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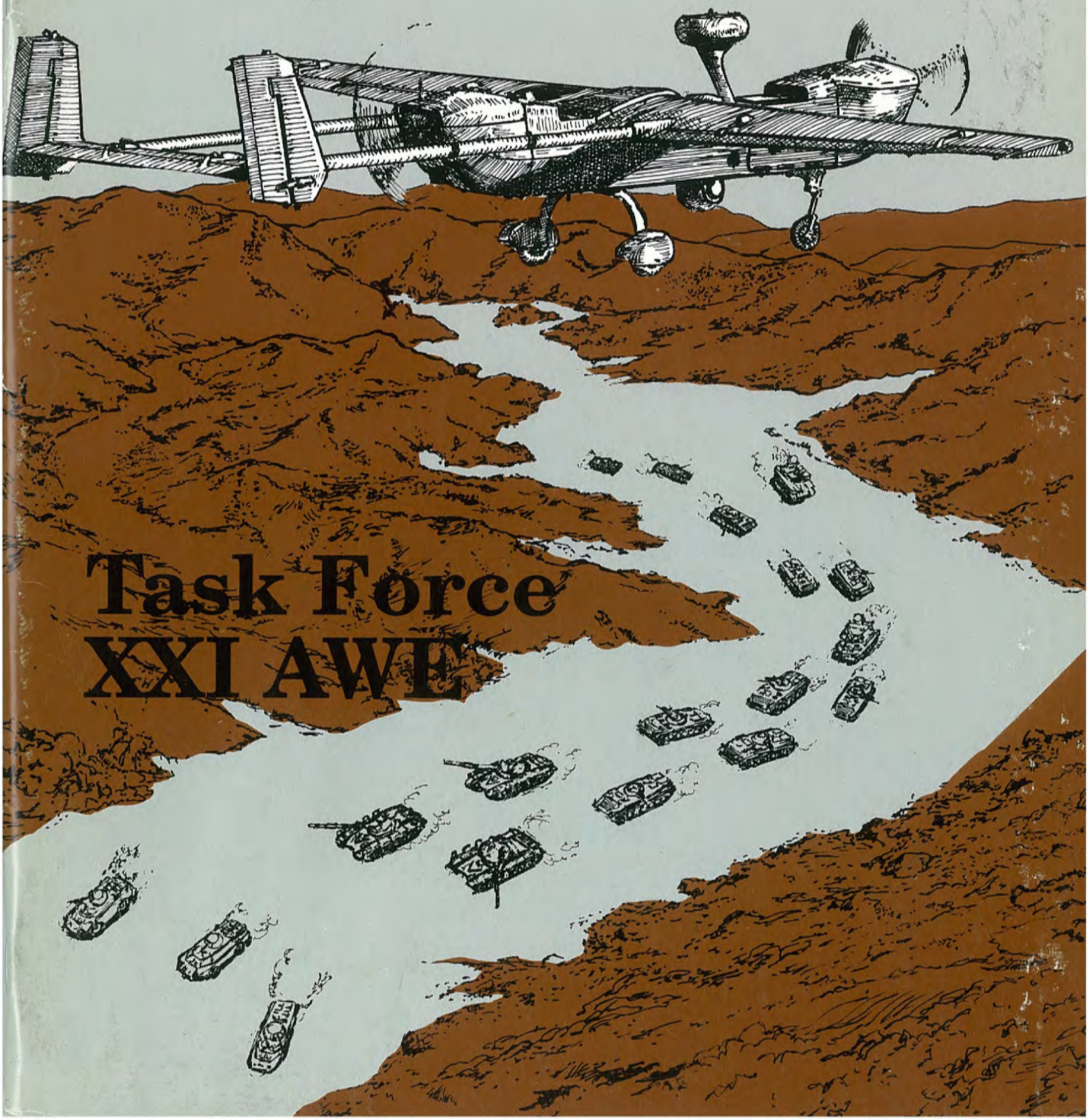
Military Intelligence

Professional Bulletin



Task Force XXI AWE

FROM THE EDITOR

"Intelligence is for the commander!" As the new editor of ***Military Intelligence Professional Bulletin***, my mission is to accomplish three primary goals:

- ☐ Include the combat commander as a primary member of our target audience.
- ☐ Maintain the high degree of informative, interesting, quality discussion of topics relative to MI.
- ☐ Significantly increase MI NCO authorship, and therefore readership and interest. We definitely need to hear more from our NCOs, the backbone of the MI Corps.

This issue of ***Military Intelligence*** deals primarily with the cutting-edge technology of the Army, and especially MI, as reflected in March's Task Force XXI Advanced Warfighting Experiment at the National Training Center. The outstanding articles contributed by writers from every echelon of the fight will make this a ready-reference and historical ***Military Intelligence***. Among the other articles in this issue are---

- ☐ CSM Skinner and MSG Carroll's article in the CSM Forum discusses what should be expected of today's MI NCOs in mission planning.
- ☐ The TECHINT discipline and its use at the NTC is discussed in CPT Outzen's piece, "Adding Realism to the AWE."
- ☐ A review of **Breaking the Phalanx** by Douglas Macgregor, a book with high interest.

I want to congratulate Captain Susan Miranda on her outstanding tenure as the editor, including five issues of ***Military Intelligence***. As she assumes command of E Company, 309th MI Battalion, the editorial staff and I wish her the greatest success.

We rely on you the reader to send us articles! Topics of interest for future issues of ***Military Intelligence*** include, but are not limited to---

- ☐ Intelligence support to the divisions (heavy and light) and joint operations.
- ☐ Brigade and battalion staff integration of IPB products.
- ☐ Lessons learned and MI TTPs during exercises, JTFs, Bosnia, Zaire, Somalia, Korea, and CTCs.

The Force XXI AWEs are our process of change to the Army of the next century. In keeping with the idea of change, how do you like our new look!

Emerson J. Rusk

Writer of the Quarter

Military Intelligence is pleased to announce that Lieutenant Colonel John R. Brooks (U.S. Army, Retired) is our **Writer of the Quarter** (July-September 1997) for the article, "The Results of the TF XXI AWE are In--Things Are A-Changin'." Congratulations to LTC Brooks and many thanks to all of our authors for their great articles, book reviews, and letters to the editor. Contributions like yours make ***Military Intelligence*** the forum for MI professionals.

How to Submit an Article to *Military Intelligence*

1. Select a relevant topic of interest to the MI community.
2. Write an outline to organize your work. Put the bottom line up front and write clear, concise introduction and conclusion paragraphs.
3. Follow proper rules of grammar. Consult **DA Pamphlet 600-67** or William A. McIntosh's **Guide to Effective Writing**, if necessary.
4. Maintain the active voice as much as possible. Write "Congress cut the budget" rather than "the budget was cut by Congress." (See **DA Pamphlet 600-67**, **Effective Writing for Army Leaders**, paragraph 3-2,b[1].)
5. Send the article to Commander, USAIC&FH, ATTN: ATZS-TDL-B, Fort Huachuca, AZ 85613-6000 or E-mail mcgoverne@huachuca-emh1.army.mil. Please include with your article—
   - ☐ Pictures, graphics, and crests with an adequate description and photographer credits. (We can return photos if so requested.)
   - ☐ E-mail the article or send a computer diskette in Microsoft Word 6.0, Word Perfect, or ASCII. Please do not use special document templates, and separate any graphics files from the text on the disk.
   - ☐ You **must** mail or fax a security release stating that your article is unclassified, nonsensitive, and releasable to the public.
   - ☐ A short biography with the full names of all the authors of the article. The biography should include each author's current duty position, other related assignments, civilian degrees, and advanced military education (CGSC, War College, SAMS, MSSI, SEIP, PGIP). (Tell us if we can print your telephone number and E-mail address with the biography.)
   - ☐ A cover letter with work, home, and E-mail addresses and telephone numbers, stating your wish to have the article published.
6. Remember, content is the most important part of your article. When in doubt, **send us your article**—we can work out the details.

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FEATURES

DEPARTMENTS

Purpose: The U.S. Army Intelligence Center and Fort Huachuca (USAIC&FH) publishes the ***Military Intelligence Professional Bulletin*** quarterly under provisions of **AR 25-30**. ***Military Intelligence*** disseminates material designed to enhance individuals' knowledge of past, current, and emerging concepts, doctrine, materiel, training, and professional developments in the MI Corps.

Submissions: Send your manuscripts, letters to the editor, photographs, and any inquiries to: Commander, USAIC&FH, ATTN: ATZS-TDL-B, Fort Huachuca, AZ 85613-6000; send via E-mail to mcgoverne@huachuca-emh1.army.mil; or telephone (520) 538-1004/5 or DSN 879-1004/5.

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Official:

JOEL B. HUDSON
Administrative Assistant to the Secretary of the Army
03573

VANTAGE POINT

by Major General Charles W. Thomas

AWE: Designing Our 21st Century Force

March 1997 saw the Army's Task Force XXI (TF XXI) Advanced Warfighting Experiment (AWE) begin and end at the National Training Center (NTC). This issue of ***Military Intelligence*** features articles on the AWE for good reason. No other single exercise will so effect the future design of the Army's 21st century force structure and doctrine.

The central hypothesis of the AWE was determining if the experimental force (EXFOR), using a number of digital improvements to command and control, could achieve information dominance over the opposing force (OPFOR). In so doing, could the EXFOR demonstrate dramatic improvement in warfighting capability?

I expect that most of us fully understand that if the technology brought to bear worked as designed, and EXFOR soldiers were properly trained to use it, then the hypothesis would, no doubt, be proved. Well, to me, the most interesting outcome of the AWE is that—despite the fact that most of the technology was not performance perfect and there were glaring training deficiencies in too many places—the EXFOR still achieved clear information dominance in almost every aspect of the term. This was especially true for the Intelligence initiatives experimented during the AWE.

Without doubt, the integration of a direct support (DS) MI company into maneuver brigade operations gave warfighting a tremendous added value. The combination of key sensors and now-battle processors at brigade made efficient the top-down and bottom-up integration of intelligence at this level of command. The Brigade Combat Team Commander had the resources to effectively anticipate and verify enemy intentions relevant to his area of responsibility—and to do so with a degree of timeliness and efficiency not possible before.

Even when previously untested prototype systems proved erratic, there was always sufficient capability to ensure enemy situational awareness, predictive analysis, and targeting accuracies necessary for information dominance. The integration of a total intelligence picture literally from national level through theater, corps, and division proved an overwhelming capability for clear information dominance.

It is important to note that all the military intelligence (MI) initiatives proved important to success. The removal of any single system involves an operational risk, for there is clear advantage in the integration of their capabilities. For example, the All-Source Analysis System (ASAS) provided the right tool for developing an intelligence preparation of the battlefield (IPB) at division that was enhanced at brigade for that level of operations. The IPB served as a guide for employing other sensors like the Joint Surveillance Target Attack Radar System (Joint STARS), ground scouts, and signals intelligence (SIGINT). These sensors often cued other precision confirming sensors like unmanned aerial vehicles (UAVs) and scout helicopters to look in specific locations. The latter proved successful because of cueing from the former, and this is only one aspect of our aggregate of systems that insured information dominance.

There will be much written about the TF XXI AWE —some of it rightly critical and other more laudatory. However, the plain fact is that the Intelligence battlefield operating system (BOS) worked—and worked well. No future commander will go to war willingly without the capability that MI brings to the fight. Without question, we have much room for improvement. Many of our systems are still prototypes, and the tactics, techniques and procedures are just as prototypical. But improve we will, in terms of technology maturation, training, and doctrine. It is up to all of us to make this happen—to get on a mutual road towards understanding our evolving BOS and make it work efficiently to support future operations, whether a full-up warfight or a stability and support operation. We can do it.

ALWAYS OUT FRONT!

CSM FORUM

by Sergeant Major Randolph Hollingsworth

Master Sergeant Timothy P. Carroll, Jr., and Command Sergeant Major Alex J. Skinner, Sr., formerly of the 104th MI Battalion, 4th Infantry Division (Mechanized) (4th ID (M)) are my guest writers for this issue. They discuss the importance of non-commissioned officers as key intelligence planners.

The NCO's Role in Mission Planning

As we evolve with the digital revolution, the noncommissioned officer's (NCO) role is expanding from mission execution into mission planning, a role formerly held exclusively by officers. The battle staff NCO is a key marker of this development. Force XXI intelligence NCOs in the 104th MI Battalion at Fort Hood, Texas, are quickly discovering their new roles in the lightning-fast planning-to-execution environment in which they are experimenting. Force XXI and, to a larger extent, how the digital revolution is changing the way we communicate and operate on the battlefield, have significantly reduced the time between plan development and execution.

NCOs from World War II through the Vietnam era were largely the executors of plans developed by officers at higher headquarters days or weeks before an operation began. Beginning in the late 1970s, the NCO's role began to slowly expand into the planning process as the all-volunteer NCO Corps replaced the drafted NCO Corps. The application of digital technology to tactical-level communications and computers in the mid-1980s began to reduce the time between plan development and execution. This allowed for considerably faster exploitation of information, shortening the decision cycle, and allowing for quicker situational awareness.

The AWE Series

Now we are experimenting with the idea of planning an operation that can quickly be published and disseminated with a few keystrokes on a tactical communications network where there are many players. Many of the recipients can respond to potential weaknesses in real time. The force experimenting with this idea and others, called Force XXI, is conducting a series of AWE simulations and field training exercises (FTXs). The 4th ID (M) at Fort Hood was chosen to execute two of these events. The first brigade-level FTX at the NTC in March, the TF XXI AWE, tested the concept of giving data and plans (situational awareness) to the soldier in near-real time. The key to accomplishing this was Appliqué software, installed in several hundred vehicles and command posts and linked via a robust tactical communications network as well as a heads-up display system for the individual soldier.

The second major AWE event is the Division XXI AWE, a command and control (C^2) exercise simulation with deployed command posts to take place at Fort Hood in November. The 104th MI Battalion is the primary source of intelligence collection, processing, and dissemination support to 4th ID (M). Intelligence is exceptionally critical in the success of both of these AWE events.

The stars on this playing field are new and prototype MI collection, processing, and dissemination systems. They include the Ground-Based Common Sensor (GBCS)-Heavy and -Light, the Joint STARS Light Ground Station Module (LGSM,) the Common Ground Station-Prototype (CGS-P), the latest ASAS processing hardware and software, UAVs, and others.

The NCO as Key Intelligence Planner

The systems do not always act as desired, but with the awesome capabilities they are bringing to the tactical intelligence battalion, we are quickly discovering how important it is for NCOs to be players in plans development. The NCOs' nuts-and-bolts knowledge of system capabilities is now essential to the planning process because we no longer work with planning and operational windows measured in hours, but sometimes only minutes. When NCOs are involved early and throughout the planning process, mission execution works smoother with a much higher degree of success.

Force XXI intelligence mission planning happens in four key organizations from division through battalion. They are the—

- ☐ Divisional Analysis and Control Element (ACE).
- ☐ Battalion Operations Center (BOC).
- ☐ General Support Operations Center (GSOC).
- ☐ Analysis and Control Team (ACT).

NCO Planning in the ACE

The ACE NCOs not only keep things operating, but are a part of the systems planning process from communication management through collection tasking to setting the ASAS along a path in line with the commander's priority intelligence requirements (PIR). Making an ACE happen is an awesome thing. It takes a tremendous amount of planning to ensure all the pieces are in place prior to an operation. The critical element for a successful operation is planning the communications architecture. Although a warrant officer normally spends agonizing weeks planning how the Communications Control Set, TROJAN Special Purpose Integrated Remote Intelligence Terminal (TROJAN SPIRIT), Tactical Exploitation of National Capabilities Program (TENCAP) systems, and other Force XXI communications devices will be tested, there are usually three or four NCOs ensuring the plan is whole. This normally happens through detailed layouts of the entire communications architecture and dialogue on how each communications system interfaces with other systems, providing redundancy as required.

Preparing the ASAS for an operation takes meticulous planning to ensure all the proper maps are uploaded and the right database is loaded for mission-capable status. This all normally happens while the ASAS officers are tied-up wargaming in the Division Plans Team, leaving the weight of ASAS planning on the ASAS NCO's shoulders.

The final important planning concept in the ACE is daily operations planning, clearly NCO business.

The ACE intelligence systems, although very capable, like any other mechanical system require a rigid preventive-maintenance-checks-and-services and maintenance schedule in order to maintain peak performance. Although this sounds like a simple task, its significance in planning and executing daily ACE operations should not be overlooked.

A key note here is that Force XXI has shortened the planning timelines and distorted the 104th MI Battalion's ACE to test a wide variety of communications and operational modes with constantly changing software and hardware pieces. This environment often demands NCOs to conduct mission planning while in execution mode.

The BOC, DTAC and the ACE Forward

One of the major doctrinal and organizational Force XXI tests is to collocate the BOC with the Division Tactical Command Post (DTAC), and a slice of the ACE called the ACE-Forward. A significant advantage of this move is the BOC's ability to plan quickly, coordinate, and execute movement of divisional intelligence assets throughout the battlespace (the combination of ground and air platforms is important to Force XXI). The BOC Battle Staff NCOs can conduct face-to-face coordination with those who control land and air space, reducing communications concerns and allowing immediate responses to evolving situations. The role of these NCOs is now more important because they must recognize when a plan is changing and quickly begin the planning, coordination, and execution of these changes.

We have demonstrated this concept in recent exercises by staying wired into the G2 and G3. Battle NCOs have assessed changes that were pending and subsequently began planning the next mission before a decision was made to change the division battle plan. Having immediate knowledge of G3 plans has improved the BOC NCOs' ability to plan, coordinate, and execute the movement of the division's collection assets to the most advantageous positions in time for the next battle. Added to this is the advantage of proximity with the ACE. This closeness allows the BOC NCOs to keep precise track of PIR and the current enemy situation. Essentially, the BOC Battle Staff NCO is doing much of the internal coordination and preliminary intelligence mission planning, leaving the Battle Captain time to coordinate actions external to the DTAC.

An important part of the Force XXI DTAC is that it is completely automated, much of it with Army Tactical Command and Control System computers like ASAS. Battles are no longer tracked on paper maps and acetate sheets, but rather via the computerized Maneuver Control System-Prototype (MCS-P). This allows the BOC Battle Staff NCO to see what the Battle Staff NCOs in other BOSs are doing. For instance, a BOC NCO can download the current Engineer overlay and consolidate it with an intelligence overlay, saving a tremendous amount of time.

GSOC

The GSOC controls SIGINT collection across the division's battlespace and conducts immediate initial analysis providing situational awareness to both the collectors and the ACT. The Force XXI GSOC manages an awesome array of SIGINT platforms including the GBCS-Heavy and -Light. The GSOC NCO is deeply embedded in the asset and collection management (CM) of these systems. This NCO is often in charge of a shift and responsible for ensuring the achievement of the battalion commander's intent and the execution of near-term asset and CM.

ACT

The ACT is a new organization that funnels and filters the impressive amount of intelligence now available to the brigade S2. Its primary role is DS to the brigade commander vis-à-vis the brigade S2. It manages its organic Improved Remotely Monitored Battlefield Surveillance System (I-REMBASS) teams, UAV platform control, and CGS-P taskings. The role of the NCO at this level is perhaps most critical for it is often that soldier who is conducting crucial UAV asset and collection tasking adjustments. The ACT NCOs often brief the brigade commander while the UAVs are in operation, describing enemy formations, vehicle types, and indicators of the enemy's most probable courses of action. The intelligence NCO in the DS role is required to have a more in-depth understanding of each organic collector. With the responsibility of providing more intelligence with less manpower and much more automated equipment to maintain, the responsibility for better mission planning, collection, dissemination, and control of limited resources and assets lies squarely on the NCO. Force XXI needs require the intelligence NCO to re-think managerial skills by forcing development of and strict adherence to standard operating procedures. Unlike the pre-Force XXI era, the DS role of ACT NCOs involves them initially, during every planning process, and finally throughout the execution of assigned missions.

Conclusion

With the further development of command, control, communications, computers, and intelligence (C^4I,) the NCO is ever more a part of the tactical planning process. The intelligence NCO is found at the battalion, brigade, and division-levels in greater numbers. Today's combat commander needs quality intelligence immediately to survive the present lethal battlefield.

The NCO's role in planning will continue to grow. The younger NCOs and soldiers of today often better comprehend emerging technology than those who are senior. Also, we feel the current NCO

Corps is more technologically astute and better able to quickly understand how it fits into a unit's operations. Force XXI operations will help us to better define the NCO's role in planning and executing intelligence operations into the 21st century.

ALWAYS OUT FRONT!

Master Sergeant Carroll is now at Fort Huachuca, Arizona. His previous assignments include First Sergeant Headquarters and Headquarters Operations Company and 1SG ACE Detachment, 104th MI Battalion. He has a bachelor of science degree in Computer Science from the University of Maryland. Readers can reach MSG Carroll through Command Sergeant Major Skinner.

CSM Skinner is currently assigned as the USAIC&FH Garrison CSM at Fort Huachuca, Arizona. His previous assignments include Battalion CSM at the 104th, 297th, and 18th MI Battalions; and G2 Sergeant Major, 6th Infantry Division. Readers can reach him at (520) 533-5384 or DSN 821-5384.

LETTERS

To the Editor:

"Military Intelligence In Bosnia"—theme of your October-December 1996 ***Military Intelligence*** —missed out on a great opportunity to highlight the tactical side of modern MI support to the commander. The editor of this volume completely overlooked the efforts and contributions of the 205th MI Brigade and more than 1250 of its soldiers. It seems an incredible oversight to have tackled the theme of "MI in Bosnia" without considering the record of performance of these great tactical MI soldiers. The 205th MI Brigade could well have been the lead article in your edition. To set the record straight, I offer the following.

The 205th MI Brigade deployed to Bosnia-Herzegovina, beginning 20 December 1995 and remained for eleven months as the primary intelligence organization belonging to TF Eagle to provide intelligence to U.S. and allied commanders. Based on soldier strength, the 205th MI Brigade was the most strongly represented Army MI unit in the Former Republic of Yugoslavia. With the complexity of the unit task organization, the 205th MI Brigade in Bosnia could well be the largest and most robust MI Brigade yet deployed in real-world operation. During this operation, I witnessed the MI doctrine heralded for a decade come to life, sustain itself, and evolve on a modern battlefield.

During its stay in Bosnia, the 205th MI Brigade varied between 800 and 1250 soldiers. Led by Colonel Charles J. Green and his staff of approximately 60 soldiers, the Brigade provided C^2 for focused, continuous, multidiscipline intelligence operations throughout the entire depth of the Multi-National Division-North (MND-N) sector for over 330 days. Tested daily, the Brigade answered key PIR, tested new technologies and staff structures, provided key interaction for MI leadership, interoperated with the U.S. Air Force and U.S. Marine Corps (USMC) elements, and perhaps most importantly, earned the trust and respect of hundreds of maneuver commanders throughout the TF.

The Brigade organization included the 1st MI Battalion (Aerial Exploitation) flying multiple daily sorties of Guardrail RC-12K over Bosnia from its base in Taszar, Hungary, under direct collection management from TF Eagle. This battalion continues its support to U.S. forces in the former Yugoslavia for the foreseeable future.

Also included in the 205th MI Brigade was the 165th MI Battalion (Tactical Exploitation) comprising more than 18 force protection teams, counterintelligence, and human intelligence (HUMINT). They provided the lion's share of HUMINT analysis to the TF ACE. Soldiers from this battalion also integrated into the TF J2X concept bringing access to theater and national HUMINT sources to bear. The Long-Range Surveillance Company, E/51st Infantry, assigned to the 165th MI Battalion, provided key support to the elections and TF reconnaissance and surveillance operations.

During the spring of 1996, the Brigade received the attachment of one USMC UAV company (Pioneer), which became task organized under the 165th MI Battalion (TE). In addition to providing leadership and support to assigned soldiers, the Brigade also provided C^2 and support to more than 80 marines and worked with the TF Engineers to construct a home, "Boyington Airfield," near the quarry camps, from which to operate the UAV.

Additionally, the Brigade received the attachment of the Divisional MI Battalion, the 501st MI Battalion (CEWI) effective during Exercise Mountain Eagle in November 1995 at Grafenwoehr Training Area, Germany. This battalion deployed to Bosnia under the 205th MI Brigade. It formed the nucleus of the analytic effort of the TF ACE and provided the bulk of the ground-based electronic warfare collection capability to the TF, incorporating numerous assets and personnel from theater and national agencies.

The 501st MI Battalion received the attachment of two additional TROJAN SPIRIT II teams, one from the 10th Mountain Division and the other from the 3d ACR. These teams were task organized to the DS Company teams in support of 1st and 2d Brigade, TF Eagle. Each Brigade S2 had daily access to his TROJAN SPIRIT II for products and analytical support.

In addition to its ground surveillance radars, the 501st MI Battalion received the attachment of an

entire light-division set of the I-REMBASSs. As part of the DS company teams, these soldiers earned a great reputation throughout the operation.

Add to the above organization the influx of about 200 temporary duty soldiers, particularly linguists, from throughout the active and reserve Army, without whose participation and special skills the TF would have clearly suffered. These soldiers played a key role in the Brigade's success and that of intelligence operations in MND-N. Many remain there today.

Soldiers from the 302d MI Battalion provided continuous support to operations in Bosnia from their forward- deployed locations in Germany. TENCAP systems including the Modernized Imagery Exploitation System (MIES), Enhanced Tactical Radar Correlator (ETRAC), Electronic Processing and Dissemination System (EPDS), and Enhanced Tactical Users Terminal (ETUT) produced tailored products daily in support of TF Eagle and other theater commanders. During mid-year 1996, the ETRAC deployed to Hungary and collocated with the Guardrail Imagery Processing Facility (IPF) to provide improved support and responsiveness. The challenge of maintaining the intelligence lines of communication throughout the entire communications zone was no amateur task, and their contributions were critical to tactical success.

When the redeployment order arrived, the soldiers of the Brigade knew that their task was not yet over. Since returning to Germany, the 205th MI Brigade continues to provide support to operations in Bosnia. In spring 1997, elements of the Long-Range Surveillance Company deployed back to Bosnia to support the upcoming fall elections. TENCAP and analytical elements continue to provide daily support. The Brigade provides equipment and individuals and teams for several key areas. Finally, the Brigade is using its experience in Bosnia to assist in validating follow-on MI forces enroute to serve our interests in that region.

In conclusion, the contributions of Vanguard soldiers deployed to Bosnia in the early days, when the Sava River was flooding its banks, the base camps were primitive and the minefields plentiful deserve mention. These soldiers truly went where no one had paved the path before and carried the burden of answering some of the most challenging questions yet posed to the MI Corps. They embody the highest spirit of soldiers of the MI Corps.

Major John P. Jenks
Wiesbaden, Germany

To the Editor:

Do a better job covering enlisted issues! In the last two bulletins, the Proponent Notes section contained no information for noncommissioned officers and junior enlisted soldiers. This is a disheartening situation given approximately 15,000 active component enlisted MI soldiers in the force and the many issues affecting enlisted careers. What is the impact of MI reorganization on enlisted assignments? Have operations in Bosnia and changes in threat technology required revisions to enlisted training? How has military occupational specialty restructuring affected promotions? These are a few examples of information that the Intelligence Center should be disseminating to the enlisted force through ***Military Intelligence***.

Military Intelligence is the professional bulletin of the entire MI Corps. Please make an effort to ensure ***Military Intelligence*** represents the enlisted members of that corps.

Sergeant First Class
Michael C. Taylor
Fort Huachuca, Arizona

To the Editor:

I would like to offer an historical footnote and a small correction to First Lieutenant Zeytoonian's excellent article in the April-June 1997 issue of ***Military Intelligence***.

In his first paragraph, 1LT Zeytoonian proposes that by flexibly employing the AN/PRD-12 Lightweight Manpack Radio Direction-Finding Set (LMRDFS) with the AN/TLQ-17A TRAFFICJAM, *"we can add value to the intelligence picture in a way we cannot if we leave this system in the AN/TRQ-32A(V)2 TEAMMATE, as designed."*

As background, I served from 1986 through early 1990 in the TRADOC Systems Manager for Ground IEW Systems. I was the officer responsible for the TRAILBLAZER, LMRDFS, and remote sensor systems.

The LMRDFS was **not** designed as a "ride along" adjunct system for the TEAMMATE. The LMRDFS was designed to meet the needs of low-level voice intercept (LLVI) teams in airborne, light infantry and special forces units. LLVI teams were at that time equipped with the AN/PRD-10 and AN/PRD-11, the latter a Forces Command quick-reaction capability (QRC) intended as a gap-filler until PRD-10 fielding was complete. The PRD-10 was a heavy system and did not include HF intercept and DF capability. In addition, force structure changes reduced the LLVI team from four men to three. Three soldiers instead of four carrying the PRD-10 would overload even the fittest of these exceptional troops. The PRD-11 QRC was also too heavy for the smaller team and required carrying along several tuning heads for different frequency ranges.

LMRDFS was designed to divide the weight among the three man LLVI team, net with others of its own kind or the TRQ-32, and add badly-needed HF coverage to the Army's tactical signals intelligence and electronic warfare capabilities. I agree with his proposed employment techniques for the TLQ-17 and the PRD-12, but his premise that the LMRDFS was designed to ride as an adjunct in the TRQ-32 is not correct.

Major Hugh Blanchard (USA, Ret.)
Yorktown, Virginia

TRADOC Commander Reveals Some TF XXI AWE Results

Released by the TRADOC News Service

...in the next 10-15 years, it will still be soldiers doing soldier things enabled and assisted by the technologies

The most important thing learned from the Task Force XXI (TF XXI) Advanced Warfighting Experiment (AWE) held in March at the National Training Center (NTC) at Fort Irwin, California, is *"that situational awareness is so powerful."* General (GEN) William W. Hartzog, Commander, U.S. Army Training and Doctrine Command (TRADOC), oversaw the creation and equipping of the TF, and the training of commanders and soldiers for the AWE at the NTC.

TF XXI is the 1st Brigade, 4th Infantry Division (Mechanized) at Fort Hood, Texas, also known as the experimental force (EXFOR). It had all the latest digital communications devices and other equipment. Soldiers from 1st Battalion, 5th Infantry Regiment, Fort Lewis, Washington, were outfitted with night-vision equipment and Javelin antitank weapons to provide the light infantry component to the AWE. At the AWE, the TF put its equipment, concepts, and training to the test against the NTC's world class opposing force (OPFOR).

Situational awareness consists of three things, according to the General. They are knowing where you are, the location of friendly forces, and the location of the enemy. Attaining situational awareness was possible through the use of the Joint Surveillance Target Attack Radar System (Joint STARS) aircraft, unmanned aerial vehicles (UAVs), and the tactical internet which linked all the components of the EXFOR.

The AWE tested 71 new equipment prototypes. They ranged from the Apache Longbow down to simple, small, laser signaling devices. GEN Hartzog said that about 85 percent of the prototypes met their requirements. Of the rest, ten percent need improvements to be useful, and five percent were *"ideas whose times have not yet come."*

Among "the great winners" were Joint STARS, the UAV, and the Javelin. The TRADOC Commander said that Joint STARS really is important to getting the big picture. He said, *"You fly the UAV...to validate, to see the detail."* The two systems are "indivisible" partners, according to the General. During the AWE, the tandem forced the OPFOR to change its operational patterns. GEN Hartzog indicated that—

They had to reorganize for force protection. They were 50 percent more defensive than they had ever been before according to the commander.

Not everything worked in the desert. But several important systems proved they will be valuable with some modifications:

- ☐ The tactical internet must be improved to make it more efficient.
- ☐ Leadership training should be changed to help commanders adapt to and trust the rapid computerized representations of the battlefield.
- ☐ More work will have to go into making combat service support delivery on the battlefield more efficient.

The General also said he thinks there will be an increased civilian presence on future battlefields. Although the new systems had a 98-percent operational ready-rate throughout the AWE, civilian contractors were present to quickly put them back on line when they failed.

As much as the computerized equipment provided *"a major view into a future,"* GEN Hartzog said there was one truth that he "relearned" every day:

The soldiers, the noncommissioned officers, and the officer leaders were still the centerpiece of this. At least in the next 10-15 years, it will still be soldiers doing soldier things enabled and assisted by the technologies.

Attention NCOs

Send us your articles and book reviews. If you have experience you can share on MI doctrine, professional development, or "how-to" tips, please send them to ***Military Intelligence***. Topics of interest for future issues include—

- ☐ Intelligence support to the 101st Airborne Division (Air Assault).
- ☐ Joint Readiness Training Center lessons learned.
- ☐ Unit collection management, planning, and synchronization.
- ☐ Brigade or battalion staff intelligence integration and intelligence preparation of the battlefield products.

E-mail them to mcgoverne@huachuca-emh1.army.mil, call (520) 538-1005/4 or DSN 879-1005/4. Do not worry about the style, we will work with you on it!

The Results of the TF XXI AWE Are In--
Things Are A-Changin'

by Lieutenant Colonel John R. Brooks (U.S. Army, Retired)

This article is about the recent Army Advanced Warfighting Experiment (AWE), Task Force XXI (TF XXI). I am going to use General (Retired) Gordon R. Sullivan's book, **Hope is Not A Method**, as the foundation for this discussion.[1] General (GEN) Sullivan is the visionary that created this remarkable process.

Many stories exist as to what exactly happened at the National Training Center (NTC) in March 1997. At times, it was difficult for even those that were actually there to tell the difference. Much will be written about the TF XXI AWE lessons learned as well as the other parts of the three years of experiments past and the ones still to follow.

Experimentation—Part of the Legacy

It is difficult to discuss the future, without a look into history. It is important to know where one comes from to understand where one is going. Experimentation has always been part of the Army's history, normally tied to technological advances.

it was important to keep the Army training and looking to the future, not to the past—to see itself growing, not declining

In the 1970s, helicopters and air assault operations were introduced. The 101st Airborne Division (Air Assault) developed from this experimentation. In the 1980s, we had the 9th Infantry Division (ID), a high-technology testbed. The 9th ID proved some very interesting ideas and pieces of equipment like the high-mobility assault vehicle.

Keeping the Army Growing

In 1991, when GEN Sullivan became the 32nd Army Chief of Staff, he walked into a very challenging situation. The Army was returning from a great victory, Operation DESERT STORM. The Cold War was over, and Congress was demanding a smaller Army by giving it a much smaller budget. The Chief was faced with the mission of downsizing the Army. He was also feeling the impact of a relatively new technology, the microchip. Something that had the potential of changing warfare as dramatically as the machine gun and the airplane. Facing this downsizing, he felt it was important to keep the Army training and looking to the future, not to the past—to see itself growing, not declining. To achieve this end, the Army needed to demonstrate the future, to show people what could be. GEN Sullivan said it best, *"Think, Do, Be."* As he states in his book—

> *Demonstrating change on this level involved a series of linked experiments supported by a campaign to communicate the new themes throughout the Army and among its external constituents.*[2]

As a focal point, he created the Louisiana Maneuvers Task Force, under then Brigadier General Tommy Franks. The name came from the large-scale experimentation early in World War II. The purpose of this TF was to spur the Army into the future. This was a very controversial group of officers working directly for the Chief. The group was not only allowed, but encouraged to circumvent the Army's own bureaucracy. Out of the Louisiana Maneuver Task Force effort, the Advanced Warfighting Experiments were born.

The TF XXI AWE was merely a continuation of this process. The AWEs were designed to take the Army on a journey, one in which there is not a finite end-state. TF XXI is part of a larger vision, Force XXI, the Army of the 21st century—an Army built around information. The AWE process began at Fort Hood, Texas, with a digital tank platoon in the 1st Cavalry Division, followed by a digital company.

In 1994, an entire battalion TF, Task Force 1-70, was taken to the NTC as part of the Desert Hammer AWE. MI was there (in Operation Desert Capture II), with the largest intelligence deployment since Operations DESERT SHIELD and DESERT STORM. To many, TF 1-70 was considered a disaster (I was there and it was far from a disaster). Sometimes, we have to admit we have a problem before we can fix it. The Army is a large, complex organization, with many moving parts. Historically, things have had to be broken to institute change. GEN Sullivan uses an example from the Civil War to illustrate this. In the winter of 1862, when troubled by the fact that Union artillery was superior to his own, Robert E. Lee ordered all 6- and 12-pound howitzers melted down to be recast in a standard size to simplify field ammunition. This placed his

batteries more nearly on an equality with those of the enemy.

Can you imagine the consternation this caused in the ranks of the artillery as their cannons were being hauled off to be melted down? We saw similar looks as we "broke" things only to begin rebuilding as TF XXI.

AWE Players and Equipment

TF XXI is the 1st Brigade Combat Team (1BCT), 4th Infantry Division (Mechanized), the Raider Brigade. The 1BCT consists of the headquarters, an armor battalion, mechanized infantry battalion, light infantry battalion, forward support battalion, engineer battalion, field artillery battalion, aviation battalion, air defense artillery battery, a military police platoon, chemical company, and a signal company. It also has a couple of new organizations: the Brigade Reconnaissance Troop (Brigade Scouts) and a network management platoon. It has two other units, Alpha Company, 104th MI Battalion, with its Analysis and Control Team (ACT) in direct support and Delta Company, 104th MI Battalion, for ground-based signals intelligence (SIGINT). More than 5000 soldiers were part of the 1BCT.

The vertical intelligence structure was in place supporting the Brigade, including the—

- ☐ Division Analysis and Control Element (ACE).
- ☐ XVIII Airborne Corps ACE. (The XVIII Airborne Corps was used because of its more modern systems.)
- ☐ Alpha Company, 15th MI Battalion (Unmanned Aerial Vehicle (UAV)).
- ☐ National Ground Intelligence Center in Charlottesville, Virginia, and Washington, D.C.

More than 30 MI organizations participated.

The scenario was very similar to an Intrinsic Action (such as the rotations in Kuwait) deployment gone sour with one brigade in the theater when the Iraqi Army decides to come south. Multiple national and theater collection systems deployed to support the force. This included national satellites, U-2s, SR-71 Blackbirds, and the Joint Surveillance Target Attack Radar System (Joint STARS). The force was also equipped with many modern tactical intelligence systems, including the—

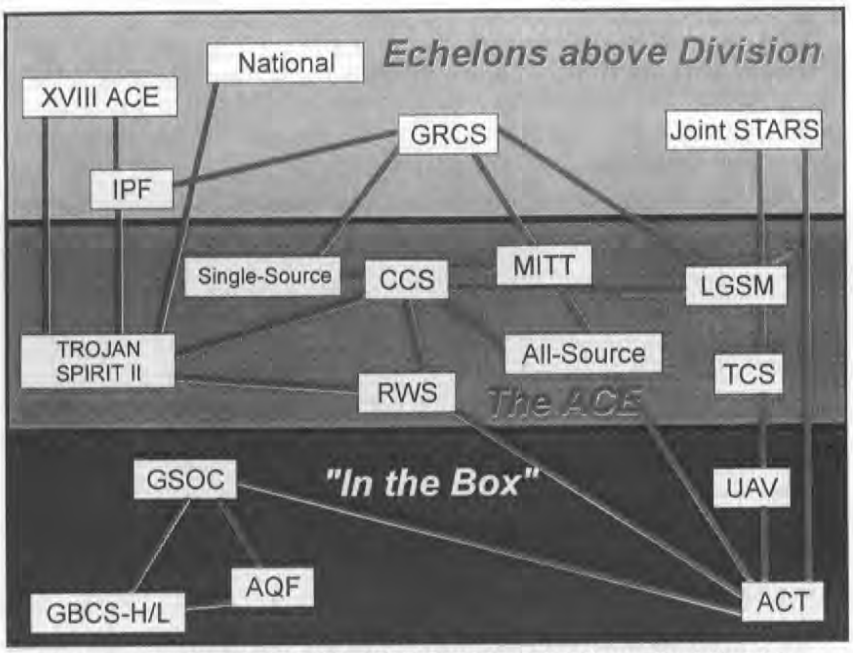

Figure 1. Task Force XXI AWE Communications Architecture.

- ☐ Intelligence and Electronic Warfare Common Sensor (IEWCS) family: Ground-Based Common Sensor-Light and -Heavy, Advanced QUICKFIX, and the Guardrail Common Sensor System 1.
- ☐ Hunter UAVs.
- ☐ Common Ground Station-Prototype.
- ☐ Improved-Remotely Monitored Battlefield Sensor System (I-REMBASS).
- ☐ All-Source Analysis System (ASAS).

So what was different? The force had some modern equipment like Paladin artillery systems and Apache Longbow helicopters. It had some prototype systems like Appliqué, the software that provided common situational awareness down to the individual fighting platform and soldier. This unit, to paraphrase GEN William Hartzog, could see itself and see the enemy. This situational awareness, or access to a "common relevant picture," was a very powerful, very different, and a very good thing. The experiment started with more than 300 initiatives, or good ideas; in the end, we evaluated 72 initiatives at the NTC. (By the way, we ended up with all the MI initiatives originally submitted.)

The Battle With the OPFOR

At the NTC, not all the battles were won—if you define winning as reaching an objective or preventing the enemy from reaching his objective. In fact, I think the official record is about 50-50. One must dig deeper than that to truly understand what occurred. I am sure the history will be written and rewritten many times from many different viewpoints on this subject.

Every battle began with a 90-percent or higher read of the enemy...down to individual fighting position and vehicle. In the 14 days of battle, 1400 tanks were positively identified by the UAV. This is documented by the testers, Test and Experimentation

Command (TEXCOM) and Operational Test and Evaluation Command. TEXCOM actually had imagery analysts study each frame of film and count the objects. Joint STARS tracked the enemy relentlessly. Every obstacle was located and that data was provided to the 1BCT. The enemy could not use a radio without being intercepted and located to very precise coordinates. National systems watched defensive positions as they were being built. The brigade won most of its reconnaissance and counterreconnaissance battles.

the bottom line is, get the technology in the hands of soldiers and they will tell you how to use it. This is the essence of the AWEs

So, one may ask, why did the brigade ever lose with near perfect intelligence? I am sure this will be debated for many years, but I think it has to do with the ability of the Army to assimilate the capabilities we now have. We must be able to train with these capabilities and learn to trust them. This process takes time. We have to change how we train, and we will have to change some tactics and doctrine to take advantage of this edge.

The 1BCT was probably among the best that has ever hit the NTC. They got better every day. As the 11th ACR (OPFOR) Commander, Colonel Guy Swan, said on training day 13, *"I am glad there is not a training day 15. These guys are inside my decision cycle and getting better every day."* A rare situation existed: the world-class NTC OPFOR was consistently struggling to fight and win.

This intelligence force was a very powerful organization. It was truly a flat, internetted organization. The following is one example. We used electronically shared "white boards" to link disparate groups of individuals, creating a synergistic approach to problem solving. For instance, during a hasty attack against a hasty defense, we put a blank map sheet on the electronic white board.

We had national analysts reading out imagery and radar products, corps analysts working theater systems, division analysts using UAVs and theater downlinks, the Brigade ACT putting on scout and UAV reports, and tactical SIGINT analysts all simultaneously placing what they were finding on this map. In a very short time, the enemy situation was depicted quite accurately. We did not use a situational template to confirm or deny a predicted situation, we built the enemy situation in real time, and the product was already disseminated! All shared in its development. This also created a better understanding of the enemy situation as the recipients participated in its development. The unit trusted the read because they participated in its formation.

Lots of people talk about a flat, internetted organization of the future, but when we showed them one, some felt very threatened. Maybe an analyst in Washington can contribute to a tactical situation? How do we deal with this? How do we use it? How do we harness this power? How does it change us?

Conclusion

What does all this mean to Army MI? We will have to change. The Army of the future will be very different because of what we learned from this experiment. The weekend this article was written, a group of 4th ID (Mechanized) (4th ID (M)) soldiers were in Washington testifying before the Congress on the effects of digitization. It appears that digitization will be accelerated across the Army. Everyone will not immediately embrace the decisions on this force of the future, but we must be ready to accept the change. History is full of examples of how hard change is to assimilate.

I heard the following argument at Fort Irwin, California. *"The computers are untested, unproven, too fragile, and prone to breaking down in the field. Besides that, we will be giving soldiers and commanders too much information, we will overwhelm them!"* I do not know about the rest of you, but as long as it is relevant information, I am not sure you can tell me too much about the enemy I am facing or about my own unit. I guess the bottom line is, get the technology in the hands of soldiers and they will tell you how to use it. This is the essence of the AWEs.

As GEN Sullivan puts it, overcoming resistance is a big step in effecting change and will influence the rate at which transformation can take place as much as any other factor will. If you are not attacking, you are defending.

The TF XXI AWE was about overcoming resistance and attacking the future, not defending against it. The results of Task Force XXI are in. The Army is ready to move into the future. I was there and I am happy to report MI is still leading the way!

Endnotes

1. **Hope is not a Method: What Business Leaders Can Learn from America's Army**, GEN Gordon R. Sullivan (U.S. Army, Retired) and Michael V. Harper, 1996, Random House, Inc.
2. Sullivan, 12.

Lieutenant Colonel Randy Brooks was the G2 of the 4th ID (M), the Army's Experimental Force, Fort Hood, Texas. He retired from active duty on 30 June 1997. His previous assignments include Deputy Director Battle Command Battle Lab-Fort Huachuca, Project Manager Army Intelligence Agency Network (AIANET), and Automation Management Officer, U.S. Army Intelligence and Threat Analysis Center, Washington, D.C. During Operations DESERT SHIELD and DESERT STORM, he served as the Chief of National Systems, Third U.S. Army. He graduated from The Citadel with a bachelor of arts degree in Political Science. Readers can contact the author via E-mail at brooksj@n-link.army.mil.

On the Path to the Digital Division: Force XXI and the AWEs

by Colonel Albert F. Turner

The Task Force XXI (TF XXI) Advanced Warfighting Experiment (AWE) was historic in many ways. Yet, even as it made history, it started the process of changing the course for the future. If the Army can continue the methods established during the three-year AWE process, we will be able to rewrite the outcomes historians would have predicted just a short time ago. Intelligence, as it has so much in past history, played a significant role in the TF AWE and will be important in the years ahead. Arguably, the intelligence community is about to undergo some of the most radical and intriguing changes as the Army transitions into the 21st century. History will be made as intelligence adapts and adjusts to the changing and changed environment of the Army's 21st century force.

Background

The AWEs are a part of our recent past. Just three years ago, the 24th Infantry Division and an armored TF, 1-70 Armor from Fort Knox, Kentucky, completed the first AWE. It was the first digitized rotation ever conducted at the National Training Center (NTC).

That experiment was illuminating. The TF from Fort Knox was the digital TF. It was provided little opportunity to train with the gaining brigade out of Fort Benning, Georgia. Due to delayed fieldings, it also had little opportunity to train with the digital equipment. Often, that equipment on hand for training did not perform as advertised. Consequently, the unit was still attempting to learn the use of the new technologies even as it made final preparations to depart the "Dust Bowl" and confront the opposing force (OPFOR). Intelligence operations suffered proportionally. The TF S2 did not know how to avail himself of the capabilities inherent in his battalion, nor did he know how to share that information with his higher headquarters. Worse yet, he had no ability to electronically share it because he was digitized and was trying to communicate with an analog higher headquarters.

The Army learned two main lessons about experiments through this initial effort. First, despite the numerous technical and training difficulties encountered, digitization was a powerful combat multiplier, and we had just had a sneak preview of things to come. Second, the Army learned a great deal about how future AWEs should be structured to allow the unit to train and succeed.

To that end, it established two driving force milestones. The first milestone was a date beyond which we would no longer allow incorporation of new initiatives or suggestions into the experiment (good-idea-cutoff date). The other was the date by which all promised hardware, software, training packages, and so forth would be delivered to the experimental unit (everything-in-place date). Enforcing those dates would in turn allow the unit sufficient time to train prior to the experiment. The first AWE had been a success. We needed to go forward.

And we did. Several AWEs later—including three Prairie Warrior exercises, Focus Dispatch (involving virtual forces fighting alongside live TFs) and Warrior Focus (light infantry in the JRTC environment)—we arrived at the NTC. An extraordinary number of personnel and agencies combined to form one of the most cooperative and comprehensive teams in the history of the Army. The historic cooperation that allowed the successes of World War II and Operation DESERT STORM were, in a microcosm, present at Fort Hood and then at Fort Irwin for the execution of the TF XXI AWE.

What happened in the desert has been reported in many other venues. Suffice it to say that the long hours, days, weeks and months of preparation paid off. There were flaws directly attributable to immature technologies and insufficient training. The Army not only glimpsed, but stared the future right in the eye—the intelligence community, with its historic foundation, was there in the heart of it.

We will field a digital division by 2000. We will field two additional digital divisions, a corps headquarters, and a corps slice by 2004

Technologically, the S2s and G2 had more information than many had seen in the recent past. In DESERT STORM, Joint Surveillance Target Attack Radar System (Joint STARS) data was fed to the theater; then the information passed to the lower units by voice. In March 1997, the information was fed directly to the brigade. They knew how to use it and they used it extremely effectively in finding, targeting, and killing the enemy.

The unmanned aerial vehicles (UAVs) were another key asset. They found, targeted and helped direct the killing of the enemy, to such an extent that the OPFOR attempted special tactics just to

Photo provided by SGT Alyssia Levesque

The EXFOR Reconnaissance Troop Commander works on Appliqué in a HMMWV.

neutralize the UAVs' devastating effects on their operations.

The way ahead for the Army is now known in general terms, although there are an extraordinary number of details still to be determined. We will field a digital division by 2000. We will field two additional digital divisions, a corps headquarters, and a corps slice by 2004. This is the point where historical trends are changing and we are rewriting the Army's future history.

The Future Digital Division

The new direction will begin to reveal itself this autumn. There is one more official AWE to go. The 4th Infantry Division (Mechanized) will, using the Battle Command Training Program as the vehicle, conduct an AWE in November 1997. That experiment will implement a division design slightly different from that used in the March 1997 AWE.

The first significant direction change will be the division structure. The division design that is ultimately implemented will no doubt vary somewhat from the two AWE precedents. Just 90 days after the November AWE, the Army will make a final decision on the design of the future heavy division. That is the force that the Army will field in 2000 and beyond. The mechanism is in place to solicit input from the field and to complete the staffing process; this will allow the Army Chief of Staff to render this all-important decision. Never before have such momentous changes in organization been decided so quickly and yet with such a methodical approach.

Equipment is another area of significant change. The digital equipment experimented with in the field in March and again in November 1997 is not, in all cases, the final design of the system or systems. Much work remains to be done. The integration by the Consolidated Technical Support Facility at Fort Hood allows testing, integration, and training to occur simultaneously, enabling fielding of the final products to the first digital division in the next two years.

The Army has seen the future, measured it against the past, and has decided to change the way we change. Force XXI is the process

In some cases, the most modern or objective-design systems will simply not be available by 2000. Consequently, the first digital division is being labeled an "interim" division in recognition of these acknowledged shortfalls. (This does not connote a lesser quality.) The division will be able to command and control its forces using digital equipment, will be able to maintain a common relevant picture, and it will manage its sustainment operations.

Furthermore, digital technology will extend to every platform in the division using an early version of the family of battle command at brigade and battalion ($FBCB^2$) devices, much like Appliqué did for the brigade at the NTC in March. Later divisions, labeled "objective," will have the most modernized weapons and all enabling technology envisioned by division designers and proponents.

Concurrently with the technological changes, the Army must change the philosophy in many of the branches. Logisticians arguably assert that the changes they have had to make are the biggest and most painful of the lot. Perhaps, but the Intelligence branch can also make such a claim.

Changing Role of the S2

The doctrinal staff decisionmaking process calls for the S2 to develop a template of the enemy's capabilities and his most likely course of action (COA) early in the planning process. That template drives all future activities including the friendly scheme of maneuver and the intelligence collection plan. There is intellectual tension between the developers of the templates at each command level, and each is convinced that the others do not understand the big picture. Over the past few years, developing the template has become a one-time event, and the collection plan only partially confirms or denies small portions of the template. Consequently, friendly forces have rarely crossed the line of departure with a good picture of the enemy. The unit will fight the previously published plan because it is the best they have at the moment, and they flex their way through developing situations.

Shared information and situational awareness changes that. Significantly, at the NTC rotation in March the friendly force had a

60-percent or better "read" on the enemy every time before they actually made contact. More often it was 80 percent or more. Unfortunately, that "read" was not used for two reasons.

First, in an analog environment we are conditioned to not having a good picture. When we did have it, it was so unusual, we discounted it as not being possible. Second, the largely complete picture was never available before the promulgation and rehearsal of the plan. Adjusting the plan in reaction to late-breaking news was determined too risky even when the confirmed information was radically different from the template and therefore from the plan.

Conclusion

The way ahead is daunting, but it is also bright. Ask any of the 5000 soldiers who fought in the TF XXI AWE rotation whether they would like to go back to the analog method. Despite the painful and irritating technical glitches, despite the lost opportunities to train, despite the confusion on the battlefield wrought by technology, the answer is a resounding **no**! They have seen the future and they like it. The Army has seen the future, measured it against the past, and has decided to change the way we change. Force XXI is the process. The intelligence community is deeply involved and is at the heart of the process.

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ASAS Master Analyst Program

The U.S. Army Intelligence Center and Fort Huachuca will offer a unique program to provide commanders specially trained intelligence analysts. This program is designed to meet the challenges of advanced automation and the demands of MI senior noncommissioned officers. A special branch has been established at Fort Huachuca to lead and control all aspects of the project.

The program is centered around an eight-week additional skill identifier (ASI)-producing course. All MI MOSs can attend, however, the ASI is only for 96B and 98C MOSs. The All-Source Analysis System (ASAS) Master Analyst Course is designed to take experienced MI personnel who have been successful ASAS operators and turn them into highly skilled intelligence analysts. The training will provide expertise in using ASAS system tools to solve intelligence problems. Graduates will be able to—

- ☐ Plan and supervise ASAS operations.
- ☐ Apply advanced analytical techniques and integrate ASAS into mission operations.
- ☐ Supervise instruction, and ASAS training management, including the ASAS skills test.
- ☐ Evaluate unit and individual performance.
- ☐ Direct and supervise the conduct of ASAS component maintenance (all-source and single-source workstations, communications interfaces, and supplemental equipment).

The major training objectives of the course are—

- ☐ Develop and maintain the unit TACSOP.
- ☐ Design and implement an ASAS training program.
- ☐ Troubleshoot ASAS system components (Communications Control Set, Compartmented ASAS Message Processing System, and the all-source, single-source, and remote workstations).
- ☐ Apply advanced automated analytical techniques to the intelligence process.

Graduates of the course will be awarded a special diploma and the ASI "1F".

Prerequisites for the course are E-5 promotable and above, basic noncommissioned officer course graduates, in an MI MOS, and nominated by their battalion commanders. Candidates should demonstrate proficiency and experience with ASAS prior to application as the course requires extensive background knowledge.

Personnel enrolled in the ASAS Master Analyst Program will have their assignments managed similar to the Armor Center's Master Gunner Program. The ASAS Master Branch at Fort Huachuca will coordinate assignments through the U.S. Total Army Personnel Command for personnel in the program. Assignment patterns will be diverse (strategic and tactical) with opportunities to exit the program to meet Army or career requirements.

Specific positions have been coded in unit manning documents to reflect ASAS Master Analyst requirements. These challenging positions are in the ranks of sergeant first class and master sergeant. Currently the Army has approximately 75 of these special positions.

A web page will be created to allow all personnel to communicate with the ASAS Master Branch and have an active voice in their own futures. The webpage for the "Sly Fox" program will be accessible through the TRADOC System Manager-ASAS homepage at URL http://www.tsmasas.army.mil. Your Web browser must be one that supports frames, such as Netscape 3.0 and Internet Explorer 3.0 to access the TSM-ASAS homepage.

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Photos courtesy of the author

UAVs at the AWE

Lessons Learned and Future Applications

Throughout the [AWE], the UAVs consistently answered the commander's priority intelligence requirements....The UAV, integrated with Joint STARS, became the combat multiplier for the 1BCT

by First Lieutenant William R. Byars, III

The views expressed in this article are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.

The digital battle of tomorrow will be won by the commander who receives the most timely and accurate intelligence. Unmanned aerial vehicles (UAVs) are a unique and significant contributor to our warfighting capability today and in the next century. Tactical commanders who have witnessed the revolutionary capabilities that UAVs bring to bear on the battlefield recognize its tactical applications as a collection and targeting asset. Providing the commander with real-time and accurate intelligence, when and where he needs it, allows the commander to make timely decisions that may dictate the course of an engagement.

The UAV Mission

The UAVs are tailorable enough to allow for a diverse array of missions across the entire spectrum of operations. One consolidated Launch and Recovery Site (LRS) is capable of supporting units at several echelons, allowing each unit to independently control its own UAV and mission planning process. UAVs can support additional units via the Remote Video Terminal (RVT), which enables these units to receive a real-time video downlink while a mission is in progress.

As a collection asset, UAVs can enhance the intelligence preparation of the battlefield (IPB) process and can be used in areas of the battlefield that the commander believes are critical to his success. As a targeting asset, UAVs have proven their ability to provide accurate grids of targets to the artillery, and to adjust fire if necessary.

Recently, the Hunter UAV successfully tested a laser target-designator payload designed to guide the Hellfires, Copperheads, and other laser-guided munitions. During the test at White Sands, New Mexico, Hunter targeted five tanks for destruction by five Hellfire missiles fired from a Kiowa helicopter. The ability to visually acquire targets and pass targeting data introduces a whole new dimension to current UAV capabilities as a targeting platform.

In addition to the UAVs' primary role of providing reconnaissance, intelligence, surveillance, and target acquisition, UAVs are also well suited for providing battle damage assessment (BDA) and rear-area security. Unlike manned aircraft, UAVs may fly into contaminated areas of the battlefield without the risk associated with piloted aircraft. Rather than solely focusing on the close fight, they can also look deep. They can accomplish this through a variety of methods including satellite communication (SATCOM) with the UAV, and by microwave datalink via a relay UAV (in Hunter's case, this method extends its range to more than 250 kilometers).

UAVs at the AWE

Alpha Company, 15th MI Battalion Aerial Exploitation (AE), equipped with the Hunter UAV, is the Army's only tactical UAV company in the operational forces. A primary mission of this company is the development of tactics,

techniques, and procedures (TTPs) for UAVs in support of a corps, division, and brigade. In March 1997, Alpha Company demonstrated the value and effectiveness of UAVs while supporting the 1st Brigade Combat Team (1BCT) during the Army's Task Force XXI (TF XXI) Advanced Warfighting Experiment (AWE) at the National Training Center. The Hunter UAV successfully supported both the 1BCT and 4th Infantry Division (Mechanized), logging more than 281 hours and providing the 1BCT with a 90-percent resolution of the battlefield. The timely and accurate intelligence Hunter provided clearly placed the information advantage with the 1BCT.

UAV Site Configuration

To support the 1BCT, Alpha Company operated in a split-site configuration. This consisted of a Mission Planning and Control Section, located with the 1BCT tactical operations center (TOC) in the maneuver box, and an LRS site located at Bicycle Lake. The supporting element with the 1BCT was composed of one Mission Planning Section (MPS), one ground control station (GCS), and two Launch and Recovery Data Terminals. All missions for the Brigade were controlled from this site except for the UAV launch and recovery operations. During the course of each mission, supporting elements with RVTs received the same imagery intelligence as did the Brigade.

Hunter consistently provided daytime and nighttime imagery to the 1BCT and its TFs

UAV imagery and Joint Surveillance Target Attack Radar System (Joint STARS) moving target indicators (MTIs) were integrated by routing the UAV video telemetry from the MPS to the Common Ground Station-Prototype (CGS-P), the primary intelligence receiving point in the Analysis and Control Team (ACT). From the CGS-P, the video could be routed to users not equipped with RVTs, such as Task Force 1-22, which received video via SATCOMs.

Targeting the OPFOR at the Advanced Warfighting Experiment.

The CGS-P also routed video inside the Brigade TOC and was used by both the Brigade S2, and the Fire Support Officer (FSO). The S2 primarily focused his attention on the video during UAV collection missions. The FSO's chief concern was during targeting missions, at which time he also wore a headset for direct voice communications for artillery coordination with the UAV Mission Commander (MC).

Force on Force

Through the emplaced RVTs at subordinate units, Hunter consistently provided daytime and nighttime imagery to the 1BCT and its TFs during the six battles of the AWE. The impact UAVs had at the AWE was a significant one, confounding the opposing force (OPFOR) in its search to avoid UAV lethality. Going into every battle, each commander understood the UAVs' domination of the battlefield and planned accordingly. In the case of the OPFOR, TTPs were actually developed to detect, acquire, and destroy the UAVs.

UAVs are not invulnerable. Still, they are difficult to detect and kill, since at 12,000 to 14,000 feet mean sea level, the UAV is extremely hard to hear or see. To detect the UAV, the OPFOR established observation posts (OPs) on hilltops. Once an OP heard and made visual contact with the UAV, it would next relay the approximate location of the UAV to Asset IV air defense artillery (ADA) crews, who would then attempt to acquire the UAV with their radars. Next, the ADA crews would try to track and subsequently destroy the UAV.

The OPs were relied upon heavily because the Asset IVs were constantly on the move to avoid targeting by the UAVs. As a result of the ADA survival techniques to avoid being targeted by the UAV, other Blue force aviation assets benefited from the incidental collateral effect of being targeted less often. The net effect UAVs had on the OPFOR ADA capabilities was the severe degradation of the OPFOR's overall ability to effectively counter the 1BCT's threat in the sky.

Throughout the exercise, the UAVs consistently answered the commander's priority intelligence requirements (PIR). The UAV, integrated with Joint STARS, became the combat multiplier for the 1BCT by presenting the commander with unsurpassed situational awareness that enabled him to focus his combat power

when and where he deemed necessary.

For the **movement to contact** phase of the AWE, the UAV verified enemy penetration of the international border and later detected and identified the OPFOR forward support element, the advance guard main body, and the regimental main body. While tracking each of these elements, the FSO and MC coordinated targeting for the division artillery.

One tactical UAV company in the Army is not sufficient to support the near-term needs of tactical commanders

During the two **deliberate attack** phases at the AWE, UAVs methodically collected intelligence focused at an unprecedented level. Not only did UAVs identify wire obstacles, they provided ten-digit grid-coordinate accuracy for the ends of each obstacle. Not only did they identify "bear claws," the UAVs pinpointed and provided targetable grid coordinates for nearly every defensive position the OPFOR prepared. As each TF received this real-time imagery intelligence, the information could be processed and used almost immediately to identify exploitable avenues of approach.

The **mobile defense** phase (22 through 24 March) more than any other battle highlighted the relationship between Joint STARS, UAVs, and artillery. At 2045, the ACT Chief informed the MC that Joint STARS picked up eleven MTIs heading north, approximately 6 kilometers south of the 1BCT sector. The MC, taking into consideration the known OPFOR ADA locations and their threat radius, informed the GCS of a mission retasking and the flight route that would be used by the UAV flying a counterreconnaissance mission in the vicinity of Brown and Debnam Pass in the east. At 2053, the UAV spotted one BMP and three BRDM OPFOR vehicles, and seven canvas-covered five-ton trucks. By employing the payload's infrared capability, the UAV also identified approximately 100 dismounts in two of the five-ton trucks. The MC relayed this to the ACT Chief with hardcopy photos, and the ACT Chief and the Brigade S2 (using Appliqué to rule out friendly forces in the area) confirmed the unit's identification as TF Destroyer.

Targeting began at 2128 and immediately TF Destroyer dispersed in several directions to avoid the artillery. The MC and the FSO continued to track the vehicles and dismounts, targeting them until 2213 when the last shot was fired. The final BDA was 103 dismounts, 3 AT-5 missiles, and 2 5-ton trucks destroyed.

A Guide To Mission Planning (Lessons Learned)

I would like to comment on lessons we learned during the TF XXI AWE. They are in five areas.

Tasking. The most important thing to remember is to include the MC in the mission planning process. Ideally the ACT Chief would synchronize his collection efforts to answer the commander's PIR and to confirm or deny the S2's enemy courses of action. The MC would create the UAV mission plan and seek the ACT Chief's approval.

Collection Requirements. Collection missions and targeting missions need to be understood as separate entities. The value of intelligence collection is squandered if targeting is over-used. Any interruption for targeting during a collection mission should be tied to prioritized high-payoff targets.

Weather. Weather conditions have the potential to severely impact UAV missions. The brigade S2 and ACT Chief need to have an alternate collection plan in the event UAVs are grounded due to weather. The maximum acceptable operating winds for the Hunter UAV are 25- knot headwinds, and 15-knot crosswinds.

TOC Location. Most tactical UAV systems operate by line of sight (LOS). Prior to selecting a TOC location, the MC should be consulted with regarding the LOS associated with possible TOC locations. The Enhanced Mission Planner (EMP) in the MPS is capable of computing LOS limitations in relation to the terrain and varying UAV altitudes.

Time Over Target. As a general rule, time over target should not exceed the time required to identify a target and acquire an accurate grid (5 to 10 minutes), unless the UAV is adjusting fire.

UAV Prospects

In the long term, UAV prospects in the Army are bright. For the near term, however, they are not. Without question, we have come to realize that UAVs are a truly revolutionary addition to the Army. Two UAV rotations to the NTC have proven the value of UAVs to tactical commanders who have witnessed their vast capabilities. One tactical UAV company in the Army is not sufficient to support the near-term needs of tactical commanders.

One possible solution is to field one Hunter UAV baseline(+) (two baselines of GCSs and one baseline of UAVs) per division to support the division and each of its separate brigades. The division UAVs would integrate to become part of an enlarged MI battalion, prepared to provide general and direct support to the brigades. Just as an MI support team provides intelligence support to each brigade, the same would apply to UAV support.

First Lieutenant Byars is currently the S3 Training Officer and UAV Liaison Officer in the 104th MI Battalion, Fort Hood, Texas. During the AWE he was the UAV Flight Platoon Leader, A Company, 15th MI Battalion (AE). He has a bachelor of arts degree in Political Science from The Citadel. Readers can contact him at E-mail via ByarsW@hood-emh3.army.mil and telephonically at (254) 288-5080 and DSN 287-0796.

Employment of QUICKFIX in Division IEW Operations

by Chief Warrant Officer Three Robert J. Martin

This is the first of a three-part series on QUICKFIX operations. This first article provides a historical perspective on the QUICKFIX heliborne, electronic warfare (EW) collector. The second article provides a critical observation of current QUICKFIX operations and explains the need for better coordination with other Army combined arms members. The third article introduces several bold new efforts to improve QUICKFIX capability and efficiency, including the Advanced QUICKFIX (AQF) and joint operations tactics.

The Army's latest doctrine on operations (**FM 100-5, Operations**) and intelligence operations (**FM 34-1, Intelligence Electronic Warfare (IEW) Operations**) lays the framework for the design and execution of operations involving cooperation and synergy between the various combat arms and joint Services. Your comments are invited.

Introduction

Force XXI is synonymous with the reconceptualization and redesign of our military forces, from the battlefield to the industrial base. It has posed many new challenges and mandates for the intelligence community. The Army intelligence portion of this self-evaluation and analysis, known as Intel XXI, is the basis for rewriting our capstone document, **FM 34-1**. While our recent achievements are laudable, the Army Chief of Staff has directed us to keep pushing the envelope, in both technology and in tactics. In keeping with this initiative, QUICKFIX mission planners and managers must also reevaluate their tactics to ensure that they keep pace with the evolving Intelligence battlefield operation system (BOS).

Background

QUICKFIX is the system comprised of the airborne (helicopter) radio direction-finding (DF) and electronic attack (EA) platform that consists of the AN/ALQ-151 (V)2 system mounted in the modified Blackhawk helicopter (EH-60A). QUICKFIX is one of several Army airborne IEW mission platforms; however, it is currently the only airborne platform organic to the division.

Although the idea of an Army airborne EW platform dates back to the 1950s, a formal mission requirement and description for what we recognize as QUICKFIX did not come into being until 1969. The publication of an Army combat developments study identifying the tactical communications of potential adversaries as a main threat to U.S. Army divisions, prompted the U.S. Army Europe to initiate the development and acquisition of a heliborne emitter identification, location, and jamming system in support of their quick reaction capability. Initially dubbed HEMLOC for heliborne emitter location and countermeasures, the request remained essentially a paper study until 1972, when the U.S. Army Security Agency Test and Evaluation Center started **military potential testing.** In May 1973, a **required operating capability** statement was approved by the U.S. Army Security Agency and formal testing began. The name HEMLOC was then changed to QUICKFIX.

Early efforts to develop an accurate emitter location system failed. In 1975, the first production contract for QUICKFIX was awarded. Dubbed QUICKFIX 1A and later 1B, these were modified Huey helicopters (EH-1H) and formally named the AN/ARQ-33 **special purpose countermeasure set.** They could intercept and jam—but could not locate the emitters. A total of 20 were built. Research and development continued and, in 1977, a contract was awarded for 10 improved EH-1X helicopters, dubbed the QUICKFIX IIA AN/ALQ-151(V)1. This was a composite system consisting of both an emitter location system and an EA subsystem (TRAFFICJAM AN/TLQ-17). In 1984, the program was further upgraded with the production of 66 EH-60A helicopters, dubbed QUICKFIX IIB AN/ALQ-151(V)2.

Today, all 66 aircraft are either operational or undergoing upgrades. A low-rate production schedule is in progress to upgrade existing QUICKFIX IIBs to the QUICKFIX III (AQF) configuration. The AQF platform uses the improved EH-60L model Blackhawk and an almost entirely new mission equipment package, the AN/ALQ-151(V)3.

Current Employment (QUICKFIX IIB)

QUICKFIX normally operates as a platoon element of three EH-60A aircraft, providing communications intelligence (COMINT) and EW general support to the division or Armored Cavalry Regiment (ACR). QUICKFIX IIB is assigned to the division aviation brigade (in the general support aviation company) and under operational control of the divisional MI battalion. A similar relationship exists for QUICKFIX platoons assigned to ACRs.

Because QUICKFIX is capable of operating above most terrain obstacles, it is suited for operations against the radio nets of both first echelon and second echelon forces that affect the friendly tactical commander's area of interest.

QUICKFIX units may also perform nontraditional "other than war" roles, perhaps as part of a joint task force (JTF). In such cases, the mission and unit or-

(Continued on page 59)

AWE Intelligence Commu
The Division ACE

by Captain Gary Don Dickey

Editor's Note: The role of the NCO in ACE operations is addressed by Captain Dickey in the following note. The October-December 1997 MIPB will further address this issue with at least one article.

"Many of the NCOs are really contributing to the unit because of a positive attitude and a willingness to learn new systems. What NCOs would hopefully take from this article is that they should be open-minded and develop a thirst for knowledge. They should use their initiative to seek responsibilities beyond their assigned duties and systems.

"This particular article speaks more to the Battle Captain only because he is the one who has the responsibility to move between sections of the ACE. A 98C (SIGINT Analyst) should learn everything there is to know about the ASAS Single-Source but a 96B (Intelligence Analyst) should focus his knowledge on the All-Source and the Remote Workstation."

The division analysis and control element (ACE) battle captain must be active in the creation and evolution of the communications architecture above, within, and below the ACE to properly understand the information flow and to ensure that the right information reaches the right people at the right time. Analysis and supervision of intelligence products are important, but if dissemination is "broken" due to communications problems, then the Intelligence battlefield operating system cannot contribute to the battle.

Today's MI leaders must be "part-Signal" to survive. Prior to the Task Force (TF) XXI Advanced Warfighting Experiment (AWE) at the National Training Center (NTC) in March 1997, we had many discussions about the communications architecture to ensure that all the systems being used were able to intercommunicate. The ACE battle captain or NCOIC, **must** fight to be a part of those meetings. Attend those meetings prepared to talk. Learn the architecture and question from someone in your organization or elsewhere on post before the meeting.

Current Communications Systems

The first step in systems education is learning the communications systems in your unit. The 4th Infantry Division (Mechanized) (4th ID (M)) has the Communications Control Set Version 2 (CCS(V)2), TROJAN Special Purpose Integrated Remote Intelligence Terminal (SPIRIT) II with Asynchronous Transfer Mode (TS II w/ATM), Light Ground Station Module (LGSM), and the Mobile Integrated Tactical Terminal (MITT).

Next learn how your processing systems hook into these different communications systems. The 3 types of ASAS workstations (Single-Source, All-Source, and Remote) all tie into the CCS via differing routes. (See the figure on page 9 in Lieutenant Colonel Brooks' article for a depiction of the communications architecture.) As you see, everything hinges on the CCS. It is important to note that the CCS(V)2 is different from the CCS(V)3, particularly in that it does **not** have the same connections (more of some and none of others).

You will also notice that the 4th ID (M) does not have a Compartmented ASAS Message Processing System (CAMPS). This makes the newer Army systems that only use LANs much more difficult to integrate. Learning this system yourself and having a smart operator can be crucial at 0300 when the generator spikes and the regimental main body of the opposing forces has just screamed across the line of departure.

The TS II is the next system I recommend you learn. As doctrine continues to evolve and we see command posts and maneuver forces moving farther apart, satellite communications systems will play a more vital role. At the AWE we were able to exploit the TS II by linking to the—

- ☐ XVIII Airborne Corps ACE and the Guardrail Common Sensor (GRCS) Integrated Processing Facility (IPF) at Edwards Air Force Base, California.
- ☐ General Support Operations Center (GSOC) of D Company, 104th MI Battalion, in general support.
- ☐ Analysis and Control Team (ACT) of A Company, 104th MI Battalion, in direct support to the 1st Brigade Combat Team.

Inside the ACE, the TS II was connected to both the Single-Source and the CCS for the AWE. The GSOC and the ACT were connected directly to the ACE. The IPF and the XVIII Airborne Corps' ACE systems, however, had to filter their message traffic to us through their CCS.

The next systems to learn are the LGSM and the MITT. The LGSM receives the Joint Surveillance Target Attack Radar System (Joint STARS) data and, in conjunction with the Mission Planning Station (MPS), it can also receive unmanned aerial vehicle (UAV) data. The LGSM can receive the Tactical Reporting Intelligence Exchange System (TRIXS) broadcast via its Commanders Tactical Terminal--Hybrid Receive

nications Architecture: Battle Captain

(CTT-H/R) which enables it to communicate with the GRCS. The MITT is actually a system of smaller systems such as the Tactical Exploitation of National Capabilities Program (TENCAP) Guard and the Chariot[1] all linked together by LAN. Both of these systems were connected to the CCS.

Surprise Additions and Connections

During the March AWE at NTC, there were many surprises when unexpected systems were introduced or when expected systems arrived with different connections. If possible, the ACE battle captain needs to participate in those discussions to determine whether a particular system will be allowed into the architecture.

There are usually alternative ways to hook up any system. Contractors become crucial at this point to "tweak" the software of the systems to allow them to "talk" to the new system being introduced. Remember that we are not a major software company and our systems do not "plug-and-play." Because of this, you must also be the deciding authority on **when** the system will be introduced. During the main battle is obviously not a good time to introduce a system that would require rebooting or could possibly cause your CCS to reboot.

Communication Skills

Verbal communication skills are also important to correctly formulate questions to the subject matter experts or contractors. It is best to state your request clearly, and always be aware of your mental state. Blowing up at a contractor is not conducive to a successful rotation.

Summary

With a thorough understanding of the systems capabilities and knowledge of how they interact, you will be able to handle any architecture changes that occur. A good imagination and a positive attitude are required to work any puzzle, and the interoperability puzzle is no exception. A willingness to work with the different systems and enable them to work together and to not fall back on the old systems—thereby allowing the new systems to fail—will better prepare you and your organization to transition to the new digitized Army.

Endnote

1. The TENCAP Guard provides a secure network capability with access to the Mobile Subscriber Equipment (MSE) Tactical Packet Network, Defense Secure Network 1/Secret Internet Protocol Router Network (DSNET1/SIPRNET), and TROJAN SPIRIT.

The CHARIOT is a tactical, manportable, receive-only terminal. It provides a means to disseminate data, such as secondary imagery products, to the field users.

Captain Dickey is currently the G2 Operations Officer for the 4th ID (M). He served as an ACE Battle Captain during the TF XXI AWE. In 1995, during Operation RESTORE DEMOCRACY in Haiti, he commanded A Company, 2d Brigade Rear Detachment, and then was an assistant G2 operations officer. Captain Dickey has a bachelor of science degree in Physical Education from Tarleton State University. He can be contacted at (817) 287-0361, DSN:737-0361, and by E-mail at dickeyg@hood-emh3.army.mil.

Doctrine For Multinational Operations

In an environment of increased operational tempo, soldiers are deploying to overseas locations where they are partners with troops from other countries. Often, it is the first time the Army has worked with those countries. There was a need for doctrine on how we were going to fight in coalition with other nations. The result is **Field Manual 100-8, The Army in Multinational Operations**, a doctrinal publication meant to help leaders and commanders work with other countries' armies. Development of this field manual began in 1989, but events such as Operations DESERT SHIELD and STORM and deployments to Somalia, Rwanda, Haiti, Bosnia-Herzegovina, and other areas have delayed publication.

This manual basically goes into some of the considerations, command structures, different areas of the battlespace, and what they should look like. One annex of the manual is a checklist based on one developed by the 10th Mountain Division, Fort Drum, New York, for dealing with international partners. The checklist is divided into categories. For example, what are the allied engineer elements that will be working with U.S. Army engineers? What are their capabilities? What type of equipment do they have? The checklist is one of the things in the manual that is a little more specific. The rest of the manual tends to be more general.

The draft of the manual was staffed with the Air Force, Navy, and the Joint Chiefs of Staff organization. It was also staffed with a North Atlantic Treaty Organization doctrinal working group. The working group indicated that it gives them an idea of how we look at working in the multinational environment.

Technical Intelligence:
Added Realism at the NTC

by Captain Richard H. M. Outzen

Technical intelligence (TECHINT) is one of the most frequently used, but least discussed disciplines in all-source intelligence. TECHINT deals with the analysis of foreign weapons and materiel, and TECHINT analysts report to the combat forces highlighting the capabilities and vulnerabilities resident in the opponents' systems and equipment. The recent Task Force XXI (TF XXI) Advanced Warfighting Experiment (AWE) cemented TECHINT as a key facet of National Training Center (NTC) training. Future rotations can expect to deal with TECHINT products and training events.

The 203d's TECHINT analysts provided a depth of equipment analysis that brigade and division staffs normally do not have

Analysts and LNOs from the 203d MI Battalion (TECHINT) teach regular Technical Order of Battle Courses (TOBAC) at Aberdeen, Maryland, and the NTC. These courses and the reception, staging, and onward integration (RSOI) briefings at the NTC train the force on how to access technical products and analysis, so warfighters have a place to send their questions should they arise with little lead time during combat. An example of a combat commander accessing TECHINT in this manner is the so-called "Khafji tank." The tank, an Iraqi T-55 retrofitted with armor add-ons and captured before the ground campaign kicked off in Operation DESERT STORM, initially troubled U.S. planners, who did not know if our antitank weapons would have trouble penetrating the add-on armor. TECHINT teams evacuated sections of the armor back to technical analysis centers in theatre and in continental United States, and in short order had an answer—the Improved TOW missile and other U.S. systems could defeat the retrofit.

EXFOR Introduction to TECHINT

The 1st Brigade Combat Team (1BCT)—the Experimental Force (EXFOR)—4th Infantry Division (Mechanized) became acquainted with TECHINT early in the rotation, during RSOI of forces phase. A TECHINT LNO attached the 52d ID G2 office from the Brigade staff on order of battle, technical specifications, and peculiarities of the Krasnovian equipment. This RSOI briefing has been described by one NTC scenario writer as *"the most exciting briefing the brigade gets all week."*

The EXFOR staff responded well to the TECHINT availability, and sent forward requests for intelligence to the 52d ID G2 for answers on specific Krasnovian systems. For instance, where on the Krasnovian T-80 is a thermal sight fitted? Is the sight for the gunner or the commander? Can the 2A45M antitank gun fire missiles as well as unguided projectiles?

The 203d's TECHINT analysts provided a depth of equipment analysis that both brigade and division staffs normally do not have. TECHINT analysts can leverage national intelligence assets when immediate answers are not on hand. The EXFOR got these answers before entering the fight, and fought smarter for having that knowledge.

Where does an aviation brigade S2 access expertise on enemy system recognition and capabilities when those systems fall outside the usual target mix? This question faced the EXFOR as well, when they received orders to execute a deep strike against an array of air defense systems and FROG-7 (free rocket over ground) surface-to-surface missile launchers near China Lake, California (off the NTC reservation). Prior to their detailed planning, they requested several TECHINT briefings for their Apache pilots. The 203d delivered photos and specifications. Though high winds hindered the second of two planned strikes by Apache helicopters, and thus delayed destruction of the FROGs, TECHINT ensured that the pilots knew the limits of the air defense umbrella and how the FROG launcher would look when acquired. C Detachment, 203d MI Battalion (TECHINT) also enhanced the realism of this AWE training by deploying and operating real FROG-7 missiles, ZSU-23-4 air defense guns, and BRDM-2 and other infantry fighting vehicles at China Lake. Advanced sensors on unmanned aerial vehicles (UAVs), the Apache Longbow radar, and national systems had to identify not a U.S. visually modified vehicle (VISMOD), but the actual foreign vehicles with unique materials and visual or reflective profiles.

MASINT and TECHINT

Because of the close integration of measurements and signatures intelligence (MASINT) and technical intelligence, TECHINT analysts often can provide thermal and infrared imagery of threat systems prior to planned operations. Whether tankers, Apache pilots, or infantrymen, soldiers at the NTC can come to the TECHINT office and see how enemy systems look through their electro-optical sensors **before**

Photos provided by CPT Outzen

OPFOR MTLBs preparing to move out at the National Training Center.

they actually fire rounds at them. Some EXFOR soldiers came to view the MASINT and TECHINT imagery available at the 203d's C Detachment before the fighting began. Others chose to simply stroll through the TECHINT display yard, adjacent to the Dust Bowl. In this yard, soldiers can touch, sit in, and (on the right days) drive T-72s, BRDM-2s, ZSU-23-4s, and other adversary systems. This yard highlighted for the EXFOR the role of TECHINT in preparing the warfighter's battlefield visualization, and implanting knowledge of how the enemy's systems look, perform, and operate.

Preventing Technological Surprise

The post-Cold War political climate does not guarantee that any army's arsenal comes from a single supplier state. S2s cannot template capabilities based on a single (normally Russian) model.

Such diversity not only complicates order of battle study, it also provides opportunities for technological surprise. Technological surprise is the bogeyman for TECHINT analysts: the specter of U.S. commanders encountering threat optics, weapons ranges, or armor more sophisticated than they thought an opponent possessed. The key to preventing this technological surprise is training soldiers ahead of time to look for, recognize, and report on new or modified weapons on the battlefield. The 203d MI Battalion responds to such spot reports with a TECHINT Collection Team, which photographs and often retrieves the new systems from the battlefield for further study. This cycle of recognition, reporting, retrieval, and analysis is fundamental to avoiding technological surprise, and the NTC began training rotational units on these tasks in September 1996.

The EXFOR received a capture listing during their RSOI week, which highlighted Krasnovian systems that, if encountered, were high priority for reporting and evacuation. As in most rotations, the plan called for C Detachment to insert one of the items on this list on the battlefield where the Blue force (BLUEFOR) may not have expected to deal with it, such as the brigade support area (BSA). *"We find that soldiers and leaders in the BSA don't really have a plan for captured enemy equipment,"* says Captain Matthew Burns, a Logistics Observer/Controller (O/C). *"Units have a hard time identifying, let alone handling, real BRDM-2 and MTLB vehicles, etc."* Often, the first time units give any thought to processing foreign material is when it is found abandoned or captured astride their main supply route. Everyone benefits from these close encounters according to Captain Burns.

We are prompting them to develop the skills ahead of time, to prepare before deployment to recognize, report, defeat, and handle equipment, especially those items with potential intelligence value.

Soldiers working the BSA do not always come to the NTC expecting a close encounter with Russian-made armor, but chances are good they will get one.

Foreign Equipment Processing

What exactly does a TECHINT Team do to foreign equipment once they arrive? First Lieutenant James Reed, Executive Officer of C Detachment, explains.

The Collection Team will either evacuate the equipment or components of it, collect information (photographs, diagnostic data), then disable the vehicle, or coordinate with transportation assets for evacuation to the corps rear area for detailed analysis.

The team includes explosive ordnance disposal technicians, mechanics, armaments specialists, and 96B intelligence analysts. The work goes quickly once on site, but the key piece is training S2s and soldiers to report the capture in the first place, then safeguard items until the team's arrival.

Teaching U.S. Army soldiers how to deal with captured materiel...has emerged as a key area for improving rotational scenarios

TECHINT events at the NTC end with C Detachment's collection team hauling away the captured item to a holding facility. In an actual theater of conflict, the holding facility would be a Captured Material Exploitation Center, run by military and civilian agency analysts armed with sophisticated test equipment. According to **FM**

A 203d MI Battalion soldier training a Marine on MTLB driving.

34-54, Technical Intelligence, that is when the real benefit to the combat commander begins. Deeper analysis can—

...ensure that the commander has a clear understanding of the full technological capabilities residing in his opponent's equipment. With this knowledge, the [combat commander] can adopt countermeasures, operations, and tactics, as necessary, to be successful....

Exploitation of Foreign Materiel

At the NTC, the time-consuming exploitation phase of TECHINT is not part of force-on-force, but the capture, evacuation, and answers for the combat commander are part of that phase. BLUFOR units should come prepared to recognize items from a capture list, report in a timely fashion, and when possible assist the TECHINT Collection Team with evacuation of equipment. Most importantly, the BLUFOR should learn to question the analysts and LNO at the holding facility before heading into the fight. Our real-world experience shows that too often U.S. soldiers destroy or damage captured enemy equipment items with great potential value, or take as trophies equipment useful for intelligence. Teaching U.S. Army soldiers how to deal with captured materiel, like teaching them to deal with unexploded ordnance and civilians on the battlefield, has emerged as a key area for improving rotational scenarios. Scenario planners strive to add complexity to the battlefield to better equip units to deal with the "clutter" of modern warfare.

In addition to TECHINT collection and briefings, Charlie Detachment provided the opposing force (OPFOR) with more operational foreign vehicles during the TF XXI AWE than for any rotation before it. The OPFOR 60th Guards Motorized Rifle Division typically draws seven to ten BMP personnel carriers and three to four BRDM-2 to augment their Sheridans and other VISMOD systems each month. During the AWE, the OPFOR drew more than 30 vehicles, including operational ZSU-23-4s, T-72s, and MTLBs. Seeing Russian armor, not U.S. fiberglass, maneuvering against the 1BCT sharpened the realism and excitement of the training. It also provided a sharper portrayal of threat vehicle maneuverability (something which U.S. surrogate vehicles do not always do) and realistic targets for BLUFOR intelligence sensors.

Conclusion

If not all EXFOR soldiers saw these genuine foreign tanks and personnel carriers rolling toward them during a capture event or during the force-on-force, many took the opportunity to do so during the recovery week prior to leaving the NTC. Hundreds of soldiers filter through the display yard and classroom each rotation. By signing up early, you can also gain slots in the Foreign Weapons Course (including live fire of foreign weapons) or Foreign Vehicle Course (licensing on several different types of vehicles), both offered monthly.

What are the results so far from the recently expanded role of technical intelligence in NTC rotations? Feedback from O/Cs who work the BSA and soldiers who encounter the foreign equipment during the force-on-force phase, have been strongly favorable. Despite the success of the AWE in terms of foreign materiel for training, however, there is room for growth. As Colonel James Grazioplene, the Chief of Operations Group at NTC, points out, technical intelligence has only scratched the surface:

"TECHINT is not yet being [used] to its full potential. A part of education is creating a picture in the minds of soldiers, NCOs, and officers...but we simply are not yet doing a good job at this. TECHINT has a tremendous opportunity to develop some of the great products to achieve definitive results and better warfighting at the NTC."

So the process of expanding the use of TECHINT to benefit NTC rotations continues.

Captain Outzen is currently attending the Defense Language Institute for Turkish and preparation for the Foreign Area Officer Program. He was Commander, C Detachment, 203d MI Battalion, Fort Irwin, California, through June 1997. He has served as Commandant of the 11th Armored Cavalry Regiment (OPFOR) Academy at the NTC. He has a bachelor of arts degree in History from Dartmouth College. Readers can contact the author via E-mail at herbmatt@telis.org.

Intelligence Operations on the Digitized Battlefield

by Captain Michael D. Brady

This article documents experiences and lessons learned regarding intelligence operations at the task force (TF) level. It is based on my observations during numerous field training exercises and the Army's Advanced Warfighting Experiment (AWE) at the National Training Center (NTC) from 16 March 1997 to 29 March 1997.

The "common relevant picture" is what TF XXI is about. It is —

- ☐ Seeing where both enemy and friendly units are positioned on the battlefield in real time.
- ☐ Making timely and informed decisions to close with and destroy the enemy.
- ☐ Information dominance.

Making the common relevant picture a reality is tough business! Limitations in technology and practical applications hindered this process, particularly in portraying the Red picture. We should first get familiar with the systems and terms.

Background

Appliqué is the backbone of the tactical internet and the instrument used by maneuver forces to portray a common relevant picture. There are three versions of Appliqué:

- ☐ Version 1 is similar to an ordinary laptop computer used by Army professionals on a daily basis.
- ☐ Version 2 is "militarized" and equipped in most of the tanks, Bradley armored personnel carriers (APCs) and command and control vehicles (C^2Vs) within the TF.
- ☐ Version 3 is "ruggedized."

The tactical internet is composed of the Single Channel Ground and Airborne Radio System (SINCGARS) system improvement plan (SIP) internet controller radios and the Enhanced Position Locating and Reporting Systems (EPLRS). Both radios are linked with an internet controller which routes messages, battlefield geometry, and vehicle locations. Each tank and Bradley APC at the company level has two SINCGARS radios, except the vehicles of the company commander, executive officer, and first sergeant. These platforms have an EPLRS in addition to two SINCGARS SIPs.

These three platforms act as "servers" for their companies and for the TF. For example, a wingman in 1st Platoon, B Company, reports his current location from his SINCGARS to one of the three platforms stated above. The server then takes that position and "pushes" it forward to the TF. Both the company and TF commanders now "see" the location of that wingman on the ground in real time. The operator of each of these vehicles is required to do nothing except ensure the systems are functioning properly.

Problem-Solving With Appliqué and the RWS

As the S2, I used Appliqué quite extensively. It was my means to push reconnaissance and surveillance plans, enemy courses of action (COAs), enemy reconnaissance routes and terrain data (e.g., intervisibility (IV) lines). I also used it to track the status of friendly units in relation to enemy units to assist the TF commander in making timely decisions on the ground battle. It made using a decision support template easy!

The most frustrating aspect of Appliqué was my inability to push all enemy information down to company commanders, platoon leaders, and dismounted squad leaders. This was due to several problems. First, too much information displayed on the Appliqué would not transmit across the tactical internet. For example, I could not effectively depict "red zone" operations when the opposing force (OPFOR) was arrayed in a defensive posture. I could not show each vehicle, holes and their orientation, weapons-range fans, repositioning of forces, mine and wire obstacles, etc. As a result, I was forced to transmit enemy COAs in less detail than I would have liked.

I overcame this issue by creating some detailed sketches using the All-Source Analysis System-Remote Workstation (ASAS-RWS). This was the most powerful tool at my disposal. During operations order (OPORD) briefs and TF rehearsals, I could at least print the sketches I wanted leaders in the TF to see. However, not everyone in the TF could see them—a big frustration when the common relevant picture is required at all levels, including the lone infantry soldier in a foxhole.

The ASAS-RWS was my tool during the planning and preparation phases. I could effectively conduct intelligence preparation of the battlefield (IPB) in two to three hours. This included—

- ☐ At least three enemy COAs.
- ☐ A template for enemy reconnaissance assets.
- ☐ A template for enemy special munitions use.
- ☐ A reconnaissance and surveillance plan.

My final step was to write Annex B for the TF OPORD. That took another 20 minutes.

However, my frustration was greatest when creating these and other products. For example, I identified approximately 250 major intervisibility (IV) lines throughout the NTC battlefield prior to the AWE. I used the ASAS-RWS to create this and capture the IV lines. Because my ASAS-RWS

and Appliqué were on the same local area network (LAN), it was no problem transferring the ASAS-RWS data to Appliqué. However, because the file was so large, I could not effectively send the IV lines to the rest of the TF. I overcame this problem by printing 1:50,000 map sheets, laminating them, and giving each company commander a copy. It would have been better, though, if I could have sent them to their Appliqués so they could further push the product down to each track commander.

I also developed a mobility corridor overlay using the ASAS-RWS. Again, I could push it to my Appliqué using the LAN. However, it could not be pushed down to anyone else. This is the single biggest limiting factor of the tactical internet: we cannot pass large amounts of information between platforms.

Another frustrating aspect of the experiment was the inability of the digital systems to effectively "communicate" with each other. For example, when we first began the AWE, battlefield geometry (phase lines, unit icons, vehicle icons, tank ditches, etc.) between digital systems was not effectively integrated. ASAS-RWS and Appliqué still have this problem.

Again, we found ways to overcome these challenges by spending countless hours transferring data between ASAS-RWS and Appliqué. The tool I had to use for many of my products was a phase line. I used it to depict battle positions, direction of attacks, repositioning of forces, air avenues of approach (AAs), special munitions use, reconnaissance routes, and others. We were also forced to depict tanks with APC icons. Therefore, we labeled items for which we had to use an incorrect icon because the necessary icons were not available. This solution was not acceptable to me or the TF but it did the job. In this case, the picture did say a "thousand words" but it forced TF commanders and platoon leaders to spend more time analyzing the enemy situation than should be required. A good, clean picture is a must on the digitized battlefield.

Using the Warfighter Associate

Another powerful tool at my disposal was the Warfighter Associate (WFA). This equipment was my link to the Global Broadcast System–Battlefield Awareness and Data Dissemination (GBS-BADD). Unmanned aerial vehicle (UAV) imagery was transferred over this network down to my C^2V. In addition, Joint Surveillance Target Attack Radar System (Joint STARS) moving target indicators (MTIs) were also pushed over the GBS-BADD network.

Information must be made available for all echelons on the digitized battlefield. How we use that information will make an S2 a success or failure

I rarely used UAV imagery. Several factors contributed to my decision. First, I did not control where UAV flew on the battlefield. This decision was made by the Brigade S2 in support of the Brigade Commander's priority intelligence requirements (PIR).

In addition, I could not dedicate a soldier in the section to watch UAV data since I had limited manpower. Also, and most importantly, no soldier in my section was an imagery analyst and I could not therefore effectively "trust" reports from an untrained soldier. The UAV imagery is quite clear and provides detailed resolution. However, a trained analyst is a must before I would base recommendations to a TF commander on this imagery.

Joint STARS moving target indicators were a success story. I hope it will remain at battalion level. I used the MTIs most frequently during TF defensive missions. I could see where vehicle concentrations were and effectively predict where those formations would be on the battlefield at certain times in the fight. This was not difficult since a clear understanding of the terrain allowed me to make these assessments. I saw the enemy and made recommendations to the TF Commander, who moved his units on the battlefield to seize ground on his terms and not the enemy's.

Identifying and tracking MTIs were also critical during the reconnaissance fights. We knew where the enemy's reconnaissance assets were and where their infiltration routes would lead them. A single MTI on my WFA meant reconnaissance. This, of course, was confirmed by Appliqué and scouts on the ground (an example of "cueing" at the battalion level). The power to track enemy reconnaissance and position friendly forces to destroy that particular asset is powerful stuff.

This was no more evident than during one of our last operations. The TF sent a mechanized company team (and 100 dismounts) from Red Lake Pass to seize the Whale ridge before the TF line of departure (LD). I gave the company commander one final intelligence summary five minutes prior to his LD. I told him we had picked up six MTIs that located along his primary AA and along various dismounted AAs. He knew the eight-digit grid coordinates of these vehicles and effectively destroyed three. His company suffered no casualties enroute to the Whale. The other three MTIs were either observer/controllers, visiting dignitaries, or good deception by the OPFOR.

Information Overload

There are many key leaders in the Army and within our own branch who believe too much information is flowing down to the battalion TF level. They are concerned about overwhelming battalion S2s. I could not disagree more. Information dominance is about just that: **information**

dominance. Information must be made available for all echelons on the digitized battlefield. How we use that information will make an S2 a success or failure. More importantly, it will assist in saving soldiers' lives.

For example, if UAV imagery and Joint STARS MTIs are not pushed to the battalion level...what does the battalion S2 do when the brigade tactical operations center (TOC) is destroyed? What does the battalion S2 do when the Brigade TOC jumps or just does not look at the information for whatever reasons.

Information must be made available for the battalion S2 in order to conduct IPB and provide timely recommendations to a TF commander. The S2 must know what to look for and when to look at the information. This is difficult to master and requires training but is achievable.

Conclusion

Digital training of all our personnel must start in the schoolhouse. MI leaders at all levels must be indoctrinated with terms such as the tactical internet, Appliqué, internet controllers, ASAS-RWS, and so forth, to contribute to their units. Maneuver commanders will demand this of our branch. We must become the experts in developing a common relevant picture using all digital technologies and pieces of equipment.

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XVIII Airborne Corps Collection, Processing and Analysis

by Chief Warrant Officer Two Tony E. Meade

The analysis and control element's (ACE) Technical Control and Processing (TC&P) section, using the All-Source Analysis System (ASAS) Single-Source Workstation, was extremely successful during the Task Force XXI (TF XXI) Advanced Warfighting Experiment (AWE) National Training Center rotation (NTC 97-06). From the very first battle on 20 March 1997, until the final engagement with the opposing force (OPFOR), the section proved its worth to the commander by providing accurate and timely communications, electronic, and imagery intelligence support. The commander received intelligence on everything from enemy dismounted reconnaissance team (DRT) movement, to early warning of enemy artillery attacks, and warning of the commitment of TF Rampage, among many other successes which this article will highlight.

Background

First, we should discuss the nuts and bolts of the system. The single-source system should no longer be considered a front-end processor for the ASAS all-source workstation. The capability and efficiency of the single-source system to process large amounts of information and report it in a timely manner far exceeded the All-Source Enclave capabilities. Signals intelligence (SIGINT), in particular, was a major player during this rotation. The uniqueness of this AWE rotation greatly contributed to these results. Unlike other rotations, far more SIGINT collection units were available to cover the battle.

The release of National Security Agency (NSA) data was greatly enhanced when NSA granted many waivers for downgrading most information from the TF XXI AWE to Sensitive but Unclassified. The exception to this rule was some information received through the single-source system from echelons above division (EAD). For exercise purposes, all the information was treated as special intelligence (SI) and standard sanitization procedures were exercised. The ASAS Single-Source workstation was connected to the TROJAN Special Purpose Integrated Remote Intelligence Terminal (TROJAN SPIRIT) and Communications Control Set (CCS) to provide access to the General Support Operations Center (GSOC), XVIII Airborne Corps at Edwards Air Force Base, Guardrail's Integrated Processing Facility (IPF) at Edwards AFB and the Mobile Integrated Tactical Terminal.

Experiments and Lessons Learned

Some of the lessons learned during this rotation will impact the architecture that we initially set out to test. One lesson learned was that Guardrail Common Sensor (GRCS) Commanders Tactical Terminal output could not be read by the single-source serial reader as it could with the Advanced Guardrail V Tactical Commanders Terminal. This is a software incompatibility problem. The work-around was to use the Compartmented ASAS Message Processing System (CAMPS) from the IPF to the CCS through TROJAN SPIRIT to our CCS. This was a very effective means of communication and proved instrumental in maintaining reliable communications with the IPF. This setup is basically an "AUTODIN-like" setup that could be achieved us-

that could be achieved using CAMPS, CCS or similar systems.

Another great experiment was the Collaborative Virtual Workstation (CVW). We installed this software on the XVIII Airborne Corps single-source system, the IPF, the GSOC system, and our single-source system. This allowed us to communicate by several means including: typing information on the screen, displaying information on the whiteboard, and placing the whiteboard in a "room," allowing everyone who enters to view it. The CVW also allowed everyone to talk with each other through the voice communications package (Telephony).

the brigade received a near-perfect read of enemy positions on the battlefield

The contractor did not create this software for use with the single-source systems but it was easy to adapt. This software may be used on the ASAS-Remote Workstation (RWS). One of the benefits we gained with the CVW was the ability to interface with everyone on the net, to "trade" technical information, and for analyst-to-analyst exchange. Another benefit gained through the use of the CVW was the ability to send time-sensitive combat information to the ACE-Forward by adding a collateral machine with the CVW package. The ACE-Main and Analysis and Control Team (ACT) were also in this collateral net.

Providing the Intelligence Picture

The Single-Source system proved to be a front-runner for providing the intelligence picture during the battles. It was set to automatically update the GSOC's single-source database every five minutes. As the battles developed, the IPF and XVIII Airborne Corps ACE sent us time-sensitive combat information via the CVW link. This method allowed us to receive the intelligence long before we received the tactical reports and tactical electronic intelligence reports. In turn, it allowed us to pass the information on to the ACE-Forward and the ACT via the collateral CVW. The ACT would then pass the information to the Brigade S2, thus giving the Brigade Commander an up-to-date battlefield picture. The Deputy Commander Operations Group at NTC looked at our system during the first battle and stated that our battle picture showed exact locations of the enemy positions. This means that the brigade received a near-perfect read of enemy positions on the battlefield.

Support to the 1BCT

The Ground-Based Common Sensor (GBCS) did an extraordinary job at its first major exercise. Both the system and its operators proved their value during the first battle on 20 March. The GBCS provided time-sensitive intelligence to the 1st Brigade Combat Team (1BCT). TC&P's analysis of the GBCS and Advanced QUICKFIX (AQF) collection resulted in tracking the movement of the enemy's DRTs and TF Angel (air assault unit); early warning of enemy targeting of specific elements, enemy close-air support, and enemy scouts tracking friendly movement. The interaction and cross cueing of information between the Division ACE (Main and Forward), GBCS, AQF, unmanned aerial vehicle (UAV), Corps ACE and Guardrail Common Sensor (GRCS), greatly enhanced the intelligence provided to the Brigade during the battles. For instance, the OPFOR attacked the 1BCT, 4th Infantry Division (Mechanized) on 23 March. Reporting provided by collection assets was key in our locating and tracking the division and regimental reconnaissance, providing early warning of artillery bombardment, warning of the commitment of TF Rampage, and tracking the enemy's eventual retreat.

During the 1BCT's counter offensive on 25 March, the TC&P's analysis of GBCS, AQF and GRCS collection provided valuable intelligence on enemy reconnaissance operations; artillery locations and fire missions; the enemy's emphasis on tracking and destroying the UAV; and enemy positions, disposition, and combat plans. We assessed that the OPFOR overlooked the SIGINT capabilities of the GBCS, AQF and GRCS in its urgent desire to deny UAV coverage to the 1BCT. The intelligence provided by these assets resulted in a timely and accurate battle picture for the Brigade Commander.

The 1BCT engaged the opposing force in offensive operations on 28 March. The intelligence derived from the GBCS, AQF and GRCS collection provided the 1BCT with information on enemy reconnaissance operations, indirect and direct fires, the use of chemical weapons, and on the enemy's strength, losses, and weakness. The operation was highlighted by GBCS locating the motorized rifle battalion Commander and chief of reconnaissance, resulting in their destruction.

Conclusion

The XVIII Airborne Corps ACE and GRCS IPF played an important part in the processing and analysis of EAD collection. Through the use of the CVW, we were able to produce a common relevant picture of the battlefield and enhanced our ability to exploit the collection of the sensors by talking and comparing intelligence as we tracked the battles. This working relationship established the concept of a collaborative virtual environment. This is intelligence operations 2000, military intelligence at its best. The success of our working relationship will forever be a part of the 1BCT TF XXI AWE NTC Rotation 97-06.

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Managing the Collaborative Virtual Workstation

by Chief Warrant Officer Two James A. Hopkins

The views expressed in this article are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.

The Analysis Control Element (ACE), 104th MI Battalion, 4th Infantry Division (Mechanized), recently deployed to the National Training Center at Fort Irwin, California, to support the 4th ID (M) Advanced Warfighting Experiment (AWE) during March 1997. The mission of the ACE was to provide accurate, near-real-time battlefield intelligence products to subordinate brigades and battalions using several newly fielded computer systems. It is a known practice that the Army "trains as it would fight." However, this was not always the case for the ACE and every unit that was preparing to fight on the digitized battlefield. Section standard operating procedures (SOPs) were set aside and new procedures were learned on the fly. One new system we used was the All-Source Analysis System (ASAS) Collaborative Virtual Workstation, known to the user as CVW.

Information Management and SOPs

The CVW is best described as an office building of a corporation within a computer. There are "floors" and "offices." The designation of each office and its location within the building must be initially established through development and coordination of SOPs between all echelons using the CVW. Within these SOPs, naming conventions must be established to quickly scan and prioritize information requiring analysis or dissemination (e.g., numerous taskers to the National Ground Intelligence Center referencing different pieces of enemy equipment).

The CVW environment allows folders to be created and deposited in designated "rooms" in the office building, even if the user that created them logs off the system. This functionality of leaving folders in appropriate offices ensures that the agency or echelon assigned to that room is not required to wade through information that is not pertinent to that office. We used "request for information" rooms with associated RFI folders, collector tasking folders, and RFI answer rooms to manage the exchange of information. As with any other intelligence request, the latest time the information would be of value was stated on the request.

Without these SOPs and coordination efforts establishing offices and naming conventions for the rooms and folders within particular offices, chaos and confusion would have reigned not only at our site, but at those sites with whom we conversed. This confusion could have severely hampered our coordination efforts and rendered us incapable of obtaining national intelligence collection support for the 1st Brigade Combat Team.

Intelligence Analysis of Information Collected

It is the responsibility of the division collection manager, under the guidance of the G2, to obtain intelligence information necessary for the commander to effectively direct combat operations. The ability to converse with national-level analysts and analysts within the 4th ID (M) facilitates a more refined analytical effort, allowing expertise from other echelons to be incorporated into a division intelligence product. I cannot emphasize enough the benefits to be gained from this cross-echelon analysis. National assets provide capabilities such as the Training and Contingency Directorate for imagery. They could never be fully exploited at our echelon due to division organic collectors' range limitations and limited technology available for exploitation (e.g., light tables for imagery analysis). Analysts at our echelon or below provide national levels with an "eyewitness" evaluation of the enemy, allowing those analysts to better interpret and refine their assessment of enemy activity and reactions.

There are a number of tools available for this exchange of information. There is what is referred to as a "whiteboard" function. This is nothing more than a blank electronic sheet of paper on which one can draw and annotate with analysts' comments. This ability allows for a graphic representation of ideas that could never be transferred through voice communications. The old adage that *"a picture is worth a thousand words"* holds true for this functionality. The whiteboard allows integration of actual pictures in the display; those pictures can themselves be annotated (e.g., unmanned aerial vehicle imagery). These whiteboards were fully employed by the collection management shop in several tasks:

- ☐ Conveying the Blue force scheme of maneuver.
- ☐ Assisting national-level agencies in interpreting and pinpointing specific intelligence information requested.
- ☐ Aiding the Division in assessing opposing forces intentions (such as identifying OPFOR deception efforts and locating areas with obstacles).
- ☐ Receiving processed information in respective rooms by national echelons.

The information received from higher levels was later retrieved by the collection managment and

dissemination (CM&D) shop, further developed, and disseminated to appropriate sections within the ACE and 4th ID (M). For example, the CM&D shop received the national imagery, produced the Synthetic Imagery Generation System (SIGS) images, and placed it on the 4th ID (M) tactical internet home page for subordinate elements to pull up as needed. If either division- or national-level analysts had questions, they could view the same information or picture and "chat" with each other.

An additional function of the ASAS CVW software was the capability for video and voice communications that would enhance the analyst-to-analyst exchange. Initially, both of these functionalities were used. However, both functions required enormous bandwidth that was not always available. This constraint limited the ability to effectively use these functions.

Dissemination Operations

While dissemination during any exercise has historically been difficult at best, CVW greatly aided our effort in accomplishing this valuable mission. Knowing the enemy situation is half the battle; the other is the ability to focus combat forces to shape the battlefield. CVW eased this process by allowing direct communications with subordinate, adjacent, and higher-echelon units. If information was time-critical, it could be passed instantaneously to appropriate end users.

Conclusion

I have nothing but praise for the CVW software. Its ability to be easily adapted to UNIX workstations and the minimal time needed for training allows for quick implementation. This software offers capabilities for connectivity between sections, units, and national-level agencies over great distances with a minimal amount of bandwidth needed. It allows direct analyst-to-analyst interface in an internet-related "chat" environment. This interface is invaluable in assisting in the production of refined intelligence products. Instead of numerous analytical efforts on one piece of intelligence information, there is a collaborative effort between all analysts. This reduces the amount of information the commander must sift through and facilitates a common picture of the battlefield at all echelons that have this software. One Battle, One Effort!

Chief Warrant Office Two Hopkins is currently assigned to the 4th ID (M) ACE's Technical Control and Processing Section. During the AWE, he was the 4th ID (M) Assistant Collection Manager. He has a bachelor of science degree in Business Administration from the New York State Regents University. Readers can contact the author at hopkinsj@hood-emh3.army.mil, (254) 618-7693, and DSN 259-7693.

The Tactical Weather Initiative and the AWEs

by Jeffrey A. Faunce

In this article, I will discuss technology initiatives that provide U.S. Army commanders world-class weather support today. The tactical weather (TAC WX) initiative supported the Task Force XXI (TF XXI) Advanced Warfighting Experiments (AWE) at the National Training Center (NTC) in March 1997. It will continue along the Force XXI joint venture axis as an approved Division XXI AWE initiative.

Since 1994, U.S. Army Space Command (ARSPACE) (Forward), the Army Research Laboratory Battlefield Environment Division (ARL/BED), U.S. Air Force Combat Weather Center, and the 3d Weather Squadron have designed and developed the next generation combat weather system for the Army. Available technologies which exploit space and increase the quality of weather analyses and forecasts were assembled and integrated for use during the Force XXI AWEs. The product of this effort became the TAC WX initiative employing the Integrated Meteorological System (IMETS) Block II (Prototype).

System Components

The IMETS Block II components include the ARSPACE Deployable Weather Satellite Workstation (DWSW), the Weather Effects Workstation (WEW), and the Forecaster Workstation (FW). The DWSW acquires and processes high-resolution imagery and vertical atmospheric sounding data directly from all U.S. polar orbiting and geostationary weather satellites. TF XXI forecasters used this real-time data to refine maneuver area forecasts and to develop value-added weather products.

The **WEW** provides a high-resolution analysis and forecast model which prepares weather products to a level of detail needed by Army warfighters. The WEW also serves as an interface to Army Tactical Command and Control System (ATCCS) workstations.

The **FW** acquires and processes graphic, alphanumeric, and gridded data fields from the Air Force Global Weather Center. Using data from the FW, the forecasters monitored inter- and intratheater weather events and forecast weather out to 96 hours.

System Advancements

The IMETS Block II represents major enhancements over currently fielded systems. These improvements include—

- ☐ A seamless digital link to and from all ATCCS workstations, using homepage functions.
- ☐ The direct real-time downlink of data and weather imagery every 30 minutes from weather satellites (vice processed imagery that is 1 to 2 hours old with IMETS Block I).
- ☐ Weather imagery resolution down to 550 meters (vice about 10 kilometers with IMETS Block I). High-resolution images and microwave sensor data also support terrain evaluation and analysis with information such as snow cover, soil moisture, and the location and intensity of precipitation (microwave sensor data is not available with the IMETS Block I).
- ☐ High-resolution weather imagery (550 km) and forecasts (2.5 km) of weather conditions over enemy areas (rather than the low-resolution imagery (10 km) and forecasts (300 km) using IMETS Block I). This information supports mission planning and execution, such as aviation operations across the line of contact.
- ☐ Real-time downlink of vertical sounder (winds and temperatures) data which can be used planning and executing deep fires and aviation missions (not available with Block I).
- ☐ The Integrated Weather Effects Decision Aid (IWEDA) software that translates 24-hour weather forecasts into "stoplight" (green-amber-red) weather effects graphics.

Accomplishments

The IMETS Block II prototype recorded a number of accomplishments at the TF XXI AWE. It prepared high-resolution weather analyses and forecast products for the area of operations (AO), appropriately annotated information relative to future operations, and distributed them throughout the TF. The prototype also received real-time high-resolution imagery directly from U.S. military and civil weather satellites at a tactical location. This imagery was annotated with forecast information relative to current operations and disseminated throughout the TF. High-resolution weather imagery of the AO, annotated for the 24-hour forecast, was the most used weather product during the TF XXI AWE.

The IMETS Block II provided...timely, relevant, customized products for the battle staff's intelligence preparation of the battlefield process

The prototype IMETS Block II operated a client-server architecture that assessed weather effects on operations, weapons systems, subsystems, and per-

sonnel. It used IWEDA software hosted on the WEW.

The system also exploited homepage technology to provide tailored weather products, sorted by combat functions (e.g., intelligence, manuever, fire support) down to battalion level. The products available at the intelligence icon on the homepage (for both friendly and enemy areas) include weather observations, cloud coverage, flight hazards (turbulence, icing), and current and forecast precipitation areas.

TF XXI AWE Lessons Learned

The IMETS Block II team obtained significant information through the use of the prototype during the TF XXI AWE. The more general observations include----

The IMETS Block II provided the weather team with the means to prepare timely, relevant, customized products for the battle staff's intelligence preparation of the battlefield (IPB) process. Intelligence organizations should recognize the increased capabilities of IMETS Block II and task weather teams for weather product overlays that support IPB; this was never done during the TF XXI AWE. These IPB-related overlays include products that depict current and forecast precipitation, snow depth, visibility, cloud cover, and wind direction and speed.

- ☐ Updated weather databases, digitally linked to all echelons, permitted a nearly total "warfighter pull" of weather and weather effects products. "Smart push" of routine products was never directed, although "push" products included weather advisories and warnings.
- ☐ The number of weather product "consumers" increased as digital access to multiple weather products was established.
- ☐ The homepage was an excellent means for disseminating weather products to Army users from division through company levels.
- ☐ The Global Broadcast System (GBS), or a comparable high-capacity communications link, is necessary for the rapid dissemination of large weather-imagery files.
- ☐ The weather staff must append relevant legends to all weather products.
- ☐ Because of unmanned aerial vehicle (UAV) vulnerability to the weather (wind, icing, turbulence), UAV teams may need dedicated weather support.
- ☐ Despite having user's guides available, the operators relied heavily on attendant ARSPACE and ARL/BED technical representatives during hardware and software problems.

Observations from 3d Squadron operators and product consumers were collected on the ability of IMETS Block II to satisfy mission requirements. A Predator UAV team member reported, *"We changed the flight altitude and mission of a UAV based on the detailed wind information."* (The Predator UAV team used the IMETS Block II extensively due to the system's ability to produce timely, tailored, and high-resolution products.)

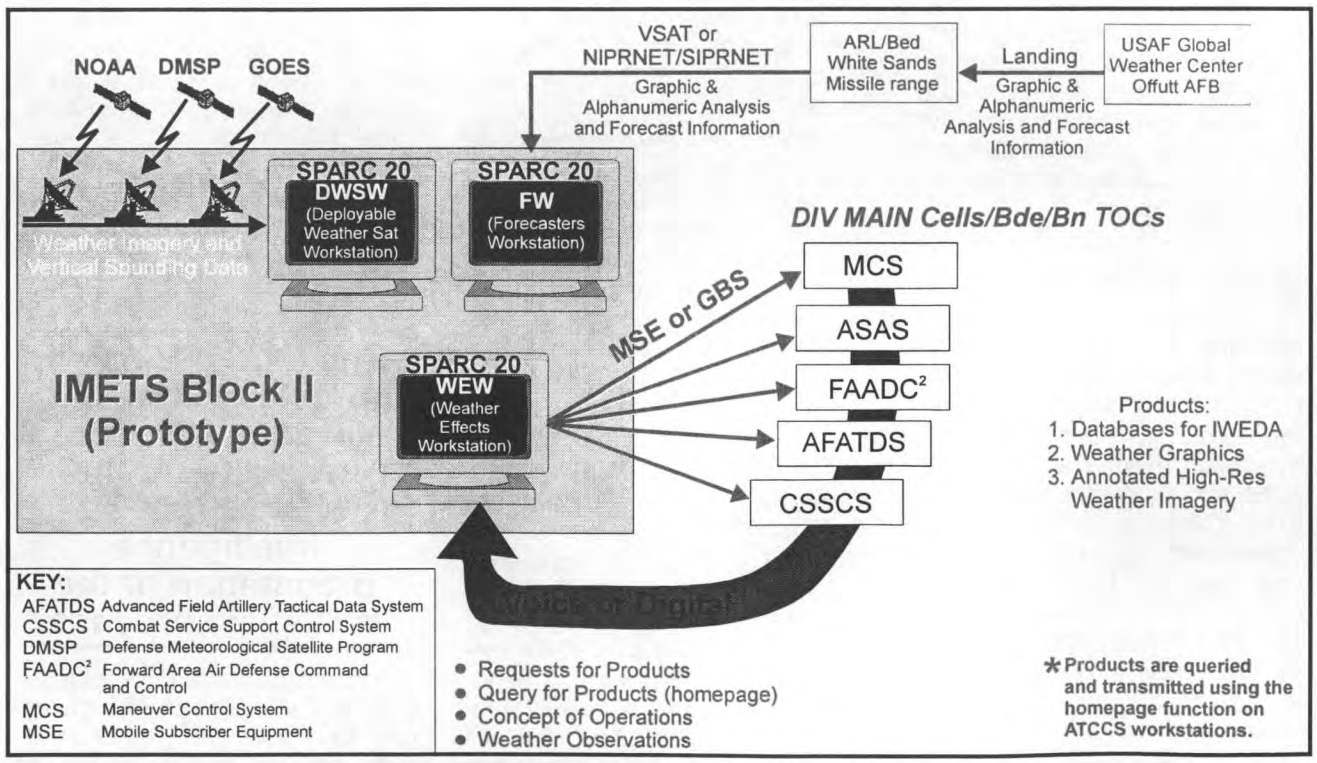

Figure 1. IMETS Block II (Prototype) Architecture.

As proponent for the DWSW, ARSPACE collected lessons-learned data specifically about the use and utility of weather satellite imagery. This information includes the facts that—

- ☐ The most useful imagery came from the geostationary weather satellite (GOES-9). Approximately 90 percent of the imagery sent to the homepage came from GOES-9, which was directly downlinked every 30 minutes. The conclusion was that the polar-orbiting weather satellites do not pass overhead often enough to support military operations in the low and mid-latitudes.
- ☐ High-resolution geostationary weather satellite imagery is most useful at the lowest echelons, such as to enhance maneuver and aviation brigade mission planning and execution.
- ☐ The wind and temperature fields at various altitudes available from the National Oceanographic and Atmospheric Administration (NOAA) satellites were instrumental in determining the location of frontal systems and jet streams.
- ☐ The operators desire a geostationary satellite downlink reception antenna that is small, light, easy to erect, and not susceptible to high winds.
- ☐ Advanced software, such as an algorithm for using two GOES imagery channels to highlight the location of blowing dust, proved highly relevant to military operations in a desert environment.
- ☐ The operators want an imagery annotation capability that is robust and easy to use.

Division XXI AWE

The IMETS Block II prototype will also participate in the Division XXI AWE in November 1997. One IMETS Block II will deploy well forward in the division battlespace with the Division Tactical Command Post Number 1 (TAC1) and a second will be employed by the III Corps weather team at their main command post. Both systems will be digitally connected to ATCCS workstations using organic communications as well as the GBS. Because the Division XXI AWE is a simulation exercise, the IMETS Block II will generate weather and weather effects products in accordance with "scripted" weather data for the exercise area to be played.

The author wishes to thank William Coffey and Arthur Kyle for their valuable contribution to this article.

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Training a Better SIGINT Analyst

by Sergeant First Class Michael C. Taylor

Word of change sometimes spreads slowly in the MI Corps. One change that many may not be aware of is that military occupational specialty (MOS) 98C10 is no longer awarded after training at Goodfellow Air Force Base, Texas. Since October 1996, soldiers must complete Phase II training at Fort Huachuca, Arizona, before they can pin on their MI brass. Now, all Army signals intelligence (SIGINT) analysts receive the same baseline training in tactical SIGINT analysis and All-Source Analysis System (ASAS) operation.

Background

The Analysis Platoon of A Company, 305th MI Battalion, developed the 232-98C10 Phase II, Signals Intelligence Analyst Course (SIAC), from the F8 Electronic Warfare Analyst Course (EWAC). The Intelligence School at Fort Devens, Massachusetts, built the original 12-week EWAC in the early 1980s. EWAC familiarized soldiers going to tactical units with tactical equipment and operations. A decade later, we have changed the old F8 course to reflect changes in training strategies, doctrine, and equipment. For example, we have shortened the course to six weeks and changed the field training exercise to an indoor situational training exercise. In addition, the instructors have thoroughly integrated ASAS training into the course.

Outside the academic arena, one big change was the transition from a follow-on functional course to an initial entry training (IET) course. The change basically means that rather than going to EWAC as MOS-qualified students, soldiers come to SIAC as trainees under the control of drill sergeants. The drill sergeants continue the soldierization process begun in basic combat training, conduct daily fitness training, march the students to and from class, and take care of IET administrative issues.

Tactical Focus

The objective of SIAC Phase II is to provide new SIGINT analysts with the basic knowledge needed to function in tactical MI organiza-

Week 1 **Tactical Organizations and Operations**

- Combat Organizations and Operations
- Tactical IEW Organizations and Operations
- Tactical SIGINT Analyst Operations
- Tactical IEW Systems

Week 2 **Tactical Analysis and Reporting**

- Intelligence Preparation of the Battlefield
- Electronic Preparation of the Battlefield
- Tactical Reports
- Information Request Messages
- Collection Management Messages

Week 3/4 **Tactical Communications and Processing**

- SINCGARS Operations
- TIGER Operations
- ASAS Single Source Workstation Operations
- Introduction to INTELINK

Week 5/6 **ASAS Situational Training Exercise**

Soldiers apply new skills and knowledge as analysts in a divisional ACE and Platoon Operations Centers supporting a peace-keeping operation.

Figure 1. SIAC Phase II Training Effective 1 October 1997.

tions and to answer the tactical intelligence requirements of combat commanders. The course is six weeks long and classes start every two weeks. Our class size varies from a maximum of 24 to a minimum of 6 students. The course's three teaching teams provide the training shown in Figure 1.

Future Plans

We will continue to refine and update the Signals Intelligence Analyst Course based on the 98C critical tasks list, the availability of training resources, the course cadre's experience, and student critiques. In August and November 1997, training and operational units will review and update the 98C Critical Tasks List. This is an important opportunity for tactical units to tell us what 98Cs need to know before they reach their first duty assignment. We have already begun to review our program of instruction to determine changes for the future. Some changes we envision for our fiscal year 1998 program of instruction are—

- ☐ A student handout containing all necessary course reference material.
- ☐ Introductory lectures on tactical communications and processing.
- ☐ More performance-oriented training and testing on TIGER, SINCGARS, and ASAS -SSW.
- ☐ Addition of general support company SIGINT analyst operations into the ASAS-SSW situational training exercise.

Conclusion

This article covers the changes to the SIGINT analyst training and what we are doing to improve the course. The 305th MI Battalion (with the 344th MI Battalion at Goodfellow Air Force Base) is working hard to produce technically and tactically proficient SIGINT analysts. We measure our success by the ability of these new analysts to integrate into your unit and support your mission. Your participation in the critical tasks selection process and correspondence with the training base ensure our success and yours. So evaluate the quality of 98C10 analysts arriving in your unit, participate in the process, and help us make better SIGINT analysts.

Sergeant First Class Taylor is currently the Chief Instructor of the SIAC Phase II and assigned to A Company, 305th MI Battalion. A NSA Professionalized Traffic Analyst, he has served as a SIGINT analyst at all echelons. His most recent assignment was as the NCOIC of the Deployable Intelligence Support Element, 501st MI Brigade, in Korea. SFC Taylor has bachelor of arts degree in Russian Studies from University of Maryland. Readers can reach him at (520) 533-6224/6230 or DSN 821-6224/6230. If units have comments about the 98C Critical Tasks List, they can send them via E-mail to grenierl@huachuca-emh1.army.mil and mark them "Pass to SFC Taylor."

Task Force ARRC: 66th MI Group's DISE in Sarajevo

by Major John W. Loffert, Jr.

The 66th MI Group, stationed in Augsburg, Germany, has a variety of missions ranging from strategic-level signals intelligence (SIGINT) collection to the tactical deployment of multidiscipline intelligence assets. One of the tactical assets inherent in the 66th MI Group's 527th MI Battalion is the Deployable Intelligence Support Element (DISE). The 527th MI Battalion has the capability to deploy two DISE teams in support of contingency operations. One of these DISE teams is always on call to support the Southern European Task Force (SETAF) in Vicenza, Italy, and the other has been deployed since December 1995 in support of Operation JOINT ENDEAVOR (OJE), now called Operation JOINT GUARD, in Sarajevo, Bosnia-Herzegovina.

Over the last few years, the DISE concept has become a familiar intelligence support package to U.S. ground commanders. More unique, however, is the metamorphosis of the 66th MI Group's DISE deployment to Sarajevo where it became the core element upon which was built the U.S. National Intelligence Cell (USNIC). In this configuration, the 527th MI Battalion DISE was thrust to the forefront of intelligence collection, production, and dissemination for the Allied Central Europe (ACE) Rapid Reaction Corps (ARRC) in direct support of the Implementation Force (IFOR) in Bosnia.

From DISE to National Intelligence Cell

On 13 October 1995, the 66th MI Group was alerted to prepare a DISE to deploy in support of the ARRC headquarters in conjunction with the deployment of North Atlantic Treaty Organization (NATO) forces to Bosnia during OJE. The 66th's standard DISE (see Figure 1) is comprised of two M1037 high-mobility multipurpose wheeled vehicles (HMMWVs) with their organic All-Source Analysis System Warlord workstation systems (one collateral, and two sensitive compartmented information (SCI)), one TROJAN Special Purpose Integrated Remote Intelligence Terminal (SPIRIT) II antenna, 30-kilowatt generators, three SCI Joint Analysis Workstations (JAWS), an administrative personal computer (collateral), and three printers (collateral and SCI).

After a coordination and planning conference with the ARRC headquarters, it became apparent that a more robust DISE was required to accomplish all the specified and implied intelligence missions levied against it. This became more critical as the U.S. European Command selected the 66th's DISE to serve as the EUCOM J2-Forward (original concept) in Sarajevo, working for the Commander, Implementation Force (COMIFOR) (endstate). As such, the DISE would not only provide U.S. intelligence support to the ARRC G2, but directly to a host of other U.S. ground and joint commanders. The DISE was to—

- ☐ Provide indications and warning (I&W) to the IFOR.
- ☐ Answer Requests for Information (RFIs).
- ☐ Manage U.S. collection platforms for the ARRC.
- ☐ Provide the ARRC G2 with unique U.S. intelligence products.
- ☐ Integrate U.S. national-level intelligence.
- ☐ Ensure that U.S. decisionmakers were provided with up-to-date intelligence and analytical support.

The need for immediate responsiveness to the commander meant that critical information and analytical products had to be done on the ground. In order to meet these requirements, a 14-soldier ground order-of-battle (GOB) cell was added to help track the Former Warring Faction (FWF) troop and equipment dispositions. A Commander's Tactical Terminal (CTT) was added to download Guardrail reports. Added Linked Operational-Intelligence Centers, Europe (LOCE) terminals disseminated and shared intelligence among the French, British, and American sectors. To take advantage of the human intelligence (HUMINT)-rich Bosnian environment, a counterintellience (CI)/HUMINT cell was added, augmented with the Theater Rapid Response Intelligence Package (TRRIP). Additional Warlords and JAWS were added to beef up the analytical capability. The TROJAN SPIRIT II would operate off the Ku-band satellite on a 512-kHz bandwidth for intelligence communications.

Another challenge surrounding the DISE deployment to Bosnia dealt with logistical and maintenance support. The DISE was to operate in the French sector of Bosnia, under the British-run ARRC headquarters. Because of this, logistics and maintenance support would not be available for our vehicles, generators, computers, or communication systems. To compensate, a support element—consisting of a vehicle and generator mechanic, two local area network contractors, a Warlord contractor, a contractor for the TROJAN SPIRIT II, and a system administrator—was assigned to augment the DISE.

This enlarged 66th DISE package, with the addition of EUCOM augmentation and a National Intelligence Support Team (NIST), became the USNIC. It was designated by the 66th as Task Force (TF) ARRC. The TF was led by an Army major from the 66th MI Group's 527th MI Battalion and intelligence command and control (IC^2) was by a headquarters EUCOM Navy captain. The entire effort encompassed 107 personnel and 22 vehicles from the 66th DISE, the EUCOM J2, elements of the J2X[1], a NIST with its Critical Source communications, and a Joint Mobile In-

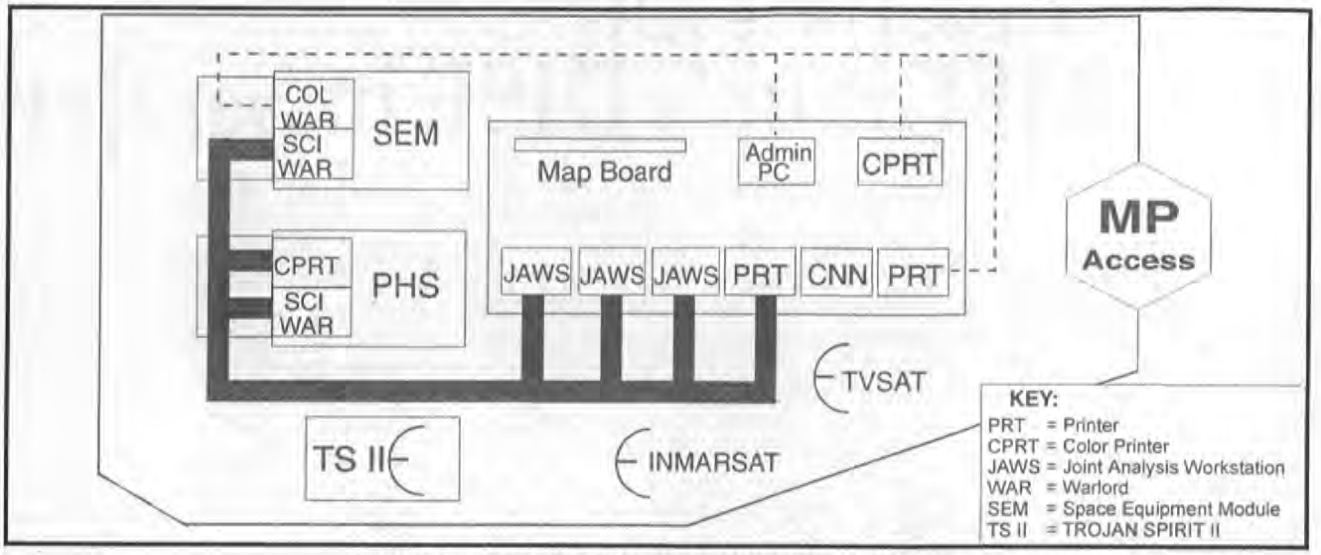

Figure 1. Standard 66th MI Group DISE Package.

telligence Communications System with an additional TROJAN SPIRIT II from the 513th MI Brigade.

Deployment

The time line from notification to deployment allowed the TF to conduct various certification exercises to refine its operations as well as measures to validate and prepare the TF for deployment. These included—

- A command post exercise with the ARRC headquarters at Rheindahlen, Germany, conducted from 4 to 10 November 1995.
- Mine certification at Hohenfels, Germany.
- Measures for individual certification on the various intelligence systems, personal and TF equipment layouts, convoy procedures, reaction to snipers, mine awareness, country briefs, and rules of engagement.

On 4 December 1995, two DISE soldiers, forming a mini-DISE (collateral laptop Warlord and an international maritime satellite receiver (INMARSAT)), deployed to Sarajevo with the ARRC Headquarters-Forward. Shortly thereafter, the rest of the TF moved to Rheindahlen to begin its journey into Bosnia. On 14 December, the TF's vehicles were driven to Antwerp, Belgium with 600 other vehicles from the ARRC and uploaded on a ship destined for the port of Split, Croatia.

On 22 December 1995, personnel traveled via British air transport out of Rheindahlen and linked up with the vehicles in Split. The destination of the ARRC headquarters, and hence TF ARRC, was the Terme hotel complex in the Sarajevo suburb of Ilidza. Unfortunately, the Serbian Army headquarters manning the Terme complex had not yet pulled out and the site was not ready for NATO occupation. Incoming troops of the ARRC would have to be positioned at various locations in and around Sarajevo until the Terme complex was ready. The TF was to move to Visoko, approximately 25 kilometers north of Sarajevo, with other elements of the ARRC Main Command Post (CP). The ARRC-Rear would be stationed at Kiseljak and designated rear-echelon elements would move there.

At 0730 on 25 December 1995, the TF departed Split, Croatia, as one of more than 20 convoys moving towards Visoko and Kiseljak that day. After a 12-hour convoy, the TF arrived in Visoko. The British Support Squadron manning the Visoko camp immediately ensured that the U.S. TF ARRC soldiers, sailors, airmen, and marines received a welcomed Christmas meal.

Set Up and Operation

Uncertain when the site in Sarajevo would be ready, the TF coordinated with the ARRC headquarters to set up in Visoko and begin operations. On 28 December 1995, the TF's intelligence assets (DISE, NIST, and EUCOM J2) set up and the first USNIC was officially established, providing critical intelligence support to the ARRC headquarters and to V Corps units moving across the Sava river in TF Eagle's area of operation.

On 10 January 1996, the site in Sarajevo was completed and the TF began its move from Visoko. The primary dilemma was to ensure that reliable intelligence, especially I&W, did not degrade during the move. To solve this problem, the TF conducted its own split-based operation. The DISE broke down and moved on the morning of 10 January 1996. The NIST team remained in Visoko and, using their INMARSAT and Tributary systems, maintained I&W communications with the ARRC headquarters during the move. Once the DISE was in place in Sarajevo, the NIST "fell in on" the DISE. Once again united as the USNIC, the TF defined and solidified its intelligence support to the diverse and unique coalition experience within a combined headquarters.

The USNIC has many roles and capabilities. The EUCOM augmentation provided the USNIC its IC^2, resourced the RFI and collection management positions, incorporated the NIST team, established the J2X, and attached the 513th's TROJAN SPIRIT II, operating a full T1 cir-

cuit for the Joint Worldwide Intelligence Communications System (JWICS). The DISE, however, provided the foundation on which the USNIC was formed and served as the primary intelligence producer. Looking specifically at the DISE portion of the USNIC, it was broken into three distinct sections: the SIGINT, imagery intelligence (IMINT), and CI/HUMINT cells.

The SIGINT cell was responsible for monitoring National Security Agency (NSA) message traffic, and Guardrail downlink messages from the JAWS systems. While also tasked to operate using the CTT, the Guardrail flight routes did not cover the French sector in Bosnia; hence all Guardrail reports had to be pulled off the JAWS. Using this information, a SIGINT summary was produced for wider dissemination. In addition, the SIGINT cell was responsible for electronic intelligence data consolidation in theater and analysis of the FWF's air defense artillery dispositions to the ARRC G2.

The IMINT cell provided customized U.S. imagery for the COMIFOR ARRC G2 and Commander. On some occasions, this required direct coordination with higher U.S. intelligence agencies for declassification approval for the release of U.S. imagery products to NATO commands. The IMINT cell pulled its imagery off the 5D server. In conjunction with the better weather and as more assets arrived in theater, an Orion P-3 downlink into the DISE was added, as well as the Predator unmanned aerial vehicle (UAV), whose video was disseminated through the Joint Broadcast System (JBS). The IMINT cell assumed responsibility for monitoring these systems.

The CI/HUMINT cell focused its effort on counterintelligence, counterterrorism, and HUMINT collection. In Bosnia, the CI/HUMINT cell coordinated through the ARRC headquarters. A separate U.S. reporting chain was established for U.S. force protection issues via the G2X and G2 in the TF Eagle area of responsibility (AOR). The cell conducted close coordination with the Allied MI Battalion for all HUMINT matters, and with the Royal Military Police for liaison and crime data in Sarajevo. The CI/HUMINT cell was the controlling headquarters for all CI operations in Croatia. In addition, the CI/HUMINT cell was able to conduct reconnaissance operations to Gorazde, Visegrad, Sokolac, and Pale using their TRRIP Fotoman color digital cameras to instantly augment CI reports with digital imagery.

Reassessing the Mission

TF ARRC was built around a tailored intelligence package that allowed it to flexibly adapt to the progressing IFOR mission. For example, once IFOR forces were firmly emplaced in theater with the ARRC to monitor and man their AOR, there was less need for the USNIC to maintain and update the ARRC's GOB database in theater, using information received from the U.S. Army Europe (USAREUR) Combined Intelligence Readiness Facility (UCIRF). The ARRC G2 firmly assumed control of the FWF GOB, via in-country reports from the multinational divisions (MNDs). The GOB cell was therefore reduced to one warrant officer ensuring that updated GOB data, coming in from the various MND's through the ARRC G2, was passed on to the UCIRF. The UCIRF then validated the incoming data to build the official LOCE GOB database.

As concrete compliance measures with the Dayton Peace Accord became more difficult to ascertain for IFOR forces, the USNIC picked up the responsibility of providing more precise analytical products concerning military and geopolitical predictive analysis for the COMIFOR. To accomplish this task, senior analysts from EUCOM and the Joint Analysis Center (JAC) were integrated into the USNIC to provide dedicated analytical support.

Over time, other innovations occurred. The NIST team was reduced in size and the DISE portion of the USNIC picked up the responsibility of monitoring the NIST Tributary I&W system and some of the NSA communications systems. Through many transitions, the USNIC evolved into its current configuration.

The Future

The 66th MI Group's DISE during Operation JOINT ENDEAVOR as part of the USNIC, provided intelligence support to a host of recipients. The DISE—

- ☐ Worked directly for the British-led ARRC headquarters.
- ☐ Provided daily intelligence to COMIFOR and U.S. units in MND-North.
- ☐ Coordinated with French units within the MND-Southeast.
- ☐ Cooperated with a host of NATO and non-NATO nations for the success of the IFOR mission.

In doing so, the soldiers of the 66th MI Group underwent a unique experience as part of NATO's first deployment in its 50-year history.

The operation also demonstrated the flexible tailoring of a DISE package to meet mission requirements. The 66th MI Group's standard DISE is built around the TROJAN SPIRIT II, two HMMWVs with various intelligence systems organic to the vehicles, and a small analytical package totaling approximately 24 personnel. This package can be expanded to meet mission requirements, such as in OJE and Operation JOINT GUARD, to include more communications and operating systems, a JMICs (mobile JWICS) video teleconferencing capability, a NIST team, and senior headquarters staffing. The DISE can push the intelligence capability of an intelligence organization forward to the ground or Joint Task Force commander to provide him with immediate SCI-high intelligence and analytical capability to which he would not otherwise have ready access. It is a flexible intelligence package intended to be deployable, yet expandable to meet any contingency and evolution in mission.

The 66th's DISE in Sarajevo remains in place to this day. It continues to serve as the vital element of the USNIC in support of the newly established Allied Land Forces, Central Europe Stability Force

(SFOR) mission, Operation JOINT GUARD.

Endnote

1. Editor's Note: The J2X and G2X refers to the CI/HUMINT section in the J2 or G2 office.

Major Loffert is currently the S3 of the 527th MI Battalion, 66th MI Group. He served as Battalion Assistant S3, and Battalion S1. On 1 Nov 1995, he assumed command of the 66th MI Group's Intelligence TF deployed to Sarajevo, Bosnia to support the ARRC Headquarters during Operation JOINT ENDEAVOR. He has a Bachelor of Science and Engineering from the U.S. Military Academy and a Master of Science in Strategic Intelligence from the Joint National Military Intelligence College. Readers can call him at commercial 49-821-540-7430 or DSN (314) 435-7340.

Eyes of the Eagle:

Exercise Mega Gold '97

by Lieutenant Colonel Gerald N. Vevon, Jr.

Integrating the unique capabilities of the air assault (AASLT) division into our intelligence collection process can greatly enhance both redundancy and our ability to see the battlefield. Exercise Mega Gold 97 provided the 101st Airborne Division (AASLT) with an opportunity to test our collection methodology and some new capabilities over the extended distances that the Division would fight. Based on computer-generated collection provided by the Warfighter exercises, we believed that we had become too confident in our ability to function without facing the real challenges presented by weather, equipment failures, and doctrinal distances.

Exercise Setting and Objectives

Exercise Mega Gold 97 was conducted over a three-week period last fall and represented the largest maneuvers in Tennessee and Kentucky since 1943. More than 10,000 soldiers, 130 aircraft, and 1250 vehicles deployed for the exercise, replicating the battlespace in which the Division would doctrinally operate. The area stretched from the Intermediate Staging Base at Fort Knox 117 kms to the Tactical Assembly Area (TAA) in Greenville, and then another 72 km to the Forward Operating Base and area of operations at Fort Campbell.

The main training objective of the Intelligence battlefield operating system (BOS) during the exercise was multifaceted collection and system connectivity. Collection included IMINT, electronic, human, and communications intelligence using a variety of systems. This article will address our efforts at executing imagery collection using Tactical Exploitation of National Capabilities (TENCAP) systems, OH-58D Kiowa Warrior helicopters, AH-64 Apache helicopters equipped with a Phototelesis system, handheld digital cameras, and UAVs provided by the Commandant's Warfighting Lab, U.S. Marine Corps (USMC).

Exercise Employment of IMINT Systems

The challenge of using TENCAP systems for a peacetime training exercise requires a minimum of eight weeks for prior coordination and solid justification. For our exercise, we had national IMINT coverage once per day for a ten-day period. Our objectives were to support targeting and situation development on an opposing force (OPFOR) battalion preparing defensive positions. Excellent processing and analysis by the 525th MI Brigade (Corps) (Airborne) Modernized Imagery Exploitation System and transmission of initial photographic interpretation reports and softcopy imagery via TROJAN CLASSIC to our deployed TROJAN Special Purpose Integrated Remote Intelligence Terminal II proved valuable. This effort led to deep attacks by Apaches against an OPFOR artillery battery and logistics area, and provided cueing for further collection. Overcast skies limited collection during the last five days of the exercise.

The cueing by the TENCAP systems and poor weather forced one of the Division's organic imagery collectors, the OH-58D Kiowa, to provide needed collection using the forward-looking infrared radar (FLIR)- capable camera. The Kiowa collected against critical named areas of interest (NAIs) including a flight landing strip which was key for the follow-on movement of soldiers and supplies by C-130 Hercules fixed-wing aircraft and CH-47 Chinook helicopters.

Mega Gold 97 provided a unique training opportunity to exercise our collection capabilities and processes over the distances [we] can expect to fight

The OH-58D is equipped with an 8-mm tape player to record the gun-camera footage of NAIs or engagements for exploitation when the aircraft completes its mission. The operators employed the 8-mm tape player's frame grabber in the Mobile Integrated Tactical Terminal (MITT) to freeze key images. These were copied to disk or 8-mm data tape and sent to the Analysis and Control Element (ACE) Collection Management and Dissemination IMINT Section. The imagery was annotated and the digitized image sent via file transfer protocol by the

All-Source Analysis System Warlord workstation over the Mobile Subscriber Equipment to the brigades. The innovation here was using the 8-mm tape player in the MITT to grab the images, as well as having the pilots help with the analysis.

The 101st Aviation Brigade demonstrated the Phototelesis imagery system which allows near-real-time transmission of electro-optical and FLIR imagery from the gun camera on the AH-64 Apaches, both to and from the aircraft, while the mission is in progress. Mega Gold 97 successfully demonstrated two capabilities:

- ☐ The compatibility of transmitting images in encrypted mode via the aircraft's organic Single-Channel Ground and Airborne Radio System (SINCGARS) radios and communication security gear for 130 km using a retransmission aircraft.
- ☐ Passing imagery from the ACE to the aircraft.

These capabilities permit immediate battlefield damage assessment, reduction of fratricide, and target handoff from UAVs and OH-58Ds. The long-range surveillance teams equipped with the manportable Lightweight Video Reconnaissance System can also pass real-time images of NAIs to inbound aircraft equipped with the system.

Flying in a UH-60 Blackhawk helicopter, our analysts used the 35-mm digital camera from the MITT to take TAA photographs to assist in force protection. These annotated digitized images were passed via Warlord to identify possible OPFOR hide sites and assist in the assessment of the unit's force protection posture.

The final IMINT system employed in the exercise was the USMC Battle Lab Expendable Drone (EXDRONE) UAV. The USMC's primary intents for this system are communications jamming or using its 20-pound payload for delivery of nonlethal munitions for riot and crowd control. The system has two cameras: one for the pilot and another for ground target tracking. We placed one ground station video monitor with our Assault Command Post, another with the Brigade CP, and a third at the EXDRONE launch site. The fidelity of the system's cameras, problems with datalink, and winds limited the effectiveness of the system. The real value was in our development of airspace management procedures in the air assault division for UAVs and the collection management process.

Conclusion

Exercise Mega Gold 97 provided a unique training opportunity to exercise our collection capabilities and processes over the distances our Division can expect to fight. Our lessons learned and innovations will improve the Intelligence BOSs support to the 101st Airborne Division (AASLT).

Lieutenant Colonel Vevon is a student at the Army War College. He was the G2, 101st Airborne Division (Air Assault), at Fort Campbell, Kentucky. His previous assignments include command and staff positions with the 313th MI Battalion (Airborne); 82d Airborne Division; and XVIII Airborne Corps. LTC Vevon commanded the 165th MI Battalion in Germany and deployed with the battalion to support Operation JOINT ENDEAVOR. He has earned the National Intelligence Certificate of Distinction. He has a bachelor of arts degree in Economics from Wofford College and a master's degree in International Relations from the University of South Carolina.

Expeditionary Warfare Intelligence Course

The Expeditionary Warfare Intelligence Course (EWIC) provides intermediate- and advanced-level instruction to career intelligence personnel assigned to units with expeditionary warfare missions. These missions include amphibious warfare, noncombatant evacuation operations, special operations, stability and support operations, and joint operations.

Students learn the basics of naval expeditionary force structures, amphibious task force, and carrier battle-group missions and capabilities, amphibious joint intelligence center operations, intelligence preparation of the battlefield, collection resources and management, joint intelligence architecture, targeting, and contigency planning. The course concludes with a comprehensive three-day practical exercise in which students demonstrate their proficiency and understanding of intelligence requirements to support contingency planning.

The course is available to officer and enlisted intelligence personnel (E-5 and above) active duty and reserve from all Services assigned to units tasked with the conduct of expeditionary warfare missions. The target audience includes joint staff personnel, marine air-ground task force (MAGTF) staffs, amphibious staffs, carrier group staffs, and ship's company intelligence personnel.

The EWIC is available from the Navy and Marine Corps Intelligence Training Center (NMITC) in Virginia Beach, Virginia and San Diego, California. Course length is 13 training days. Students must possess a minimum Secret security clearance; special compartmented intelligence is preferable.

Quota control is the NMITC Navy Integrated Training Resource Automated System (NITRAS) at commercial (757) 433-0126, or DSN 433-0126. For additional information about the course, call the Course Coordinator at commercial (757) 433-0248/9/50, or DSN 433-0248/9/50.

Short Title: EWIC

CIN: J-150-2966

CDP: 423U

Length: 17 calendar/13 training days

NEC: None

525th MI Brigade

Support to the Task Force XXI AWE

by Colonel Keith B. Alexander, Lieutenant Colonel Collin A. Agee, Lieutenant Colonel Thomas G. Francis III, Captain James R. Vandergrift, Captain Hal M. Hinton, Jr., and Captain Heather L. Browning

Imagine a U-2 plane sweeping over a 324-square kilometer area, and within minutes calls for fire are made for 21 different target sets---all controlled from an MI brigade tactical operations center hundreds of miles away from the main battle area. This is just an example of the dynamic tracking of the enemy forces by the soldiers of the 525th MI Brigade (Corps) (Airborne) in March 1997. The unit was in support of the 4th Infantry Division (Mechanized) tactical command post (DTAC) and Experimental Force (EXFOR) at the Advanced Warfighting Experiment (AWE). The Task Force XXI (TF XXI) AWE took place at the National Training Center in Fort Irwin, California.

The 525th MI Brigade supported the TF XXI AWE from Edwards Air Force Base, California, with the Brigade Headquarters, the 224th MI Battalion (Aerial Exploitation), and elements of the 319th MI Battalion (Operations). In addition, eight soldiers supported the 4th ID (M) DTAC with our special battlefield visualization capability.

Mission

The Brigade's mission during the AWE was to develop new concepts and integrate new systems and processors for several tasks. These included---

- ☐ Provide multidiscipline intelligence to the EXFOR.
- ☐ Support the Defense Advanced Research Projects Agency Advanced Concept Technology Demonstration (ACTD) of the Semi-Automated Imagery Processor (SAIP).
- ☐ Evolve battlefield visualization (see Figure 1).

The 525th MI Brigade's soldiers were able to track the enemy better than ever before through multidiscipline collection, processors with enhanced capabilities, and an improved ability to conduct aggregate analysis. The use of existing TROJAN Special Purpose Integrated Remote Intelligence Terminal (SPIRIT) communications, Global Broadcast System---Battlefield Awareness and Data Dissemination (GBS-BADD), and software applications facilitated analyst collaboration.

This greatly enhanced view of the enemy forces allowed the Brigade to capitalize on the capabilities of our collectors and processors for situation and target development. It also provided great insight into our future collection management opportunities. These advances were made possible by a combination of the---

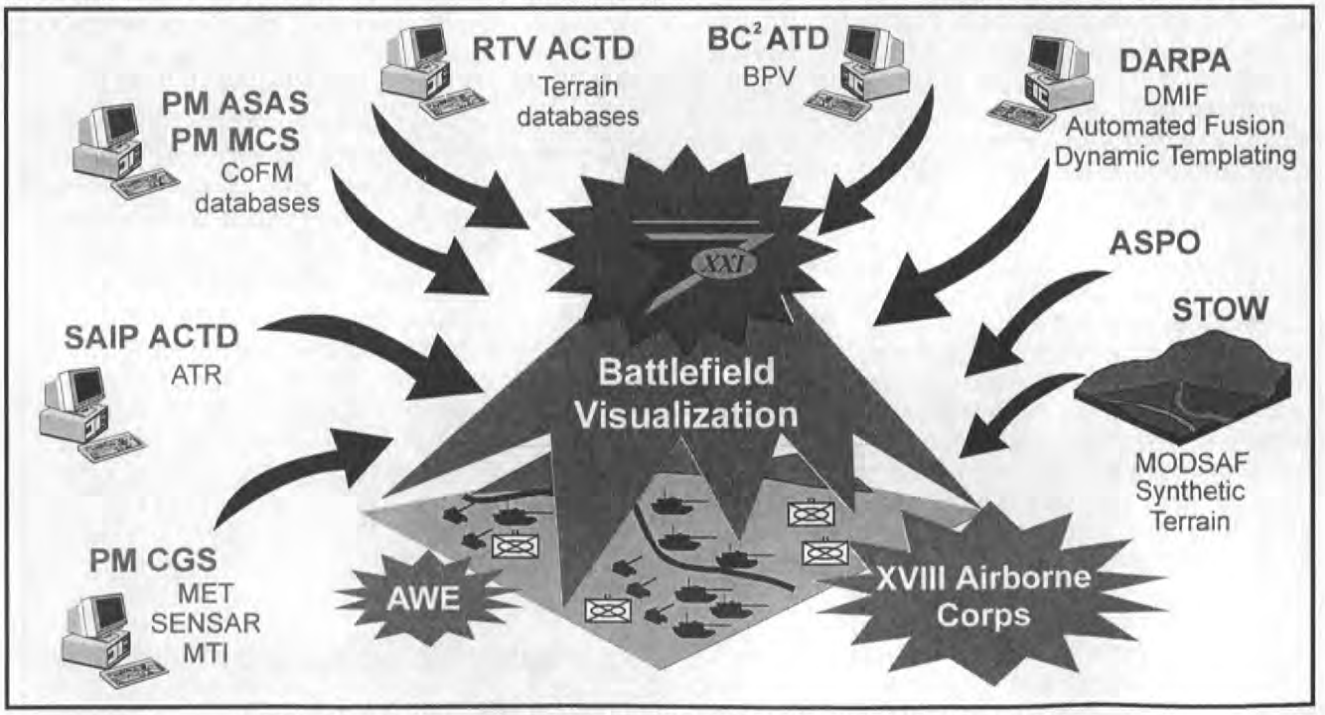

Figure 1. Participants in the Evolution of Battlefield Visualization.

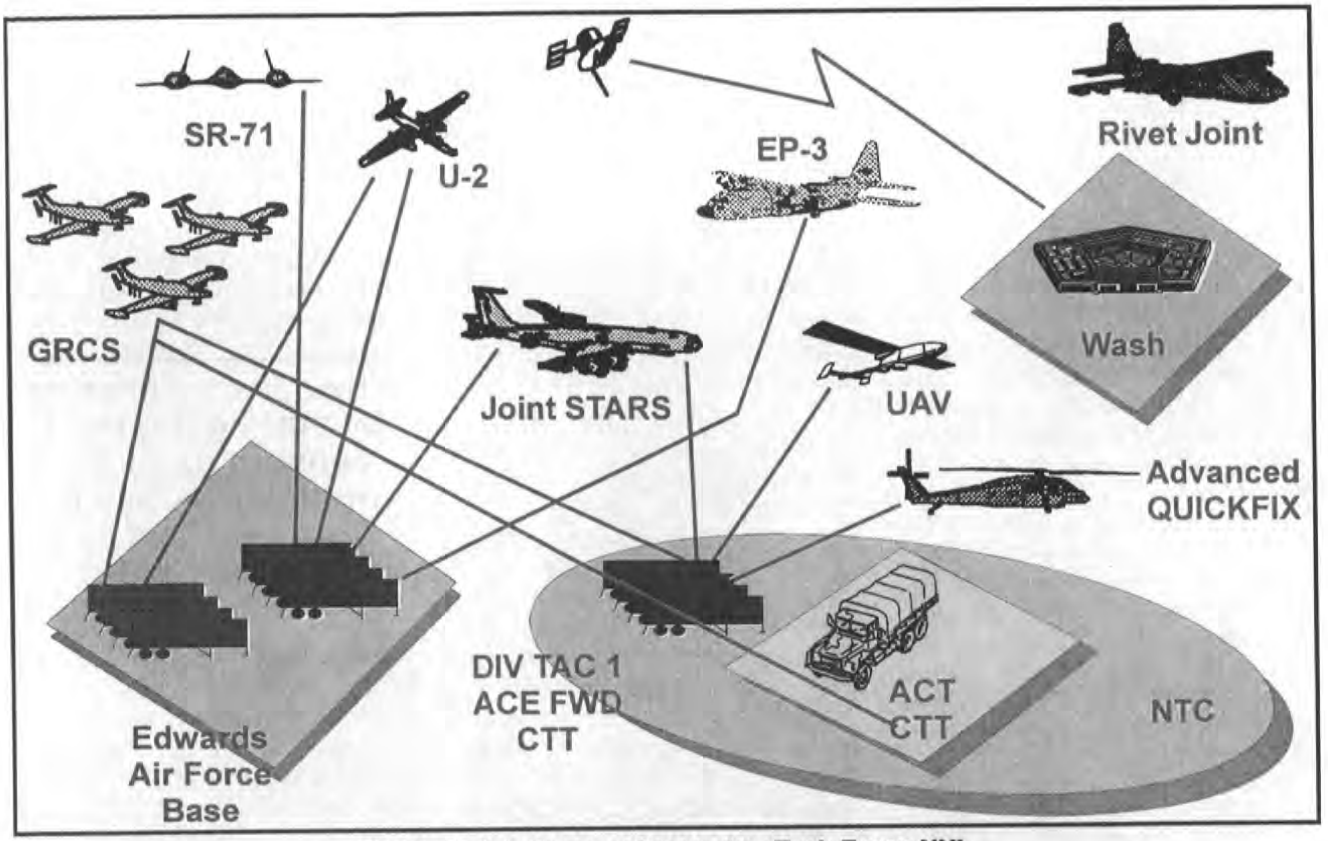

Figure 2. Intelligence Support to Task Force XXI.

- ☐ SAIP's successful demonstration conducting wide-area surveillance of fixed targets.
- ☐ Integration of synthetic aperture radar (SAR), moving target indicators (MTIs), and signals intelligence (SIGINT) for display on the All-Source Analysis System Remote Workstation (ASAS-RWS) and on large screens.
- ☐ Tremendous synergy created by collocating the Brigade's processors with the Corps' Analysis and Control Element (ACE).

The TF XXI AWE provided an unprecedented opportunity to experience live collection by real assets against actual targets. The Brigade planned, executed, and evaluated real-world collection with virtually all the assets we could expect during wartime—such as the SR-71 Blackbird, U-2, unmanned aerial vehicles (UAVs), Guardrail Common Sensor (GRCS), and Joint Surveillance Target Attack Radar System (Joint STARS) with its Interim Ground Station Module (IGSM). (Figure 2 depicts the multi-Service intelligence support to the AWE.) According to Lieutenant Colonel Collin Agee, then Corps ACE Chief—

It soon became apparent that simulation, our frequent mode of training, cannot duplicate the complexity of intelligence operations. We were reintroduced to the fog and friction of war, intel-style.

GRCS Sorties

The 224th MI Battalion supported the AWE with the Guardrail Common Sensor system, the only non-divisional intelligence system authorized to provide SIGINT directly to the digitized brigade in the box. Never before has an AE battalion been authorized to provide support to the Blue Force. The 224th flew 192 sorties (and more than 1000 hours counting deployment and redeployment) in support of the AWE. After more than 700 tactical reports, the reporting time neared the six-minute mark (specified as a goal by the Brigade Commander). Several hundred tactical electronic intelligence reports averaged three to four minutes total time from collection to dissemination.

GRCS proved during this exercise that it could provide timely, targetable data to the maneuver commander

Aircraft launched approximately every four hours to allow for relief on station, thereby maximizing collection time.

GRCS proved during this exercise that it could provide timely, targetable data to the maneuver commander. The GRCS was the most responsive and prolific non-divisional collector we had during the AWE, covering the battlefield 80 percent of the time and was able to surge when requested. The other non-divisional systems

only provided 10-percent coverage and not always at the crucial times. GRCS provided timely tipoffs to other systems, significantly improving the results of each system. GRCS in combination with the UAV provided the most trouble for the enemy forces. This reinforces the need to have organic UAVs at the corps level.

This exercise marked the first time the 224th MI Battalion collocated with the XVIII Airborne Corps ACE at the Corps' instrumented airfield—as it would in war. The AE battalion's GRCS integrated processing facility (IPF) is the Corps' SIGINT hub. This setup allowed the battalion to disseminate its reports directly to the ACE through the Joint Worldwide Intelligence Communications System (JWICS) and a Secret Internet Protocol Router Network (SIPRNET).

SAIP Aggregate Analysis

Tremendous advances were made in the exploitation of SAR data when the SAIP automatic target recognition (ATR) algorithms automatically reported all targets in an 18-square kilometer area in four minutes. In the past, this wide-area imagery was used as a cue to refocus for better resolution imagery, which would then be exploited in detail by our analysts. It took analysts 12 to 15 minutes more to fully exploit each high-resolution image.

The ability to display the outputs of the wide-area surveillance (WAS) systems on a large screen paid tremendous dividends in understanding the current and future situations. It was the integration of the WAS data with the most recent understanding of the enemy situation and aggregated with other data such as database information. This represented information pulled from one of the earlier versions of the ATR developed under the SAIP program.

The SAIP system also provided key insights into the value of having ATR algorithms accelerate the exploitation and reporting of high-resolution SAR imagery and wide-area electro-optical (EO) and infrared (IR) UAV video. It was clear that additional refinements and continued evolution of this program will greatly facilitate and expedite the combat commander's understanding of the enemy situation.

Collocation of Brigade Assets

The collocation of the Brigade's assets created a synergy which enabled us to better manage and control its overall intelligence effort. This was especially evident in our ability to cross-cue our collectors. For example, in a wide-area targeting demonstration, the U-2 imaged a 324-square km area, downlinked the imagery to the Enhanced Tactical Radar Correlator (ETRAC), and passed the imagery to the SAIP. The SAIP provided 8-digit grid coordinates of all targets in the search area within 1 minute.

The ACE used this information, with other all-source data to identify targets and obstacles. The ACE then retasked the U-2 via the ETRAC with ad hoc collection requests to identify key targets and obstacles. The new image of the focused area was sent back to the ETRAC where it was exploited. A report was sent to all the ASAS workstations. The operators at these stations then issued a call for fire. The total elapsed time for this sequence averaged 12.5 minutes for 21 different target sets; we believe this can be reduced to 6 minutes.

Collection Management

Though we have a collection management section in the corps ACE, the corps' only organic collection assets are the Scouts, GRCS, UAV, and some other resources. The corps is heavily reliant on collection assets owned by other Services at the theater-level or by national agencies. The ground forces commander does not have the final say on when, where, and how long each of the assets that support him will collect, nor does the commander decide who will process this information. While our overarching architecture highlights the importance of having wide-area SAR, MTI, EO and IR, the ground commander's needs are not always met when there are competing requirements.

The synergy created by putting the right sensors up at the right time is key to our success in future wars

We need to work through the issue of who is in charge of the collection assets we rely on for intelligence support and ensure all our commanders understand the impact of that relationship. This is extremely important as the Army develops doctrine for fighting deep, especially with the evolving Deep Operations Coordination Cells. If the other Services control when and where these deep-look intelligence sensors will focus, it means operations will have to be formed around the collection plan—which does not support the ground commander's requirements. This also highlights the need to doctrinally identify who is in charge of the deep ground fight.

Integration of Battlefield Visualization

The 525th MI Brigade has completely retired paper maps and overlays in favor of an electronic display. Animations are routinely used both to replay past activity and project future operations on a three-dimensional map display on a large screen.

Simulation Versus Real-Time Collection

Live intelligence collected during this exercise was far superior to any played during earlier Warfighter Exercises. During our exercises at division and corps

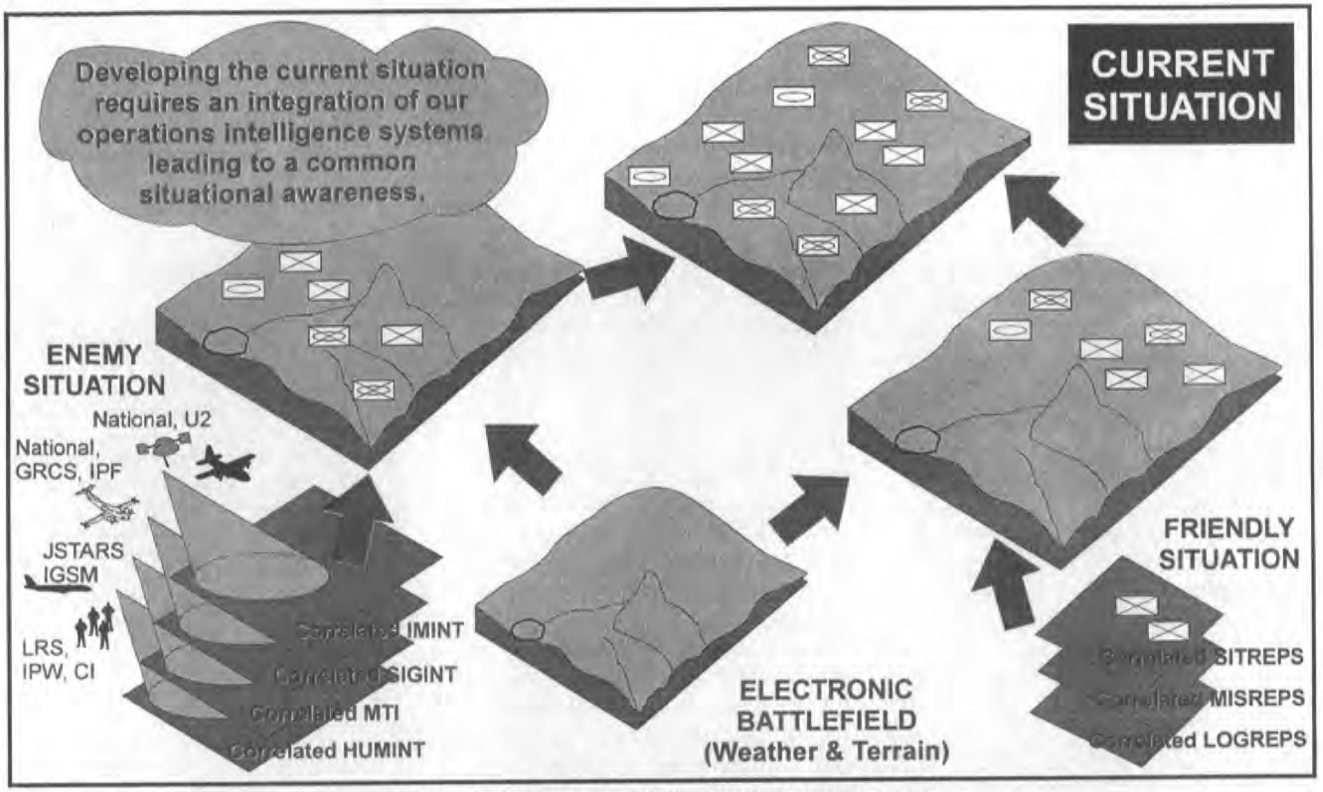

Figure 3. Developing Situational Awareness.

level, the quality, quantity, and timeliness of the information we received differs greatly from what real-world sensors and processors can accomplish today. The synergy created by putting the right sensors up at the right time, is key to our success in future wars. This is not played well during the Battle Command Training Program (BCTP) rotations, nor are our commanders graded on how well they integrate the Intelligence battlefield operating system (BOS) with their scheme of maneuver.

The Army must continue to improve the current simulation systems such as the—

- ☐ Combat Synthetic Training Assessment Range (Combat STAR).
- ☐ Federation of Intelligence, Reconnaissance, Surveillance and Targeting, Operations and Research Models (FIRESTORM).
- ☐ UAV.
- ☐ MTI simulators.

We must continue to push our simulators to provide intelligence output that is consistent with our current collection and processing systems.

In addition, we need to revise how intelligence is played and graded in BCTP exercises. We need to hold commanders more accountable for how they use their intelligence assets during their operations, rewarding them when they use these assets to support their operations, and penalizing them when they use the assets poorly. As this area continues to grow, increased emphasis should be placed on the discussion of these assets during the after-action reviews.

Insights to the Future

Future impacts include an Analysis and Control Team with each Common Ground Station, even at corps level. This team will assist future intelligence collection by better enabling the ground commander to visualize each enemy target—their equipment, radios, computers and infrastructure, and current activities. Show the ground commander these enemy targets and he will destroy them, thus speeding up the pace of warfare.

To accomplish this, we must integrate proven SAIP algorithms as rapidly as possible with imagery processors. This ability is clearly needed to support the combat commander in a more timely manner and these algorithms will allow analysts to perform missions they previously could not. By continuing to push for improved levels of ATR, our systems will be able to distinguish between types of tanks, infantry fighting vehicles, etc. This will be extremely useful in steering our collection assets and our understanding of the current situation.

At the AWE, the SAIP demonstrated its processing of SAR surveillance against fixed targets. It is necessary to develop ATR processors for EO and IR imagery collectors. Tremendous gains could be made for the tactical commander by using ATR algorithms for EO and IR imagery, especially with the UAV. These results could be more efficiently reported, and the commander would get a better overall appre-

ciation of the battlefield, not by seeing one picture, but by seeing the information resulting from rapidly exploited imagery over an entire area of the battlefield.

The proliferation of information highlights the need for dynamic databases and high-performance knowledge bases. The ability to collect a tremendous amount of information on the enemy through MTI and SAR loses some of its value when it cannot be correlated to identify specific types of units, leading to a clearer understanding of enemy disposition and intent. Using a set of bounded neural networks and living organization tables coupled with detailed output from ATR algorithms would allow a more rapid correlation and understanding of the enemy forces.

For the Intelligence BOS to show the ground commander what the enemy is doing, we must continue to integrate the output of processors and preprocessors with our analytical systems. We need to integrate all of these directly into the ASAS. This will provide the commander with improved battlefield visualization, predictive analysis ability, and situational awareness. Situational and event templates should be visually validated, modified, or denied by the active collection systems.

To rapidly focus the all-source analysts on key events, we must develop algorithms to enhance the ASAS baseline correlating, based on SIGINT, indicators from WAS imagery. Results of this information will enhance situational awareness, aid more efficient collection-asset management, and more rapidly support deep operations and targeting. We also need to improve the reliability of our collection assets.

Conclusion

The AWE provided a great opportunity to train our soldiers, support TF XXI, and test new and evolving intelligence systems. Insights were formed on the future of our Intelligence BOS that will clearly assist us in reducing the time it takes to surveil an area and present that information to the combat commander in a clear and understandable format. The successes achieved by the SAIP ACTD, and the impacts this has on our ability to conduct aggregate analysis, will have far reaching effects on intelligence in the future. With all this technology the clear successes during this exercise were our outstanding soldiers. They accomplished every task and demonstrated their technical competence and ability to adapt to new and changing situations. They clearly were our credentials.

Glossary of Acronyms in Figures

ACE FWD: Analysis and Control Element-Forward
ASPO: Army Space Program Office
ATD: Advanced Technology Demo
BC^2: battlefield command and control
BPV: Battlefield Planning and Visualization
CoFM: Correlation of Forces Means
CTT: Commanders Tactical Terminal
DMIF: Dynamic Multi-User Information Fusion Project
HUMINT: human intelligence
IMINT: imagery intelligence
IPW: interrogation of prisoners of war
LOGREP: logistics report
MCS: Maneuver Control System
MISREP: mission report
MODSAF: modular semiautomated forces
RTV: rapid terrain visualization
SITREP: situation report
STOW: synthetic theater of war

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Combat STAR:
Enhanced Realism in Training

by Captain Michael E. Mowes

The views expressed in this article are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.

The guidance of the Chief of Staff of the Army's (CSA), General Dennis J. Reimer, was clear: *"Improve the intelligence training realism at the Combat Training Centers (CTC) and Intelligence training to the commanders."* This was the starting point for development of the Combat Synthetic Training Assessment Range (Combat STAR).

Since the first rotation at the National Training Center (NTC) in 1982, the preferred practice for passing intelligence and information to the unit in the "box" has been the use of a master event list. This information was to replicate intelligence received at division and higher echelons that was passed down to the brigade. It often was incomplete, untimely, and somewhat cryptic, leaving the brigade with a picture that had to be completed by organic reconnaissance resources and limited MI assets.

Following Operation DESERT STORM, the norm has changed. In the future, the brigades will deploy as separate units and will have the capability to receive intelligence and information from all echelons including national-level agencies. If this capability is the standard of the future, we need to train for it now at the brigade level. We cannot expect commanders in a force-projection scenario to effectively use information and intelligence from the sensors and systems they have never seen before. Examples of the types of sensor information unfamiliar to brigade commanders include Joint Surveillance Target Attack Radar System (Joint STARS) moving target indicators (MTIs), unmanned aerial vehicle (UAV) video, and signals intelligence (SIGINT) information from division, corps, theater, and national assets.

Intelligence Brigade Realignment

Lessons learned during Operation DESERT STORM and subsequent deployments caused a major realignment of the intelligence force structure at the brigade level. The changes included the formation of direct support (DS) MI companies. These DS companies provide the brigade commander—

- ☐ A dedicated UAV system.
- ☐ Organic intelligence processing in the All-Source Analysis System (ASAS).
- ☐ The capability to receive, filter, and interpret the larger intelligence, surveillance and reconnaissance (ISR) environment using the Common Ground Station. The CGS-Prototype (CGS-P) participated in the AWE.

This force structure change has a major impact on battle command at the brigade level. The brigade commander now has several new concepts to consider. They include the—

- ☐ Extended battlespace the commander is able to visualize.
- ☐ Ability to dynamically target well beyond the range of direct-fire weapons using indirect fire.
- ☐ Integrated reconnaissance and surveillance processing capability, which fuses the bottom-up and top-down sensor feeds at the brigade level.

The new requirement presented by these new concepts is to train brigade commanders to exploit the information advantage for enhanced situational awareness, tactical warning, battle management, and force protection. Managing information now becomes a critical task for the brigade.

Combat STAR is a method to conduct and enhance individual and collective training that fulfills the new training requirement. It also meets the CSA's guidance for more realistic intelligence training at CTCs and the home station.

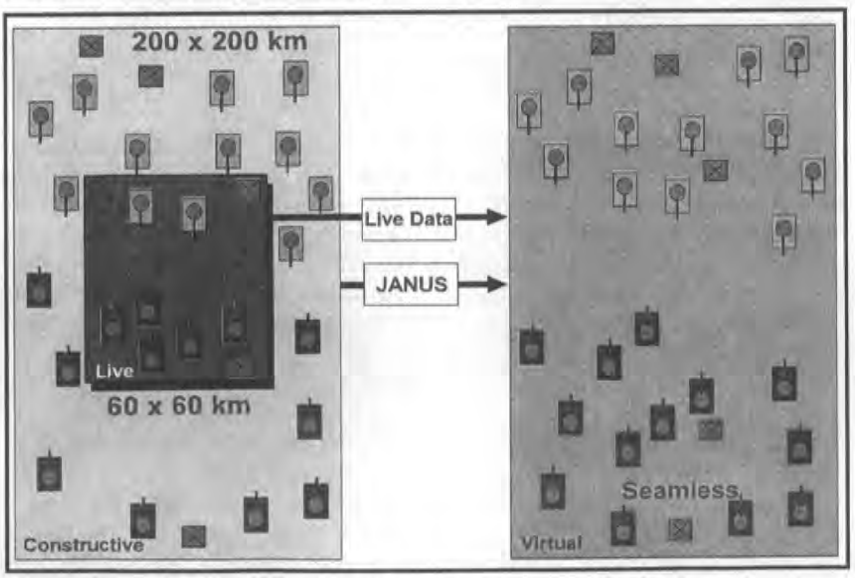

Figure 1. Creation of the Virtual World.

Combat STAR Benefits

Simplified, Combat STAR is a classic synthetic theater of war (STOW) application, where synthetic and live data are combined. It creates a battlespace that is larger than the actual maneuver area, allowing a brigade commander to visualize both the close-fight and deep-fight battlefields simultaneously.

In answer to the CSA directive, Combat STAR benefits include supporting the training for the brigade's emerging mission essential information-based tasks. In addition, working and training in a STOW environment allows a unit to test and train ideas and concepts in a controlled battlespace.

Another benefit of using Combat STAR for collective training at CTCs and at the home station is that the system provides a continuous and smooth-flowing scenario for the entire exercise. All echelons of the opposing force (OPFOR) are shown moving through the battlespace. The brigade must now act on the information from the close-battle force as well as information that defines the "next battle" force they may encounter within 24 to 48 hours.

This was proven during the Task Force XXI (TF XXI) Advanced Warfighting Experiment (AWE), a 14-day exercise. This is a major change from the standard portrayal at the NTC, where a normal 14-day rotation may have 7 to 8 separate vignettes. These vignettes require a brigade to shift its reconnaissance effort and combat power. This forces the brigade to focus on the vignettes and not the scenario as a whole.

Using the simulated sensor packages within Combat STAR, the brigade is able to locate and track the OPFOR outside the actual maneuver area and into the "box." Correct management of ISR assets and the monitoring of higher-echelon asset feeds allow the brigade to maintain contact with that force throughout the operation. They can now train how to use ISR assets that the brigade would expect to have supporting them during an actual deployment.

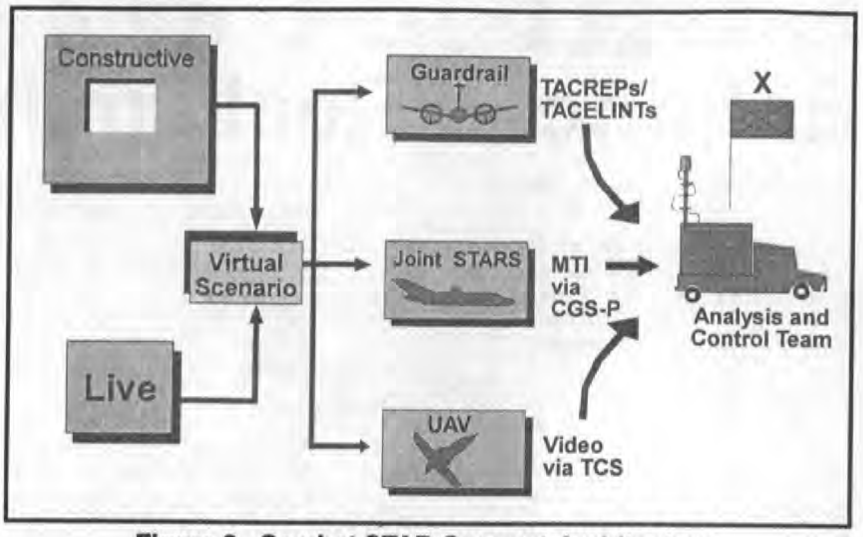

Figure 2. Combat STAR Concept Architecture.

One of the most apparent benefits of Combat STAR is that the system trains not only commanders and their staffs, but also individual soldiers on their systems and equipment. All data created by Combat STAR is transmitted in a format and type they would expect to receive on an actual deployment.

Defining the Virtual Battlespace

The first part of building the Combat STAR is creating a constructive or synthetic battlefield. We use the JANUS combat model to do that. Within Janus, we define the battlefield as an area approximately 200 by 200 kilometers. JANUS can populate the battlefield with up to 8000 individual entities—both OPFOR and Blue Forces (BLUFOR). An entity is an individual system (for example: tanks, infantry fighting vehicles, artillery pieces, even manpacked air defense artillery weapons or an infantry squad). The constructive scenarios, which must be built prior to the exercise, require close coordination with the training scenario writers. This coordination ensures the constructive scenario complements the real scenario inside the live maneuver box.

Figure 1 shows the creation of the virtual world by combining live data from the box with constructive data provided by Combat STAR. The gray area is the constructive battlefield created in JANUS. This diagram shows the increase in battlespace that JANUS creates with the constructive wrap-around added to the live data (brown area on the right). We can shift this constructive area in any direction to fit other scenarios being portrayed.

The live box covers the area within the Fort Irwin boundaries. The NTC instrumentation system creates this using the instrumented vehicles at the NTC and the data these vehicles transmit to the Operations Group Building (better known as the Star Wars Building). Just like the JANUS entities, the data is from both BLUFOR and OPFOR vehicles and manpacks. This can total up to 1700 entities.

The data from the live box and the JANUS combat model is then merged. When both sets of data pass through the sensor models, the end user is unable to distinguish the difference between the live and constructive entities. The virtual battlefield is, therefore, a meshing of live and synthetic or constructive data.

Simulated Sensor Models

Once we define the virtual battlefield, we use simulated sensor

models that emulate the live sensors to look at the battlespace. These sensor models are capable of looking at both the live and constructive portions of our virtual battlespace, or we can configure them to look just at one. During the TF XXI AWE, these areas varied depending on the sensor emulated and what live sensor was available to support the Experimental Force (EXFOR) (see Figure 2).

The Joint STARS Simulation System (JSS) looked at both the live and constructive portions of the battlefield and produced MTIs of all entities that the system sensed as "moving." This data was broadcast directly to the brigade via satellite communications. The equipment that received the JSS data at the brigade was the CGS, the same piece of equipment that receives live Joint STARS data. This information then passed through the analysis and control team to the brigade S2. If the brigade felt the information was of value to the maneuver battalions, they could send it to them through the Warfighter Associate using its broadcast capabilities. (The Warfighter Associate is the "receive" piece of the Global Broadcast System--Battlefield Awareness and Data Dissemination.) During the TF XXI AWE, the JSS "flew" its missions and passed data to the brigade when the live Joint STARS E-8 aircraft was not available.

Combat STAR was so successful, it was immediately approved by the Army Chief of Staff for funding this year

The second model placed in the virtual battlespace is a UAV simulator. The simulator can replicate any of three UAV types: Pioneer, Hunter, or Predator. The proponent of the simulation, the UAV System Integration Lab, is also developing a model that will replicate the new Tactical UAV (Outrider). The UAV replicated during the TF XXI AWE was the Predator. This was so the brigade could "see" the OPFOR while still in the constructive world. The brigade already had the live Hunter—flying in direct support—that could see the live players in the maneuver box.

One of the interesting concepts tested in the AWE was that of the Forward Control Element (FCE). The FCE concept places the corps or joint UAV under the direct control of the division while it flies in the airspace controlled by that division. The division then controls not only the payload but also the airframe, allowing the division to dynamically retask the UAV.

The data received from a UAV is normally full-motion video. Restraints on available bandwidth during TF XXI caused us to institute a work-around for this simulation. Since the Predator was a division asset, the aircraft and all the data were controlled and processed at division. When division deemed data to be important for the brigade, they sent freeze-frame imagery and reconnaissance exploitation reports to the brigade. The advent of the Tactical Control System (TCS) at the brigade will eliminate this problem, because the TCS is capable of viewing several UAVs simultaneously, while controlling another.

The most difficult piece of the intelligence puzzle to portray realistically is SIGINT. Classification is a major obstacle when dealing with any SIGINT model and a CTC. The generic nature of the SIGINT model and guidance from the National Security Agency allowed us to overcome that problem for TF XXI. The model produced both tactical reports and tactical electronic intelligence reports with only the most basic information: time of intercept; location of intercept; and randomly, the unit designation. This information was generated on the wrap-around units only. Live assets were at the NTC to collect on the live players in the box. Again, the simulation filled in the blanks and completed the deep picture.

The SIGINT model distributed its data to the brigade through the Analysis and Control Element (ACE). The ACE received and analyzed the data in their All-Source and Single-Source ASAS systems. The ACE then sent analyzed data to the brigade as an update to the database on the OPFOR.

The Future

During the TF XXI AWE, Combat STAR proved itself to be a valuable asset and a solution for the CSA guidance. It provided the opportunity to train with expanded command, control, communications, computers, ISR capabilities such as Joint STARS, UAVs, and other division-and-above intelligence sensors (which were not available), over an expanded battlespace, and link them to the Army Tactical Command and Control System.

Combat STAR is a stand-alone system, or it can augment live systems as it did during the TF XXI AWE. It has the potential for expansion and incorporation into use at other CTCs and the home station as a collective training tool. It enhances and improves realism at CTCs and the home station.

The TRADOC Commander asked the Battle Command Battle Lab-Huachuca to submit Combat STAR to the Warfighter Rapid Acquisition Program. Combat STAR was so successful, it was immediately approved by the Army Chief of Staff for funding this year and employment at the National Training Center by next May.

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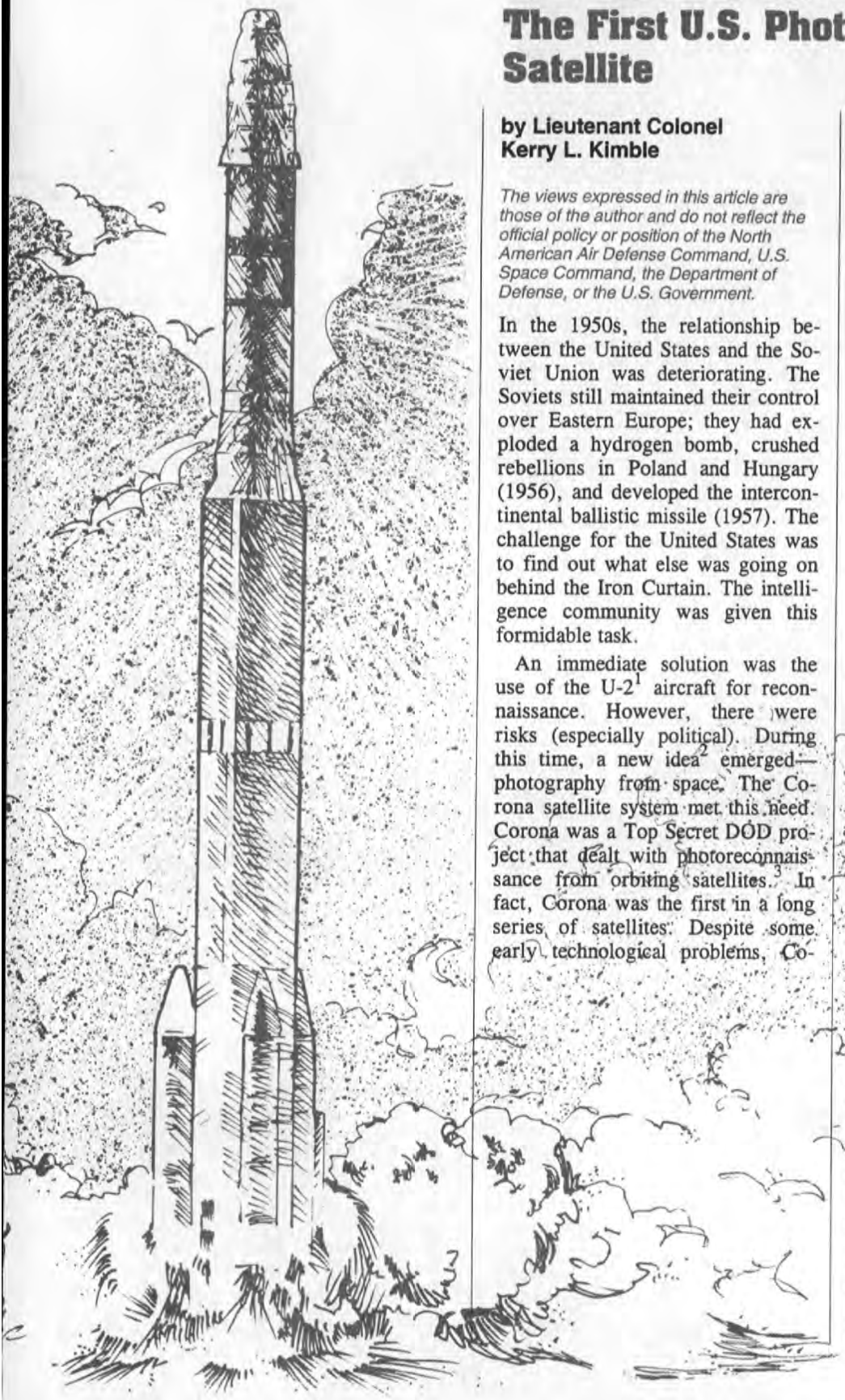
CORONA:

The First U.S. Photoreconnaissance Satellite

by Lieutenant Colonel Kerry L. Kimble

The views expressed in this article are those of the author and do not reflect the official policy or position of the North American Air Defense Command, U.S. Space Command, the Department of Defense, or the U.S. Government.



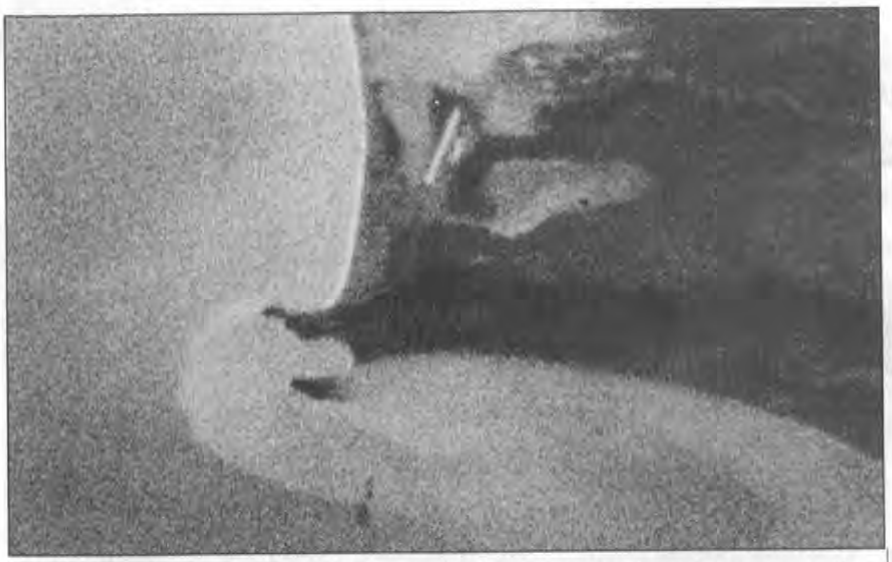
In the 1950s, the relationship between the United States and the Soviet Union was deteriorating. The Soviets still maintained their control over Eastern Europe; they had exploded a hydrogen bomb, crushed rebellions in Poland and Hungary (1956), and developed the intercontinental ballistic missile (1957). The challenge for the United States was to find out what else was going on behind the Iron Curtain. The intelligence community was given this formidable task.

An immediate solution was the use of the U-2[1] aircraft for reconnaissance. However, there were risks (especially political). During this time, a new idea[2] emerged—photography from space. The Corona satellite system met this need. Corona was a Top Secret DOD project that dealt with photoreconnaissance from orbiting satellites.[3] In fact, Corona was the first in a long series of satellites. Despite some early technological problems, Corona developed into one of the United States' longest-running and most successful satellite intelligence programs. On 22 February 1995, an executive order[4] was issued that lifted decades of protection by a Top Secret classification. The story could now be told to the public.

Historical Background

For thirteen years, Corona operated on the leading edge of technology, a technology necessary for a changing world. In the late 1950s, the Cold War was starting between the United States and the Soviet Union. Premier Nikita Khrushchev was seeking to destabilize other governments to expand Communism. He had rejected President Eisenhower's "Open Skies" proposal that would have provided the foundation for mutual arms-control verification.[5] There were claims that the United States was falling behind the Soviet Union technologically. There was a perception that a "bomber gap," a "missile gap," and a "science gap" existed.[6] The Soviets tested a hydrogen bomb in 1953 (years before we thought they would), fielded the BISON bomber in 1955, and launched Sputnik in 1957. Both Presidents Harry Truman and Dwight Eisenhower were concerned over the expansion of the Soviet Union.

President Eisenhower was first briefed on the idea of photoreconnaissance on 7 February 1958. He approved the concept and later the program. As scientists and engineers worked to make the program a reality, a major political event occurred. On 1 May 1960, Gary Powers, flying a U-2 aircraft, was shot down over the Soviet Union. One week later, after previously denying the true nature of the flight, the United States admitted that the U-2 was on an intelligence gathering mission.[7] This incident halted any further



Mys Schmidta Air Field (left) and Dolan Air Field (below) were objectives of early CORONA flights.

overflights and left the intelligence community with a void. Fortunately, the Corona program was already under test as a replacement for the U-2.

Trial and Error

As with all new projects, especially those involving new technologies, there was a period of trial and error. Nine of the first ten launches were failures. These mission failures were associated with the launch vehicle (a Thor rocket), the camera, orbit and deorbit failure, and one lost payload. Because of these failures, there was a great deal of discussion about Corona's future, and possibly canceling the program. Thanks to the project management team, Corona was given more time to prove itself. The next two missions were also failures,[8] but the thirteenth mission worked. Some semblance of success had finally been achieved.

Although the press did not know how far the program had come, for Flight XIII, they made some very good speculations. In a 12 August 1960 article, ***The New York Times*** stated that—

> *The technological feat marks an important step towards the development of reconnaissance satellites that will be able to spy from space. The same ejection and recovery technique eventually will be used for returning photographs....*[9]

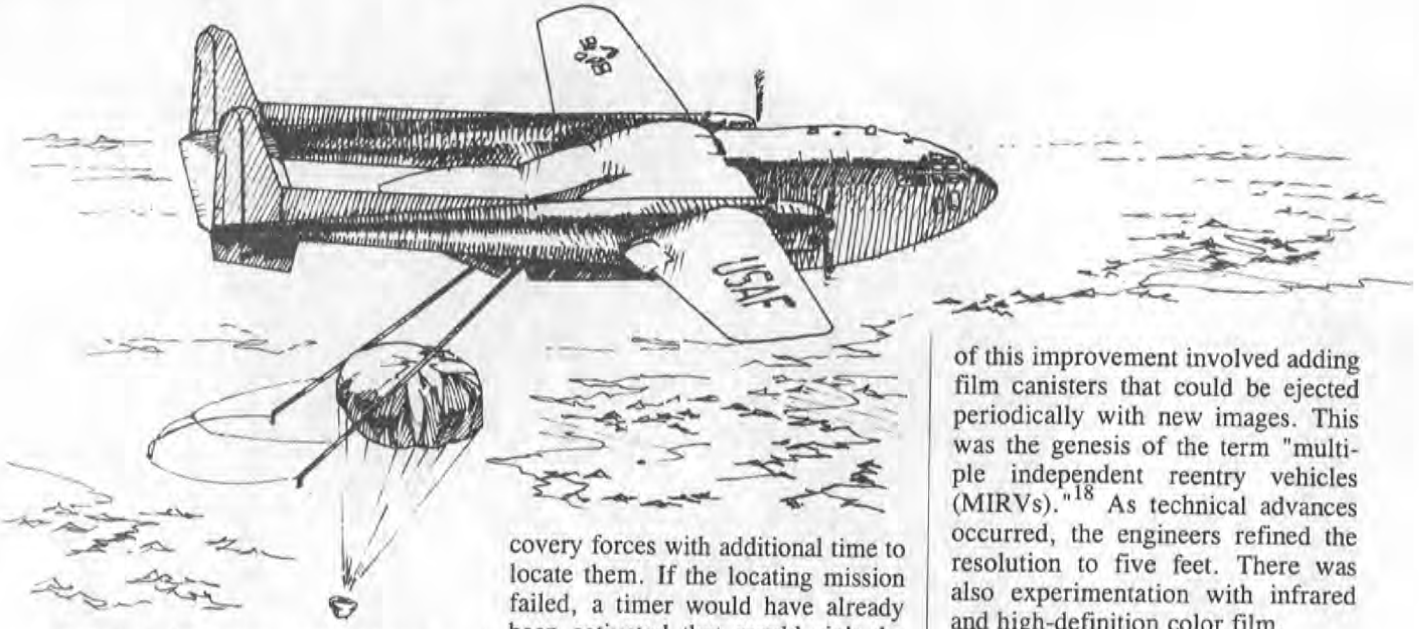
The first military-related image was the military airfield near Mys Schmidta on the Chucki Sea in the far-northeastern portion of Russia

On the day after Flight XIV, ***The New York Times*** reported that the mission was to help lay the groundwork for follow-on flights.[10] In some respects they were right, but they did not know the truth. The papers talked about the program's achievement, *"Space Capsule is Caught in Mid-Air...."*[11] Not until the end of the article was there any reference to the ultimate purpose of the secret gear on board.[12] The first military-related image was the military airfield near Mys Schmidta on the Chucki Sea in the far-northeastern portion of Russia. Over the next eleven years, the program expanded and improved. Eventually, Corona had more successes than failures and finally proved itself to be a vital asset to the intelligence community.

Cover Story

As with all classified projects, Corona had a cover story—something plausible that could be told to the public without raising suspicion. Because this was the era of experimental rocketry, a cover story revolved around the testing of the Thor launch vehicle followed by the exploration of the environmental conditions in space that would involve biomedical specimens to include live animals. The secrecy of the mission required that Corona have a cover name. The name chosen was "Discoverer."[13]

The original plan for Discoverer was to conduct five launches. Two would deal with launch vehicle diagnostic flights, while the remaining three dealt with biomedical experiments. Two of these would fly mice while the third would carry a primate. Actually,only one flight carried animals.[14] On that mission, a crew of four black mice were launched to test possible hair-bleaching effects of cosmic rays.[15] The Advanced Research Projects Agency developed two radiometric payload packages to study space navigation which were subsequently



added to the cover story. These actually occurred on Flights XIX and XXI.

A contingency plan had to exist just in case the first successful recovery of a payload had been a photo reconnaissance mission. The payload would be switched between the time of recovery and the time of return to the air base with a cover payload.

Security Challenges

Tight security was required because the U.S. Government did not want the Soviets to know about Corona and its capabilities. In the beginning, Corona could discern objects 50 to 100 feet on a side. If the Soviets, or anyone else for that matter, had learned of the resolution, they could create dummy targets to fool the photo interpreters.

One of the added challenges involved the date and time of the launches. All of the launches were conducted from Vandenberg Air Force Base, California.[16] Besides obtaining a proper polar orbit and insuring coverage of specific denied territory, the project management team had the challenge of scheduling launches around a nearby Southern Pacific railroad. Launches were conducted when the trains were not close—the fewer the people who knew what the United States was doing, the better.

The payloads were provided with the capability to float to provide recovery forces with additional time to locate them. If the locating mission failed, a timer would have already been activated that would sink the film canister, and thus avoid being recovered by an adversary. This timer consisted of a *"compressed plug of salt that dissolved steadily until saltwater flooded the capsule."*[17]

Modifications

To refine the imagery, the engineers kept tinkering with the capabilities of the cameras. One of the significant improvements occurred on Flight XXXVIII with the MURAL stereo system. Two cameras were used; a photograph of the same area from different angles results in a stereo image. This significantly assisted the analysts in their task of identifying what was on the ground.

The first film material that was used for photo imagery was acetate-based. A major problem was that the film broke frequently. The Kodak™ company was responsible for improving the film. After analyzing the various reasons for this breakage, they produced a polyester-based film which was more durable.

Other improvements in the camera dealt with a larger aperture lens, an improved film transport mechanism, and a faster response to commands. The system was expanded to increase each satellite's coverage time in space. Instead of one day, missions could last two, three, or more days. This was important because it extended the satellite coverage time. Repeated images of the same location will show minute activity. Part of this improvement involved adding film canisters that could be ejected periodically with new images. This was the genesis of the term "multiple independent reentry vehicles (MIRVs)."[18] As technical advances occurred, the engineers refined the resolution to five feet. There was also experimentation with infrared and high-definition color film.

Accomplishments

In retrospect, there were several areas of accomplishment. Although the Soviet Union was the primary target, other interests or crises commanded U.S. attention. In August 1964, photography detected the early indications that the People's Republic of China would detonate their first atomic bomb. Some of the indicators included the movement of equipment to key locations. The explosion occurred two months later.[19]

Corona was able to outline the extent of Israeli successes during the 1967 Middle East war. Just one example of this success was confirming the destruction of approximately 245 Egyptian, Jordanian, and Syrian aircraft. Imagery also revealed that Soviet missiles deployed to Egypt to help protect the Suez Canal.

While collecting over the Soviet Union, Corona imaged all of their medium-range, intermediate-range, and intercontinental ballistic missile test launch facilities along with the Plesetsk missile test range.[20] Continuous satellite photoreconnaissance coverage of the Severodvinsk facility monitored the launches of each new class of submarines and surface ships. Corona was also able to identify the entire Soviet anti-ballistic missile network (Galosh, Griffon, and Tallinin missile sites; HEN HOUSE, DOG HOUSE, and phased-array radars). The Strategic Air Command used the imagery of SA-1, -2,

-3, and -5 locations to plan the entry and exit routes for their bombers.[21] Albert D. Wheelon, one of the program's architects, recently stated that *"Corona data quickly assumed the decisive role that the Enigma intercepts...played in World War II."*[22] Corona's last mission occurred from 25 to 31 May 1972.

New Life

The intelligence community used all of the photography to help fill in their intelligence gaps. As more sophisticated systems came on-line and their products achieved greater success and detail, Corona's products were relegated to the classified archives. Now that these products have been resurrected and declassified, a new crop of analysts can use them. Instead of military analysts looking for missiles and facilities, environmental analysts can now profit from this database.[24] Corona imaged vast areas of countryside and oceans around the world. The LANDSAT system was not operational until 1972 (Corona's last year) and had a limited resolution of 30 meters.[25] Corona can provide approximately thirteen years of environmental data.

Conclusion

After 95 satellites and 145 launches, the program came to an end. Corona's most lasting legacy is that it photographed more than 750 million square nautical miles. Satellite programs, such as Corona and its follow-on systems, have provided the decisionmaker with quantifiable and measurable information so that they can identify potential problems, develop options, and make accurate and timely decisions. In the 1950s, decisions were sometimes based on fears and rumors. Corona provided hard evidence of reality that greatly reduced concerns of a "missile gap." In a 1968 intelligence report, Corona's imagery was directly responsible for the statement that "No new ICBM complexes have been established in the *USSR during the past year."*[26]

In 1958, the Soviets were achieving most of the space firsts. But Corona brought the United States its first space victory. The U.S. military was the first to successfully recover an object from orbit. Other firsts included: the delivery of intelligence-related information from a satellite, employment of stereoscopic photography from a satellite, and the use of MIRVs.

Without the men and women in the analytical shops or behind the lines, Corona would not have known where to point the cameras. To them, we all owe a debt of graditude.

Endnotes

1. The U-2 provided the first photography of the Soviet nuclear test sites and Tyuratam launch facility.

2. The original concept came out of the Killian Committee that was established to examine the threat of any surprise attack on the United States." Remarks of the Honorable John Deutsh, Director of Central Intelligence at George Washington University symposium: Corona and the Revolution in Intelligence," 23 May 1995.

3. The CIA and Air Force jointly developed these satellites. Remarks of Admiral William O. Studeman, Acting Director of Central Intelligence at the Signing of the Executive Order declassifying early satellite imagery, Washington, D.C., 24 February 1995.

4. **Executive Order 12951, Release of Imagery Acquired by Space-Based National Intelligence Reconnaissance Systems, Federal Register**, Vol. 60, No. 39, 10789-10790, Tuesday, February 28, 1995. Argon (KH-5) and Lanyard (KH-6) satellite systems and products were also declassified under this executive order. It was not until 1978 before the U.S. publicly admitted they had the capability of imaging from space.

5. McDonald, Robert A., Corona: Success for Space Reconnaissance, A Look into the Cold War, and a Revolution for Intelligence, ***Photometric Engineering and Remote Sensing* (PE&RS)**, Volume 61, No. 6, June 1995, 691.

6. Remarks of Admiral William O. Studeman, Acting Director of Central Intelligence, at the Signing of the Executive Order declassifying early satellite imagery, Washington, D.C., 24 February 1995.

7. Reston, James, Action Explained," ***The New York Times*** (New York: The New York Times Co.), May 8, 1960, 1.

8. The payload was lost on XI and the satellite did not attain orbit on XII.

9. Finney, John W., "Copter Recovers Capsule Ejected By U.S. Satellite," ***The New York Times*** (New York: The New York Times Co.), August 12, 1960, A-1.

10. *"Its nose cone was loaded with special instruments designed to help two series of surveillance satellites - Samos, to radio back pictures of terrain it passes over, and Midas, to detect enemy missile firings."* AP, "New Discoverer Shot Into Orbit," ***The New York Times***, August 19, 1960, 1.

11. AP, "Space Capsule is Caught in Mid-Air by U.S. Plane on Reentry from Orbit," The New York Times , August 20, 1960, 1.

12. Ibid., 7.

13 A DOD press release, dated 3 December 1958, announced this mission.

14. The first mice crew was loaded and minutes away from launch when it was discovered they had all died from eating krylon from their cages instead of their food supplements. Ruffner, Kevin C., Editor, **Corona: America's First Satellite Program**, (Washington, D.C.: Central Intelligence Agency, 1995), 17.

15. The mice were killed when the rocket fired the payload into the Pacific Ocean right after take-off.

16. Prior to October 1958, Vandenberg was known as Cooke Air Force Base.

17. Philip Chjen, "High Spies," ***Popular Mechanics***, February 1996, 50.

18. The MIRV acronym would later be associated with nuclear weapons (expanding to multiple independently-targetable reentry vehicle).

19. A secret CIA report stated that "On the basis of new overhead photography, we are now convinced that the primary suspect facility at Lop Nur in western China is a nuclear test site which could be ready for use in about two months." The report was dated August 26, 1964—the explosion occurred on October 16th. Ruffner, 10.

20. The significance of this site was that Soviet missiles were developed, tested, and deployed from here.

21. Ruffner, xiv.

22. Broad, William J., "Spy Satellites' Early Role as a Floodlight Coming Clear,", ***The New York Times*** (New York: The New York Times Co.), September 12, 1995, C 1.

23. Ibid., C 10.

24. This imagery can be reviewed and ordered through the U.S. Geologic Survey. Additional information is on the Internet at http://edcwww.cr.usgs.gov/dclass/dclass.html.

25. McDonald, 703.

26. Ruffner, 37.

Photographs for this story were originally published by the American Society for Photogrammetry and Remote Sensing and appear in the book, **Corona Between the Sun & Earth: The First NRO Reconnaissance Eye in Space.** Courtesy of Dr. Robert A. Mc Donald.

Lieutenant Colonel Kimble is currently the JARP Space Employment Section Chief within the J2 at U.S. Space Command. His last assignment was Space Analyst, U.S. Space Command, Space and Strategic Forces Branch at Peterson Air Force Base. Lieutenant Colonel Kimble holds a masters degree in Space Systems Management from Webster University, and a bachelors in Political Science from Westminister College. Readers may contact the author via E-mail at UCOL16@ denver.du.edu.

CTC NOTES

by Major David G. Puppolo

Caution: Most Likely Enemy COA May Become Least Likely

Beware S2s! Your most likely enemy course of action (COA) briefed during mission analysis may actually become the enemy's least likely option. Here is what can happen. During the mission analysis brief for a friendly defense in sector (enemy attack), the S2 decides the enemy's most probable attack option is in the northern part of the sector (see Figure 1).

The intelligence preparation of the battlefield process, as it should, then drives the development of a friendly COA and we build a defense with its main effort in the north. Enemy reconnaissance enters our sector and successfully penetrates our defenses. It sees the bulk of our engineer effort, especially the obstacle work, occurring in the north. It reports the information, the enemy S2 assesses that our main effort is north, and the enemy develops its plan to attack to penetrate our weakness in the south (see Figure 2). The enemy may have initially planned to attack north, but decided against it once his reconnaissance confirmed our strength there.

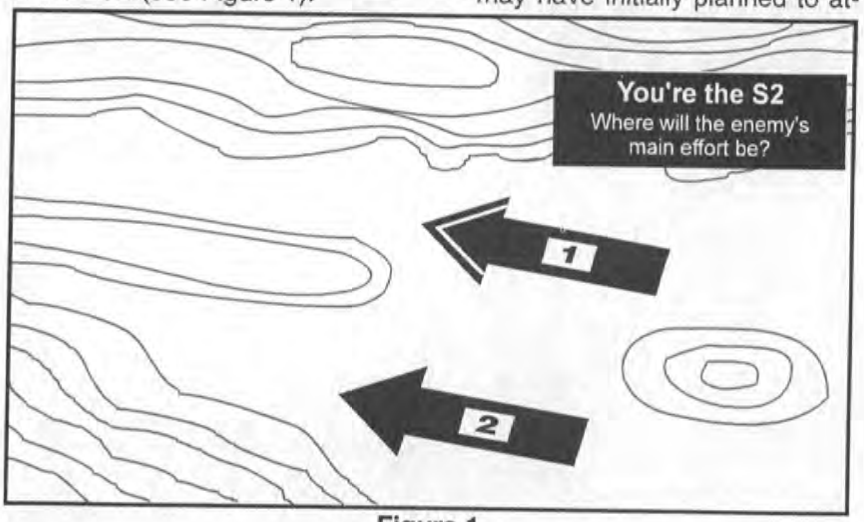


Figure 1.

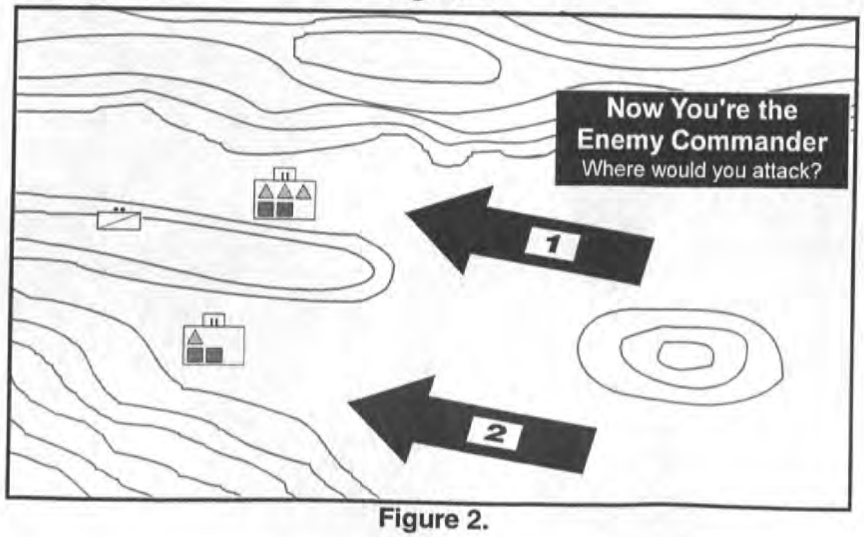


Figure 2.

This happens often at the National Training Center (NTC), and may easily happen in combat. S2s must consider this same scenario during mission analysis and illustrate all feasible enemy options to their commanders so they can build flexibility into their own plans. S2s should therefore address all feasible enemy COAs at the mission analysis brief to better prepare their commanders in dealing with a multi-optioned enemy.

It is easy to see this concept in action during any football game. The (friendly) defense has already called its formation, based on what it expects the (enemy) offense to do, and sets itself in position while the offense receives the play in the huddle. The huddle breaks and as the quarterback (enemy reconnaissance) slowly moves into position, he checks the set of the defense—where it is strong and weak. He sees the defense is strong on the right, in the very the place he called the play to run his fullback. Does he go with the play (the adversary's COA) that he called in the huddle? Absolutely not. Instead, he calls an "audible" at the line of scrimmage and changes the play by adjusting the formation to run the fullback to the weak left side. Since the coaching staff has built flexibility into the defense, which is prepared for a full range of offensive options (a full set of enemy COAs), it is ready to make necessary adjustments to deal with any offensive play.

In conclusion, S2s may quickly get themselves into trouble if they portray only one enemy COA to drive friendly COA development. A most likely enemy

COA briefed during mission analysis may soon become the enemy's least likely option if his reconnaissance sees and reads our defense (and the Krasnovian reconnaissance usually does). S2s can avoid this problem by introducing all feasible adversary COAs into the mission analysis brief, and ensuring these options continue to receive attention throughout the COA development and wargaming phases of the planning process. Although the burden is on our commanders and S3s to build a flexible friendly plan capable of addressing all feasible enemy COAs, sometimes it requires S2s to speak up and deliver the warning.

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Intelligence Training Opportunities Available from JRTC

by Captain David H. Carstens

The Joint Readiness Training Center (JRTC) offers three outstanding training opportunities. They are intended for MI officers and noncommissioned officers (NCOs) preparing for upcoming rotations or currently serving or anticipating assignment in tactical MI positions.

Available Training

Observer/Controller (O/C) Augmentation. Attend a three (3) day O/C train-up and participate in a JRTC rotation as an O/C for the MI Company Team. Participants in this program are expected to lead team-level after-action reviews (AARs) and provide feedback for the MI company take-home packet following the rotation. This is for **experienced and tactically confident** MI professionals; previous JRTC rotations are **not** a requirement. Performing as an O/C augmentee is the best means for MI leaders to better understand the doctrinal applications of tactical intelligence and electronic warfare (IEW) operations.

Right-Seater Program. Participate in a JRTC rotation alongside one of the full-time task force or brigade O/Cs. Participants are **expected to observe only** and will not be asked to lead or participate in the AAR process. This is an outstanding opportunity for S2s, S2 senior NCOs, MI company commanders or analysis and control team (ACT) chiefs to observe the tactical intelligence process and take note of lessons learned for upcoming rotations and home-station training. Likewise, MI professionals in echelons-above- corps units can more accurately gain first-hand knowledge of intelligence support requirements to the combat commander.

Mobile Training Team (MTT). JRTC can provide a team of Intelligence Division O/Cs to lead a seminar on doctrinal intelligence applications and lessons learned at the JRTC. This is an outstanding opportunity for G2 or S2 conferences and intelligence training seminars. All mobile training teams (MTTs) are tailored to fit the requesting unit's training plan. Typical seminars last two to four days and include maximum time scheduled for practical exercises. Subjects include but are not limited to—

- ☐ Intelligence and the tactical decisionmaking process.
- ☐ Intelligence preparation of the battlefield.
- ☐ IEW operations (how to fight the MI company).
- ☐ Tactical human and signals intelligence operations and analysis.
- ☐ JRTC intelligence lessons learned.

O/C Augmentation Program

DURATION: 18 days; includes deployment/redeployment plus 3-day train-up, 11-day rotation, and 2-day equipment recovery period.
FUNDING: Paid for in full by JRTC if shortages exist in a required O/C billet. If no shortages exist, funded through unit or home-station REDTRAIN funds.
RANK: Staff sergeant (E-6) or above; exceptions made on case-by-case basis for sergeants (E-5) promotable.
MOS: 35D/G (Captain or above), 98G (language non-specific), 98C, 97E (language non-specific), 97B, 96R, and 96B analysts working in the analysis and control team.

Right-Seater Program

DURATION; 14 days; includes deployment/redeployment plus the 11-day rotation, and 1-day train-up.
FUNDING: Paid for in full by requesting unit or home-station REDTRAIN funds. Expenditure is **minimal:** lodging is as low as $6 a day with available government dining facilities.
RANK: First Lieutenant (O-2) or above for assistant S2s and S2s. Staff sergeant (E-6) or above for NCOs serving in S2 sections or the MI Co; exceptions made on case-by-case basis for sergeants (E-5) promotable.
MOS: 35D/G, 96B, 96R, 97B, 97E, 98C and 98G.

Mobile Training Team Program

DURATION; 2 to 4 days depending on requesting unit's schedule and topics covered.
FUNDING: Paid for in full by requesting unit or home-station REDTRAIN funds.
PARTICIPANT RANK: All
PARTICIPANT MOS: 35D, 96B, 96R, 97B, 97E, 98C and 98G.

Figure 1. Available Training from JRTC.

- ☐ Ground surveillance system operations and tactical employment.
- ☐ The ACT (IEW collection management and predictive analysis).

Conclusion

Units requesting participation in the O/C augmentee or right-seater program are required to do so a minimum of forty-five (45) days in advance. We require that right-seaters **not** be scheduled during times that their home-station unit is undergoing a rotation. MTTs must be scheduled between rotations offering less flexibility for requesting units. MTTs must be requested a minimum of sixty (60) days out.

The lessons learned at JRTC are a valuable tool in developing home-station training. MI professionals who participate in the O/C augmentation or right-seater program will return to their unit with a better understanding of the tactical application of MI doctrine as well as those collective tasks which require training focus. We look forward to working with you.

Captain Carstens is the Senior MI Company O/C at JRTC. He has served in many assignments including Collection Platoon Leader, IEW Support Officer, Infantry Battalion and Brigade S2, and Direct Support MI Company Commander. Readers can reach him at (318) 531-0221 and DSN 863-0221.

CONCEPTS & DOCTRINE

by Captain Neal J. Wegner

In the previous issue of ***Military Intelligence***, I completed a three-part article on the Intel XXI concept. That last article explained in more detail the core principals of the Intel XXI concept: the seven intelligence tasks.

I recently returned from the NTC where I was involved with the Task Force XXI (TF XXI) Advanced Warfighting Experiment (AWE). This experiment was an opportunity for not only Intelligence, but all branches to test some of their concepts in support of Force XXI. I was tasked to be an augmentee to assist the armored TF trainers (the Cobra Team). Specifically, I was there as another set of eyes to help observe the S2 section during the AWE.

In this article, I will discuss some of the things I saw during the AWE and use these as examples to illustrate some of the ideas within Intel XXI. I will deal with five of the seven intelligence tasks, omitting Attack and Protect because they deal mainly with electronic attack and command and control warfare.

Direct. The first Intelligence task requires the S2 to use all the reconnaissance, intelligence, surveillance, and target acquisition capabilities at his disposal and ensure synchronization with the operational plan. At battalion level, the S2 has limited assets under direct control and must rely on the assets from higher echelons. During the AWE, the Battalion S2 synchronized the collection effort with the operational plan and did rely on the higher-level assets, mainly Joint Surveillance Target Attack Radar System (Joint STARS) and the unmanned aerial vehicle (UAV), to extend his range of visibility. The Battalion S2 would receive the Brigade's collection plan over the All-Source Analysis System Remote Workstation (ASAS-RWS) and ensure that his plan matched the Brigade's. The Battalion S2 had no control over the higher level assets and had to rely on the Brigade S2 to ensure that those assets gave the battalions visibility at those extended ranges.

Collect. This task requires the S2 to collect at extended ranges, locate, identify and track the enemy in the commander's extended battlespace. The S2 used the Joint STARS feed (received in the tactical operations center (TOC) on the Global Broadcast System-Battlefield Awareness Data Dissemination and information from the Brigade UAVs to cross-cue and focus his assets on the enemy and track his approach. Another system that should prove valuable in this area is the Appliqué. This system can potentially increase situational awareness by providing locations of friendly vehicles to every vehicle equipped with a screen. It is also possible to send an enemy situational overlay to the Appliqué which will increase our awareness of the enemy situation. There were some difficulties in using the Appliqué to its full potential during the AWE. Some of the icons on the ASAS-RWS were not compatible with Appliqué, and many times only a few or no icons would show up when a situational template was sent from ASAS-RWS. Another capability of the Appliqué was to send free-text messages between systems. This capability was not used for many reasons: communications range limitations, taking too long to prepare a spot report compared to frequency-modulated (FM) voice communications, and light discipline at night.

Analyze. Once the raw intelligence is flowing to the S2, the S2 section must analyze it and turn it into information useful to the battalion commander. The S2 must take the intelligence received from higher and the intelligence received from the

Battalion assets and create a common picture that supports predictive analysis. During the AWE, the information from the Joint STARS and the UAV were most useful to the Battalion S2 in helping create the common picture, which he then was able to confirm by use of the Battalion's assets. Combining the Appliqué system (which allowed the S2 to track the Battalion scouts) with the Joint STARS and UAV capabilities enabled the S2 to focus assets where they were needed most to support the friendly COA and provide precise identification and tracking of the enemy forces.

Disseminate. Once intelligence has been analyzed, it must be disseminated to the user in a timely fashion. It was in this area that the Battalion S2 relied more on traditional communications during the battle due to a number of factors. Once the initial products were sent by ASAS-RWS, most of the follow-up information sent to the Battalion during the battle was by FM voice. Another characteristic of the Disseminate task is an uninterrupted flow of intelligence on-the-move. The ASAS-RWS used during the AWE was not designed to operate while moving. The ASAS-RWS requires extensive cable hook-up and start-up time which made it usable only when the TOC was stationary. It is also necessary for the ASAS-RWS to be connected to the TOC local area network in order for it to be able to pass overlays to other systems such as Appliqué. With the increased operating tempo of the battles at NTC, the Battalion TOC was continuously moving. This resulted in the ASAS-RWS system and its capabilities being used only during the planning phase of an operation; it was unusable during the execution phase.

Present. Once intelligence has been disseminated, it must be presented to the commander in a way that rapidly conveys understanding and gives the commander the information needed to make decisions and focus critical assets. One example of this was the S2's use of the ASAS-RWS to brief his part of the operations order. He used a larger monitor inside the TOC and used ASAS-RWS intelligence products to brief the intelligence annex. This was supported with hardcopy products given to each company commander. The commanders were very receptive to this type of brief and began to rely on and expect the hardcopy products developed by the S2.

Captain Wegner is an Action Officer in Concepts Division, Directorate of Combat Developments at the U.S. Army Intelligence Center at Fort Huachuca. Readers can contact him via E-mail at wegnerm@huachuca-emh1.army.mil.

Information Warfare: OPFOR Doctrine—An Integrated Approach

by Major Erin J. Gallogly-Staver and Major Raymond S. Hilliard

The opposing force (OPFOR) information warfare (IW) doctrinal concept was approved on 7 January 1997, by the Deputy Chief of Staff for Intelligence, Training and Doctrine Command (TRADOC). It will be incorporated into the **FM 100-60**-series OPFOR field manuals.[1] While the **TRADOC 350**-series pamphlets discuss electronic combat, camouflage, concealment, and deception, and *maskirovka*, it reflects neither the realities of information-age technology nor recent writings by individuals associated with actual worldwide forces and organizations. Although the term "information warfare" is new to OPFOR doctrine, the concepts and principles that fall under the IW umbrella are not. The World Class OPFOR Battle Command Training Program applies approximately 75 percent of the IW elements in all Warfighter Exercises. They continue to incorporate the doctrine and will implement IW, as a specific issue, during corps and division seminars and Warfighter Exercises. Appropriately, the OPFOR considers IW to be evolutionary—not revolutionary. As such, their application of it will continue to evolve. This article summarizes the approved doctrinal concepts, provides initial guidance to practitioners of OPFOR IW, and is intended to increase the awareness of U.S. Army commanders and trainers.

What Is IW?

Many foreign forces and organizations have or are develop-

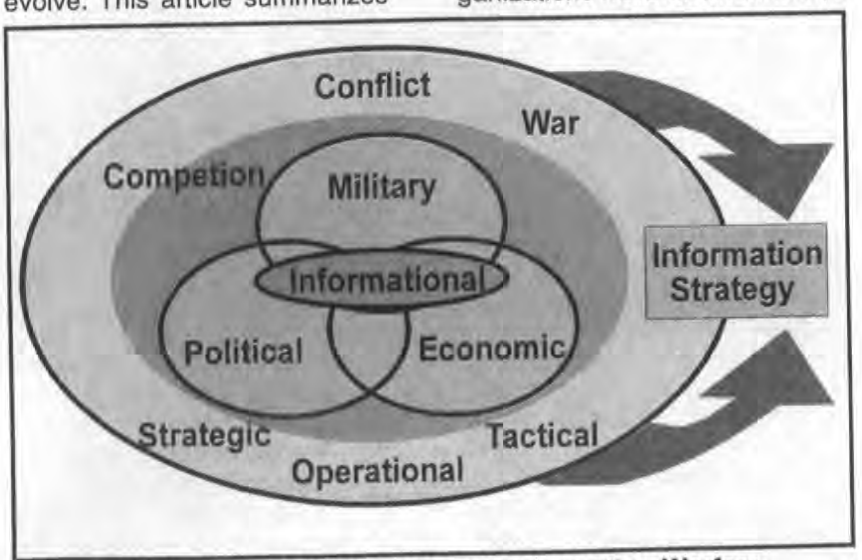

Figure 1. OPFOR Integration of Information Warfare.

ing IW concepts, strategies, doctrine, and tactics, techniques, and procedures. Although there are many definitions, all contain attack and defend dimensions. The following definition provides a general framework for OPFOR IW strategies, campaigns, and operations:

Specifically planned and integrated actions taken to achieve an information advantage, at critical points and times. These OPFOR actions provide an advantage by effecting adversary information and information systems and defending OPFOR information and information systems.

The key components of this definition are **integration** and **advantage**. The OPFOR integrates its elements of power and targets specific enemy weaknesses while protecting its vulnerabilities. Not concerned about superiority or dominance, the enemy only seeks an advantage at critical points and times.

OPFOR IW does not equate to the U.S. concept of information operations (IO)[2]. All elements of the OPFOR, including sympathetic civilian populations, embrace IW as another means to compete. However unlike the United States, the OPFOR has no qualms or cultural aversion towards using deception, trickery, or civilian-run enterprises, (such as high-technology businesses or the media) when implementing an IW campaign. American citizens are by nature wary and skeptical of government involvement in IO.

The OPFOR considers technology a double-edged sword, and may occasionally use its lack of sophistication to its advantage, for instance in using commercially-available technology like cellular phones and messengers instead of interlinked computers. The OPFOR can obtain high-technology equipment, such as frequency scanners, encryption devices, lasers, and digital video manipulation equipment,

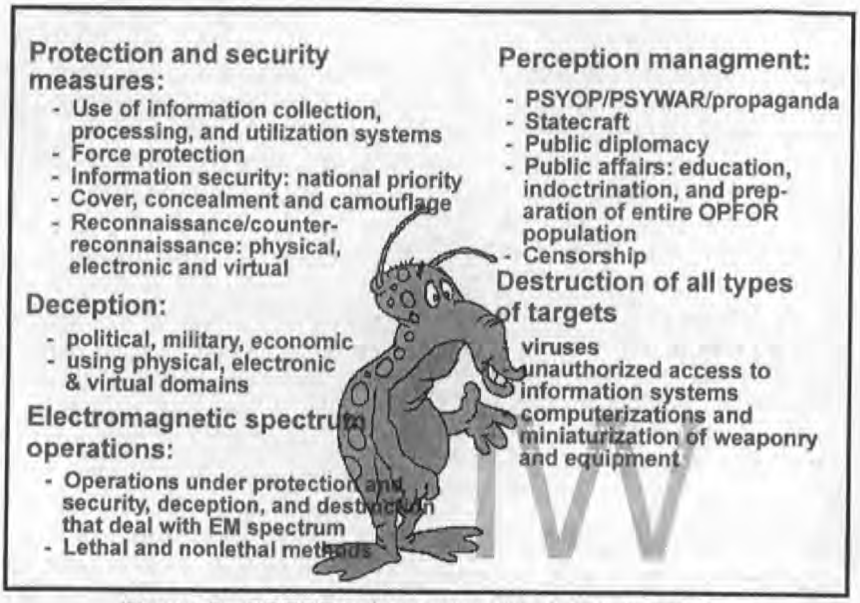

Figure 2. OPFOR Information Warfare Elements.

from the open or black markets. In most cases, it is more economical to purchase equipment or steal technology, than to develop systems independently. Finally, the OPFOR always seeks to exploit U.S. dependence on information-age technology and may attempt to overload U.S. intelligence collection efforts or disrupt a critical information link.

Figure 1 depicts the OPFOR IW doctrinal concept. The leadership of an OPFOR, whether from a terrorist group or the State, integrates **all** elements of power—political, economic, military, and informational—to implement its information strategy. One element of power may have primacy over the others during a certain operation or at a given time, but all are working together.

The outer ring of the diagram competition, conflict, and war—illustrates the OPFOR concept that it is always trying to impose its will on someone, it is never at peace. The OPFOR conducts IW at all levels—strategic, operational, and tactical—and, in most instances, conducts an integrated IW campaign without regard to strict organizational boundaries. Research indicates that several foreign forces have a well-developed information strategy while others have one by default. For example, while Somali warlord Aideed probably did not have a formal integrated information strategy, one could conclude from his actions that he was using all his elements of power towards one goal—getting the U.S. military out of Somalia.

OPFOR IW Elements

Across the operating continuum, the OPFOR considers six elements (described in Figure 2) when developing and implementing IW. Many subelements overlap. For example, if the opposing force conducts electronic reconnaissance, it may be part of an electronic combat operation or part of his protection and security measures, electromagnetic (EM) spectrum operations, and deception operations in an integrated IW campaign. Similarly, if the OPFOR disseminates a digitally-manipulated video that depicts an adversary engaged in war crimes, that operation may be considered an integrated IW campaign comprising electromagnetic spectrum operations, perception management, deception, and computer warfare activities.

Protection and security measures are broader than the U.S. concepts of operations security (OPSEC) and force protection. The OPFOR considers information a critical resource and takes appropriate protective

measures such as censoring, camouflage, counterreconnaissance, and encryption. It employs a variety of systems to collect, process, and use information to determine friendly and adversary weaknesses and vulnerabilities, assess various conduits for use in IW campaigns, and evaluate IW campaigns.

The OPFOR thoroughly integrates **deception** operations using all elements of power, within all domains—physical, electronic, and virtual—across the operating continuum. Economic organizations may publish false financial figures; official spokespersons may initiate a rumor campaign; the military may use decoys or conduct a feint, all integrated to mislead the adversary. Each deception operation has a specific target, objective, story, and means allocated to make it believable and at least to some extent, verifiable. The OPFOR allocates sufficient resources to execute the deception operation so their adversary will believe the deception story. For example, a military commander may allocate up to 30 percent of his available combat power to create a combined-arms deception force in an effort to preserve combat power, achieve surprise, and gain an advantage on the battlefield.

EM spectrum operations span the entire EM spectrum. These include, but are not limited to, operations that use radios, radar, lasers, directed-energy weapons, digital manipulation, parapsychology, holograms, morphing, and computers. The OPFOR applies both lethal and non-lethal methods, such as destroying a radio-relay site and blinding a soldier.

Perception management operations include all planned operations—against foreign and friendly targets—intended to change, manipulate, control, or otherwise manage a target's perceptions. Perception management is broader than U.S. psychological operations which target only foreign audiences. The OPFOR uses truth, false information, and misinformation and "spins" information to fit its needs—sometimes highlighting certain aspects or carefully deleting harmful information. Censorship and public affairs programs, aimed at a population sympathetic to the OPFOR, are an important component of perception management. When conducting IW, the OPFOR skillfully uses the media and other neutral players, such as nongovernmental organizations, to benefit its operations and deter adversary operations.

Computer warfare is the newest and perhaps most ominous of all the OPFOR IW elements

Destruction, when integrated with other elements of OPFOR IW, is powerful. The military element of power has primacy in this area. Military forces that conduct destruction operations are often unaware that they are involved in an integrated IW campaign. Forces such as an artillery unit, direct-action cell, or special operations team may receive a mission to destroy a target at a certain time or using a particular technique. Upon completion, the force continues with other assigned missions. The destruction element of IW highlights the importance of precision-guided weapons or "smart" weapons. A technologically-advanced OPFOR will continue to research, develop, and employ weapons and equipment with sophisticated information components, such as guided weapons, munitions, or global positioning systems. Its goal is to link real-time intelligence systems and long-range precision weapons within a faster decision-making cycle than its adversary. Less-sophisticated OPFORs, however, will continue to target high-value targets with available weapons systems such as, artillery and attack helicopters.

Computer warfare is the newest and perhaps most ominous of all the OPFOR IW elements. Although it overlaps with other elements, computer warfare requires sophisticated expertise to conduct. The OPFOR may contract hackers, disgruntled employees, or other foreign agents to provide computer warfare assistance. By hiring these services, it reduces the possibility of tracing the act back to itself. Computer warfare includes the altering of data and performance characteristics through the use of viruses or other database manipulation techniques; unauthorized access, such as hacking; and computerization, miniaturization, and robotization of weaponry and equipment. The OPFOR exploits the availability of technology on the open and black markets to determine vulnerabilities in its adversary's information systems.

Endnotes

1. See ***Military Intelligence***, October-December 1996, pages 51-52, for more information on the OPFOR field manuals and pamphlets and capabilities-based OPFOR.

2. See **FM 100-6, Information Operations,** dated August 1996 and **Joint Pub 3-13** 1st Draft, **Joint Doctrine for Information Operations**, dated 21 January 1997, for additional information.

Major Gallogly-Staver is attending the Command and General Staff College. She has served with the TRADOC Threat Support Directorate, 4th Psychological Operations Group, and Special Operations Command-Korea. She has a master of arts degree in Economics from North Carolina State University, and a Master of Science in Strategic Intelligence from the Joint Military Intelligence College.

Major Hilliard is assigned to the World Class OPFOR at Fort Leavenworth, Kansas. He has served as S3, 470th MI Brigade, XO 308th MI Battalion, and at the Intelligence and Security Command. He earned bachelor and master of science degrees in Management from East Tennessee State University and Saint Mary College, respectively. Readers can contact him at hillardr@leav-emh1.army.mil or by telephone at (913) 684-8396 and DSN 552-8396.

PROPONENT NOTES

Captains' Professional Military Education

Army units have raised concerns over the disruption and turmoil caused by officer training absences to the Combined Arms and Services Staff School (CAS^3). As a response to this concern, a new Captain Professional Military Education (CPT PME) program has been developed. This program will provide the field with captains who have requisite branch and staff skills before going to operational assignments.

Two significant changes have been made to support this action. CAS^3 has been shortened from nine to six weeks and held seven times each year instead of five. Second, officers will attend CAS^3 immediately after completing their branch officer advanced courses (OACs).

Synchronizing CAS^3 and OAC programs of instruction will continue to develop the CPT PME assignment throughout fiscal year 1997. Officers will go permanent change of station to their OACs to receive branch-related technical and tactical training, followed by staff training at CAS^3, at Fort Leavenworth, Kansas. The Office of the Chief, Military Intelligence (OCMI) point of contact (POC) is Captain John Cooper, Officer Professional Development Action Officer at (520) 533-1180/1188, or DSN 821-1180 /1188. His E-mail address is coop erj@huachuca-emh1.army.mil.

Warrant Officer Accession Waivers

MI is experiencing a shortage of accessions in several of our warrant officer military occupational specialties (MOSs). This has led to many inquires on availability of Active Federal Service (AFS) waivers. The Department of the Army's (DA) goal is to access warrant officers prior to their eighth year of AFS. An individual may apply up to 12 years of AFS without requesting a waiver. Once an applicant exceeds 12 years of AFS, they must request a waiver. OCMI makes a recommendation to headquarters DA, ODCSPER (the approval authority) whether to approve the waiver. In all cases, ODCSPER is the final authority on all AFS waivers.

OCMI primarily bases the recommendation on the needs of the MI Warrant Officer Corps. If we are short applicants in a particular MOS, we will consider recommending approval of the AFS waiver based on a performance review of the application. If we have sufficient qualified applications to ensure a competitive selection within a MOS, we will not normally recommend approval of the AFS waiver request. In addition, we will usually recommend disapproval of a waiver request for any applicant who exceeds 14 years AFS due to limited retainability once the individual is appointed as a warrant officer.

To find out which MOSs are currently experiencing shortages, call the POC in OCMI, CW5 Rex Williams, Warrant Officer Professional Development Manager. You can reach him at (520) 533-1183, DSN 821-1183. His E-mail address is williamsx @huachuca-emh1.army.mil.

Naval Postgraduate School Information Warfare

Personnel from the Naval Postgraduate School (NPS) information warfare (IW) group recently briefed the U.S. Army Intelligence Center (USAIC) leadership on their new IW curriculum. With the need for increased information operations (IO) skills in Army XXI, and with the forthcoming implementation of a functional area dedicated to IO, we believe that the NPS IW curriculum has great merit both to the MI community and the Army.

In recent years, Army Educational Requirements System (AERS) quotas for the basic branches have diminished. This has resulted from funding cuts for advanced civil schooling and the fact that personnel holding functional areas receive AERS priority. MI Branch currently receives only one AERS quota per year.

We are told the OPMS XXI Task Force is recommending that the NPS IW curriculum be used as training for specific IO functional area billets. We believe that the NPS IW curriculum has so much merit that the Army should commit itself to enroll approximately ten Army students in the program starting in Fall 1998. The Army cannot afford to lose even one more year in educating our officers in this critical field.

As the Army and OPMS XXI begins to use this training program, we are hoping as many MI officers as possible take the lead in this essential mission area training. Other branches would also benefit by enabling their officers to attend the IW curriculum. USAIC is currently working to identify and validate AERS positions throughout the force to support the IW degree. The IO functional area and other basic branches will likely be doing the same. We will provide all of the information we have gathered to your advanced civil schooling experts and to other Army branches.

We would like to be able to begin enrollment of as many as ten Army officers (from MI branch and the IO functional area) in the program beginning with the Fall

1998 semester. We ask you to evaluate our request to determine feasibility. POCs for this article are Captain Cooper and Mrs. Charlotte Borghardt, Officer Professional Development Action Officers, at (520) 533-1180/1188, or DSN 821-1180/1188. Their E-mail addresses are cooperj@huachuca-emh1.army.mil and borghardtc@huachuca-emh1.army.mil.

MI CORPS HALL OF FAME

Former Honorary Colonel of the MI Corps

Lieutenant General Sidney T. Weinstein, U.S. Army (Retired)

Lieutenant General Weinstein's distinguished career spanned 33 years, culminating in 1989 as the DA Deputy Chief of Staff for Intelligence (DCSINT). In 1956, following graduation from the U.S. Military Academy he was commissioned a Second Lieutenant of Infantry. After infantry duty with the 101st Airborne Division, he served with the Second U.S. Army Research Group, Fort Meade, Maryland. From 1961 to 1962 he was assigned to and worked with the 109th Intelligence Corps Group. In 1963, he was assigned to the 8th Special Forces Group, Panama, and later was an advisor in Ecuador. In 1967 he became an advisor to the Army of Vietnam 23d Infantry Division in South Vietnam.

After graduating from the Command and General Staff College and graduate study at the University of Rochester, in 1970 he joined the U.S. Army Combat Developments Command Intelligence Agency, Fort Holabird, Maryland, moving with the command to Fort Huachuca, Arizona. From 1972 to 1974, he commanded the 2d MI Battalion, 66th MI Group, and later was the Group Director of Operations.

LTG Weinstein attended the U.S. Army War College in 1977. In 1977, he returned to Fort Bragg, North Carolina, where he served Deputy Assistant Chief of Staff G2, XVIII Airborne Corps; Commander, 525th MI Group; and then as the Assistant Chief of Staff G2, XVIII Airborne Corps successively. While at Fort Bragg, he was instrumental in creating the foundation that would become the Army's Combat Electronic Warfare and Intelligence (CEWI) structure. In 1980, LTG Weinstein was assigned as Executive to the Assistant Chief of Staff for Intelligence, Headquarters, DA. Selected for general officer rank, he became Deputy Commanding General for Support, Headquarters, U.S. Army Intelligence and Security Command. Then later in 1981, LTG Weinstein took command of the Intelligence Center and School at Fort Huachuca. In this capacity, he institutionalized in MI doctrine intelligence preparation of the battlefield, the G2 workstation, and CEWI concepts he pioneered at Fort Bragg.

U.S. Army photo

From 1985 until his retirement from active federal service in 1989, LTG Weinstein distinguished himself as the DCSINT, Department of the Army. As the senior Army intelligence officer, he improved support in special operations, reorganized the civilian career program, and created the Army Intelligence Master Plan which defined the intelligence force structure of the future.

MI Corps Hall of Fame Nominations

The OCMI accepts nominations throughout the year for the MI Hall of Fame. Anyone can nominate an individual for induction in the HOF. Officers, soldiers, or civilians who have served in a U.S. Army intelligence unit or in an intelligence position in the U.S. Army are eligible.

A nominee must have made a significant contribution to MI which reflects favorably on the MI Corps. In certain isolated instances (particularly in the case of junior soldiers), the nomination may be based on heroic actions. Nominees cannot be employed by the U.S. Government in any capacity at the time of their nominations and cannot be self-nominated.

The OCMI provides information on nomination procedures. If you wish to nominate someone, contact them at OCMI at USAIC&FH, ATTN: ATZS-MI (Hall of Fame), Fort Huachuca, AZ 85613-6000. Send E-mail to chambersj@huachuca-emh1.army.mil or call (520) 533-1178 or DSN 821-1178.

RESERVE COMPONENT

Warlord Notebook

The Warlord Notebook (WLNB) of the All-Source Analysis System (ASAS) is an intelligence support workstation designed to be a low-cost approach to extending the issuance of ASAS functionality down to the brigade, battalion, and subordinate levels. WLNB is a "consumer of intelligence products" workstation equipped with a full range of applications to support communications, messaging, maps and overlays, database operations, and analytical support tools. WLNB is built on a common baseline with the Maneuver Control System/Phoenix Beta (MCS/P Beta) interim issue command and control (C^2) system, the Army Airspace Command and Control System (A^2C^2S) and the Army's Medical Situation Awareness and Control System, among others. WLNB is compatible with these systems as well as the full range of Army Tactical Command and Control Systems (ATCCS) including—

- ☐ MCS.
- ☐ Advanced Field Artillery Tactical Data System (AFATDS).
- ☐ Combat Service Support Control System (CSSCS).
- ☐ Forward Area Air Defense Command, Control, Communications.
- ☐ Intelligence ($FAADC^2I$).
- ☐ The ASAS Remote Workstation.

WLNB is currently being used at the U.S. Army Intelligence Center and Fort Huachuca (USAIC&FH) as a surrogate intelligence training platform and has been used successfully by the students for two years at the annual Prairie Warrior exercise.

WLNB and its MCS/P Beta counterpart are critical components of the intelligence and C^2 architecture of several major Army units including the XVIII Airborne Corps and III Corps, and the 1st Armored Division (AD). The WLNB's role is continually expanding to additional active component (AC) as well as U.S. Army Reserve (USAR) and National Guard (ARNG) organizations. It is found in the ARNG's 34th ID, 38th ID, 40th ID (Mechanized), 278th Armored Cavalry Regiment (ACR), 81st Mechanized Brigade, and soon in the 49th AD. Other Guard and Army Reserve organizations are looking at purchases of the hardware and implementing WLNB.

WLNB is ideal in this role as a low-cost solution for two primary reasons. First, the development of WLNB from a common baseline resulted in major cost savings to the Army. Second, WLNB runs on a low-cost INTEL personal computer platform and has no software license or fee issues. WLNB has a robust Web browser, hypertext-based, online help capability for operators and system administrators to use as augmentation to the WLNB user's manual. The system's operators course includes 80 hours of classroom and hands-on experience and is normally extended an additional 40 hours for advanced (system administrator) training. Points of contact (POCs) for additional information on WLNB include Dr. Ray Freeman of Program Manager Intelligence Fusion at (703) 275-8086) and Captain Kenneth Payne, TRADOC System Manger All-Source Analysis System (ASAS) office at (703) 671-8680.

The 278th ACR (TN ARNG) began initial fielding of the Warlord Notebook during their annual training at Fort Stewart Georgia, in May 1997. The 278th uses ASAS-RWS to link III Corps to the Regimental ACE and then puts information on the Regimental intelligence web page. Subordinate units use the Regimental Local Area Network/Wide Area Network to access information from across the regiment down to Squadron S2 level. The 278th ACR is fully equipped with packet-switched Mobile Subscriber Equipment to accomplish this in a tactical environment. USAIC&FH provides both technical advice and procurement assistance with hardware (using unit funds) to the Guard units. Other units in the Guard intend to use end-of-year funds, as available, to purchase WLNB. The South Carolina G2 has expressed considerable interest in using the WLNB system for disaster relief operations and other military support to civil authority missions. The USAR is undertaking a similar effort to place WLNBs into selected Army Reserve MI units. Information on this fielding will be posted on the ARNG Separate Brigade Intelligence Page (http://batcave.army.mil/school/ng/index. html).

ASAS Remote Workstation Fielding

The ARNG's 41st Separate Infantry Brigade, 116th Armor Brigade, and 155th Armor Brigade recently completed initial fielding training for the ASAS-RWS at Fort Huachuca. These units will receive follow-on visits by software support personnel throughout the year. They will also have exercise support for their major training events. The 278th ACR and the 45th Separate Infantry Brigade will field ASAS-RWS by the end of fiscal year 1997 (FY97). Battle Command Training Program (BCTP) has made provisions to support Guard brigades using ASAS-RWS and WLNB at BCTP training exercises.

Clearance Requirements

All the Reserve and National Guard officers attending AC resident Officer Basic and Officer

Advanced Courses must have sensitive compartmented intelligence (SCI) access or a final Top Secret special background information clearance prior to arriving at Fort Huachuca, Arizona. There can be no exception. Several officers have been returned to their units owing to lack of clearance or improper clearance. This is very costly in training dollars and should never happen. If you are a potential student or training officer, insure clearance and access levels are in order before departure for training at the USAIC&FH. **There are no exceptions.** A letter from the unit or state security manager is not sufficient. When in doubt, call the Reserve Forces Office or the USAR/ARNG Liaison Sergeant Major at USAIC&FH, SGM Clark Sullins.

ARNG G2/S2 Training Workshop

In response to units' requests, we are changing this event to November 1997. Details will be forthcoming. This year's event will concentrate on digitization of MI in the ARNG, MI training in Total Army School System (TASS) Battalions, and support for Combat Training Center events.

TASS MI Battalion Workshop

The USAIC&FH will host this annual workshop for the five USAR MI TASS training battalions in late FY97. The TASS MI battalions conduct the majority of RC MI military occupational specialty reclassification and Noncommissioned Officer Education System training. The focus will be to RC Total Army Training System Courseware update and Title XI evaluations.

Colonel John Craig is the USAR POC. Readers can contact him at (520) 533-1176, DSN 821-1176, and via E-mail craigj@huachuca-emh1.army.mil.

Major Steve Ponder is the ARNG POC. His telephone is (520) 533-1177, DSN 821-1177, and his E-mail is ponders@aol.com or ponders@huachuca-emh1.army.mil.

The TRADOC Liaison NCO is Sergeant Major Clark Sullins at (520) 533-4212/3 and DSN 821-4212/3.

QUICKFIX

(Continued from page 17)

ganization are tailored to suit the JTF commander's objectives.

Current Capabilities (QUICKFIX IIB)

QUICKFIX intercepts signals of AM, FM, continuous wave, and single sideband modulations. It can locate and jam those modulations. The operational crew consists of two pilots, two 98G voice interceptors (one at the TLQ-17 console and one at the DF console). One additional crew seat is available just behind the 98G positions which can be used by a back-up 98G or technician.

The aircraft can remain aloft for approximately 2.5 hours, depending on weight, altitude, and ambient temperature. With additional external fuel storage tanks, time aloft increases to approximately 5.5 hours. The aircraft is restricted to operation below 14,000 feet mean sea level (due to lack of supplemental oxygen) although most missions never prescribe such altitudes.

The EH-60A has six tactical voice communications radios onboard. The pilots have access to one UHF-AM, two VHF-FM, and one non-secure VHF-AM radio. The voice intercept and EA operators both have access to one UHF-AM voice and one VHF-FM radio.

The EH-60A has an additional UHF-AM data transceiver used for networking the platform with others when performing a DF mission. This radio is used solely for the DF network. It cannot be used to transmit COMINT reports as with a tactical intelligence-gathering and exploitation relay radio. Unfortunately, QUICKFIX IIB does not have a net radio protocol capability.

QUICKFIX can operate alone or electronically networked as a group of three QUICKFIX platforms. Up to five additional ground systems—consisting of both TRQ-32 TEAMMATEs and TSQ-138 TRAILBLAZERs—can also enter the net to create an extended baseline of eight DF systems. Flight-track locations are primarily influenced by considering the factors of mission, the area of interest, friendly and enemy operations, signal propagation factors, and the terrain. Although equipped with several antimissile defense systems, QUICKFIX is unarmed and normally operates outside of the engagement range of known threat weapons.

Developing the potential

QUICKFIX should be the division commander's premier COMINT and IEW asset. Yet many missions are less than well planned and executed; this fact is often not apparent to the commander. As the Intelligence BOS continues its evolution toward a "seamless" architecture, the intelligence gaps due to inefficient QUICKFIX operations become harder to detect because the Analysis and Control Element (ACE) can "pull" SIGINT from so many other sources. The point here is not to lay blame. Rather, I am saying that a better statement of QUICKFIX tactics, techniques, and procedures is required to fully develop QUICKFIX mission capabilities.

Next time...

A critical assessment of QUICKFIX's tactics, techniques, and procedures.

CW3 Martin is currently an Instructor at the QUICKFIX and Guardrail Qualification Courses assigned to B Company 304th MI Battalion, Fort Huachuca, Arizona. He is a graduate of the Joint Air Operations Staff Course. He can be reached at (520) 538-7187, DSN 879-7187, and via E-mail at martin@desert-thunder.army.mil.

PROFESSIONAL READER

Chinese Intelligence Operations by Nicholas Eftimiades (Annapolis, MD: Naval Institute Press, 1994), 192 pages, $31.95.

The towering strength in Mr. Nicholas Eftimiades' work, **Chinese Intelligence Operations,** is his penetrating and incisive analysis of open-source events. Few intellects are so keenly geared toward finding out what is important about any piece of information. He depicts the Chinese national intelligence structure with wire diagrams, bureaus, and functions. He then elaborates on their objectives, and how the Chinese intelligence apparatus collects, analyzes, and disseminates intelligence to meet their objectives.

Mr. Eftimiades' methodology through this book is to start with an event and determine what the objectives were. Once he determines the objectives, he then figures out what gaps the objectives were trying to fill. After discerning the gaps and the limitations, he can give a fair analysis of their capabilities. Once he knows their capabilities and limitations, he gives a fair estimation of the whole situation and what it means.

The clearest examples of his analysis are on pages 33-34, 39, 64-67, and 95. These analyses are so easy to follow, very logical and obvious, yet almost no one except an analyst very refined in his art would find the underlying importance. Reading his analyses is like looking at Seurat paintings—at first all one sees is tiny points of paint, but once looked at as a whole, a clear picture emerges. Mr. Eftimiades' book, **Chinese Intelligence Operations**, paints the whole clear picture from numerous and seemingly disparate occurrences. His documentation is thorough and rigorous. Most of his information comes from open-source documents. He does use nine unnamed sources who spoke at personal risk. This is the only possible point of contention with his documentation. However, even if one were to delete everything which comes from these sources, the best part of this book remains—Mr. Eftimiades' analysis.

This book is for anyone who is looking for a combination of education and entertainment. Those who follow intelligence matters must read this to sharpen their knowledge of how the most populous country in the world runs their intelligence community. Many readers will appreciate the logical flow of this analysis and perhaps incrementally sharpen their thinking skills. Sinophiles and sinologists should read this book to increase their knowledge about Chinese intelligence operations, the Chinese intelligence apparatus, and insight into Chinese thought from a China expert.

Captain Roger F. Cavazos
Fort Benning, Georgia

Breaking the Phalanx by Douglas A. Macgregor (Westport, CT: Praeger Publishers, 1997), 283 pages, $25.00.

This book is a must read for today's Army. It proposes nothing less than the abolition of division structure and reorganization of the Army at *"the strategic, operational, and tactical levels."* That is exactly what Lieutenant Colonel Macgregor, an Armor LTC who has spent much of his career in cavalry units, proposes in detail in this timely and relevant work. This is a "hot" book that is hard to keep on the shelves of such places as the Army War College Book Store. It is reported that the Army's most senior leaders are paying serious attention to it. Only through massive change, he maintains, can the Army truly reap the benefits of the current revolution in military affairs (RMA). In this well-researched and -documented work he makes a very compelling case.

The author starts by defending the very existence of the Army as the enabler for land dominance. He points out several historical examples where naval or airpower failed to resolve international crises or win conflicts, and examples of how failure to maintain a credible land force has not prevented conflict or achieved a nation's objectives. Landpower alone cannot meet our country's objectives, but it is a critical element in achieving those objectives.

This introduction leads the reader to the meat of **Breaking the Phalanx.** The point made here is that an RMA requires new thinking, organization, and procedures. Highlighting the "flattened" organizational structure of some successful corporations like software companies, he contends that simply adding new "third-wave" hardware to essentially old organizations will not maximize the benefits of the RMA or prepare for the new operational environment. Having made this point, the author proposes how the Army should reorganize.

History provides a guide. All we have to do is look at the Combat Commands of the World War II armored divisions and the modern armored cavalry regiment (ACR). He contends that divisions are too unwieldy at all levels of warfare, and that self-contained, brigade-sized elements are a more effective way to organize the Army. He provides sample heavy, airborne-air assault, and heavy and light reconnaissance-strike "combat groups" as examples. These are combined arms "brigades" with organic combat support and combat service support elements. The division is eliminated as a command echelon with each group commanded by a brigadier general and answering to the corps commander (often dual-hatted as a joint task force commander).

All of these combat groups have a common "base" of a C^4I battalion (command, control, communications, computers, and intelligence) and a support battalion. That is right, **no MI battalions below corps level** under this proposal. Within the C^4I battalion, there is no MI company. Instead—

LTC Macgregor proposes placing MI assets in either a non-line-of-sight battery consisting of unmanned aerial vehicles and some unnamed over-the-horizon attack system or an "information warfare company"...

made up of "intelligence collection," "jamming analysis," and chemical detection. The major staff sections in the combat group headquarters are personnel, strike coordination, logistics and sustainment, information support, civil affairs and psychological operations, and operations and intelligence. More on this later.

The remainder of the book is devoted to a cost-benefit analysis and a Southwest Asia scenario where the Navy and Air Force suffer stunning losses, and the Army's proposed agile landpower saves the day. The scenario struck me as a little too parochial with regard to the other Services' performance but the main point—that land power is needed to achieve strategic objectives—rings true. His cost analysis seems on track and his plan would actually put more "tooth" in the field in terms of both personnel and dollars.

LTC Macgregor does not come across as a friend of MI. This is demonstrated by the proposal to split MI assets, as if some only look deep and others are just close-in systems. While this is true in some cases, it is not necessarily true of signals intelligence or UAV assets. He provides little explanation of the logic behind his proposal.

Deeper than the organizational issue is his cry that *"intelligence is always wrong."* What he says is simply a rehash of Clausewitz's *"Most intelligence is false"* taken out of the historical context. Not surprising with someone of this viewpoint, he proposes subordinating intelligence staff functions under operations. He explains this reorganization as aligning *"mission-essential functions with mission-oriented activities."* For some reason, deep fires and the S1 and S4 are not similarly realigned.

Despite my disagreement with LTC Macgregor on the value, function and organization of MI, **Breaking the Phalanx** is a book that every intelligence professional should read. It rings true on several levels from the value of landpower right down to the proposed restructuring of our combat elements. I found myself hoping that the senior Army leadership reads this book and adopts much of what the author proposes.

Captain James C. Laughrey
Joint Military Intelligence College
Washington, D.C.

*U.S. Government Printing Office: 1997 — 581-046/64500

66th MI Group

A gold colored crest consisting of a hexagon composed of a chequer of six black and white enamel sections, surmounted throughout by a smaller hexagon composed of a chequer of nine sections of gold and oriental blue with the center square charged with a gold sphinx head, facing to the right, all above a gold scroll inscribed Honor, Valor and Security in oriental blue. The black and white symbolizes enlightenment and knowledge both day and night around the world. The chequer represents the unit's tactical and strategic capabilities in counterintelligence. The sphinx is a traditional intelligence symbol and indicates observation, wisdom, and discrete silence. The hexagon with a hexagon further distinguishes the numerical designation .

The 66th MI Group traces its history to its activation at Camp Rucker, Alabama, 1 July 1944 as the 66th Counterintelligence (CI) Corps Detachment. The unit arrived in France in December 1944 and remain in France and Germany. Deactivated after World War II, but reactivated in Stuttgart in November 1949 and assigned to U.S. Army Europe (USAREUR) to provide CI for the Commander in Chief (CINC), European Command (EUCOM). In January 1960, the unit was redesignated the 66th MI Group. In February 1977, the Group was assigned to the Army Intelligence and Security Command as part of a worldwide reorganization. In October 1986, the Group was redesignated the 66th MI Brigade; then in July 1995, redesignated the 66th MI Group (Provisional) due to downsizing.

On 12 August 1997, the 66th MI Group will reorganize from its current task organization of two battalions and a headquarters company. The new configuration will comprise one battalion, the 527th MI Battalion (Provisional); a separate company, the 407th MI Company (Provisional); and Headquarters and Headquarters Company, 66th MI Group (Provisional). Then in July 1998, the Brigade will move to Darmstadt, Germany, and its SIGINT (Enhanced TRACKWOLF) Company will move to Bad Aibling, Germany.

The Brigade's mission is to collect, analyze, and disseminate tailored all-source intelligence; conduct CI operations; conduct additional intelligence operations as directed by CINC USAREUR; and coordinate the theater intelligence automation architecture. It also provides general and direct support (GS, DS) to tactical, theater,and national intelligence efforts. The 66th MI Group provides direct support to USAREUR, the Southern European Task Force (SETAF), and the 21st Theater Army Area Command (TAACOM). It provides reinforcing support to V Corps and other USAREUR units and deployed ground forces operating in the USAREUR and EUCOM areas of responsibility. The Group also provides GS in the theater and other support as directed.

Over the past year, the Group has executed its assigned functions, focused primarily on operations in the Balkans. The Group has elements throughout the Operation JOINT GUARD area of operations. It operates in DS from locations in Germany. Deployed forces include a Deployable Intelligence Support Element with Headquarters, Stabilization Force in Sarajevo (see page 33); CI Force Protection Support Teams in Bosnia, Croatia, and Hungary; and other specific functional teams in the theater.

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