel is 15-20 kph (10 mph). The IED vehicle is the primary observation platform. All elements are on the same net. The jammer installed on IED or C2 vehicle and is activated. Security Team 1 establishes forward security more than 100 m from IED and blocks traffic. The IED vehicle moves to Security Team 1 location and provides security. C2 secures right flank and dismounts an engineer team to sweep 300 m to search for secondary IED. Security 2 secures left flank. Security 3 secures rear and blocks traffic. EOD is called to reduce the threat. IED sweeps are a route clearance missions against a specific target and TTP. It is a combined arms effort that requires dedicated resources to create well-trained, well-lead and well-rehearsed teams.

Insights/Lessons Learned:

- The measures to restrict IED emplacement were:
- Develop actionable intelligence and predict IED emplacement.
- Employ active combined-arms patrolling to look for suspicious activity.
- Use unmanned aerial vehicles (UAVs) and sniper teams to monitor roads during times of likely emplacement.
- Place remote TV cameras (RTV) at known trouble areas.
- Civil affairs (CA) must work with local nationals.
- The measures to detect and clear IED were:
- Forces use aggressive right of way clearance and maintenance of cleared routes.
- Employ a systematic sweep program.

DOTMLPF Implication/Recommendation: none

Topic H: Urban Environment TTP, Commercial Digital Cameras

(ART 7.6 Execute Tactical Operations)

Observation: The battalion uses COT digital cameras to support CTA. UAV optics and satellite imagery are not sufficient for the details needed for urban operations. UAV optics is not resolute enough and satellite imagery is not reliable enough. To augment the need for CTR without driving by in a Stryker, too overt to support the operation, the battalion purchased COT digital cameras and issued them to the pilot crews. The immediate, high resolution products greatly enhanced the battalion's ability to conduct detailed planning and rehearsals and provided the CTR needed.

Insight/Lesson Learned:

- COT technology can greatly enhance operations planning and execution.

DOTMLPF Implication/Recommendation: none

Topic I: Urban Operations TTP, Inner Cordon/Outer Cordon Techniques

(ART 7.6 Execute Tactical Operations)

Observation: Effective Tactics, Techniques, and Procedures (TTP) in urban Areas.

Discussion: To isolate the objective in an urban environment units use an inner cordon/outer cordon technique with sniper teams, and M240B, over-watching the objective and identifying suspects trying to flee the scene. Stryker vehicles are used to drop off the squads and then rove about the perimeter continuing to isolate the objective and identify suspects fleeing the scene. Static Stryker vehicles on the perimeter are easy targets.

Insights/Lessons Learned:

- Inner cordon/outer cordon techniques, with over-watch positions, is an effective method of isolating the objective in an urban environment. Stryker vehicles drop off the squads and then rove the perimeter
- Static Stryker vehicles are easier targets.
- Snipers and M240B machine gun teams are used to provide over-watch.

DOTMLPF Implication/Recommendation: none

Topic J: Primary Threats to Civilian Movement

(ART 8.3 Conduct Stability Operations)

Observation: Improvised Explosive Devices (IED) is the primary threats to civilian traffic, pedestrian and vehicular.

Discussion: The enemy uses several tactics to employ IED in the brigade's AO. Initially, IED were placed on primary routes of travel and concealed in shrubs, trash, water/fuel cans, and other societal clutter. As broken cars, empty containers, and trash are a significant part of the local landscape, these containers blended well with the environment. IED are now being placed in cars. The driver drives the IED laden car to the planned detonation place, parks the car, lifts the hood, and leaves the car as if broken down. The IED is then command detonated remotely. In addition, IED are driven to point of detonation and command detonated by the driver in a suicide mission.

Insight/Lesson Learned:

- IED are field-expedient weapons and are extremely effective.
- The only real limits to their use are the imagination ingenuity of the enemy.

DOTMLPF Implication/Recommendation: none

Topic K: Movement of Civilian Vehicles and Traffic

(ART 8.3 Conduct Stability Operations)

Observation: The brigade is not responsible, and does not assure, safe movement of civilian and pedestrian movement in the AO.

Discussion: The brigade does not assure safe movement of civilian pedestrian and vehicle movement in the AO for either residents or other civilian agencies (foreign governments, NGOs, etc). The AO is simply too large, there are too many civilian residents and agencies living and operating in the AO for the brigade to assure safe movement by foot or vehicle. The brigade monitors whether Iraq police are at their assigned locations for assisting with safe motor traffic control and circulation. The brigade conducts IED sweeps and has developed a specific TTP covered in a separate observation. It also conducts routine patrols and raids to defeat anti-Iraq forces operations, which contribute the safety of all civilians. Brigade is active in its training, coordination, and supervision of the local Iraq police as well as repairing traffic control lights.

Insight/Lesson Learned:

- Civilian movement is a responsibility of the Iraq police and monitors their locations.
- The brigade must rely on local force to police the city while the Army forces provide specific direct actions to reduce or eliminate dangerous elements.
- The brigade may be called upon to repair motor vehicle traffic control lights.

DOTMLPF Implication/Recommendation: none

Topic L: Convoy Operations

(ART 6.3 Provide Transportation Support)

Observation: Tactics, Techniques, and Procedures (TTP) for convoy operations.

Discussion: A number of TTP were collected pertaining to convoy operations. The key, during convoy operations, do not let civilian vehicles into the convoy. To control traffic, units locally purchased more powerful vehicle horns, because Stryker horns were not loud enough. Throwing rocks at cars that do not get out of the way and use of local hand signals to show slow traffic down is used to control traffic. Effective Stryker hardening normally include sand bags. Engineered 4x4s are used to protect the crew from improvised explosive devices (IED). Sandbags will occasionally fall from the Stryker and could cause injury. Exposed Soldiers on the Stryker vehicle must maintain a good security posture by staying in the hatch to name tape defilade. Air guards used in the rear hatches are effective in covering overpasses where anti-Iraq forces throw explosives on top of vehicles. Changing lanes under overpasses is also effective. All convoys should be treated as a movement to contact, no matter how short or small the convoy. The majority of convoy attacks are in during daylight. Mortar attacks often include an IED at the point of origin to ambush search parties searching for the point of origin. Battalion S2 analysis of likely activity locations and recent known attacks is very helpful in planning routes and deciding when to use other movement techniques. Detailed convoy briefs with rehearsals is also very effective. Non-combat arms units do not normally have communication assets in the vehicles to communicate to the rest of the movement element. These units should conduct convoy live-fire exercises and rehearsals prior to deployment. Soft skin vehicles must be hardened with steel plating and sandbags for survivability. Use the Stryker vehicle technical manual (TM) to change the fuel consumption setting to gravity flow drawing equal from both tanks. This technique increases fuel efficiency for long convoys. Using a special weapons team (SWT) OH-58D air sweep along convoy routes is effective in reducing RPG attacks in route. Units need to tailor the load plans based on the mission. For short duration urban and local missions, do not have fuel cans and ammunition on the outside of the vehicle. For long convoy missions, ensure to bring extra tires and fuel for emergencies.

Insights/Lessons Learned:

- Do not let civilian vehicles into the convoy.
- Local purchase horns used, Stryker horns not loud enough, helps control traffic.
- Throwing rocks and local hand signals help to control traffic while moving.
- Stryker hardening; sand bags and engineer 4x4 used to protect from IED, sometimes sandbags fall off and could cause injury.
- All exposed Soldier must maintain good security posture and name tape defilade.
- Air guards cover overpasses; potential anti-Iraq forces throw things from them.
- All convoys treated as movement to contact.
- Most attacks are in the daylight.
- Mortar attacks often followed by IED at point of origin when search party goes out to search point of origin.

- S2 analysis on likely locations of activity and known activity are very helpful in planning routes and deciding when to use other movement techniques like bounding over-watch.
- A detailed convoy brief and rehearsals are very effective.
- Non-combat arms units often do not have communication assets in vehicles, should do convoy LFX rehearsals prior to deployment.
- Soft skin vehicles must be hardened with steel plating and sandbags for survivability.
- Use Stryker TM to change fuel consumption setting to gravity flow equal from both tanks, increases fuel efficiency for long convoys
- Air sweep with air assets along convoy routes is effective in reducing RPG attacks.
- Tailor load plans based on the mission; for short urban and local missions no fuel cans and ammo should be allowed on the outside. For long missions, be sure to bring extra tires.

DOTMLPF Implication/Recommendation: none

Topic M: Fixed Wing Close Air Support (CAS)

(ART 3.3 Employ Fires to Influence the Will and Destroy, Neutralize, or Suppress Indicators)

Observation: Fixed wing Close Air Support (CAS) is not used.

Discussion: Fixed wing close air support (CAS) is not used. AH-64 and special weapon teams (SWT) OH-58D is used sporadically to support operations. Smoke signals are used, and pre-mission coordination with the pilots is very effective, especially to give pilots building numbers being used and maneuver graphics. Phoenix beacons and commander pointers are effective to point out unit locations and target locations, but units need more of both systems at the company level. Unmanned aerial vehicle (UAV) is used at battalion level, but is difficult to use and communication from the maneuver unit all the way back to the battalion command post is difficult at times.

Insights/Lessons Learned:

- Fixed wing CAS not used often, if at all.
- AH-64 and SWT OH-58D used sporadically.
- Smoke signals and pre-mission coordination is effective, especially to give pilots building numbers used and maneuver graphics.
- Phoenix beacons and commander pointers are effective; however, need more of both
- UAV are used; however, difficult to use and communication is difficult at times.

DOTMLPF Implication/Recommendation:

- Add Phoenix Beacons and allocate commanders pointers. (Materiel)

Topic N: Close Air Support (CAS) Accuracy and Effectiveness

(ART 3.3 Employ Fires to Influence the Will and Destroy, Neutralize, or Suppress Indicators)

Observation: Detailed planning and use of digital means to disseminate graphics to pilots makes CAS very accurate and very effective.

Discussion: The coordination and control of CAS (specifically, USAF AC 130 and US Army attack aviation) take place in the doctrinal manner in the targeting and plans development and execution. During this process, the operational graphics for the mission are prepared and disseminated to the pilots using digital means (combination of FBCB2 and Falcon View). Pilots know specific targets (which house, car, or intersection is the target) before departing on the mission. This significantly reduces the direct coordination required between pilot and ground forces commander during execution.

Insight/Lesson Learned:

- Use digital C2 means to disseminate plans early and quickly to improve accuracy and effectiveness during operations.

DOTMLPF Implication/Recommendation: none

Topic O: Close Air Support (CAS) Coordination and Control

(ART 3.3 Employ Fires to Influence the Will and Destroy, Neutralize, or Suppress Indicators)

Observation: CAS is controlled by the Fires Effect Coordination Cell (FECC) at brigade level and passed down to the battalions based on their battle space requirements.

Discussion: On a daily basis approximately almost 80 percent of the battalion's time, is spent on conducting company level cordon and searches. The missions are searches in which either the brigade has developed an access and execution plan or the battalion has planned at their level. In most cases, the battalion comes to the brigade with their target sets and requirements for CAS and the brigade air liaison officer (ALO) will resource and push the CAS assets to the battalion. At that point, the brigade's function for CAS is that of coordination. The controlling of CAS, once at the battalion, belongs to the terminal air controllers (TAC) for those assets the brigade ALO has pushed down to the battalion commander. The TAC is a USAF asset that will control the use of CAS for the battalion commander while in his battle space. The ROE places restriction on the use of CAS. All pre-planned CAS strikes must be approved by the multi-national coalition (MNC) commander for a collateral damage assessment. If troops are in contact this is not required. The ROE does allow CAS to fly over crowds during the CAS coverage of a battalion's battle space. This show of force technique, in which aircraft will fly over crowds at an altitude of 2,000 to 3,000 ft, has been very effective in creating the intended effects to persuade potential hostile crowds to disband. Because of the amount of air space in a given battle space (battalion

UAV Raven, US Army Air, brigade UAV-Shadow) the Army Airspace Command and Control (A2C2), for CAS, is planned at the brigade level.

Insights/Lessons Learned:

- Most CAS missions are flown in support of company level operations and are planned at the battalion level.
- The brigade's primary mission for CAS is that of a resource provider and A2C2 coordinator.
- Pre-planned CAS strikes, other than troops in contact, require MNC approval.
- The show of force by CAS is an effective Information Operations (IO) tool.

DOTMLPF Implication/Recommendation: none

Topic P: Dependence of Resupply Operations on Local National Contractors

(ART 6.1 Provide Supplies)

Observation: Brigade operations are dependent on non-US contractor support for timely acquisition of certain materials and services.

Discussion: With the exception of quality of life support issues, the biggest need in the brigade area of operations that requires non-US contractor support is gasses (the exception being medical oxygen). Field ordering officers (FOO) and "Class A" agents are the keys to the success of obtaining quick local support of supplies and services. Locally procured gasses can be on hand in four to five days verses 45-60 in the Army supply system. The local price for the unit is one quarter of the price they pay in the Army system. The problem with local procurement is that the source of supply often dries up because of threats by the anti-Iraq forces . A solution for the most used gas, nitrogen, is to add a nitrogen generator to the MTOE. This generator can be towed behind a HMMWV.

Insights/Lessons Learned:

- Each unit needs a primary and alternate FOO and class "A" agents to expedite the acquisition of local procured supplies and services.
- An MTOE change to add a nitrogen generator to the field maintenance company would greatly limit dependency on local procurement of gasses.

DOTMLPF Implication/Recommendation:

- Change the MTOE to include a nitrogen generator to the field maintenance company to limit dependency on local procurement of gasses. (Organization)

Topic Q: Class III (P) Supply Issues

(ART 6.1 Provide Supplies)

Observation: Class III (P) has been the most challenging supply issue to resolve.

Discussion: The brigade has had difficulty maintaining adequate supplies of Class III (P). The timeline for receiving Class III (P) in the brigade's area of operation has been thirty five to forty five days. If the unit does not properly forecast services and order Class III (P) to meet the historical data on major component replacements, Class III (P) shortages can result.

Insight/Lesson Learned:

- Units need to forecast services and use historical data for major component replacement so that they can order sufficient CL III (P) 60 days out.

DOTMLPF Implication/Recommendation:

- Increase unit Class III (P) authorized stockage list (ASL) to match the proceeding unit's list. Conduct an ASL review after the first quarter in theater. (Leadership and Organization)

Topic R: The Use of FBCB2 in Logistics

(ART 6.1 Provide Supplies)

Observation: The FBCB2 system is not being used by brigade level logisticians.

Discussion: Without a brigade level system that FBCB2 can feed, FBCB2 is not a viable logistic asset. The brigade has gone to using a daily logistic synchronization (LOGSYNCH) meeting to meet the logistic needs of the mission. All battalion S4 shops have a representative at the brigade administration and logistic operation center (aloc) and they directly pass support requirements to the support operations officer (SPO) at the LOGSYNCH meeting. This system is the most effective means to coordinate mission support.

Insight/Lesson Learned:

- Daily LOGSYNCH meetings with all battalions having representation are an effective way to manage logistics in the brigade, until a viable logistic automated system is developed.

DOTMLPF Implication/Recommendation: none

Topic S: Transportation Capabilities in a Large Area of Operation (AO)

(ART 6.12 Provide Distribution Management)

Observation: The divisional size AO, that the brigade is covering, is pushing the transportation capabilities beyond their organic capability.

Discussion: With the large size of the AO, the brigade support battalion (BSB) does not have enough truck drivers to support the mission. Ammo handlers, fuel handlers, and water specialist are standing in as truck drivers to support the transportation mission. Surge capabilities are limited by the size of the battle space as one logistic package (LOGPAC) can use all of the BSB transportation personnel assets.

Insight/Lesson Learned:

- When the AO exceeds the doctrinal size (MTOEs are built to support doctrinal missions), the force should be augmented as is necessary to ensure all support requirements are met.

DOTMLPF Implication/Recommendation:

- Augment units with support assets when the geographic area and requirements exceed doctrinal design.(Organization)

Topic T: Deployment and Employment of BSB Assets

(ART 6.12 Provide Distribution Management)

Observation: Combat Repair Teams (CRTs) are supporting in a habitual relationship with all other support being driven by Mission, Enemy, Terrain, Troops, Time, Civilians (METT-TC).

Discussion: CRTs are supporting in a habitual relationship, field feeding teams (FFT) is supporting as needed in remote areas, and logistics support team (LST) are deployed as necessary. Battalions have attempted to recreate support platoons out of the BSB LST, but to protect surge capabilities and to be able to perform all support missions, the BSB has not allowed support platoons to be recreated.

Insight/Lesson Learned:

- The METT-TC arrangement of support gives the BSB the ability to surge support as necessary with the limiting factor being the habitual relationship of the CRTs.

DOTMLPF Implication/Recommendation: none

Topic U: Brigade Maintenance Program

(ART 6.2 Provide Maintenance)

Observation: The brigade's maintenance program is compartmentalized into four major maintenance managers: the Support Operations Officer (SPO), the Logistic Support Element (LSE), the Stryker Contractors, and the S6.

Discussion: The SPO manages legacy and some Stryker equipment. LSE and Stryker contractors each manage aspects of Stryker equipment. The S6 manages all digital and communication equipment minus legacy systems. All of the agencies use different systems to track their specific maintenance. The SPO is the only agency using the standard Army maintenance systems, such as unit level logistics ground (ULLS-G) and standard Army maintenance system (SAMS). This decentralized management system does not support positive visibility, for the commander, in the area of combat power projection. The commander might have to talk to all four agencies to get the status of one Stryker system. With the various databases being used, one print from the SAMS2 can no longer inform the commander about the status of his Non-Mission Capable systems.

Insights/Lessons Learned:

- All maintenance, in the brigade, should be fed through the Standard Army Maintenance System 2 (SAMS-2) at the support operations office.
- The S6 should correct any soft ware issues and pass all hard ware issues to the SPO.
- The LSE should manage all contractors as a staff section of the SPO.

DOTMLPF Implication/Recommendation:

- Direct brigade maintenance through the Standard Army Maintenance System 2 (SAMS-2) at the support operations office. (Doctrine)

Topic V: Non-Mission Capable (NMC) Systems Tracking

(ART 6.2 Provide Maintenance)

Observation: Systems are being tracked NMC if any of their subsystems (defined by AR 700-138) are NMC.

Discussion: Brigade is experiencing subsystems are being replaced by logistic support element (LSE), other contractors, and S6 and are not being reported to the combat repair team (CRT) chief. New serial numbers are added to the system in which they are a component.

Insight/Lesson Learned:

- Any subsystem changes need to be reflected in unit level logistic system-ground (ULLS-G) so that the system can be tracked correctly.

DOTMLPF Implication/Recommendation:

- Use automated integrated technology (AIT) in reading bar codes on subsystems to automatically pass the change in serial number to the combat repair teams (CRT). (Materiel)

Topic W: Security Of Ground Movement

(ART 6.3 Provide Transportation Support)

Observation: Convoys are the most vulnerable US targets for the anti-Iraq forces .

Discussion: The support vehicles arrived in theater woefully inadequate for the evolving threat. The BSB has beefed-up vehicles to combat this evolving threat. The BSB has been able to acquire some Tardec armor kits for different vehicles and has fabricated steel plated armor for all other vehicles that leave the wire. They have made a half-ring armor plate for their gunners. Their suggested improvement for the Tardec armor is bigger windows than the 12in by 12in windows that limit visibility. Only the gunner can fight in a moving battle because of the window size. The windshields of all vehicles need to be armored for 7.62mm. All doors on the vehicles need to open and close securely and easily. Crew-served weapons of choice are the M2 and M240B. The reason for the mix is to balance the heavy firepower of the M2 with the quicker, more accurate, M240B. The BSB has purchased riot-style face shields that can stop 7.62mm rounds (Protective Armor Products, part number702MT). Driver vision enhanced (DVE) is necessary in all vehicles because of dust and sand. Headsets for gunners are a combat multiplier and lifesaver as the gunner cannot hear commands from those inside the vehicle during a fight. Double stack radios are necessary to ensure the convoy has the capability to communicate with their parent unit as well as the unit controlling the area they may be traveling through.

Insight/Lesson Learned:

- Proper preparation of equipment will save lives. Units need to ensure that they have armored vehicles and ring mounts, DVE, protective face shields, headsets for gunners, a mix of firepower, and double stack radios.

DOTMLPF Implication/Recommendation:

- Modify unit MTOEs to reflect the equipment (armored vehicles and ring mounts, DVE, protective face shields, headsets for the gunner, M2s, M240Bs, and double stack radios) necessary to ensure success in convoy operations in this environment. (Organization)

Topic X: Local National Convoys

(ART 6.3 Provide Transportation Support)

Observation: Local national convoys are not being used, but local national trucks roll in Brigade Support Battalion (BSB) convoys.

Discussion: Local national trucks and operators are contracted to supplement BSB assets. They are protected as part of the US convoy. Their trucks are not armored or armed, and are not as fast or agile as US tactical vehicles. There has been at least one instance where a local national jumped out of his vehicle during a fight. Recovery operations are difficult since our equipment is not designed for recovery of these local nation civilian trucks.

Insight/Lesson Learned:

- The use of local national trucks can be a great logistic multiplier; however, their use in high threat areas needs to be as limited as possible.

DOTMLPF Implication/Recommendation:

- Use of local national trucks as a last resort option. Transportation requirement shortfalls should focus on tactical vehicle augmentation. (Organization)

Topic Y: Forward Operating Based (FOB) Re-supply Operations

(ART 6.4.1 Provide Base Camp Sustainment)

Observation: The Corps Support Battalion (CSB) and the BSB both conduct FOB supply with the BSB pushing forward of the FOB.

Discussion: The mix between the CSB and BSB in FOB re-supply allows the BSB to have the surge capability to support units operating outside of the FOB. The issue in this Area of Operation (AO) is the CSB is not capable (equipment and training) of moving through high threat areas. The CSB is not a dedicated SSG or an echelon above brigade (EAB) and therefore are not in direct support (DS) of the brigade which can have an impact on the brigade's priority to the CSB. The brigade has even had to provide back up support to the CSB for maintenance and has pushed re-supply convoys to Corps units in the AO when the threat was too high for the

CSB. The BSB relies heavily on aerial re-supply to elements outside of the FOB as often as is practical. The Sherpa has been a huge logistic multiplier.

Insight/Lesson Learned:

- Since the CSB is not a SSG or EAB, they are not in direct support of the brigade and therefore the brigade is not always a CSB priority.
- Use of Army fixed and rotary wing aircraft has been a great logistic asset.

DOTMLPF Implication/Recommendation:

- Support SBCT with a dedicated SSG or EAB to allow the brigade full freedom of maneuver. (Organization)

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