

SPLIT BASED INTELLIGENCE OPERATIONS DURING DESERT STORM  
"A GLIMPSE OF THE FUTURE DIGITAL ARMY"

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*During operations Desert Shield and Desert Storm, a small Head Quarters Department of the Army (HQDA) field operating agency was instrumental in changing the way the United States Army Intelligence operations will operate in the future. This article describes the intelligence operations supporting battlefield commanders at echelons above corps (EAC).*

The important secret of war is to make oneself master of the communications.

- Napoleon

The Army Intelligence Agency (AIA) provided intelligence information to commanders during Operations Desert Shield and Storm that saved American lives. This U.S. based Headquarters, Department of the Army field operating agency's contribution is recognized as a major factor in the success of the ground operations. The electronically produced and transferred information was among the most accurate, detailed, and timely intelligence information ever provided in the history of warfare. This article provides an echelon above corps intelligence and data communications perspective that is today a vital part of the Army's effort to field a digital division by 1997 and a Corps by 1999. The concept provides a proven blueprint for supporting future split based intelligence operations, critical to a force projection Army.

The Army Intelligence Agency:

In the summer of 1990 the AIA consisted of five elements. These include the Headquarters, the Armed Forces Medical Intelligence Center (AFMIC), the Foreign Science and Technology Center (FSTC), the Intelligence and Threat Analysis Center (ITAC) and the Missile and Space Intelligence Center (MSIC). These unique national level intelligence organizations provide medical, foreign technical, and general military intelligence support to DoD. The primary focus of the organization was to support the force development process, assist in future equipment design and conduct analysis of foreign countries R&D. The agency also had the mission of providing crisis support to Headquarters, Department of the Army.<sup>1</sup>

In August 1990, the organization was providing support to HQDA for the crisis developing in the mideast. AIA was also in the process of upgrading it's automation and data communication system. This modernization project was known simply as AIANET. AIANET, like the automation systems in the four centers, was on the leading edge of technology. The agency's systems were based on an open systems architecture maximizing the use of commercial off the shelf hardware and software, in compliance with industry and DOD standards.

#### Operation Just Cause, The Prelude:

In the fall of 1989, the United States Army began planning for a crisis in Panama. The Army Operations Center Intelligence watch or AOC-Watch is located in the Pentagon. The mission of the AOC-Watch is to support DOD and Army operations with real time intelligence support. In 1989, the AOC-Watch had a manual information processing operation in which AUTODIN traffic and other intelligence products were hard copy. The staff was drowning in paper. Over 7000 new AUTODIN messages (text based messages) a day were being handled in the center. AIA centers were managing the equivalent volume of information using

computers and networks to electronically sort, profile, deliver, and store the information in real time. BG Paul Menoher Jr., the AIA Commanding General and Army Assistant Deputy Chief of Staff for Intelligence, directed that AIA solve the AOC-Watch's information overload problem. AIA temporarily corrected the problem by electronically connecting the AOC-Watch to ITAC at Washington Navy Yard.

After the end of the crisis, the AIA Commanding General, BG Paul Menoher, directed the start of a comprehensive study to seek a permanent solution. A few months later, the HQDA Deputy Chief of Staff for Intelligence approved the AIANET initiative. A project manager was appointed in April 1990 and a PM office established at FSTC in Charlottesville, Virginia. The PMO consisted of a project manager and a system integration contractor. Many professional technicians from the four centers provided support through a technical working group. The Commander AIA officially chartered the project. The agency's Information Management Executive Board provided oversight. AIANET PM had a mission to establish a high speed secure, reliable, and redundant wide area communications network between the centers, HQDA, and the national intelligence community. A secondary mission existed to orchestrate the development of the automation architecture to drive it. The heart and soul of the plan was commonality and standards.

#### The New Crisis, Desert Shield:

On August 2, 1990 Iraq invaded and occupied Kuwait with over 1,800 tanks and 140,000 personnel. In less than a day Iraq had Kuwait and was within road march distance of Saudi Arabia. AIA immediately task organized, establishing an operations center to provide intelligence support to the XVIII Corps (Airborne) and HQDA. An intelligence crisis action team consisting of key people from all the centers gathered at ITAC. The access to

national databases, electronic publishing system and multiple strategic communications systems made ITAC an ideal location. The AIANET PM established an automation task force to support the operation.

Several key elements required to support the operation were already in place. These included automated network control centers, electronic publishing capabilities, and fully automated electronic message (AUTODIN) handling systems. More important, common automation and communication standards were in use throughout the agency. This common functionality allowed for rapid, electronic exchange of information between the geographically separated components.

Pentagon Communications.

The first challenge was to fully connect the AOC-Watch. The Just Cause interim solution was insufficient. This task took only a matter of days. Significant work had already started on the technical aspects of the project. The Joint Intelligence Center, or DoD-JIC, began operations in the National Military Intelligence Center, Pentagon. The ground team was made up by AIA analysts. These analysts were now separated from their organization, databases, electronic mail capability and real time AUTODIN message profiling system. A few days later, AIANET was brought to the JIC allowing the analysts to return to the electronic environment they were used to.

Meanwhile, the task force attacked other problems. MSIC and AFMIC were not yet part of the network. To solve this problem, the Defense Intelligence Agency, DIA, worked with the task force to accelerate MISC's connection to the Defense Secure Network. AFMIC was tethered to FSTC. This short term fix brought the two centers into the operation. These two centers were critical due to the threat of SCUDS, intercontinental ballistic missiles, and

chemical warfare. Army Intelligence at the national level was fully connected by September 1990. Standard procedures for electronic mail and file transfers streamlined operations. A virtual task force existed without regard for geographical boundaries.<sup>2</sup>

#### Enemy Information:

AIA intelligence analysts, using national and tactical intelligence data, created detailed templates or overlays depicting enemy locations. They were initially hand drawn to scale and overprinted on maps. The templates were to support ground force planning and operation rehearsals. They were an immediate success. Requirements drove production to hundreds of copies. The production rapidly exceeded the manual creation process. An electronic process would solve the problem. This was not a trivial undertaking. A complex computer aided design system required extensive work. Standard military icons needed to be created and all the data had to be registered to military map scale.

The task force expanded to work the problem. Contractors, civilians and soldiers worked around the clock. Specialists literally slept at the terminals. The team understood the contribution they were making to the war effort. This information would help save coalition lives. The project ended ahead of schedule.

The timely delivery of the templates became another problem. The now electronically produced templates were reproduced in the United States and flown into theater on military aircraft. A military courier was detailed to accompany the items to guarantee delivery. Under normal conditions, delivery to Saudi Arabia took seven to ten days. This delay was unacceptable. Exploration of an electronic delivery means began.

On December 15, 1990, two members of the task force traveled to the theater to assess the electronic communication situation. In theater, the communication situation at the 513th MI Bde operated echelon above corps intelligence center (EACIC) mirrored that of the AOC-Watch in August. US Special Operations Command, USSOCOM, was implementing a deployed version of its network, SOCRATES, to support US Central Command, USCENTCOM, and components. In garrison and to USCENTCOM forward, SOCRATES worked extremely well. The SOCRATES system had been the premier model of distributed operations in the national intelligence community. The tactical communications links to the USCENTCOM components were a different story. In Riyadh, the 3rd Army link was over the military U.S. Joint Tactical Communications System, TRI-TAC, and the Saudi commercial telephone system. The attempted use of these systems designed for voice and low data rate text, resulted in a very unstable system.

#### Desert Storm:

The solution reached by HQDA, USCENTCOM and 3rd Army was to extend the AIANET architecture over the DIA DoD Intelligence Information System Extended, DoDEX, communications path. DoDEX was designed to provide a packet switch node and commercial communication to support a deployed, joint force. Someone else had to provide the automation architecture.<sup>3</sup> The AIANET architecture was proven and ready to go. The open architecture design permitted rapid expansion. The CONUS task force immediately began work on the solution. Ten days later, five members of the task force were on the way to the theater with less than 3000 pounds of off the shelf ADP and communications equipment.

The task force arrived in early January 1991. The first priority was to reestablish the TRI-TAC link to SOCRATES as an interim capability. In early February, the DoDEX team arrived

and the objective architecture was implemented. For the first time in history, a deployed Field Army Commander's intelligence operation was truly split based. The entire EAC Army intelligence community became a virtual task force. A combination of local and wide area networks united the geographically separated participants. Common standards and procedures allowed them to freely interact and simultaneously work common problems and issues.

#### Back to the Templates:

The templates were the priority. In Washington, the entire republican guard area, the breach area and the "left hook" area were updated daily from multiple national and tactical sources. This was in preparation for the ground battle. Updated templates were now transmitted to the AOR in under 2 minutes. The hardcopy shipments, competing for airframe space with the entire US VII Corps and the largest logistics move in history, were taking up to 21 days. Once in theater, the staff plotted the templates on large mechanical plotters. 513th analysts verified the accuracy. 30th Engineer Battalion (TOPO) specialist overprinted the electronic data on maps.<sup>4</sup> The overprinted maps, depicting the enemy locations down to individual tanks and fighting positions, were flown to units in theater.<sup>5</sup>

The templates were very successful. Army tankers reported engaging enemy tanks behind revetments at maximum range based on the templates. 1st AD talked of distributing the templates down to platoon leader level providing a virtual roadmap of enemy locations.<sup>6</sup> The 3rd Army after action report described the operation as "absolutely essential to make the top-to-bottom intelligence operation work".<sup>7</sup>

#### Other Capabilities.

While the templates were the priority, many other intelligence products and capabilities were available with the system. Battle damage assessment and targeting support was a daily occurrence. Daily Targeting lists were coordinated with USCENTCOM and the DOD-JIC via electronic mail. Actual graphics files depicting the 3rd Army assessment of Iraqi forces were transferred daily. By sending the actual data file, the Washington centers could plot out the graphic, eliminating the need to manually reproduce the file. This ensured all concerned were looking at the same picture thus reducing the possibility of violating data integrity. This information was crucial the process of deciding when to launch the ground war.

Megabytes of bulk data were transferred daily to "feed" all source processors in theater. This data came from various intelligence databases throughout CONUS. Technical drawings and information from the intelligence centers were transferred based on quick reaction taskings from the Desert. Network monitoring and remote support was critical. A real time, graphic display running in background on the AIANET server showed the status of all nodes. The theater elements always knew who they could talk to. Soldiers and civilians in CONUS maintained much of the system remotely. Every device on the network, except personal computers, was capable of remote access. This reduced the theater manpower requirements. Many other applications were also available and in use at the Echelon Above Corps Intelligence Center, EACIC, but are beyond the scope of this article.

#### Conclusions:

The Defense Intelligence Reorganization Act eliminated the Army Intelligence Agency on April 10, 1992. AIANET, and the lessons learned continue to live on. After the war, the US Army Chief of Staff, CSA, directed a post cold-war review of Army communications. A combination of the best aspects of AIANET,



Trojan Spirit and Hawkeye, represented the Army Intelligence community's solution to a large piece of the national to tactical intelligence dissemination problem. The result is the Army wide fielding of an enhanced "Trojan Spirit" system providing capabilities exceeding anything previously experienced,<sup>3</sup> and the full acceptance of Hawkeye into the main stream All Source Analysis System (ASAS).

"Trojan Spirit enhanced" was successfully demonstrated in the US Atlantic Command, USLANTCOM, exercise Ocean Venture 92. For the first time, deployed Army divisions and Marine Forces were able to interact with national databases over an internet. Strategic capabilities were now in the hands of battlefield commanders. Intelligence operations between echelons have no seam. The battlefield commander also had templates, similar to the Desert experience, but now totally electronic and constantly updated. During the Secure Tactical Data Network - 4 (STDN-4) Advanced Warfighting Demonstration in the summer of 1993 and again in 1994, the system demonstrated the joint inter-operability to strategic, operational, and tactical levels. As this article is being written, 9 of 13 systems are in use world wide supporting potential and actual military operations. This includes systems in Somalia, Southwest Asia and Haiti supporting ground forces and joint operations. The Army plans to field 38 enhanced "Trojan Spirit" systems to support split based intelligence operations for the force projection army of today and in the future. The US Marine Corps has requested 8 systems, and 6 are being built for JCS. It is no longer just an Army solution.

Terms like digital divisions and virtual brigades are common place today. The CSA has put marks on the wall to field digital combat units, with a computer in every vehicle and on every infantryman. The first major trial was held at NTC Rotation 94-07, the Advanced Warfighting Demonstration on Battle

Synchronization. Three TROJAN SPIRITS, including two of the advanced models, were an integral part of the effort. Bridging tactical and strategic communications system, it created a tactical internet. Operations mirrored the famous Internet. These SPIRITS, each with the ASAS prototype follow-on of HAWKEYE, and the Joint Deployed Intelligence Support System, JDISS, provided the digital links seamlessly between echelons. For the first time, Commanders at the Brigade and Battalion level had on-line access to all available intelligence. No one sat above him, deciding what he needs. He logged into a file server and "Pulled" data important to him - while on the move!

Another solution from the Internet was seen during Desert Capture. This one is revolutionizing the secure networks. It has already had it's impact on the Internet. XMOSIAC and Web Servers, called INTELINK on the secure networks, provides a common graphical interface to multi-media data. This opens up the network to all. Special training on unique methods of data access is no longer required. This appears to bridge the knowledge gap for those who did not grow up with computers.

The successes of Operation Desert Capture II can be directly attributed to a team of innovators from an earlier operation in the desert, Operation Desert Storm. Alvin and Heidi Toffler described it best: "It was improvised by a group of innovators who discovered how to bend the rules, end-run the bureaucracy and exploit off-the-shelf hardware and software to get the job done, promptly." Long live innovation and those who don't always accept the way it has always been.

"Opportunity is of great advantage in all things, but especially in war; and among the several things which have been invented to enable men to seize it, nothing can be more conducive to that end than signals." - Polybius (204BC to 122BC)

LTC John R. (Randy) Brooks is currently the Deputy Commander of the 111th MI Brigade at Fort Huachuca. His most recent previous assignment was as the Technical Director of the US Army Battle Command Battle Lab - Huachuca. He is a graduate of the United States Army Command and General Staff College. He received a BA in Political Science from The Citadel. He has served a variety of assignments as a Military Police Officer to include Company Commander of the 523rd MP Company, APG, Md and Deputy Provost Marshal 3rd Infantry Division, Wuerzburg, Germany. In his functional area, LTC Brooks has had various assignments in intelligence data handling systems to include Automation Management Officer, US Army Intelligence and Threat Analysis Center, Project Manager AIANET and Deputy Director of Information Management, US Army Intelligence Agency. During Operation Desert Storm, he served with the G-2 ARCENT, Riyadh, Saudi Arabia as the Chief of National Systems. He was recently transferred into the Military Intelligence Corps.

Major Charles (Chuck) McKeever is an Armor officer assigned to the Joint Staff. He received a BS in Criminal Justice from the University of Delaware and a MS in Systems Management from the University of Southern California. He is an Airborne Ranger and graduate of the US Army Command and General Staff College. He has served in a variety of Armor assignments to include troop commander of I Troop and HHT, 3/11th ACR, in Bad Hersfeld, Germany. In his functional area, he has been assigned as the Automation Management Officer, US ARMY Foreign Science and Technology Center. During Operation Desert Storm, he lead the CONUS based automation task force supporting Army EAC intelligence operations.

## PHOTOS

This photo depicts the rear of the Echelon Above Intelligence Center in Riyadh. The pickup truck contains the DoDex components. Beside the truck are two TROJAN Spirit satellite dishes. Various operations were conducted in the van to the rear of the truck.

This is the front of the Echelon Above Corps Intelligence Center operated by the ARCENT G-2 and the 513th MI Brigade.

Trojan Spirit Satellite terminals in Riyadh.

Local and wide area network components in the 3rd Army EACIC.

LTC Bob Staggers, Chief of Current Operations in the EACIC assisting a 513th MI Bde analyst on the AIANET terminal.

A recreated template. All original templates are still classified.

## ENDNOTES

1. For a more comprehensive description of the Army Intelligence Agency and its support to Operations Desert Shield and Storm, see Col Patricia H. Jernigan, "Army Intelligence Production: Challenge and Commitment," American Intelligence Journal (Summer 1992):71-77.

2. Many benefits were immediately derived from this concept. Analyst could remain at their desk, in their centers, with access to their paper files, libraries, co-workers and scientific and technical systems. The number of analyst required to travel to the Washington area was significantly reduced, in fact some analyst were able to return home. The morale of the already over worked staff increased.

3. The "personal computer-based local area network" discussed in the article by LTG Harry E. Soyster "Extending Real-Time Intelligence to Theater Level," Signal Magazine (September 1991): is actually the AIANET system.

4. Major Edward J. Wright "The Topographic Challenge of Desert Shield and Desert Storm," Military Review (March 1992):30-41.

5. The templates once overlaid on maps frequently lost their identity as intelligence products. the 30th Engineer Battalion (TOPO) had its logo on the product which identified it as an engineer product. Subordinate commands cut the product into battalion and company size areas further changing its original identity. In LTC Gregory Fontenont's article "The Dreadnoughts Rip the Saddam Line," Army (January 1992), a template is described as a Brigade S-2 product. The overlay pictured on page 32 of the article appears to be part of or derived from the 26th Iraqi Division overlay received in 3rd Army from AIA just days earlier. The article compares the template to a captured Iraqi overlay. The accuracy is unquestionable. In the DoD Final Report to Congress on the Conduct of the Persian Gulf War dtd April 1992, the following statement was made "These templates were valuable tools for unit-level intelligence officers during the ground campaign. Often, these products were of greater detail and accuracy than captured Iraqi overlays of the same positions. Templates were distributed to all Coalition forces involved in the ground campaign.." Major Ronald Newton, 1st of 3rd Special Forces stated "We trained on sites constructed from the templates. This was important to us." The templates are documented in yet another "official" publication. On page 166, Certain Victory, by BG Robert H. Scales, Jr, there is a portion of the Tawakalna Mechanized Division Template from 15 February 1993. On Page 165, the book states "One of the most successful examples of their extraordinary effort was the series of tactical

"templates" produced by the Army's Intelligence and Threat Analysis Center (ITAC)."

6. Comments range from very favorable to terrible about the templates availability. Those that got them like them. Some of the documented comments included the following: "We were able to get (intelligence) about 14 hours before we hit the Tawakalna (Division) showing exactly where and how they were set up...We knew what they were going to do before the average Iraqi soldier did," Steve Vogel, "A Swift Kick," Army Times, (August 5, 1991) "The failure of brigade to disseminate a corps intelligence overlay of the Norfolk area that it had received prior to the start of the ground war could have had serious consequences. When Schulte caught up with the task force and handed over the three-week-old overlay, it proved useful. However, time to study it before the attack would have revealed orientation and composition of key enemy positions, enabling the task force to conduct the attack with far more confidence and a great deal less confusion." LTC Gregory Fontenont "Fright Night: TF 2/34 Armor," Military Review (January 1993):38-51. "The reason we destroyed the 48th (Republican) Guards...with minimum casualties..(was) the templates," Alan D. Campen "Electronic Templates," The First Information War: AFCEA International Press (October 1992):75-79. "Because we had given (templates) an update the day before, they knew what was in each site...When the attack started, not many Iraqi units had moved. It was extremely accurate," "After Action Review: 1st Armor Division," Army Times (September 16, 1991).

7. Major General John F. Stewart, Jr., "Desert Storm, The Military Intelligence Story: A View from the G-2, 3rd U.S. Army." (April 1991).

8. Trojan Spirit and Hawkeye is another whole story. The phenomenal success of these systems supporting echelons below Army is described by MG Paul E. Menoher, Jr. "Responsive Communications Key to Army Intelligence," Signal Magazine (October 1991):

9. Alvin and Heidi Toffler, War and Anti-War; Little, Brown and Company, New York, NY. p 76.

# THIRD INTERNATIONAL SYMPOSIUM: NATIONAL SECURITY & NATIONAL COMPETITIVENESS: OPEN SOURCE SOLUTIONS Proceedings, 1994 Volume I - Link Page

[Previous](#)      [NAIC & the Intelligence Community Open Source Architecture](#)

[Next](#)      [Cyberglut. And What To Do About It Carol Ann Ogdin and Art Giser, -Deep Woods Technology](#)

[Return to Electronic Index Page](#)