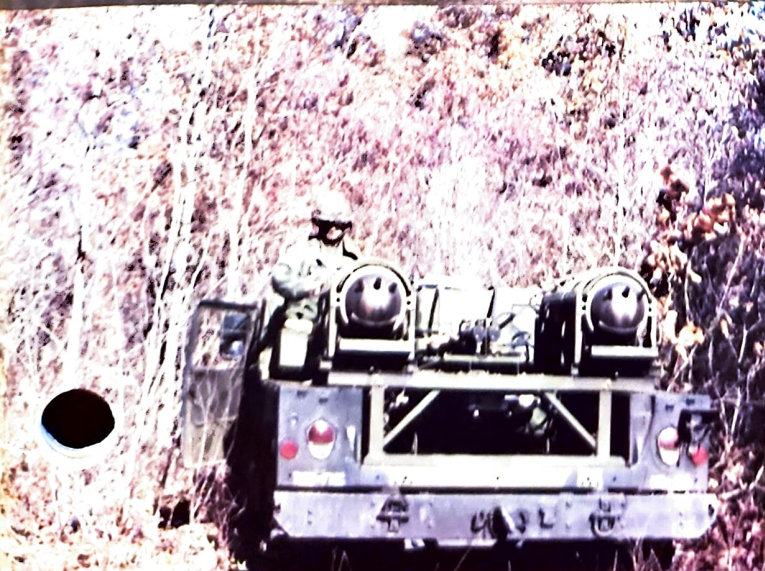


Smokin'!

CAAR ARMY CHEMICAL REVIEW CVL

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CML Army Chemical Review is prepared twice a year by the US Army Chemical School, Fort McClellan, Alabama. CML presents professional information about the Chemical Corps functions related to nuclear, biological, chemical, smoke, flame field expedients, and NBC reconnaissance in combat support. Objectives of CML are to inform, motivate, increase knowledge, improve performance, and provide a forum for the exchange of ideas. This publication presents professional information, but the views expressed herein are those of the authors, not the Department of Defense or its elements. The content does not necessarily reflect the official US Army position and does not change or supersede any information in other US Army publications. Use of news items constitutes neither affirmation of their accuracy nor product endorsement. CML reserves the right to edit material.

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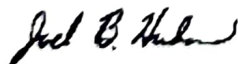
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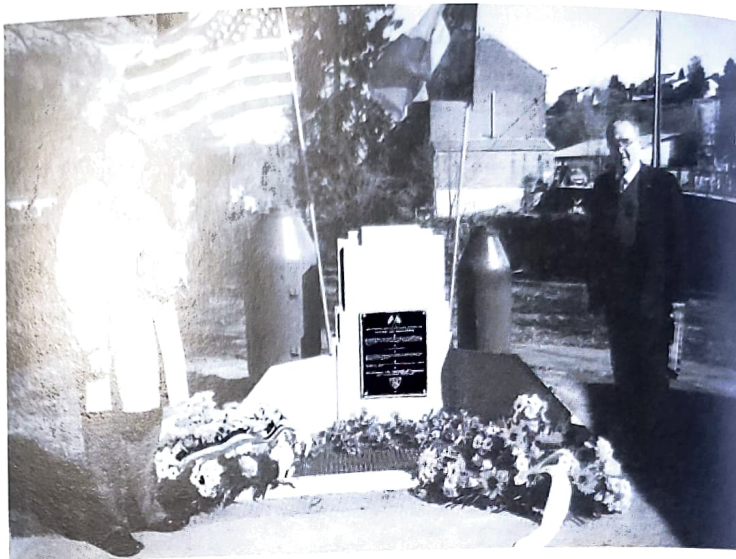
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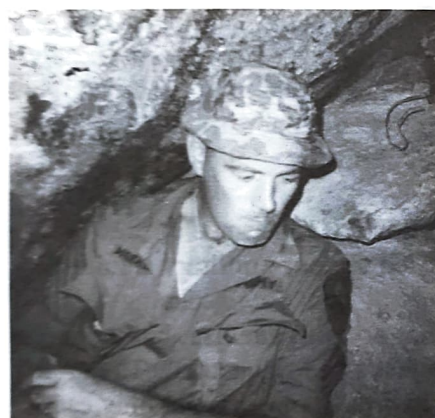
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Cover photos by Richard S. Corkan, Fort McClellan, Alabama, were made 4 November 1997 at Fort Leonard Wood, Missouri (see page 2). Cover photo (lower right) by Fort Leonard Wood Training Service Center.

Chief of Chemical



MG Ralph G. Wooten

On 4 November 1997 we made history in Fort Leonard Wood, Missouri, by conducting a flawlessly executed smoke demonstration for the local citizens, command officials, news media, environmental representatives, and the Engineer Command. As CPT Lydia Combs, demonstration OIC, explained the scenario being enacted on Range 28, our Dragon Soldiers from the Directorate of Training, operating three M157A2 smoke generator systems demonstrated both mobile and stationary smoke for an audience composed mainly of people who had never seen smoke training.

This demonstration served its purpose well. It allayed many fears and concerns of residents, relative to the safe and environmentally sound use of smoke, who are aware of our approaching move to Fort Leonard Wood. I was able to answer their questions and address their concerns on the effect of our training on the environment, and the impact we may have on overall quality of life at Fort Leonard Wood. We were well received and supported and the community reaction to our effort was very positive.

As we continue to meet or exceed each milestone in our transition from a single school concept

here at Fort McClellan to the new three schools Maneuver Support Center, we again have the opportunity to make history, not just observe it. As we know, the only true constant is change and changes are occurring more rapidly now than ever in the history of our Army.

Traditionally, the NBC threat has been equated to weapons of mass destruction. While still true, there are many other hazards of strategic significance. These hazards include (but are certainly not limited to) terrorist use of CB weapons, the use of information operations to create a "cyber NBC attack," genetic engineering to create even more deadly biological agents, smoke and obscurants that blind our systems while leaving an enemy unobstructed, and low-level hazards that could produce long-term health problems for our force.

In fact, the geopolitical significance of these threats can far outreach the pure military significance of their damage or casualty producing potential. It is also true that not only the use, but the mere threat of use can be just as consequential. The proliferation of weapons and technology is not only causing the NBC threat to increase in probability of occurrence, but to spread into strategic venues previously not considered a risk.

How do you defeat an Army based on a force protection strategy? Prevent that force from being projected. NBC defense is thus no longer an operational concept reserved for total war, it is a concern throughout the spectrum of conflict and, therefore, is both a force protection and force projection concern.

As you read the articles in this publication, you will find examples of how our Corps provides support to the warfighter (NBC defense, smoke, recon, decon), which allows our forces to fight and win in an NBC environment. It is our duty to perform these tasks well if we are to accomplish the Chemical Corps mission in the 21st Century.

Dragon Soldiers!



A Small Town in Belgium —the 86th remembers

By COL (R) James J. Doyle

On April 21, 1997, in the Ville de Limbourg, Province de Liege, Belgium, a special event occurred that brought a few people from two nations closer together by remembering actions in World War II and honoring the participants. The participants were the 86th Chemical Mortar Battalion, US Army, and the people of Dolhain, a small village on the outskirts of Limbourg, who extended their friendship to the unit.

The 86th Chemical Mortar Battalion was equipped with large mortars that were fired in close support of the infantry. In the bitter cold winter months of 1944-45, the unit was in fierce action in the Hurtgen Forest area of the Ardennes. The front lines were fairly static so mortar positions did not have to be changed, often resulting in fewer men being required to man the mortars. With this in mind and the exposure of the men to the severe weather, it was decided to rotate part of each mortar crew to the rear for a few days rest. A wool degreasing and washing plant was found in Dolhain that had a good water supply

and large boilers for heating. The large building could be heated and hot showers provided. There were large heated areas for sleeping and eating. The off-duty men received hot food, clean clothes, movies, and sometimes a USO show. They were able to stroll around the Dolhain area without fear of being shot at. The rotating officers were billeted in private homes and many lasting friendships developed.

Some years ago a few of the 86th veterans established the 86th Chemical Mortar Battalion and continue to enjoy yearly reunions. About two years ago they decided they would like to honor the 86th with a

monument in Europe. The Dolhain area was chosen as the place to put it, if possible, since more time was spent there than any other place.

Contact with the Limbourg Bourgmestre, Serge Sevrin, was established. He was most encouraging and cooperative, advising that Limbourg would provide a suitable place and a monument for the commemorative plaque the 86th envisioned. The 16x20-inch brass plaque was designed and made and plans for its dedication were developed for April 21, 1997. LTC (R) William T. French, CSM (R) George Murray, and COL (R) and Mrs. James J. Doyle were to travel there to represent the 86th.

The special event began with a 9 AM reception at the city offices in Limbourg. Those present were Bourgmestre Sevrin and his staff, Limbourg Ville Council, a small local brass band, and invited citizens of the Limbourg-Dolhain area, many of whom were elderly and remembered World War II. Some of the men wore well-kept parts of U.S. Army uniforms. Many old photos were shown, bringing back lots of memories. There followed a time of refreshment and fellowship—where few words were understood, but firm handshakes, smiles, memories, and the evident sincerity accomplished all the interpreting necessary. After the reception, a convoy of two World War II Jeeps, an Army truck carrying the band, and cars were formed and traveled through Limbourg to a small, beautiful triangular-shaped park alongside the road to Dolhain. From the site you can see the wool washing plant down the road. Across the road a little river bubbled along, accenting the springtime green of the park. There, in the middle of the park, was the beautiful monument with the plaque attached facing Dolhain and covered with Old Glory. Around the monument were men in their makeshift uniforms holding the Belgian, Ville de Limbourg, and US flags.

The ceremony began with the band playing the Belgian national anthem followed by the Star Spangled Banner. Bourgmestre Sevrin made a welcoming and honoring speech and translated the words on the plaque. Then COL Doyle responded, thanking the Bourgmestre, the council, and the citizens for their hospitality, their generosity in providing the location and monument at no cost to the 86th, and for their remembering.

COL Doyle then lifted the US flag from the monument and accepted the flag as a token of remembrance. After stirring music by the band the ceremony concluded. All the audience closely inspected the monument and spoke approval. Hands were again shaken, smiles exchanged, and memories shared.

The words on the plaque honor and remember the 86th Chemical Mortar Battalion and its 40 men killed in action against the enemy. It honors all the men who served valiantly through 315 days of constant combat in all five major battles in the European Theater of Operations (including the Ardennes and the Battle of the Bulge) and its 366 wounded and 198 decorated. It pays tribute to the people of Dolhain for friendship and hospitality, despite the war's hardships.

The last words on the Plaque are: *We carried the torches of freedom and friendship forward.* Surely on April 21, 1997, we did it again. The 86th and the United States efforts in World War II are and will always be remembered by our friends, the Belgians.

Lineage and Honors

The 86th Chemical Mortar Battalion was constituted 4 May 1943 in the Army of the United States as the 86th Chemical Battalion (Motorized). It was activated 17 May 1943 at Camp Swift, Texas. On 19 Oct of that year it was redesignated the 86th Chemical Battalion Motorized. On 15 Feb 45 it was redesignated the 86th Chemical Mortar Battalion. It was inactivated 1 Nov 46 at Camp Campbell, Kentucky.

Its battle honors (all World War II) include Normandy, Northern France, Ardennes-Alsace, Central Europe, and the Rhineland.

The unit received numerous decorations: Companies B and C authorized distinguished unit streamer embroidered Hurtgen Forest. Companies A and C authorized streamer in the colors of the Belgium Croix de Guerre embroidered Ardennes. Company C authorized streamer in the colors of the Belgium Croix de Guerre embroidered Elsenborn Crest. Company C authorized Belgium Forragere in the colors of the Belgium Croix de Guerre.




A Time When...

—chemical units saw more action than infantrymen


By LTC Robert L. McNamara

The world was in turmoil... An ultra-nationalistic strongman had initiated unprovoked military hostilities and violated internationally recognized territorial and sovereign boundaries. Home defense forces were unable to stem the torrential flood of invaders. Innocent civilians were routinely massacred and human rights wantonly disregarded.



In response to this maniacal onslaught, the international community rapidly assembled its collective political, economic, and military bases of power. Political and economic initiatives repeatedly failed to dissuade the aggressor to cease hostilities and to retreat from the violated territories.

Accordingly, coalition leaders directed their military forces to prepare to conduct a massive counterattack that would unequivocally dislodge the aggressor and his forces. Force planners and logisticians recognized that they would have to "...create, field, and supply an organization that could decidedly engage and defeat the worst counterattack the enemy was capable of devising."



Included within the multinational forces task organization was a massive array of US units. As expected, US ground forces provided a bulk of the military manpower for the counterattack operation, including elements of the VII (US) (Jayhawk) Corps as well as the 1st, 82d, and 101st divisions. In preparation for the counterattack operation, international intelligence reports highlighted the determination and skill of the enemy's battle-hardened veterans. Notably, entrenched enemy forces were not only well-equipped with modernized mechanized and armored forces—but, their arsenals allegedly contained deadly chemical and biological weapons of mass destruction as well.

To offset the enemy's capabilities to thwart the impending international task force's counterattack through the use of weapons of mass destruction, US chemical warfare personnel, materials, and equipment were hurriedly transported into overseas assembly areas. Upon arrival into these assembly areas, chemical units began their final pre-combat training and assault preparations.

These units were not only well prepared to take up their wartime specialty duties as required, but they were also prepared to execute a number of other non-specialty tasks to directly support the combined arms forces. Thus, the historical background was set for the counterattack, operation into...not Kuwait, into Normandy to liberate Europe.

US Chemical Warfare Service (CWS)-trained troops and units continuously provided smoke, flame, and incendiary support to Allied forces assaulting Normandy's beaches and accompanied combat forces in the frantic race east toward Berlin.

Of the 139 chemical units operating in the European Theater of Operations, undoubtedly the average infantryman's closest contact with the CWS was through the 4.2-inch chemical mortar. A direct descendant of the British-designed World War I Stokes mortar, the 4.2-inch chemical mortar became the "...infantry commander's hip pocket artillery."



Stokes Mortar Firing Gas Shells, World War I.



4.2-inch chemical mortar crew in action.




Chemical Warfare Depot, Loton Deer Park, England.

This is quite a remarkable achievement; until 1942 the mortar's primary mission was to fire toxic agents and smoke munitions. In March 1943 permission was granted for high explosives to be fired by the 4.2-inch mortar. This clearance permitted the combat employment of the 4.2-inch mortar into a new critical role—that of non-gas warfare operations.

The aim of this article is to highlight and commemorate the histories, combat preparations, and combat operations of the four chemical mortar units that had arrived in England by D-Day—the 81st, 86th, 87th, and 92d Chemical Mortar Battalions. These 622-man units and their fellow CWS chemical mortar battalions, doggedly and heroically engaged the enemy across all fronts and often "...saw more action than many infantrymen."

Unit Histories

The 81st Chemical Mortar Battalion was activated on 25 April 1942 at Fort Russell, Texas. One of the better trained chemical mortar battalion units, the 81st conducted unit-level training at a number of sites to include: Fort Russell; the Louisiana Maneuver Area; Camp Johnston (Florida) for amphibious training; Camp Pickens (Virginia); and Camp Bradford (Virginia), for a total of 534 training days (ultimately, the battalion would see action in a total of 336 days of actual combat). Upon completing this stateside training, the 81st was the first mortar battalion to be sent to the European Theater of Operations. Arriving in England on 22 October 1943, the 81st immediately began its additional in-country training.




The 86th Chemical Mortar Battalion was activated on 17 May 1943, at Camp Swift, Texas. Before its departure for the European Theater of Operation, this rapidly assembled unit was afforded 329 total training days on-station at Camp Swift. The 86th arrived in England on 14 April 1944.

The 87th Chemical Mortar Battalion was activated on 22 May 1943, at Camp Rucker, Alabama. The 87th capitalized on a lengthy training period at home station as well as a rotation through the Tennessee Maneuver Area for a total of 303 training days prior to embarking for England. The 87th arrived in England 2 weeks before the 86th—on the 31st of March 1944.

The 92d Chemical Mortar Battalion was activated on 9 February 1944 in England (available records do not indicate an exact location). Unit-level training was conducted in-country from 9 February 1944 through 17 June 1944—128 training days.


Combat Preparations



The Bolero buildup in Britain, commencing in 1942, to arm and provide for the 39-division invasion force (20 American, 14 British, 3 Canadian, 1 French, and 1 Polish division) included the establishment of CWS training facilities and munitions storage depots throughout England. The scale of these operational and logistical demands on the CWS was staggering. The US fighting strength alone doubled during the 6 months between 1 January 1944 (774,000 men) to 1 June 1944—the week before the invasion (over 1,537,000 men).

This heavy concentration of American and British strength and materials in the United Kingdom presented to the Germans an excellent series of targets for vesicant gases. To meet these requirements for the invasion force in general, as well as the four Chemical Mortar Battalions in detail, in-country CWS training schools were organized and chemical storage depots were constructed and stockpiled with CWS munitions.

CWS training operations for non-chemical and chemical US Army units were coordinated under the auspices of the 142-authorized American School Center at Shrivenham. This centralized theater-level center, though not a CWS-specific school, did afford access to better facilities, training areas, and equipment than a single CWS school could achieve.



A separate CWS training division was later established in June 1943 at Cheltenham to provide chemical warfare training for the approximately 375,000 services of supply troops who were responsible for super-

vising all aspects of theater logistics. The 81st Chemical Mortar Battalion, arriving in-country during October 1943, began its additional individual and unit-level training programs with the assistance of CWS training operations personnel stationed at the American School Center at Shrivenham. From December 1943 until April 1944 the 81st participated in a series of exercises at the Assault Training Center in Devonshire as well as maneuvers along the western and southern coasts of England.

The 87th likewise participated in two amphibious training exercises in England during the spring of 1944. As a direct result of these England-based amphibious training exercises, both battalions were temporarily augmented with 125-men detachments to ensure their 48 mortars would be effectively placed into action during the Normandy landings.

The 86th, also located in an assembly area in southwestern England, literally “hit-the-ground-running,” conducting a number of combined arms training exercises within local training areas. The 92d, activated in February 1944, had to start its training program “on the move.” Mortar range firing was conducted during April-May 1944, culminating in an intensive training exercise with a field artillery group. Neither the 86th nor the 92d were able to complete amphibious assault training (similar to the 81st and 87th) before the invasion, and as a direct consequence did not participate in the D-Day landings.

During the last 6 months of 1943 the CWS, in coordination with the Services of Supply, established chemical sections in a number of general depots to include: Barry, Glamorganshire; Hilsea, Hampshire; Westbury, Wiltshire, and Histon, Cambridgeshire. Chemical sections within the general depots provided procurement, storage, and issue of chemical material to non-chemical and chemical units alike.

The CWS, during November 1943 alone, activated chemical ammunition depots at Shepton Mallet, Somersetshire, and at Loton Deer Park, Alderbury, Shropshire. These facilities, well dispersed throughout the countryside, were well equipped to provide storage and issue of a number of munitions. The Loton Deer Park facility, the largest CWS ammunition storage facility in the United Kingdom, was capable of storing a wide array of incendiary munitions, air force toxic munitions, and ground forces ammunition (to include the 4.2-inch chemical mortar).

It was from these general and ammunition storage depots that all units, to include the four chemical mortar

battalions, received their final contingency stockpiles for the impending Allied attack.

Final combat preparations encompassing in-country training and logistical resupply were now completed; and all units anxiously awaited the signal to assemble the invasion armada.

Combat Operations

The dawn of 6 June 1944 was greeted by the largest fleet of men, material, and equipment ever assembled in the history of mankind. "They came, rank after relentless rank, ten lanes wide, twenty miles across, five thousand ships of every description," wrote one reporter accompanying the invasion fleet.

The 81st and 87th Chemical Mortar Battalions were among the first units to assault the beaches at Normandy on D-Day. The 81st suffered heavy casualties when their transports were sunk en route to Omaha beach. Beachhead operations against determined German defenders resulted in additional casualties to include the unit's battalion commander who was seriously wounded.

Despite these losses, the battalion's mortars were able to fully support advancing units as they "...knocked out machine gun nests, laid screens for the attacks and advances of the infantry, and broke up enemy counterattacks with massed fire." In its 22 months overseas, the 81st fired 212,573 rounds, supported 22 divisions, received 5 campaign credits, and suffered 41 killed in action and 157 wounded in action. Unit records indicate the battalion's personnel received the following awards: 6 Distinguished Service Crosses, 29 Silver Stars, 98 Bronze Stars, 4 Croix de Guerre, 328 Purple Hearts, and Presidential Unit Citations.

The 87th provided direct support to VII Corps units, landing on Utah Beach at H-Hour alongside of the infantry. Within minutes, the battalion's mortars were placed into operation. It was during this phase of the assault that the 87th's mortars were credited with destroying four German 88mm guns (each weighing 5 tons as compared to the 300 pounds of the 4.2-inch mortar). In its 16 months overseas, the 87th fired 184,010 rounds, received 6 campaign credits, and suffered 84 killed in action and 211 wounded in action.

The 86th and 92d Chemical Mortar Battalions joined in the Allied buildup to break out of Normandy in early July 1944. While advancing across Europe, the 86th participated in 10 months of almost continuous combat

firing over 152,000 rounds of high explosive and smoke. Extremely versatile, the unit provided direct support to 21 different infantry divisions of the First, Third, and Ninth Armies. The 86th spent 15 months overseas, received 5 campaign credits, and suffered 39 killed in action and 255 wounded in action. The 92d fired 7,000 rounds, over a continuous 14-hour period, while supporting the 35th Infantry Division's breakthrough at Saint-Lo.

During the 30th Infantry Division's assault against the Siegfried Line, the 92d's mortars provided critical support to units operating only 100 to 1,000 yards to their front. Spending 18 months overseas, the 92d fired 149,502 rounds, received 4 campaign credits, and suffered 42 killed in action and 132 wounded in action.

Summary

The European Theater of Operation order of battle called for 12 chemical mortar battalions to conduct wartime operations. In responding to this requirement, only the 81st, 86th, 87th, and 92d Chemical Mortar Battalions were within the theater in time to provide support for the critical Normandy landings. Reaching the European Theater of Operation only a short time before the commencement of hostilities, these battalions were able to draw extensively upon England's training infrastructure and logistical resources.

Relying heavily upon gained experiences and confidence, these highly decorated units supported every type of ground combat unit while surviving some of the most bitterly contested actions of the war. The final testimony to their combat preparedness was their days in line versus total time in theater ratio—"...a record which is exceeded by few, if any, other organizations in the Armed Forces."

LTC Robert L. McNamara is currently assigned as the Commander, 82d Chemical Battalion, Fort McClellan, Alabama. Previous assignments include US Army Chemical Corps Personnel Exchange Officer to the United Kingdom's NBC Defence Centre at Winterbourne Gunner, Salisbury, England; Chemical Branch majors assignment officer, PERSCOM; Operations Officer, VII Corps Chemical Section, Germany and Saudi Arabia; Company Commander, 761st Chemical Company (Smoke/Decon), 7th Infantry Division (L); and Regimental Chemical Officer, 9th Infantry Regiment, 7th Infantry Division (L). He is a graduate of the Air Command and Staff College, the Command and General Staff College, the Chemical Officer Advance Course, and the Quartermaster Officer Basic Course.



NBC

and the JRTC EXPERIENCE

By MAJ Chuck McArthur

The Joint Readiness Training Center (JRTC) offers a wide variety of chemical challenges for a maneuver brigade and light forces during a rotation. Many of the skills necessary to survive in an NBC environment are put to the test at the center. For years it was common practice to hear units jokingly say "NBC - Nobody cares." Now with the vision and support of the JRTC's leadership, NBC event integration into rotations at the JRTC is alive and well.

The opposing force (OPFOR) is an outstanding training tool that assists with setting the conditions for NBC play at JRTC. The use of chemical agents by the OPFOR on the battlefield is a viable threat. Each chemical attack the OPFOR executes has a clearly defined task and purpose that is doctrinally sound. The basic OPFOR objective is to desynchronize the brigade's combat operations and the use of chemical munitions is a way this is executed.

Many light units depart JRTC with a new-found appreciation of NBC as a combat multiplier on the battlefield and the potential it has to unhinge their ground tactical plan. Our observation is that units are conducting little NBC training at home station prior to their deployment to the JRTC, or they execute an intensified NBC train-up just prior to deployment. The JRTC is the place to execute the skills that you trained on at home station. NBC skills are tough and perishable. We cannot expect soldiers to retain skills that are not sustained through repetition. In the event of a chemical attack, many of the necessary skills are a conditioned response facilitated by good sound training at home station.

During *Operation Desert Shield/ Storm* we had the luxury of having an extended period of time to train up on perishable NBC skills prior to the start of the ground war. In our next fight, given the world situation, the availability of weapons of mass destruction, and the

technology to design and build such weapons, we may not have this luxury.

A terrorist chemical threat looms just over the horizon. Since terrorist factions today are more active than in the past, there is an increased number of supporters who readily provide financial as well as technical support. It is only a matter of time before we see the employment of chemical devices by terrorists against US interests or forces. Will we be ready?

The JRTC OPFOR

The OPFOR at the JRTC currently possess no nuclear or biological capability. They can use virtually all their weapons systems, which include artillery, aerial bombs, missiles, and aerosol sprayers, to deliver limited quantities of chemical agents. Artillery systems 122mm and higher provide the OPFOR commander the capability to easily range rotational units while in the maneuver box.

The OPFOR air force is capable of employing chemical agents from fixed and rotary wing aircraft. Persistent and non-persistent chemical agents replicated at JRTC include nerve Tabun (GA), Sarin (GB), and Mustard-Lewsite (H and HL). Some nerve agents can be thickened with various substances to increase persistency. All these agents are realistically portrayed at the JRTC with real world persistency times.

Additionally, the chemical terrorist threat is replicated with great detail. The OPFOR has the technology to construct a number of terrorist-delivered devices, with components acquired from the surrounding industrial and agricultural areas. The OPFOR conducts an extensive recon campaign against rotational units to identify priority targets and key nodes. Furthermore they identify units that have weak force protection measures in place. These units are normally high value targets for attack.

Intelligence Preparation of the Battlefield

Although trained at our chemical schoolhouse, chemical personnel in the brigade task force routinely conduct limited or no chemical intelligence preparation of the battlefield (IPB). This is attributable to a number of reasons, including unfamiliarity by chemical personnel with IPB and the products they should exit the process with, weak integration between the S2 and chemical cells, chemical personnel being overwhelmed with other tasks such as battle captain or NCO, and not being given the proper amount of time to go through a detailed process. Many chemical personnel wait until they arrive at the JRTC to start their IPB. I submit that at this point it is already too late. It is possible to start this process while at home station and update products while in the intermediate staging base. Country studies are sent out to the brigade at home station prior to its rotation at the center.

Most chemical personnel in the brigade task force do not follow a structured IPB process. They tend to jump around and often overlook key and essential information. With a structured process, chemical staffs should exit the IPB process with, as a minimum, a chemical template depicting their best estimate of

potential strike locations based upon OPFOR employment doctrine and capabilities. This chemical template is a tool that the chemical officer can later use to plan decon and NBC recon to counter the OPFOR's employment of agents. It is also a good tool for chemical personnel to carry into the mission analysis process and use as a road map to predict expected OPFOR activity.

It is paramount that chemical personnel integrate their analysis of the potential OPFOR chemical actions with the S2. During mission analysis, often the S2 and chemical officer present a disjointed assessment of what the chemical potential is, sometimes resulting in the commander losing confidence in the chemical officer. Often he will go with the S2's assessment of the battlefield.

The chemical officer and S2 must be integrated. As the brigade chemical officer pushes information down to the battalion chemical officers, these battalion chemical officers must brief their battalion commanders with confidence and believability. If a battalion commander has received a different assessment from the brigade S2, there is a tendency to disregard his own chemical officer's assessment. This results in a loss of credibility and future disregarding of the chemical officer's assessment. It also results in repeatedly verifying key information about the chemical threat and wasting precious time. By the time the information is verified and action is taken, it is often too late.

NBC Annexes

Another area requiring attention is the production of NBC annexes. Many brigade task forces elect not to include an NBC annex in their orders. A strong argument exists for writing an annex versus using a matrix order. The use of an annex allows chemical personnel to completely relay all the key and essential information about the chemical threat and the actions to be taken in the event of a chemical attack. The matrix order limits the amount of information that can be passed on to units. Key and essential information such as task organization, chemical logistics (fog oil resupply, MOPP gear, and CDE issues), chemical decon sites, and templated strike locations are often omitted.

The chemical officers at brigade have a good idea about these topics but fail to get the information out and down to all levels in the



Many of the skills necessary to survive in an NBC environment are put to the test at the JRTC.

form of an NBC annex. The chemical annex is key and essential to synchronizing the chemical fight. An additional tool, seldom used by chemical officers, is to have their subordinate chemical personnel conduct briefbacks.

These processes tend to help deconflict any problems associated with the annex. Rehearsals also could help solidify the chemical fight for the brigade task force. During this past year, I have not seen a single chemical rehearsal. After coaching, select units are starting to conduct backbriefs. This also applies to the chemical platoon and Fox recon assets that may be supporting the brigade task force.

NBC Battletracking

Repeatedly we see instances in which task force chemical personnel consider their task complete once their respective order is finished. The publishing of the order is only about 40 percent of the task. The other 60 percent is mission execution. Included in mission execution is NBC battletracking. Many task force chemical personnel deploy with minimal chemical battletracking systems and charts.

The reality however, is that battletracking goes much deeper than charts. First, the charts many chemical personnel produce cover only marginal information such as the brigade or battalion overall MOPP level or decon sites. This information is routinely grouped with other tactical information around the current operations map. Battletracking information such as the brigade MOPP level must reflect all the organic and attached units operating in the brigade. The trend we normally see is that commanders want to limit the amount of charts around the current operations map, but as the NBC threat escalates the NBC battletracking charts should migrate to a prominent place in the TOC. This allows the battle captain to stay abreast of the NBC status of the brigade or battalion task force. It also lets the various BOS representatives and liaisons in the TOC have access to the information and continually update their units.

A large number of chemical personnel make the mistake of not using the BOS representatives or liaison officers in the TOC. These people are an important



Many light units depart JRTC with a new-found appreciation of NBC as a combat multiplier on the battlefield.

piece of the battletracking process and cut down on the time chemical personnel must spend on the phone or coordinating directly with units. Many times the brigade task force upgrades MOPP levels and all elements don't get the word, resulting in high casualty numbers. This is largely due to there being no credible battletracking system for the detailed tracking of MOPP levels in the task force.

Often visibility of chemical assets in the brigade task force is lost. Since the battle captain and battle NCOs are involved in the current fight and tracking maneuver units, chemical personnel must track NBC assets and update other statuses which include unit locations, movement times, mission complete times, and (possibly) the last time that element was heard from.

We have seen chemical assets go for days without someone in the TOC worrying about the last time they were heard from. Obviously no suspicion is raised. In many cases chemical assets had been engaged in some significant combat action and suffered heavy casualties. The OPFOR had taken the vehicles as their own and moved out. Sometimes the OPFOR enjoys employing chemical dual-purpose vehicles in the smoke role and effectively producing more smoke than anyone in the brigade task force.

At the JRTC we promote the use of a battletracking book since chemical personnel can't get space in TOCs

to post status charts to conduct effective battletracking. The book should be broken down into sections containing information such as:

- Current NBC annexes and plans
- Staff Journal for the tracking of NBC related activity and coordination
- NBC intelligence
- NBC estimate information, and
- The statuses of intensively managed NBC information (MOPP levels for all assets, NBC decon sites and their status, CDE, etc.). In case the chemical officer/NCO at brigade or battalion level are unavailable or are casualties, someone in the TOC can pick up the book and carry on.

Finally, it is important to mention that the battletracking process is only as reliable as its last update. In many instances chemical representatives are unwilling to make the effort or cannot see the importance of keeping battletracking systems updated—until a crisis arises. Then they cannot find an asset on the battlefield. On many occasions we have seen rotational chemical personnel at brigade and battalion lose track of chemical assets and be unable to redirect them based upon mission changes.

NBC Asset Integration

Smoke. The struggle to integrate NBC assets in support of combat operations is a difficult one. The majority of rotational units are reluctant to employ motorized smoke assets on the battlefield. This is largely due to two reasons: a lack of training at home station as a combined arms team with supporting smoke assets, and a lack of knowledge at battalion level on how to properly employ them. Many commanders as well as soldiers are uncomfortable in employing smoke as a combined arms asset. When smoke assets are task organized to battalions, we often observe them idly sitting by as the battalion executes its mission. The brigade chemical officer must assist the young battalion chemical officer, who normally does not yet have the experience necessary to properly integrate smoke assets in the battalion fight.

Decontamination. Rotational unit integration of decon assets is done rather well. This is because decon platoons are maintained under brigade control during high NBC threat periods. The brigade chemical officer is able to coordinate the actions of the chemical platoon directly with the platoon leader. There are a few things that the brigade chemical officer can do to increase the brigade's chances of success during a chemical attack:

- Have the chemical platoon leader backbrief his understanding of his mission and then once he writes his platoon order, backbrief him on the plan

- Conduct a chemical rehearsal with task force chemical personnel to discuss key chemical actions, and

- Have battalion chemical officers provide copies of their NBC annexes and their plan for decon. The execution of a decon mission as a result of a chemical strike is a brigade fight, normally because a chemical strike affects the entire brigade in some fashion. Furthermore, the brigade TOC is the best place to C² this fight.

The integration of decon assets include shortfalls—many units do not understand that a chemical platoon needs augmentation to execute its mission. Although augmentation is planned, it usually fails to arrive. Rotational units require their soldiers to operate the personnel decon portion of decon sites, but they are not trained and usually fail to deploy materials to set up or operate the stations.

Reconnaissance. Normally brigade task forces deploy with two Foxes led by a staff sergeant. Some brigade operations officers place the Fox assets under the chemical platoon leader because they are unfamiliar with how the Fox is employed. This results in an additional task of employing recon assets for the chemical platoon leader, in addition to his smoke and decon assets. Another layer is added and the Fox squad leader finds himself left out of providing input on how to properly employ his asset. Usually, maneuver battalions have little or no idea how to employ the Fox on the battlefield. Foxes function better if left under brigade control and dispatched with escorts to areas of interest.

Additionally, we find that the NBC recon plan is not tied to the NBC template (product of IPB) and is not integrated with the S2s collection plan. It does not take a Fox to cover every chemical NAI on the battlefield. Finally, little or no discussion is given to anti-fratricide measures, setting the Fox and its crew up for certain peril.

Force Protection

The issue of force protection surfaces repeatedly during rotations. We stress to rotational units that they must fight a 360-degree fight, meaning that enemy forces are all around. OPFOR forces may take on the identity of terrorist in the low-intensity fight or conventional forces in the mid-intensity fight. These forces

have a well-developed intelligence gathering capability and rapidly pass information to the OPFOR commander, allowing him to gain an accurate understanding of the disposition of rotational unit forces. Stationary or poorly defended units become high priority targets for the OPFOR. The OPFOR commander then decides what type of means he wants to engage the targets with, one of those being chemical munitions delivered either by terrorist or conventional means.

Rotational units continue to suffer high casualties as a result of terrorist and conventional chemical attacks. MOPP discipline is a key contributor to casualties suffered during chemical attacks. The brigade and battalions prescribe the MOPP levels but the standard is not enforced. MOPP discipline is truly a leadership challenge. Many leaders and soldiers do not understand the meaning of the various MOPP levels. In the last year we questioned many leaders and soldiers about the various MOPP levels and they failed to answer correctly. Leaders are too willing to accept risk in a potential NBC environment. This possibly is a product of fighting the JRTC verses posturing for and fighting the threat. In doing this leaders are reinforcing negative learning trends for junior leaders and soldiers.

The chemical threat is gradually increased during rotations at JRTC. Initially, the OPFOR only possesses the capability to employ riot control agents, and crudely made chemical bombs designed from industrial chemicals captured in the surrounding cities during the low-intensity phase. Although not lethal, riot control agents have the potential to momentarily incapacitate a force. This period of time is long enough to swing the momentum of a battle and subject forces to the possible loss of lives.

During periods when the OPFOR has the capability to employ agents by conventional means, units are slow to react to the threat. They take the minimal defensive measures, including not carrying MOPP suits and keeping protective masks in rucksacks. Soldiers are often separated from their rucksacks and, in turn, have no protection. MOPP suits are consolidated in squad bags and maintained in the brigade support area with the trains. Little attention is given to establishing a decision point that triggers the movement forward of chemical protective suits. All these factors add up to marginal NBC force protection and the large-scale loss of lives.

No one can say what tomorrow's chemical battlefield will bring. It can be said that whatever occurs will probably have been encountered in a scenario at the JRTC. We will continue to refine and make the chemical scenarios at the center more challenging and realistic. Senior leaders must take the chemical threat seriously and devise ways to integrate NBC training into home station training. Chemical training that is sporadically conducted does not allow our soldiers the time they need to master key and essential NBC skills. The chemical fight of tomorrow—will you be ready?

At the time this article was written, MAJ "Chuck" McArthur was a senior chemical observer-controller at the Joint Readiness Training Center at Fort Polk, Louisiana. His previous assignments include battalion executive officer, Camp Hobey, Korea; deputy division chemical officer, 2d Infantry Division, Korea; Chief, Combined Arms and Tactics Branch, USACMLS. He is a graduate of the Command and General Staff College at Fort Leavenworth, Kansas. MAJ McArthur holds a BS degree in political science from the North Carolina A&T State University.

Reminder

STP 21-1-SMCT, Oct 94 with Change 1. Tasks: Protect Yourself from Chemical and Biological Injury/Contamination Using Your M40-series Protective Mask with Hood, 031-503-1025, and Protect Yourself from Chemical and Biological Injury/Contamination Using Your M42 Protective Mask with Hood, 031-503-1028, were changed in Sep 96. The major change was the elimination of one of the two mask clearing/sealings. This change was published both electronically (message 121500Z Sep 96, CDT TRNGSPTCEN FT EUSTIS VA, ATIC-ITT) and in the FY97 CTT Notice, 1 Aug 96. If you haven't received your copy yet, call Bob Griffin, DSN 927-2441.

Battlefield success depends largely on the ability of the force commander to "see the battlefield." He must identify how the enemy is using the ground to minimize the risk of surprise. The force commander does this by his IPB. The IPB process achieves success when all available intelligence-gathering assets are focused to obtain well-chosen and specifically tasked PIRs.

FM 90-13-1, page 2-1

IPB—The Chemical Role

By MAJ Dave Wilcox

The intelligence preparation of the battlefield (IPB) begins early in the planning process and continues throughout the entire operation. Each staff officer brings a unique contribution to this process. This article will discuss the role of the chemical officer in that process and the chemical asset most likely to be impacted. That chemical asset is the NBC reconnaissance vehicle, commonly referred to as the Fox. The scenario used for this article was a training event from the National Training Center.

Recently, during a BLUEFOR offensive at the National Training Center, the OPFOR used persistent chemicals. The effect on the BLUEFOR was devastating. Unable to operate in a chemically contaminated environment, they lost a complete task force worth of combat power and some of its logistical trail.

What happened and why did it happen? During the situation template development, the S2 shop templated possible enemy persistent chemical strike locations.

These locations became named areas of interest (NAIs) that supported the brigade commander's priority intelligence requirement (PIR) as to when and where the enemy would use persistent chemicals to shape the battlefield.

The S2 developed a recon and surveillance plan (R&S) to answer the chemical NAIs and the remaining requirements of the PIRs. The R&S plan did not include the Fox as an observer or active participant in answering the chemical PIRs.

Meanwhile, the chemical officer developed the NBC annex and assigned missions to the chemical assets. The chemical NAIs, nominated in the NBC annex, did not match those listed in the S2s R&S—an indication that the chemical officer and S2 had not coordinated or deconflicted their predictions.

Additionally, the Fox was not given a clear mission that contained a task and purpose. In other words, the plan was not developed by the chemical officer or

chemical company commander in conjunction with the S2's R&S plan to answer the PIR. The annex had the Fox moving with the trail task force and responding to artillery strikes that might contain chemical agents.

The S2 and chemical officer conducted their planning in a vacuum. No coordination or parallel planning was done to overwatch the chemical NAIs. From the time the first vehicle entered the contaminated area, the brigade had the necessary information to possibly avoid the area.

However, an analysis of the information available was not conducted, allowing the task force to blindly enter the contaminated area. This information (see box next page) was available to the brigade staff prior to the lead task force entering the persistent chemical strike area.

This description of events was condensed from the actual version and the results of little or no action taken by the brigade battle staff, chemical staff, and chemical company are clear.

Now I want to discuss the actions that should have taken place prior to the task force entering the chemical contaminated area.

First, let's state the obvious. The chemical officer is a major player in the IPB process and assists the S2 in the development of the SITEMP.

The chemical officer, in concert with the S2, develops theories on enemy's employment of chemical weapons. From that, NAIs are developed for inclusion into the

Available Information

092204	IEW intercepts MSG/Special munitions fired at NK435090
100014	Enemy artillery fired, 600 rds at NK407096/Q37 detects / MSG sent to DS Arty Bn
100250	Battle staff (night shift) suggests possible P-chem strike (XO, BIC, IEWSO)
100337	IEW intercepts message/Special munitions fired NK445095
100345	FSO offers early Q37 intercept/600 rds at NK407096 (Battle staff decides not to post, wants to confirm)
100547	IEW intercepts message/Special munitions fired at NK3908
100700	Spot report received / Chemical strike at NK400097
100703	First vehicle enters P-chem (no reaction by crew)
100705	Task force commander asks brigade TOC for any possible chemical agent locations. None given.

Result: 78 vehicles and 176 personnel contaminated

R&S plan. The R&S plan is developed to answer the brigade commander's PIRs. The chemical NAIs are part of that plan.

The R&S planning for chemical NAIs requires detailed plans and can be broken down into two parts: getting the asset(s) to the observation post and the actions required by the asset(s) and units if a persistent chemical agent is found. The chemical officer and S2 decide early in the R&S planning who will confirm or deny the NAI.

R&S planning considerations, by the chemical officer, are command and control, routes to and from the NAI, recon technique, security, marking procedures, and reporting. Below, I have provided a list of techniques for R&S planning—OP selection.

Step 1. I identify the requirement for an OP. This selection is done during the R&S planning or during wargaming.

Step 2. Conduct terrain analysis. Terra-base is an effective tool to use in this step. The best use of terra-base is to run the terra-base shot from the NAI. This will identify all possible OPs that are available.

Step 3. Allocate the asset needed based on the mission to be performed.

Step 4. Select the OP site based on the terrain analysis, the mission, capabilities, and limitations of the asset.

Step 5. Plan the insertion: routes, control points, hide positions, etc.

Step 6. Make necessary coordination: clear passage through friendly forces, deconflict terrain, establish CFZs around OP site (force protection).

Step 7. Support the insertion/operation. Plan and coordinate indirect fires, IEW support, medical sup-

port, extraction, security, and resupply.

Step 8. Execution. Mark the area and provide a bypass route, if necessary. This part of the plan is based on the commander's guidance and intent for fighting dirty, the scheme of maneuver, and the terrain. Included in the chemical officer's plan are the procedures for doing this and it is understood throughout the brigade. The procedures can be part of the unit's SOP; however, to be effective they must be rehearsed at all levels.

The brigade could have avoided the contaminated area and the logistical intensive decon operation that followed if the key players involved had done the necessary

planning and coordination. The IPB process and the planning that evolves from its requirements demands involvement for all key players—this includes the chemical staff. I have only touched on one aspect of the process, chemical reconnaissance, which requires the chemical officer's active participation. It's a fact that the chemical officer must be the resident expert on the enemy's employment of NBC assets and capabilities, as well as our own.

One final note on the involvement of the chemical officer in the IPB process. The words "chemical officer" can be interchanged with the words "NBC NCO." The NBC NCO is part of the staff and must be just as knowledgeable on the IPB process as the officer. In fact, there are only two chemical personnel on a brigade staff and to be effective, they must be interchangeable in the accomplishment of their duties.

This involvement in the IPB process carries over to the entire planning process. The level of success will depend on the knowledge and understanding level of the chemical staff. If you are not the resident expert in NBC planning preparation and execution for your unit, get that way.

At the time this article was written, MAJ Wilcox was attending the School of Advance Military Studies at Fort Leavenworth, Kansas. MAJ Wilcox is a graduate of the Chemical Officer Basic Course, the Chemical Officer Advance Course, and Command and General Staff College. His assignments include senior chemical observer/controller, National Training Center; Commander, 10th Chemical Company, and various staff assignments. MAJ Wilcox has a masters degree from the University of Oklahoma.

The Director's Forum

Emerging Results of TAA05

The Chemical School Directorate of Combat Developments currently represents the chemical proponent in the Total Army Analysis (TAA05). Total Army Analysis is a doctrine-based process that establishes the Total Army Force Structure to support the National Military Strategy as articulated in the Defense Planning Guidance. This biennial process generates and validates the Army's warfighting requirements, establishes the support force warfighting requirements, and provides the force structure foundation for the next program objective memorandum.

In late September 1997, the Director of Combat Developments represented the Chemical School at the TAA05 Resourcing Council of Colonels, which applied resources (units) against the combat requirements for support to the 2MTW Warfighters Scenario. Recommendations of the Council of Colonels will be submitted to the TAA05 Resourcing General Officer Steering Committee on 18 November 1997.

The recommendations of the Resourcing Council of Colonels are encouraging. The council agreed to resource an active component Corps Chemical Brigade Headquarters, the only active TOE CM Colonel Command in the force. Also accepted was a proposal by the US Army Reserve to activate three NBC reconnaissance companies, three biological detection companies, and one chemical battalion headquarters and headquarters detachment. During the council, the Army National Guard also agreed to activate 14 NBC reconnaissance/decontamination companies, three battalion headquarters and headquarters detachments, and one corps chemical brigade headquarters and headquarters detachment.

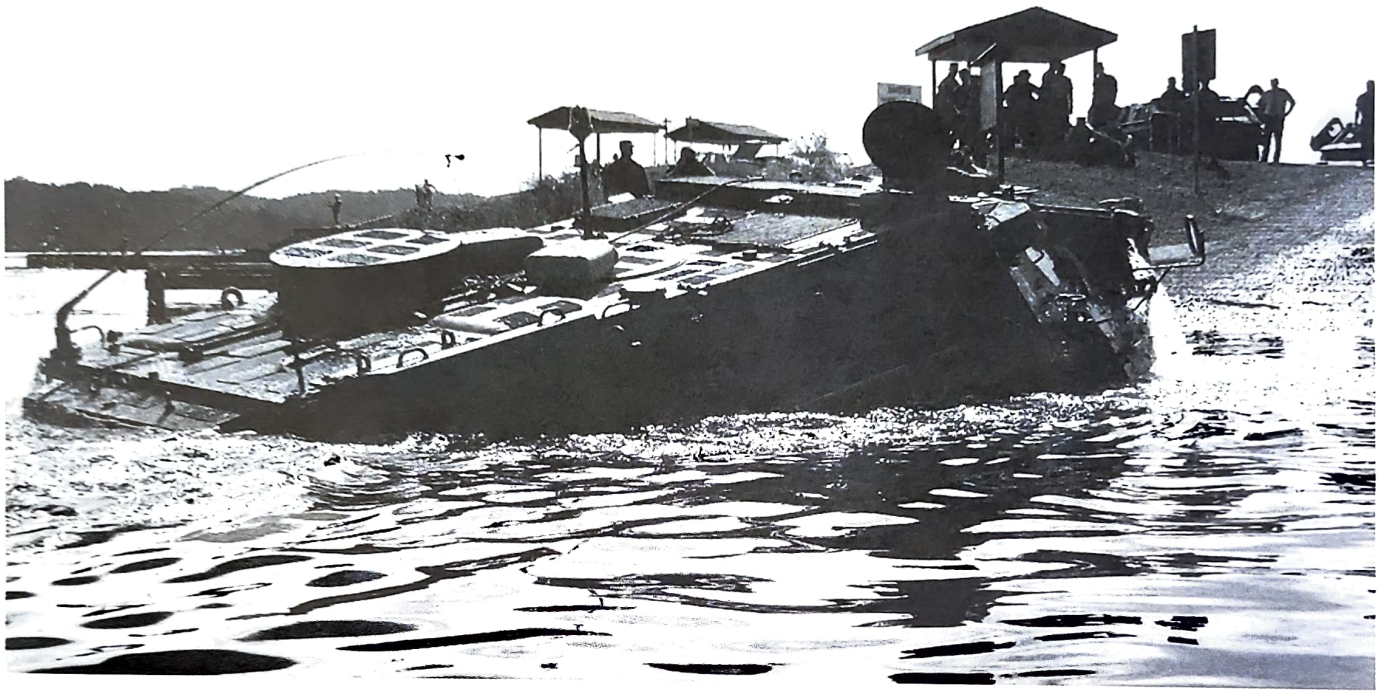
The TAA05 Resourcing council of colonels found that the chemical proponent area should pay no force structure bills but, instead, recommended significant growth in the number of chemical units, much of which is required to provide NBC support to other services. The HQDA chemical staff, supported by the Chemical School Commandant, will continue to press on throughout the TAA05 process until the final results are approved by the CSA and published in the Army Structure Message.



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<http://www.mcclellan.army.mil/usacmls/index.htm>



The Fox emerges from the depths of the water after taking a "refreshing" plunge in the Coosa River. U.S. Army Chemical School students learn to maneuver the vehicle in water as part to their advanced Fox vehicle training.

"Crazy" Like a Fox —20-ton vehicle takes a swim

*By PFC David S. Howell
Public Affairs Office, Fort McClellan, Alabama*

Twenty-two United States Army Chemical School Students, including Marines and British Army personnel, took the phrase "swimming like a fish" literally last August as they rolled down a paved docking ramp at Neely Henry Lake, and drove a 20-ton armored vehicle into Alabama's Coosa River.

Overcoming this unique, aquatic challenge was the highlight of the 2-week, Master Fox Advanced Training Course at the Chemical School for soldiers who have already completed initial training in the school's 5-week basic Fox program.

According to instructors, a massive amount of in-

formation is covered in the 2-week course because there is much more to the overall process than just learning how to drive the six-wheeled amphibious vehicle.

"The basic course teaches soldiers how to operate the Fox, but the advanced class is designed to teach squad leaders and platoon sergeants how to utilize what they already know about the vehicle and its capabilities in the mission planning process," said SSG Darion Moore, instructor/writer, Master Fox Course. "This will work to their advantage when they employ the Fox in the field because training them to be staff planners is the single best way to keep the soldiers and the officers



The Fox is an amphibious vehicle that can detect traces of nuclear, biological, and chemical agents. The six-wheeled transport carries a crew complement of four and is propeller-driven. It is a vital resource for chemical soldiers in ensuring the safety and well-being of troops, both on and off the battlefield.

informed. Who knows better about what the Fox can do than the soldiers themselves?"

While the initial course prepares junior enlisted soldiers to become crew members on the Fox, the Master Fox Course trains the crew members how to become staff planners and lead their own Fox team.

"This was an excellent course for advanced Fox training, but it proved to be even more valuable by teaching us to become operations planners," said Marine CPL Shawn Dixon, Fox operator for the Marine's Chemical Biological Incident Response Force. "It was challenging getting used to the Army's doctrine and staff planning process, but sitting in on Army Headquarters planning briefs gave a lot of insight into how our sister services conduct business. Even as a noncommissioned officer, this was the first time I actually had a hands-on chance to develop the actual mission instead of just being a worker-bee."

The overall mission of the course is to prepare senior NCOs to lead their own Fox complement, and assist in the staff planning process of Fox missions. The students' technical expertise and emotional fearlessness are also put to the test when they are ordered to drive the 20-ton armored vehicle into the Coosa river—an order more easily said than done. Not only does performing this task teach the soldiers the essential skills they will need to pilot the vehicle in water, but instructors say it establishes a sense of confidence and security in their vehicle and its versatile capabilities.

"Nobody believes that a heavily armored vehicle is going to swim like a boat," Moore said. "Before students actually take the Fox into the water for the first time, they undoubtedly fear that they are going to sink. However, once the initial panic of watching their windshields submerge underwater is overcome and they resurface, it's all smooth sailing from there."

Long-Range Biological Detection Planning

By Major Earl Teeter and Major Frank Wagdalt

"Long-range biological detection mission 003 lifted off just after EENT. MET conditions were right and the G2 had received indications of possible enemy biological warfare attack. The team flew its bio-detection track for 6 hours, providing critical early warning to the Corps. Tonight, all reports were negative, but thanks to the long-range biological standoff detection system (LR-BSDS) detachment, the Corps was prepared for any contingency."

This vignette reflects the scenario XVIII Airborne Corps used during two recent BCTP divisional warfighter exercises to develop and validate staff coordination procedures for LR-BSDS employment. Using a "crawl-walk" approach, the Corps learned several valuable lessons for future LR-BSDS planning and employment.

To facilitate the employment of biological warfare (BW) detection assets, XVIII Airborne Corps added a "first ever" BW threat (Anthrax and other unspecified BW agents) to the exercise STARTEX Memorandum of Agreement. This threat capability drove Corps staff and major subordinate command planning for BW detection and defense.

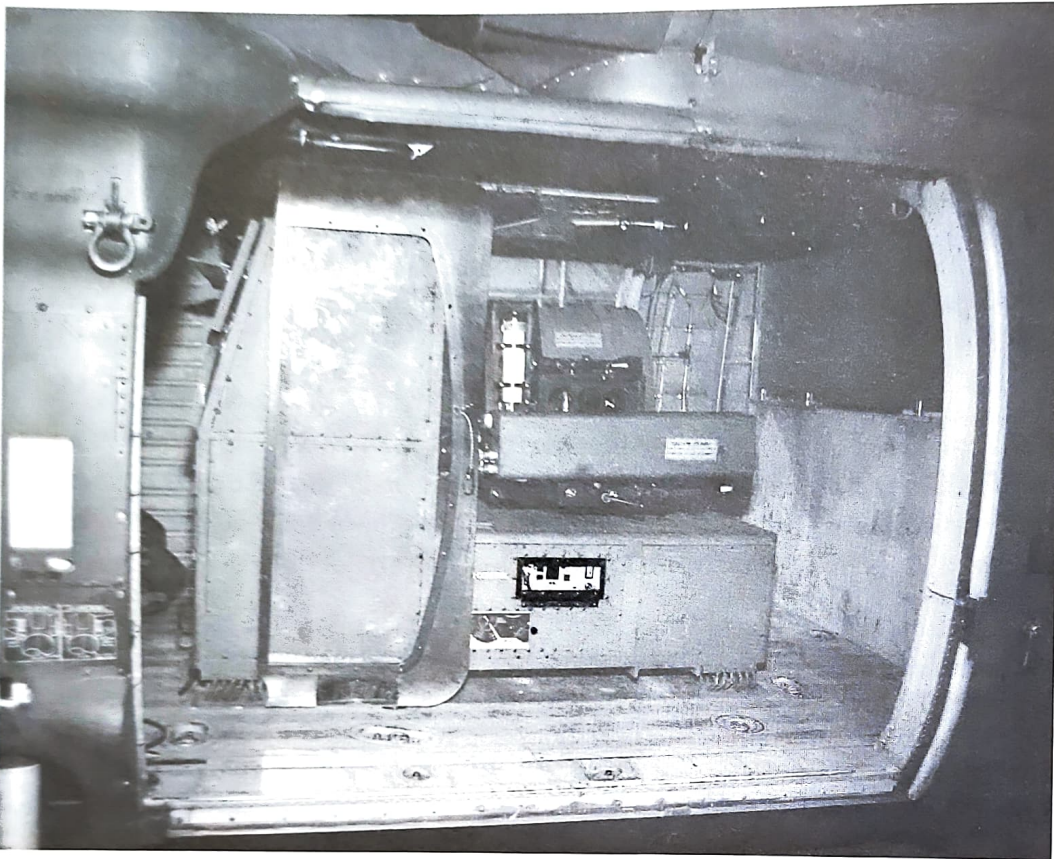
The Corps tasked its supporting chemical brigade to

position the LR-BSDS detachment with the Corps aviation brigade's lift battalion at the beginning of operations. However, based on the aviation brigade's request, we did not set up a command and control relationship between the two units (OPCON, attached, and so forth). Instead, the LR-BSDS detachment and the lift unit were in a supported/supporting relationship for each mission. Exercise constraints did not allow us to validate this relationship's impact on the mission and we must still determine the feasibility of this concept.

During the warfighter train-up exercise, the Corps NBCC developed the biological reconnaissance and surveillance plan in a vacuum and provided bio NAIs piecemeal to the aviation brigade planners. The problems resulting from this method were



UH-60 helicopter with XM-94 long-range biological standoff detection system. (Photo courtesy Bill Hungate, CBDCOM)



Close-up of XM-94 installed in UH-60. (Photo courtesy Eglin Air Force Base Training Service Center)

lack of synchronization and integration with other Corps intelligence gathering assets (LRSC, SOF, and so forth) and lack of flexibility for the aviation lift planner and aviation brigade chemical officer.

When the aviation planners developed detailed, deconflicted routes and course legs to cover one bio NAI, it was difficult to shift to an unplanned alternate NAI in less than 24 hours. This problem, in conjunction with the fluidity of the FLOT, made predicting valid NAIs for a specific time period very difficult.

The lesson learned and practiced in the next warfighter was to integrate all bio NAIs into the overall corps R&S plan and provide these locations to the aviation brigade lift planner and chemical officer during their deliberate planning. This provided the twofold benefit of ensuring coordination with the G2 on indicators triggering LR-BSDS flights and allowing aviation planners to develop tentative routes and bio tracks for all "on order" NAIs. This, in turn, lowered the required turn-around time for mission changes from 24 hours to 4 hours.

Another significant lesson learned for the staff was the need to coordinate with the Corps Army Airspace

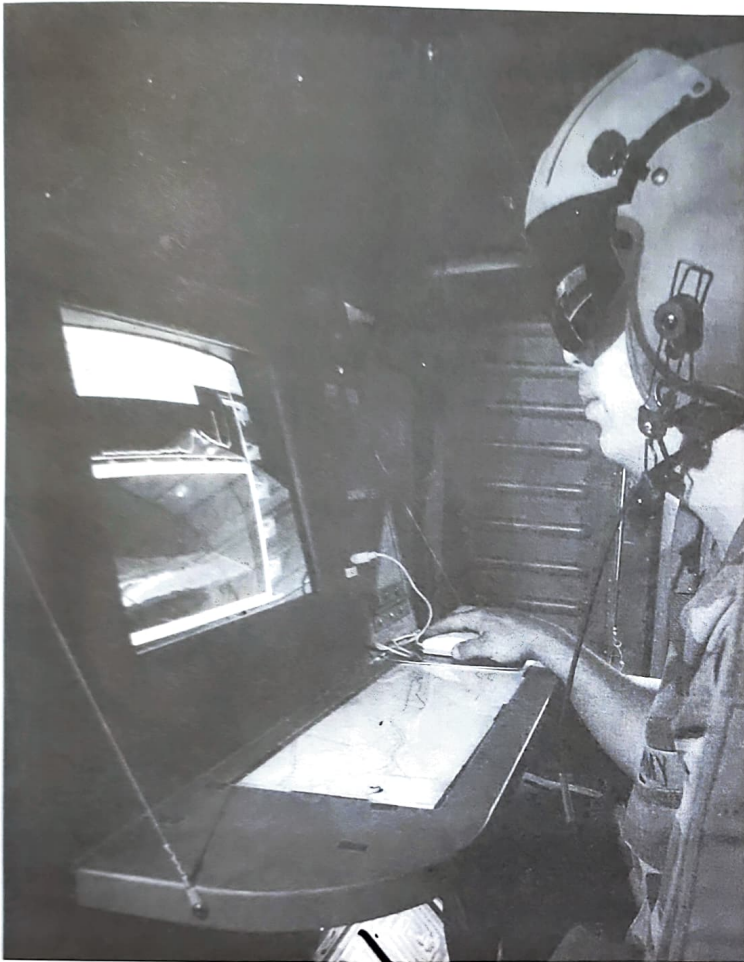
Command and Control (A²C²) element. This proved critical in our operation because the AFFOR controlled all airspace above 750 feet AGL. To ensure deconfliction of all LR-BSDS missions, the aviation lift planner provided A²C² with a copy of his consolidated preliminary flight routes and bio detection flight tracks, with recommended altitudes.

The A²C² NCOIC entered this information into his automated database containing all planned air missions in the Corps zone. He could immediately determine if conflicts existed with planned AF-

FOR or divisional Army aviation missions and recommend changes to mission parameters.

Early coordination with A²C² also facilitated AFFOR concurrence with establishment of LR-BSDS restricted operating zones and/or special use airspace. Any unresolved conflicts with AFFOR or divisional Army aviation missions were raised to the command group for resolution prior to final "go/no-go" decisions. A²C² required a minimum of 4 hours to coordinate changes to planned LR-BSDS mission parameters.

Once initial planning occurred, the Corps G3 disseminated FRAGOs to the aviation brigade/LR-BSDS detachment for each approved mission. We followed a basic five-paragraph order format that provided mission (scheduled, unscheduled, background) and included critical information such as NAIs to be covered, required hours of coverage, intent, prevailing wind direction, and other coordinating instructions. The aviation planners took this information, modified their preliminary pre-planned routes and bio detection flight tracks based on METT-T, and forwarded any changes to A²C². The aviation brigade lift planner and chemical officer then produced a detailed FRAGO for the lift



Operator running XM-94 in UH-60. (Photo courtesy Eglin Air Force Base Training Service Center)

unit flying the LR-BSDS mission. The aviation brigade found that distances between the aviation assembly area

When this article was written, MAJ Earl Teeter was assigned as the assistant corps chemical officer, XVIII ABN Corps, Fort Bragg, NC. Previous assignments include group chemical officer, 3d SFG(A); commander, HHC Southern European Task Force and group chemical officer, 559th US Army Artillery Group, Vicenza, Italy; chemical observer-controller, Joint Readiness Training Center, Fort Chaffee AR; decontamination platoon leader, 590th S&S Company and chemical officer, 1st Battalion, 32d Infantry Battalion, 7th Infantry Division (Light), Fort Ord, CA. He holds a BBA in Personnel Management from Loyola University of Chicago.

and target areas necessitated employment of a command and control/retrans helicopter. They also had to plan for forward arming and refueling points (FARPs) to support each mission. They determined the optimum solution for refueling was to coordinate for use of existing FARPS, where available.

The Corps' experience during these exercises helped us wargame and validate many staff coordination issues for successful LR-BSDS mission execution. The exercises also surfaced even more questions. How do we plan/compensate for sudden wind shifts that invalidate pre-planned mission parameters? What is the optimal width for a bio NAI and its associated bio detection flight track? How do laser safety concerns impact on other flight operations in zone?

We also had to overcome the constraints of the corps battle simulation (CBS) model. Although we flew the LR-BSDS helicopters in the CBS computer, the current simulation does not replicate BW clouds, their effects, or LR-BSDS technology. We recommend the USACMLS and BCTP work toward resolution of the modeling and simulation problems in conjunction with development of the next generation of CBS. XVIII Airborne Corps will continue to work all LR-BSDS staff planning issues as we increase our BW integration in future exercises.

MAJ Frank Wagdalt is the brigade chemical officer/assistant S3, 18th Aviation Brigade (Corps) (Airborne), Fort Bragg, NC. His previous assignments include assistant division chemical officer, 1st Infantry Division, Fort Riley KS; commander, 83d Chemical Detachment (JA), Fort Sill, OK and Operation Desert Shield/Storm, Saudi Arabia; installation chemical officer, Fort Sill, OK; platoon leader, 22d Chemical Company, and assistant DISCOM chemical officer, 3d Armored Division, FRG. He is a graduate of the Defense Language Institute Basic Spanish Course, has a masters degree in Latin American Studies from Tulane University, New Orleans, LA and graduated from the Ecuadorian Army Infantry Officer Advanced Course, Quito, Ecuador. He holds a BA in Political Science from Queens College, NY.

I am the American Chemical Soldier

*By Jim Williams
Command Historian
Fort Rucker, Alabama*

I am the American chemical soldier. I was born in battle—in the bloody years of the Great War, the "War to End all Wars." I was conceived far from my home—at Ypres, on a dank, spring day—the 22d day of April, 1915. That afternoon, a strange stillness replaced the usual shattering thunder and terrifying scream of artillery.

"...a strange yellow cloud...
piercing screams...choking...
My age had begun.

In the stillness, a strange, yellow cloud rose from the German lines and drifted over the French lines. Suddenly piercing screams and choking shattered the stillness. My age had begun.

General John Joseph Pershing—Black Jack, himself—was my father. He called me into being—a tiny number among the vast armies America raised to turn the tide of Europe's war. He made me a special breed. I made up, in spirit and wits, what I lacked in numbers. I came from the farms and factories to join the "Hell-Fire Boys." "Only red-blooded men need apply," he said.

He called me from the schools and laboratories; most of my number had college degrees, when most Americans hadn't finished high school.

He gave me leaders—proven ones, like my first chief, General William Sibert, who built the Panama Canal. And new ones, like Colonel Amos Fries, who built Yellowstone Park and led me through the twenties.

I spent my boyhood in mud and blood. I learned from the British and the French. I went where they went and even beyond. I served in the bitterest fighting, in battles whose names and sounds still ring in my ears—Chateau Thierry, St. Mihiel, Aisne, and Marne.

But I left my share under the poppies in Flanders' Fields. When the war was over, over there, I came home—a man. A victor!

The world soon forgot that my first war was the one to end all wars. In the lean years, I had struggled to preserve the lessons so dearly bought in battle. I had tinkered and trained. I spawned new tools and new doctrine. When the scream of shells and bombs again called me to action, I was ready.

My numbers multiplied. As few as 600 in the 1920s, I grew almost overnight, to over 70,000. I served, I saved, and I conquered.

My smoke sheltered harbors, airfields, beaches, and bridges. My mortars rained death on my enemies. I could go where others couldn't—in jagged mountains and steamy jungles. I could fire so fast that I gave no warning—all of my shells were in the air before the first one hit. I was gone before my enemy could fire back.

My flames drove my enemy from his caves—or roasted him, when he refused to succumb.

My readiness for the horrors of my baptism bred caution in my enemies. They, too, had prepared—

they had devised more deadly agents than any I knew before. But they feared to use them. None of my comrades ever donned his mask, but to train.

I led and I bled. I landed with the Rangers at Anzio. I was among the first to touch the beaches of Normandy. I fired the first shells from those beaches that warned the hated conqueror that his era was ending. Firing from the boats, I helped the Marines land on Iwo Jima. Some of me stayed behind, lifeless, in hundreds of places. Many had strange names to me—Bizerte, Buna, Carocetta, Namur, Suribachi, Tabontabon.

The grim, blinding daybreak of the nuclear age brought me new tasks, though the mountains and snows of Korea echoed with familiar sounds and sights—my mortars, my flame, and my smoke.

Peace never came for me—only a new kind of war. A twilight war of battles without lines. A war that mixed friends and foes, that mixed small-unit with large-scale actions.

I adapted to this strange war. Spread from the skies—often from helicopters with improvised spraybars—my defoliants stripped my enemy of his cover. My sniffers found his hiding places. And my CS flushed him out. When I could not drive him out, I hunted him in his own lair. When he brought the fight to me, my flame broke his charges. Sometimes I paid the supreme price.

There is no rest for me. On the parched lands of the Middle East, men whose tongues I can't understand wage the warfare of my birth. Elsewhere, others practice the skills of war, ready to seize a moment of weakness.

I train and I build. I study the lessons of my past. I use the best that common sense, professional knowledge, and science can give me to make the elements serve me and not my enemy.

My battlefield has changed. Though my feet remain on the ground, my eyes and ears are in the skies—even beyond, in the cold and dark of space. My talk is full of strange words—ones that would have been nonsense at my birth: ANBACIS, RSCAAL, BIDS, MICAD, and JWARN. My numbers, still small, are growing. My job is bigger than ever before, and the weight of my responsibility is even greater. Some things remain the same—wits, spirit, leadership, and courage. I am the American chemical soldier. I am ready.



PFC Moradeke Obunkoya tests liquid air samplers inside the biological detection suite, which is mounted in a HMMWV.

Detecting Biological Agents

*Story and Photos by SSG Alan Moore
(Reprint from Soldiers Magazine)*

SFC John Burns' job is to detect something that is as virtually undetectable as it is lethal. You can't see it, taste it, or smell it.

Strangely, for much of their careers Burns and the soldiers who work with him have had very little training for the job. But that could be said about all soldiers who work as nuclear, biological, and chemical specialists.

"We went over biological detection," said Burns. "We studied it in reference material and books, but we didn't spend much time training to detect biological attacks."

In fact, short of waiting to see if soldiers got sick, there was really no way to detect biological agents on the battlefield. That changed when the Army Chris-

tened the first active-duty platoon dedicated to detecting biological agents.

The 20th Chemical Detachment is the active-duty element of the 310th Chemical Company, an Army Reserve unit at Fort McClellan, Alabama. It's the first active-duty unit to field the biological integrated detection system, a non-developmental item that uses state-of-the-art commercial equipment.

The concept for the BIDS was first explored in 1991 at Edgewood, Maryland, home of the Chemical and Biological Defense Command.

"The BIDS is the Army's foremost detection system for biological warfare agent attack, combining complementary biological agent detection components in an



PFC Moss installs the detector air collector equipment on the biological integrated detection system.

integrated platform,” said CPT Adam Stroup, commander of the 20th Chemical Detachment.

“There are a number of countries that have biological weapons: China, Libya, and North Korea to name a few,” said Stroup. “As long as a biological threat exists, the BIDS will be an important part of the battlefield.”

Basically, the BIDS is a HMMWV-mounted shelter housing a two-man biological detection suite. The shelter has room for several bulky pieces of air sampling and detection equipment. With a sophisticated mobile laboratory on board, BIDS is capable of sustaining 24-hour biological surveillance operations. The equipment takes continuous air samples. If biological agents are present, an alarm bell notifies the BIDS team. Within minutes, technicians can rule out or identify the suspected agent.

Each BIDS team consists of four soldiers operating the BIDS vehicle and a support vehicle. Two soldiers perform analytical duties within the detection suite while the other two resupply the team, provide security, and evacuate collected samples to the rear.

“We are protecting a lot of folks,” Stroup said. “By capturing the agent with the BIDS, we can pass it on to medics, who will be able to study it, test it, and figure

out what will kill it.”

Before the detachment’s activation, soldiers assigned to the unit attended a 6-week specialized training course.

About half of the unit’s 35 troops were privates just out of AIT, but they attended the course with the NCOs and learned to operate BIDS as a team.

“We had to learn and grow together to make this happen,” said Burns, the detachment’s first sergeant. “We had to get to know each other quickly to develop a team.”

Commanders will use the BIDS as a corps-level or higher intelligence asset, so a team must provide accurate and timely results. To that end, the system has several built-in redundancies.

“Soldiers are counting on our assessment, so there’s a lot of responsibility on our shoulders,” said SSG Karl Kithau. “But if the BIDS gives you a series of positives, you can bet there is a biological agent present.”

“BIDS works,” said Kithau. So well, in fact, that an enemy would never know his biological attack had been detected. That assurance provides commanders a luxury they’ve never had—the ability to detect the undetectable.



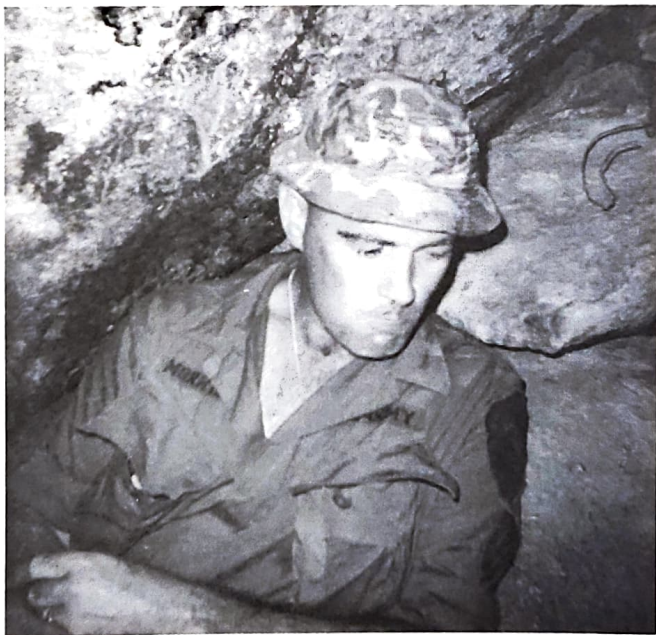
A soldier sits within the detection suite of the BIDS.

Tunnel Rats

By MSG Louis M. Morrison, USA Retired
with Dr. Burton Wright III, Command Historian, US Army Chemical School

As America comes to grips with the specter of the Vietnam War, there may come a time when the soldiers of that era are being recognized with the honors they deserve. Soldiers in Vietnam came in many varieties: the Special Forces soldiers of the famous Studies and Observation Group (or MACV-SOG), the air cavalry soldiers of the First Cavalry Division, the artillerymen of Landing Zone Bird, the "line doggies" of Hamburger Hill, and the Long-Range Reconnaissance Platoon.

Chemical soldiers can take their place with many of the more famous varieties of Vietnam heroes. Their particular group has come to be known as "tunnel rats." These incredibly brave soldiers entered tunnels of the enemy to take the war underground. Their exploits can be found in a best-selling book, *The Tunnels of Cu Chi*, by Tom Mangold and John Penycate.



The author, in a cautious mode, prepares to enter a tunnel.

The book details the operations of the tunnel rats who could be found in the chemical sections of most of the major divisions of the United States in Vietnam. The "tunnel rats" of the First Cavalry Division did not deal with tunnels, but with caves. I know. I was one of those cave rats.

When I got to Vietnam through Cam Rahn Bay, I thought I had a good job in Saigon in the chemical section of MACV. But at the replacement depot, I was informed that the First Cavalry Division had priority. They needed a chemical sergeant and I was told I had better get myself on the C-130 runway. I quickly complied.

The section was under the command of LTC Bradford. I was quickly introduced to the normal duties of the Chemical Corps in the First Cavalry—spreading anti-mosquito chemical malathion, defoliant operations, CS tear agent employment, flame-field expedients, and, in the last months of my tour, people sniffer operations.

One of the "old hands" at the chemical section was a PFC named D. R. Langley. He was a "tunnel rat" and told me hair-raising stories about the operations he had been on. While these stories of underground mayhem might have dissuaded others, I took it as a challenge and was tasked to form a "tunnel rat" section.

The soldiers who went into the tunnel with me were all volunteers. The first operation I went on turned

Tunnel Rats

out to be a 5-day exploration of a large cave complex in the division's area of operations.

LTC Bradford was located in the division DTOC. When an infantry unit reported that it had found a cave, we were told to report to a particular pad at Landing Zone Two Bits on the Bon Son plain and a helicopter would take us out to the location.

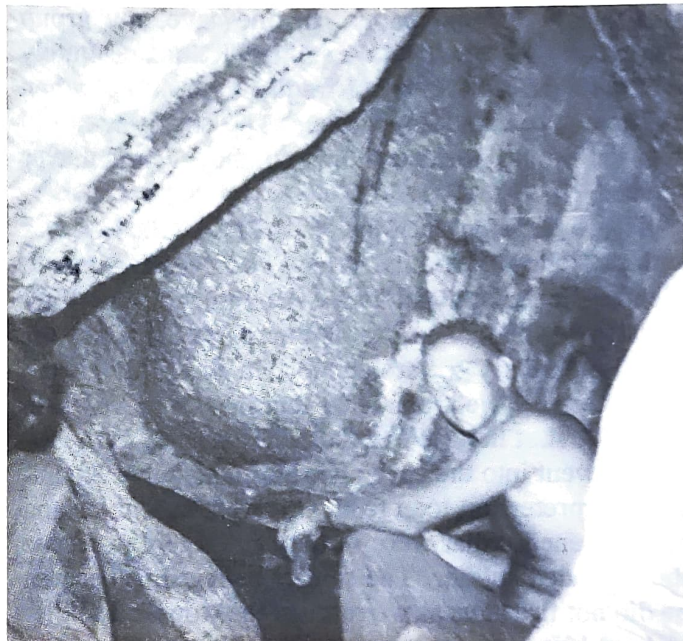
One thing I learned right away: when we arrived, I kept the team away from the line troopers. They tended to describe (in great detail) the fighting at the cave mouth and what might be inside. The volunteers sometimes looked a bit on the apprehensive side.

Normally we went into the cave with the following equipment: One M16 (which we later changed for .45 pistols), jungle fatigues and boots, floppy hat, a flashlight, knife, CS protective mask, and a grappling hook with parachute cord. The hook was used to move equipment we found to ensure that it was not booby-trapped.

In my talk with PFC Langley, I learned that the potential for NVA traps and lethal encounters in the black depths of these caves was very possible. When we moved into the caves, the lead man had his weapon and flashlight held away from his body. He was



The author and fellow tunnel rats work their way deeper into a tunnel.



Roger Harris, a 71L volunteer, went on every one of our tunnel operations.

followed at intervals by one or more men armed the same way. We were not in a hurry. Each movement was slow and deliberate.

One would think "tunnel rats" must be small in stature. They were not. I'm nearly 5 feet, 9 inches, and some of the "rats" in my team were considerably taller. It wasn't the size of the man, but the size of the heart in the man. One of my favorite "rats" was Roger Harris. He was a 71L or a administrative clerk-typist. He was also a volunteer and went on every one of our tunnel operations. He was frequently the number one man in the group as we entered the caves. He had no special training to do his mission—just a yen for adventure.

Caves are not like normal VC and NVA tunnels. They are created by Mother Nature and often take on odd shapes. Cave entrances can be large and then narrow down to small passageways, then branch out again into a large cavern or vice versa. Sometimes these caves extended hundreds of feet down into the side of a mountain. The areas the First Cavalry Division then operated in were mountainous in I Corps.

Surprisingly, in all the caves I entered, I never encountered a booby trap quite the same as told to me

Tunnel Rats

by some of the old hands. In one cave, my group managed to capture an NVA soldier. He had resolutely defended his cave and shot frequently at infantrymen as they approached its entrance. The enemy was told that we would torture them, so they would never surrender.

Before entering each cave, I had a council of war with my fellow cave rats. We were discussing how to silence the enemy soldiers when one of the First Cavalry soldiers, hearing of our plans, ran into the cave, apparently to attempt to talk the soldiers into surrender. He went about 80 feet into the cave when the NVA shot him. We could hear his cries for help.

We went into the cave after him, and our Vietnamese interpreter (on loan from G5) went in with us and told the enemy that were in the cave solely to rescue the wounded soldier. The soldier believed us because he did not fire at us as we rescued the wounded soldier and got him out of the cave to a waiting medic.

We needed to interrogate a live prisoner so, using a flamethrower we'd brought along, we sent a stream of flame shooting alongside the NVA soldier. It didn't take him long to begin talking. Although he claimed to be a "rice carrier," his uniform and demeanor spoke NVA. He had no weapons, but going back into the cave, I quickly found an SKS carbine. I don't know what happened to him after that, but he was talking up a storm as he was flown out on the helicopter.

Although danger is a ready companion to those working in caves and tunnels, there are some lighter sides as well. In one cave complex we explored, the cave route suddenly turned into five separate tunnel passageways. Since only three men were in the team, it was thought that it would be easier to use CS gas to prep the five tunnel openings and learn if any NVA were ahead.

A box of CS grenades was procured and roped down to us. Each member had a pile of CS grenades and tossed them into the tunnel opening as fast as the pins could be pulled. As a result of all this frantic tossing, a mammoth cloud of white CS smoke engulfed us with visibility similar to that of looking through milk. We got out of the tunnel fast.

The infantry support had pulled back a bit from the entrance when the clouds of white smoke began to

billow out of the cave opening. They saw the team rapidly exit the tunnel and run for the nearest water. Luckily there was a small pond nearby and all three of us jumped in. The CS was affecting our bodies where sweat had accumulated, and it was getting rather uncomfortable. The sky troopers of the 1st Cavalry didn't help us at first. They were laughing too hard to do anything.

Another incident, while not funny at the time, grew so over the years. It was the team's first use of a flame thrower to prepare the cave opening for entrance. Two members of the team crawled up to the opening with the flame thrower and proceeded to douse the opening with a sheet of flame.

Unfortunately, the cave had a sharp turn to the left, so the flame, in effect, bounced off the wall and came back through the opening. I was observing the operation from farther up the hill and as I watched the flame come out of the tunnel, it went right over the prone bodies of the flame team. I thought they were "toast," but as luck would have it, the team was hugging the ground after firing the shot and were not injured as the flame stream passed over their heads. We learned the hard way that it is much safer to shoot the fuel in first, then light it.

During another cave expedition, the team came to the field with a new M79 CS round. We were always game to try something new, so I borrowed an M79 from the infantry. Before going up to the cave entrance, the infantry commander asked me if he should pull back his unit. They had no protective masks and could be doused with the CS. Given the size of the round, I didn't think anything so small could produce much CS. I told him to hang around because we would be going in as soon as the CS dissipated.

I fired the round into the cave and within seconds, a huge billow of white CS smoke came pouring out of the entrance, engulfing not only my team but the infantry as well. We both fell back to safer and higher ground coughing and crying. My team was *persona non grata* with the infantry for a few days.

Cave exploring in Vietnam was often a dirty business. Sometimes we worked in caves for several days. When the team boarded the helicopter for a return to the base camp, I had the bird land outside in the village

Tunnel Rats

next to Landing Zone Two Bits. There we enjoyed a hot shower and a cold beer while our clothes and boots were cleaned. When we walked through the front gate, we looked like good dragon soldiers standing tall.

In all the caves we explored, we found a lot of equipment, but few of the enemy. The team captured only one NVA soldier. I might have bagged another, but the people at the top kept yelling for me to return to the surface. Finally I did.

When the team exited the cave entrance, one lone helicopter (engine running) remained of the infantry company and its helicopters that had been there when we went underground. The helicopter crew said the

company had been called to another area and had only 15 minutes of fuel remaining. Had we not come to the surface when we did, the walk back to LZ Evans would have been a bit long.

Nearly three decades after my tunnel rat days, I can still remember much of those adventures. I do so because I worked with good soldiers who volunteered to go deep underground in search of the enemy. Working with these men is something I will always treasure.

As a tunnel rat, I made almost every mistake in tunnel exploitation that a soldier can make. Perhaps my experience will help future tunnel rats not make the same mistakes.

Request for Historical Information

The Chemical Branch Historian requests assistance and information in the following areas:

All-African-American Chemical Units

The 71st Chemical Battalion was an All-African-American unit in World War II that served as a smoke generator unit. Although many histories will identify a unit as an All-African-American unit, some may have dropped through an historical crack. If you know of any such units from World War II or the Korean War, please identify them to me, and your experiences with them. I want to develop a vignette on All-African-American chemical units.

The Use of Smoke in South Vietnam

During World War II and Korea, smoke was commonly used for various combat operations. However, most of the available literature on Vietnam makes little, if any, mention of the use of smoke other than to mark targets. Does any CCRA member know

of any incident(s) where smoke was used other than that or for its normally intended mission? Please include the date and units involved.

Tunnel Rats

The Tunnel Rats were a unique breed of soldiers in Vietnam. If you know of any tunnel rat stories about how and what they did, please let me know the date, unit, and individuals involved, and what they did. I would like to get together a pamphlet on the tunnel rats and include accounts of their exploits not found in the already published book, *The Tunnels of Cu Chi*.

Send replies to Dr. Burton Wright III, Command Historian, US Army Chemical School, ATTN: ATZN-CMA-MH, Fort McClellan, Alabama 36205-5020. Phone (205) 848-5722, DSN 865-5722; FAX (205) 848-4615, DSN 865-4615. Write me at my e-mail address: wrightb@mcclellan-emls.army.mil

Smoke and Obscurants

Exploiting the electromagnetic spectrum in the 21st Century

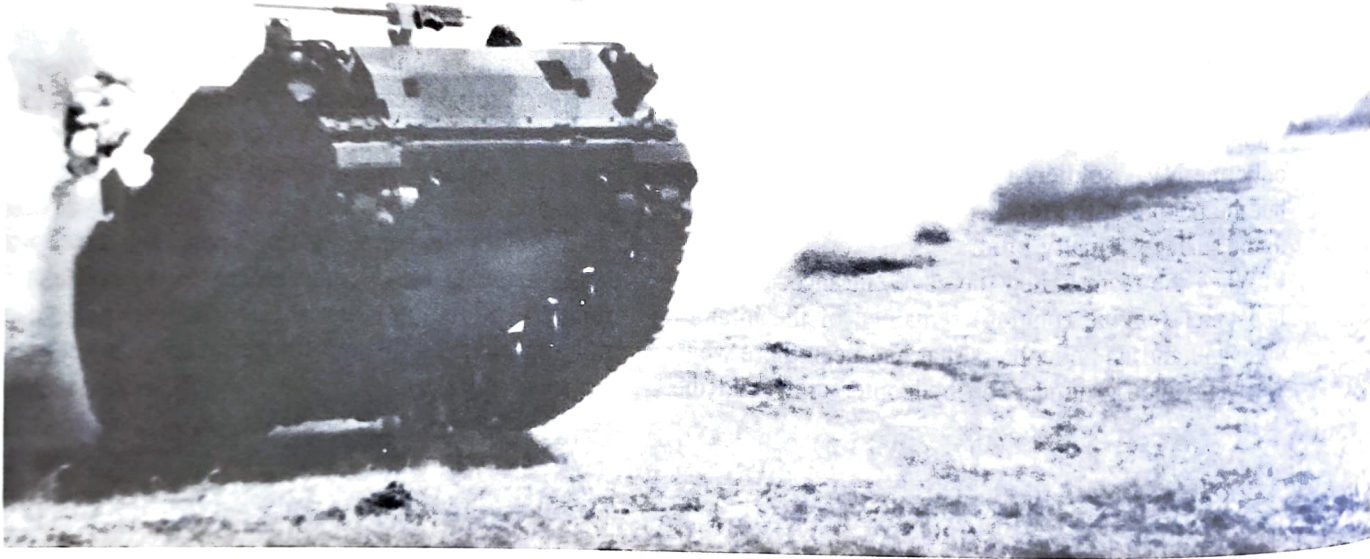


Photo courtesy Visual Information Division, CBDCOM.

By CPT Douglas W. Wishart

As the expected smoke and obscurant technology and employment criteria emerge in the 21st Century, the field commander's offensive and defensive combat capabilities will expand exponentially. This article highlights those capabilities that the US Army Chemical School is currently investigating for possible inclusion in the Force XXI Operations Concept for Smoke and Obscurants.

These issues reflect developments spawned by user requirements that effectively exploit electromagnetic capabilities in support of the Force XXI concept of future combat. It amplifies future program concepts and developments in four areas:

- Combat Capability.

- Support to Force XXI patterns of operation.
- Automated obscurant battlefield management system.
- Impact on key areas of DTLOM (doctrine, training, leader development, organization, and materiel).

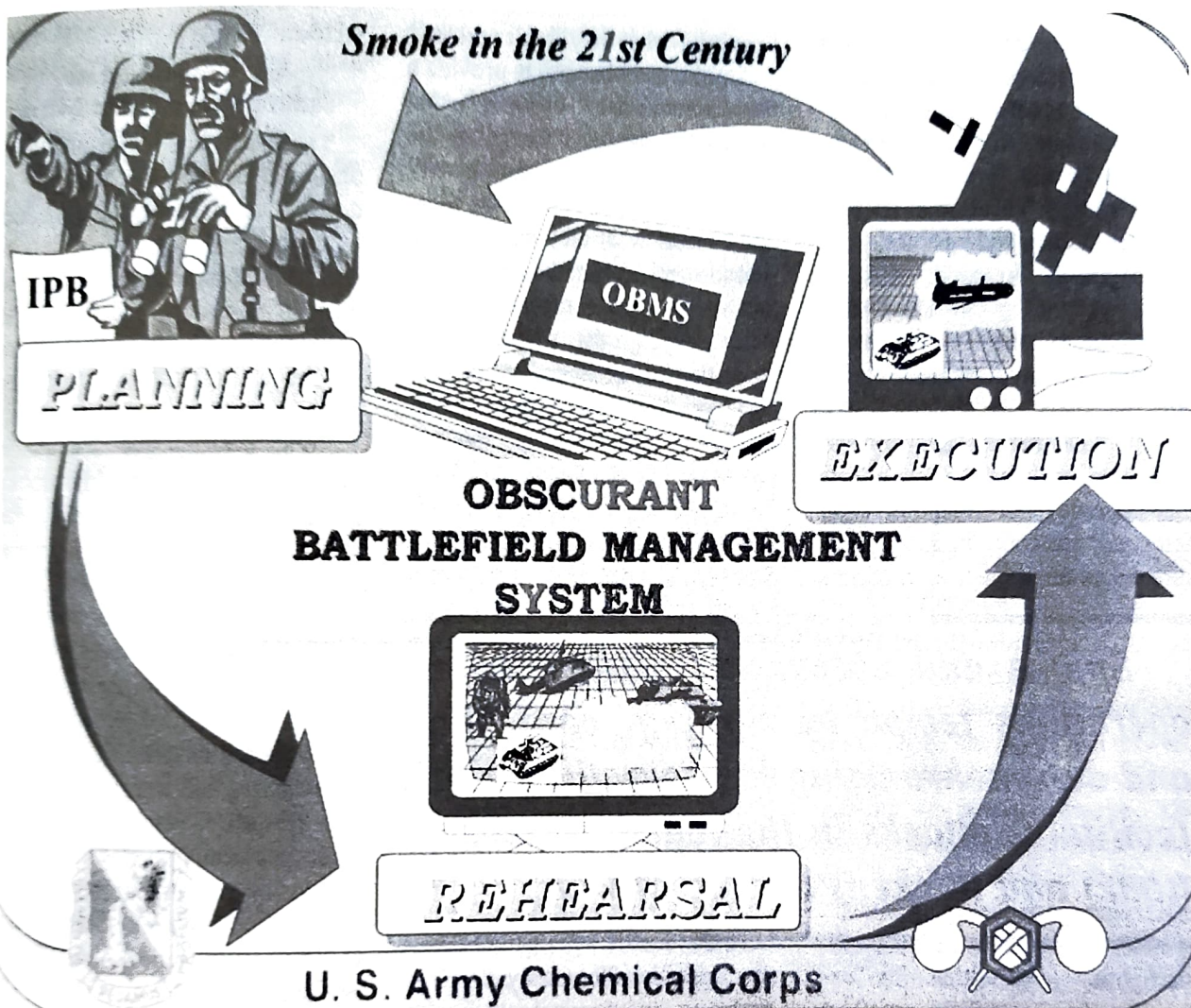
Combat Capability

Developing technologies can significantly expand the application of smoke and obscurants in combat operations. Military leaders should expect future adversaries to use visual, infrared, thermal, and millimeter wave targeting and acquisition systems. The US continues to develop new obscurants that are better able to defeat, control, and domi-

nate the multi-spectral battlespace of future conflicts. Currently, smoke is employed exclusively as a passive defense measure. Doctrinally, smoke is employed to deny the threat the use of his optical and visual devices, thereby limiting his capability to develop an accurate picture of the battlespace and acquire targets. The Force XXI concept seeks to exploit the multiple aspects of smoke and obscurant capabilities throughout the entire electromagnetic spectrum.

The US will expand its passive defense capabilities to deny threat forces the ability to perceive the battlespace from the ultraviolet wave level through the extremely low frequency wave level. Ongoing

Smoke in the 21st Century



investigations into bi-spectral and multi-spectral smokes and obscurants, particularly at the millimeter wave level, are uncovering reliable battlefield methods/materiels to mask friendly forces from detection and targeting.

These methods/materiels do not alter or suppress the target signature, but rather reduce the amount of energy reaching the sensor from the target; that is, change the target's apparent signature. The goal is to open and close the threat's windows of observation (while maintaining uninterrupted friendly observation) onto the battlespace.

The US is also pursuing active

measures to target and attack threat sensor arrays and seeker mechanisms. Smoke and obscurants designed for this mission would attenuate those frequencies used for target acquisition, target lock, guidance, control, and arming or activation.

These methods include the use of specific band width obscurant technology, high power microwave and directed energy weapon technologies. These 21st Century EM weapons will attenuate precision guided munitions by masking normal electronic signals, generating false signals, or overloading the system by saturating the sensor. The goal is to

deposit enough energy into smart weapons to induce failure.

The Army continues to develop non-lethal capabilities to destroy the threat's communications and electronics network through the use of non-nuclear electromagnetic pulse, high-energy lasers, and DEWs. These systems direct their energy into weapon emitter and collector devices causing circuitry overload, leading to meltdown and permanent system failure.

These aggressive and non-lethal developments in the smoke and obscurant concept can provide the commander another tool to affect the threat's decision-making cycle

and control the operations tempo of the battle. However, we must be vigilant in our quest to achieve spectral supremacy. As these new technologies become weaponized, the designers must ensure that friendly weapons systems and capabilities are not degraded. Achieving this includes expanding our knowledge and ability to control the radiation footprint of smokes and obscurants.

Commanders require the tools to neutralize, on demand, those effects that degrade their weapons. Joint and combined coordination will ensure we do not impede each other's

"can't hit what they don't see."

Smoke and obscurants provide a four-dimensional obstacle that shapes the enemy's image of the battlespace. Friendly forces will display what they want to be seen, and conceal what they want to conceal (deception). Smoke and obscurants support a counter-reconnaissance campaign that enhances force protection and deception operations.

They are the tactical commander's quick response tools to open and close four-dimensional "windows" in the visual, infrared, and millimeter wave spectrums. Smoke and obscurants disrupt en-

Smoke and obscurants disrupt enemy operations tempo by slowing, confusing, and de-synchronizing his operations. This facilitates attacks in the fourth dimension (time) and thickens the fog of war.

warfighting capabilities. By exploiting the capabilities of 21st Century smoke and obscurants, we will seek to achieve spectrum supremacy.

Support to Force XXI Patterns of Operations

This concept supports all patterns of Force XXI operations. To achieve success, the future Army must dominate the battlespace in all six dimensions. During force projection operations, the campaign of denying the adversary critical battlefield information begins. Friendly forces control visual and non-visual observation, targeting, and acquisition by dominating the EM spectrum. Threat forces are denied battlefield observation; enemy systems

enemy operations tempo by slowing, confusing, and de-synchronizing his operations. This facilitates attacks in the fourth dimension (time) and thickens the fog of war.

Smoke and obscurants can be used to either conceal, or draw attention to friendly operations. When integrated into a comprehensive deception plan, these assets help deceive the enemy as to friendly intentions.

The bottom line: smoke and obscurants support all patterns of operations in the Force XXI concept. Smoke and obscurants in active defense and non-lethal attack operations will help establish spectrum supremacy for Force XXI forces and ensure the success of allied and coalitions forces throughout 21st Century land

combat.

Automated Obscurant Battlefield Management System

The future smoke and obscurant planner must have the capability to develop an effective plan, conduct rehearsals, and monitor their execution. For planning purposes, the planner must know and understand how the threat sensors and seekers are arrayed and the threat's capability to use the electromagnetic spectrum.

With a responsive obscuration management capability, the smoke planner will be significantly better able to select the best countermeasure to the threat's capability. The resulting plan employs available smoke and obscurant assets at critical times and locations on the battlefield.

A battlefield management system also requires modeling capabilities for planning and wargaming to ensure the desired results. This model must graphically portray the effects of smoke and obscurants on the battlefield. The smoke planner can then determine if the desired effects are achievable.

Finally, and maybe most importantly, the smoke planner must be able to monitor the execution and effectiveness of the smoke mission. From the planning headquarters, the smoke operation is monitored with assessments of effectiveness made with real time data. The obscurant battlefield management system must be automated and integrated into the maneuver control system. The obscurant battlefield management system ensures that missions are planned, rehearsed, and executed to meet the commander's intent.

Impact on DTLOM

As concept designers continue massaging and molding these con-

cepts into a joint and combined philosophy, it is critical to assess their impact on our ability to absorb them into the current combat paradigm. This section highlights some of the major concerns and deficiencies that need to be overcome in order to facilitate an orderly and efficient evolution.

Doctrine: When transforming smoke from a passive defense role to an attack role, doctrine developers must identify new employment criteria that describe which smoke systems operate most effectively from which locations and times on the battlefields. Tactics, techniques, and procedures must describe the battlefield use of these new capabilities and technologies.

Training: Due to the current tactical perception of smoke, prevalent environmental concerns, and the dwindling availability of training funds, field units conduct only very limited, meaningful smoke training. Leaders must therefore train the force to execute its wartime mission in a limited visibility environment.

Implementing mission training plan programs and incorporating both passive and active smoke operations are essential for developing an elite fighting force. Simulation techniques are required that are less costly and less hazardous to both our soldiers' health and the environment. All our soldiers, particularly our smoke specialists, require quality and realistic training to develop the skills needed for 21st Century warfare.

Joint, multinational, and inter-agency training exercises are critical to mission success. The force must train as the team it will fight as. This is especially true when several international partners operate in a shared multi-spectral bat-

tle space. The tactical and strategic ramifications of smoke and obscurants demand a well-rehearsed and synchronized team on the initial day of hostilities.

Leader development: Those individuals (the smoke planner at the brigade, division, and corps level) who have the responsibility for planning and recommending smoke and obscurant missions, require an in-depth knowledge of how the threat arrays his sensors and seekers. This knowledge will facilitate proper employment of these new capabilities. With our goal to dominate the EM spectrum, smoke and obscurant personnel need significant training to fulfill their role as the smoke and obscurants supremacy manager.

Organization: The development of an automated smoke management system and its implementation at the unit level would require a significant support package. This capability requires additional operators and maintenance support personnel at the unit and higher levels. This addition may also require an increase in unit transportation assets to ensure the unit's mobility.

The other structure change identified for further study carries over from the previously published smoke concept—namely, the addition or conversion of selected smoke generator assets to provide projected smoke. The increased use of obscurants in training and combat operations may require some force structure refinements at echelons above corps and possible adjustments to the active/reserve component mix.

As additional smoke force structure is added to the total Army, the overall capability to supply fog oil and JP8 (or other smoke agents and

fuel sources) must be closely monitored to ensure sufficient personnel, vehicles, and maintenance support remain available.

Materiel: Materiel developments will drive 21st Century smoke and obscurant capabilities. Industry and the Department of Defense have joined, in a cooperative effort, to develop these areas. Materiel developments are needed in five areas.

- Fog oils/materials
- Obscurant particles/tuning materials
- Delivery means.
- Simulation/modeling software.
- Unit-level meteorological data acquisition and interface.

There are few current substitutes for fog oils. The single fuel forward concept has limited the force's capability to produce smoke. The field lacks sufficient alternative media to suspend spectral attenuating material; supplementary material is required for increased survivability.

Continued development of obscurant particles/tuning materiel is inherent to the success of Force XXI smoke and obscurants. Since the reduction in atmospheric transmission is wavelength dependent, a smoke that significantly degrades one wavelength may have no effect on another. Therefore, smoke must be tuned to obscure the desired wavelength.

This is accomplished by controlling the particle size and materiel. Multi-spectral obscurants and/or the ability to tune, as needed on the battlefield, would significantly improve friendly combat capability. The US Army begins fielding graphite-enhanced smoke systems, capable of visual through mid-infrared wave attenuation, in the near

future. Experimentation should continue, at the current level of effort, on economical and environmentally friendly millimeter wave smokes.

Previous studies have neglected many significant user requirements. Future programs in dissipation and clearing, and programs dealing with attenuation of directed energy and thermonuclear weapons require an increased level of effort to support these user needs.

Current barriers to the technical success of the smoke and obscurants program include identifying materials that meet both attenuation and environmental constraints, the development of packaging technology that lends itself to high efficiency dissemination, and the development of nondestructive dissemination techniques that preserve the necessary particle characteristics.

Simulation and modeling software require efforts directed to increase the overall level of understanding of how and why clouds build, travel, and spread. This knowledge is key to the development of prediction solutions and the subsequent development of an automated management system.

The other element imperative to accurate battlefield cloud predictions is an improved, up-to-date meteorological information interface system at the unit level. A possible way to achieve these

needs would be to expand the scope of the Joint Nuclear, Biological, and Chemical Warning and Reporting Network (JWARN) program to include smoke and obscurants prediction and tracking.

The current JWARN operational concept describes a system that automatically transfers data to and from units on the battlefield and provides commanders with analyzed data, additional data processing capability for the production of plans and reports, and access to specific NBC information. This concept should support an automated meteorological database and smoke prediction capability. Future JWARN upgrade proposals should include the study of this capability.

Conclusion

Smoke and obscurants in the 21st Century will be a critical element of combat power. The US Army will expand its doctrine and tactics, techniques, and procedures for the employment of smoke and obscurants. Smoke and obscurants will no longer be used as a limited passive measure degrading both friendly and enemy forces equally. The smoke and obscurant concept provides force protection by several means to include attacking and defeating sensors and seekers. It includes methods/materials for non-lethal de-

struction with high energy and directed energy weapons. Smokers in the 21st Century require the best obscurant battlefield management system for planning and implementing both defensive and offensive operations. Commanders require a mix of smoke and obscurant capabilities for employment in front line and rear areas and for a variety of effects. The 21st Century smoker will dominate the EM spectrum and assume the critical role of smoke and obscurants supremacy manager.

This is the emerging vision for smoke and obscurants in Force XXI operations—a vision that provides commanders with aggressive new combat tools.

At the time this article was written CPT Wishart was the Obscurant Control Officer, Directorate of Combat Developments, at USACMLS. His previous assignments include Commander, HHD, 23d Chemical Battalion, Camp Carroll, ROK; brigade chemical officer, Aviation Brigade, 2d Infantry Division, Camp Stanley, ROK; platoon leader, 1/11th Chemical Company, Fort McClellan, Alabama; battalion chemical officer, 5-21th IN, 7th Infantry Division, Fort Ord, California; battalion chemical officer, 1-72 AR, 2d Infantry Division, Camp Casey, ROK. CPT Wishart has a BS in mechanical engineering at the Virginia Military Institute. He is a graduate of the chemical officer basic and advanced courses, Airborne School, and the observer/controller qualification course at the National Training Center.

NBC 2000

By MAJ James E. Smith
with
LTC Tab A. Blazek
and LTC Robert L. Root

The mission of the Chemical Corps carries with it the implicit requirement to provide NBC protection in a wide range of operations ranging from peace support operations to high intensity operations. The factors of proliferation, international terrorism, low-level toxic industrial hazards and modern technology combine to leave us with the prospect of attack by briefcase-sized nuclear weapons, or even smaller chemical or biological weapons and delivery by person or vehicle (as opposed to missiles). Such an attack could come with little or no warning. The spontaneity of attacks, such as Dhahran, Oklahoma, Tokyo, and Paris undergrounds suggests that US military units could be a target at any time or place, in peace, let alone during military operations.

Now is the time to think ahead and anticipate future nuclear, biological and chemical (NBC) operations and the role of NBC specialists and NBC units. This is particularly true if one sees the evolution of future wars moving away from (or adding to) the "Industrial Age War" and toward the "Post-Industrial Age War," with its emphasis on warfare without "rules."

This paper identifies a way ahead by proposing an addition to the paradigm of how we look at and approach the NBC function for this period of increasing multinational, coalition, and peace-oriented operations aimed at preventing or de-escalating future wars or conflicts. I believe global access to information, the reporting of CNN (which can be broadcast instantly

Global access to information, CNN reporting, . . . the Gulf War Syndrome controversy, and the threat of chemical terrorism have accelerated this need for a change.

around the world, merging strategic, operational, and tactical impacts), the Gulf War Syndrome controversy, and the threat of NBC terrorism have changed the nature of NBC operations so that it has evolved to the point that there is now a sensitivity (awareness) toward force protection against hazards from the lowest levels of chemical, biological and radiological exposure (to include industrial compounds).

US participation in peace-oriented and multinational operations in Bosnia under the command and control of the Allied Command Europe Rapid Reaction Corps (ARRC), IFOR, and SFOR have exposed and further reinforced this new sensitivity toward NBC operations.

In Bosnia-Herzegovina during Operation Joint Endeavour, chemical officers and NCOs at the lowest levels, such as the NBC Recon (M93 NBCRS) Platoon Leader, executing the industrial missions for TF Eagle and the ARRC in Bosnia had to find and identify industrial hazards, protect their soldiers from exposure, determine possible dangers if industrial hazards were released, advise commanders on industrial hazards, and plot downwind hazards of industrial chemicals.

Additionally, Corps- and division-level chemical officers coordinated numerous CWC- type verification inspections of suspected chemical production /storage facilities and suspected chemical-filled ammunition.

As a result of Bosnia, tactical/operational-level chemical officers can be expected to continue to perform/coordinate highly technical NBC missions (CWC-type verification and destruction, low-level detection, artillery round analysis, industrial/environmental assessments and inspection of industrial facilities) that are usually of operational/strategic importance. This could be compounded by the extreme sensitivity on the part of higher-level commanders to NBC/industrial hazards during peace-oriented operations, and possibly in the future

during combat operations. In Bosnia, the start of the Gulf War Syndrome controversy did not help matters.

I believe this new sensitivity in NBC operations could lead our adversaries to direct the threat of use, or actual use, of NBC weapons toward our strategic and political-level command and control (C²) capabilities in lieu of our tactical or operational C² capabilities. This could involve the specific targeting of C² capabilities to attack our operational effectiveness, as well as the targeting of other sources to attack our political will power. This does not minimize the effects of NBC at the tactical/operational levels, but the real battlefield could be at the strategic/political-level centers of gravity.

This would be especially true if our adversaries learned anything from our Gulf War experience and our sensitivities concerning force protection in Bosnia and decide to attack our weaknesses rather than trying to match our strengths. An effective adversary's Information Campaign and the reporting of CNN can only make it worse in the future. I believe these are some of the reasons to target our strategic and political level C² capabilities:

First, due to the sensitivities of the Gulf War Syndrome and the recent Khobar Tower attack, current and future ground commanders, unified CinCs, and our political leaders may have to show that they have done all that they can do to mitigate the effects/exposure to NBC/industrial hazards. In other words, what will be the Public's/Congress' perception of a commander's responsibility or his culpability in future conflicts or terrorist incidents?

... the proliferation of ballistic missiles as well as covert/terrorist attacks have returned the NBC threat back to its original target - the civilian population.

Second, the proliferation of ballistic missiles as well as covert/terrorist attacks have returned the NBC threat back to its original target—the civilian population. A good example is the Aum Shinriyko Sarin attacks in Tokyo and Matsumoto (Japan). Additionally, North Korea's development and possible export of extended range ballistic missiles may allow long-range ballistic missiles and weapons of mass destruction to reach European and/or American cities in the future. Faced with the possibility of NBC use and the current state of

NBC detection and protective equipment among the military and civilian population, our political leaders and commanders could be faced with the option of either backing down, explaining the targeting of enemy NBC weapons (if they can), or allowing exposure of our civilian population.

Third, low-level chemical and radiological hazards (such as burning oil wells and damaged chemical/nuclear facilities), normally considered insignificant, have become more important due to the strategic/political sensitivity associated with their discovery and possible exposure. Damaged nuclear power plants and industrial chemical and agricultural facilities may require temporary or permanent maintenance support. As a result, strategic and political decision-makers may require an ad hoc NBC, medical, and environmental cell be deployed to provide coordination and control for toxic industrial incidents and situations.

Our political leaders and the warfighting CinCs are potentially vulnerable targets. One of the British lessons learned from the Gulf War was that the worst informed, trained, and prepared people were in higher-level headquarters. Explanations have been offered ranging from lack of emphasis to lack of visibility, clout, or importance awarded to the NBC function. Is it any better for the US military?

An examination of the unified-level commands reveals minimal resourcing of NBC specialists (rank and number of NBC personnel). At the Major NATO Command (MNC) levels, the current authorization is two LTCs at SHAPE and an extra duty Nuclear Policy Officer at SACLANT. It is even worse in NATO multinational theater and corps-level headquarters that have US forces. If unified, NATO theater-level and Corps-level headquarters deploy for combat operations, then resourcing needs to be above the current minimal levels.

For example, the first theater-level headquarters in Bosnia, IFOR (AFSOUTH), was not authorized an NBC specialist; it was only performed as an additional duty. The NATO corps headquarters (ARRC) that ran the ground operation in Bosnia was only assigned one NBC specialist, a US Army major. The current SFOR (LANDCENT) headquarters in Bosnia was initially assigned one US Army lieutenant colonel and an NCO; now NBC is done as an additional duty. Even with a lieutenant colonel, this represents little more than desk officer-level visibility in a

theater-level headquarters; the same could be said of a major at a corps-level headquarters.

My own experience as a Corps Battle Captain in the ARRC Operations Center and the Corps Chemical Officer responding to NBC incidents have shown me that the higher-level intelligence agencies tend to integrate sensitive NBC information considerably higher than the desk officer level. I also know how time-sensitive and crucial national intelligence-level information can fail to be passed down the chain of command, thus leaving "desk-level NBC officers" out of the loop.

This new sensitivity in NBC operations necessitates a critical examination of how we look at the NBC

NATO theater- and corps-level headquarters. This does not mean we take all the expertise out of the division. In fact, NBC expertise needs to be retained at the lowest level. This will be important, considering the US Army is eliminating the Chemical Company from the division force structure and appears to be moving toward basing operations around independent separate brigade-type formations.

Reorganize current and future NBC staffs and units to include equipping them to perform the NBC/industrial/environmental reconnaissance and survey missions. Task organizing NBC reconnaissance units with an environmental science officer and other preventive

... Form a Joint Service NBC Corps by combining all the US Army, Air Force, Marine and Navy NBC specialists into a "purple" NBC Corps and have it organized directly under the Joint Staff and/or the unified CINCs.

threat, how we integrate the function of NBC training and protection into operations, the role of the US Army's Chemical Corps (or even a joint NBC Corps), and the subsequent training/assignment of NBC specialists. I believe action or at least consideration on the part of the Joint Staff, the unified CinCs, and our political leadership is needed on these recommendations:

Form a Joint Service NBC Corps by combining all the US Army, Air Force, Marine and Navy NBC specialists into a "purple" NBC Corps and have it organized directly under the Joint Staff or the unified CinCs. This would allow the unified CinCs to provide input to the service chiefs on key issues affecting them. For example, it is hard to believe they would agree to the US Army's decision to eliminate the Chemical Company with NBC reconnaissance and decontamination assets from the future force structure of the Army division. As a minimum, we could form a Tri-Service NBC Center to ensure the different services' NBC resources and capabilities can be brought together to complement each other in reacting to NBC situations/incidents.

Shift the assignment of NBC specialists from the division-level headquarters to the unified level and

medicine personnel as was done in Bosnia could be the model to follow, or it could be a matter of just adding industrial hazard training to the Chemical Officer/NCO schooling process. As a minimum, we should familiarize our junior chemical officers/NCOs with the NIOSH and DOT guidelines, who they need to call to get more assistance (i.e., EPA), and how to contact the preventive medicine personnel.

Form rapidly deployable and highly specialized, strategic verification-type NBC units, such as the Army's Technical Escort Battalion or the Marine's NBC unit. Assign them to the corps headquarters or even directly to the unified headquarters.

Integrate the NBC function into the command and control warfare (C²W) process/team and collocate the NBC function with this cell at the command post during field operations. Integration of the NBC and air defense functions into the C²W process/cell is one way to integrate the intelligence (IPB process), artillery (targeting), information, PSYOP, deception, and electronic warfare functions of the C²W cell in protecting our strategic-/political-level C² capabilities and targeting the enemy's C² capabilities. This would also provide a forum to help facilitate staff coordination in unified, NATO corps- and theater-level headquarters (especially

those with austere NBC staffs) in minimizing friendly C² vulnerabilities and countering an adversary's ability to attack our friendly C².

Integrate an NBC Warning and Reporting System into any future Ballistic Missile Defense (BMD) System. If this is not possible, it may be necessary to collocate a part of the NBC function with the ADA function at the command post during field operations to facilitate expeditious warning of units on incoming suspected NBC ballistic missiles. Consider integration of BMD with implementation of new Joint Systems (JBREWS and JWARN).

Thanks to an idea of another US Army Chemical Officer and some brainstorming on our part while at the NATO Senior Staff Officer NBC Defense Policy Course in Germany, the schematic on the following page proposes an Army Component structure for a Joint Service NBC Corps. It is hoped readers will realize this proposal is only one way to implement the above recommendations and that this article is offered to ignite further analysis and discussion on the future of NBC operations and the Chemical Corps.

In summary, I believe the nature of NBC operations has changed. The question now at hand is: do we address these changes now, anticipate the future, and prepare to adapt to these changes? Or do we do as I did during and after the Gulf War, especially after the cease-fire, where I performed verification operations on suspected chemical-filled ammunitions, and assumed these experiences and challenges were an isolated occurrence and not relevant?

At the time this story was written, LTC James (Jim) E. Smith, was the Corps Chemical Officer for the Allied Command Europe Rapid Reaction Corps, most recently serving during Operation Joint Endeavor from 1 Dec 95 - 19 Nov 96 as the ARRC Chemical Officer and a G3 Operations Officer (Battle Captain). He previously served as Commander of A Company, 84th Chemical Battalion, a field-grade Chemical Command; as the Corps Chemical Officer for the notional 2d (US) Corps during the 1995 Advanced Warfighter Exercise (AWE) "PRAIRIE WARRIOR" and the Command and General Staff Officers Course Corps Operations Planning Seminar (Korean Scenario); as a Separate Brigade Chemical Officer with the 197th Separate Mechanized Infantry Brigade (24th Infantry Division) before, during, and after the Persian Gulf War; and as a company-grade commander of the 45th Chemical Company, a separate divisional Chemical Company in the 5th Infantry Division. He has also served as a Small Group Instructor at USACMLS.

LTC Tab A. Blazek is currently the TRADOC Liaison Officer to the German Army NBC, Engineer and Signal Schools. He previously served as a Corps NBC Plans Officer, Deputy Division Chemical Officer and Division Chemical Officer in USAEUR. He has served as a Small Group Instructor, Chemical/Biological Instructor and Regimental Operations Officer at the US Army Chemical School. He has also served as an NBC Staff Officer at battalion and brigade levels in Germany.

LTC Robert L. Root is currently the Chief of the NBC Section for Allied Land Forces Central Europe, Heidelberg, Germany. He recently completed a tour in Bosnia-Herzegovina as the NBC Officer and Information Operations Officer for HQ SFOR. He redeploys to Bosnia in February 1998 for a second tour. LTC Root's previous assignments include: Chief, Technical Training Department, USACMLS; Division Chemical Officer, 1st Cavalry Division, and Chemical Logistics Officer, III Corps G4, Fort Hood, Texas; DISCOM Chemical Officer, 2d Infantry Division, Camp Casey, Korea; and Instructor and Assistant Professor of Chemistry, U.S. Military Academy, West Point, New York.

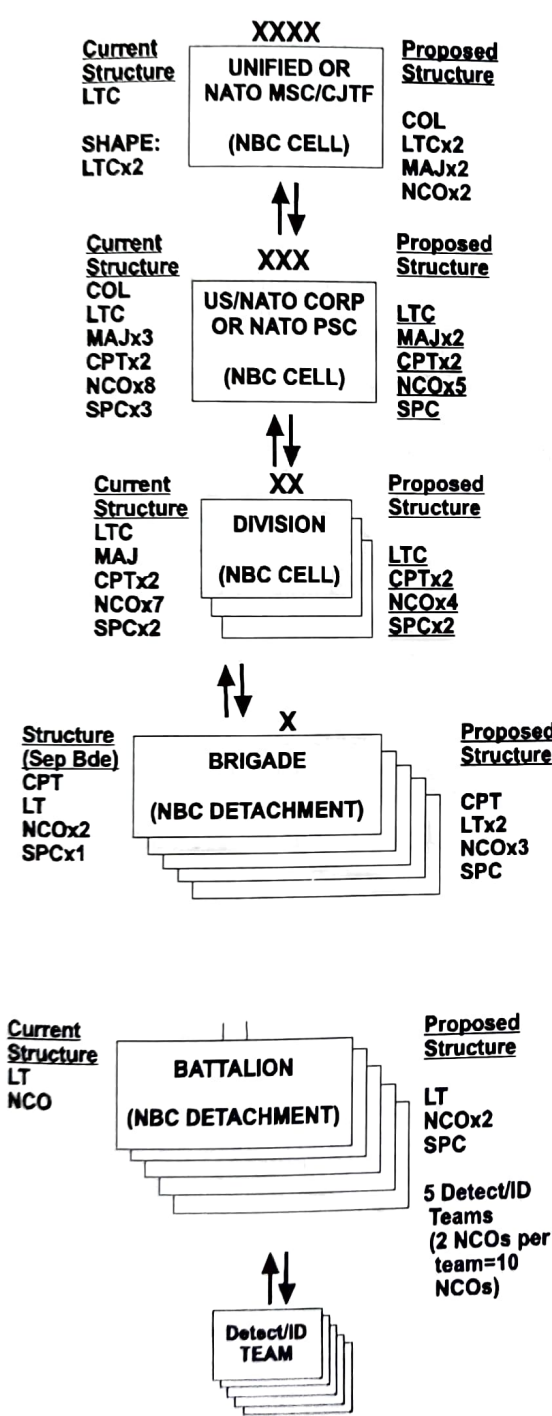
Advantages

- Maintains/justifies LT/CPT billet.
- Maintains trad staff officer development while at same time offering developmental leadership opportunities.
- Preserves appropriate level of NBC expertise at BN/BDE levels.
- Raises rank structure of NBC officer at theater/NATO HQs commensurate with level of HQ.
- Reliance on automated data processing systems for NC reporting and warning.

Disadvantages

- Change in paradigm of how we look at and approach the NBC function.
- Lowers rank structure at div/corps level.
- Major restructuring of chemical (NBC) structure.
- Stresses focus of NBC toward detection/ID (recon + bio) at expense of decon and smoke.
- Dependence on ADP systems for NBC reporting and warning could decrease manual skills of NBC operators.

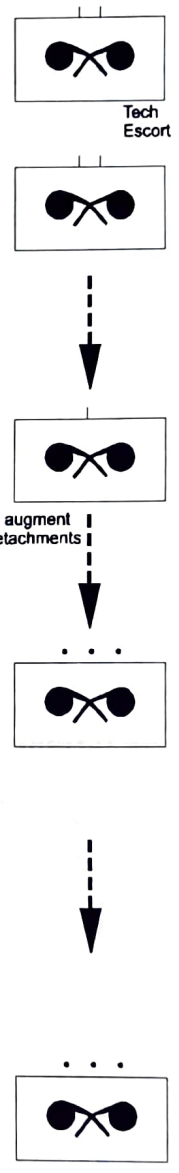
PROPOSED ARMY COMPONENT OF A JOINT SERVICE NBC CORPS



- Functions:**
(Same functions at theater, Corps and Div levels; Rank commensurate with the level of the HQ)
- NBC Advisor
 - NBC Risk Assessment/IPB
 - NBC Mission Planning
 - NBC Coordination
 - Automated NBC Report + Warning System
 - NBC Logistics
 - Sampling and ID of traditional NBC and Toxic Industrial Hazards

- Functions:**
- Dual role as CDR/ Staff Officer
 - C2 of 5 NBC Detachments
 - NBC IPB
 - Conduct and Execute NBC Operations
 - NBC Mission Analysis
 - Automated NBC Report + Warning System
 - NBC Logistics
 - Sampling and ID of traditional NBC and Toxic Industrial Hazards
 - Environmental
 - 3 Detect/ID Teams

- Functions:**
- Dual role as PLT LDR/ Staff Office
 - C2 of 5 NBC Teams
 - NBC IPB
 - Conduct and Execute NBC Operations
 - NBC Mission Analysis
 - Automated NBC Report + Warning System
 - NBC Logistics
 - Traditional NBC Detect/ID
 - Ind Hazard Detect/ID
 - Bio Detect/ID
 - Environmental



KEY

MSC=NATO Major Subordinate Command
PSC=Nato Principal Subordinate Command
CJTF=Combined Joint Task Force

↑ =NBC Warning & Reporting Flow

FROM THE FIELD

AUTOMATED SYSTEMS APPROACH TO TRAINING (ASAT)

Collective Training and Individual Training Products

TRADOC Schools are using the new ASAT software program to manage, design, and develop collective, individual, and doctrinal training products. Products such as ARTEP mission training plans (AMTPs), drill books, and Soldiers Training Publications (STPs) are uploaded into the TRADOC Module Executive Management Information System (TEXMIS), a relational database. These products are also in the Army Doctrine Training Digital Library (ADTDL); however, the ADTDL is not a relational database and only stores the products in a text format (non-relational). TEXMIS transfers these products into the ADTDL as text files. If a unit needs text files, it uses the standard internet to download. If a unit needs to manipulate the data contained in these files, it uses the Standard Army Training Systems (SATS) software program to download the entire files from TEXMIS in a data base format.

The current version of TEXMIS changes the format of STPs, AMTPs, and drill books. TEXMIS displays all information contained in printed STPs except the preface, chapter-1, and the appendices. For AMTPs and drill books, TEXMIS displays only the information contained in chapter-2 and 5 of printed AMTPs and drill books. We will provide updates to available information as the software program is evolved.

Units must first register with the POCs to obtain a user ID and password to gain access to these files. The POC for TEXMIS is Ms. Mary Kern, DSN 927-4762, ext. 260, and the POC for the ADTDL is Mr. Hugh Blanchard, DSN 927-5456, ext 268. The web site address for the ADTDL is <http://www.atsc-army.org/atdls.html>. The web site address for TEXMIS is <http://206.135.244.11/>.

The following AMTPs are digitized in the TEXMIS database and also the ADTDL.

AMTPs

ARTEP 3-7-10-MTP	Mechanized Smoke Platoon	Jul 97
ARTEP 3-7-11-MTP	Fuel Supply Platoon	Aug 96
ARTEP 3-116-MTP	Chemical Brigade/Battalion	Oct 97
ARTEP 3-117-40-MTP	Chemical Section/NBCC	Sep 94
ARTEP 3-207-10-MTP	NBC Recon Platoon (M113/HMMWV)	Jun 97
ARTEP 3-207-11-MTP	NBC Recon Platoon (Fox System)	Feb 97
ARTEP 3-457-10-MTP	Smoke/Decontamination Platoon (LID)	Sep 92
ARTEP 3-457-30-MTP	Chemical Company (All)	13 Oct 94
ARTEP 3-417-10-MTP	Decontamination Platoon	Feb 92
ARTEP 3-447-10-MTP	Motorized Smoke Platoon	Jul 91
ARTEP 3-477-10-MTP	BIDS Platoon/LR-BIDS Team	Apr 97

The following Drill Books and STPs are digitized in the TEXMIS database and also the ADTDL.

DRILL BOOKS		
ARTEP 3-7-10-Drill	Smoke Platoon (Mechanized)	Nov 93
ARTEP 3-207-10-Drill	NBC Recon Platoon (M113/HMMWV)	Oct 94
ARTEP 3-207-11-Drill	NBC Recon Platoon (Fox System)	Sep 94
STPs		
STP 3-54B1-SM		Jun 95
STP 3-54B2-SM		Oct 95
STP 3-54B34-SM-TG		Jan 96

The POC for Collective Training is Mr. Sloan Gresham Jr., DSN 865-4096, and the POC for Individual Training is Mrs. Judy Carter, DSN 865-5071.

MINIMUM REQUIREMENTS

Windows 3.1--Microsoft Internet Explorer 3.01

Microsoft™ Windows® 3.1
 IBM PC-compatible, 486 processor or higher
 16 MB RAM
 30 MB available hard drive space
 28.8 Kbps modem (14.4 Kbps minimum)
 CD-ROM drive (not required if you are downloading the software)

Windows 95--Microsoft Internet Explorer 3.02 (4MB version-Available for download only)

Microsoft™ Windows® 95
 IBM PC-compatible, 486 processor or higher
 16 MB RAM
 25 MB available hard drive space
 28.8 Kbps modem (14.4 Kbps minimum)

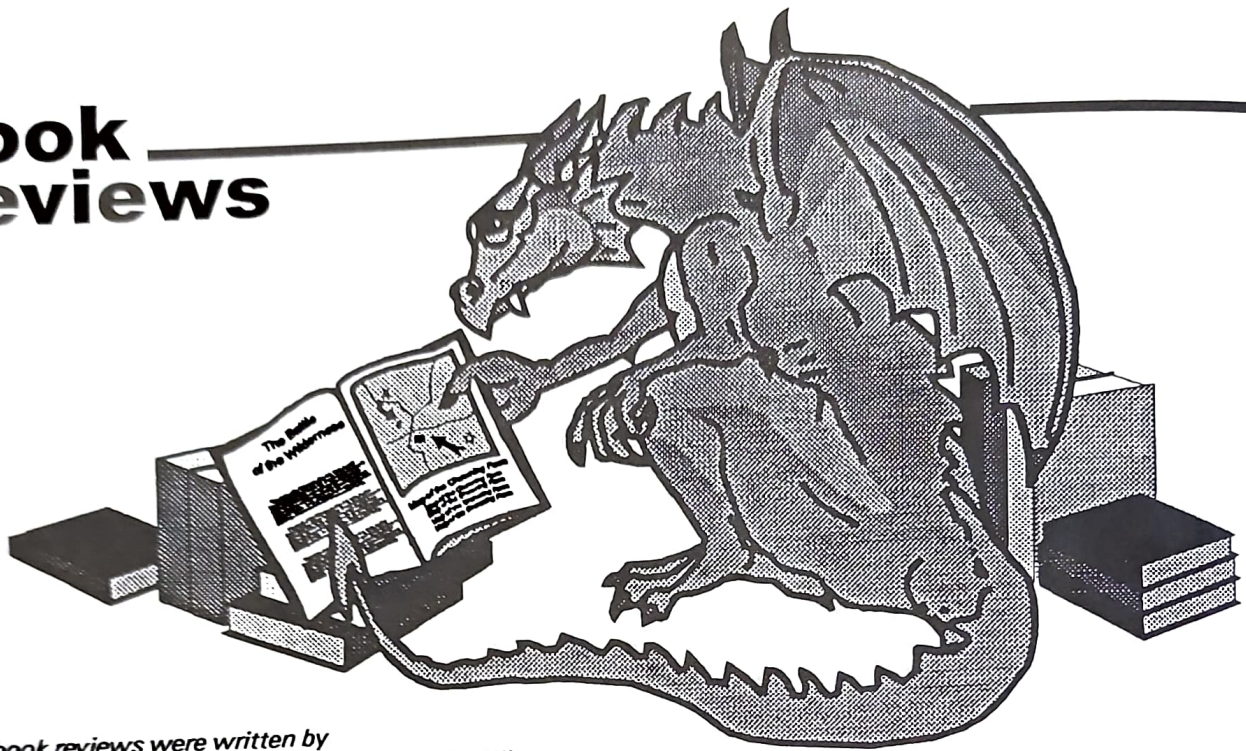
Windows 95--Microsoft Internet Explorer 4.0

Microsoft™ Windows® 95
 IBM PC-compatible, 486 processor or higher
 16 MB RAM
 40 MB (estimated size) for typical installation (adds Microsoft Outlook™ Express and Microsoft Wallet to the minimal configuration). For additional features such as NetMeeting™, NetShow™, and Microsoft Chat 2.0, please allow another 20 MB of disk space.
 28.8 Kbps modem (14.4 Kbps minimum)
 CD-ROM drive

Macintosh--Microsoft Internet Explorer 3.01

Macintosh-compatible computer running Mac OS System 7.5 or higher
 68030 or higher processor
 16 MB RAM
 45 MB available hard drive space
 28.8 Kbps modem (14.4 Kbps minimum)
 CD-ROM drive (not required if you are downloading the software)

Book Reviews



These book reviews were written by
USACMLS Command Historian, Dr. Burton Wright III.

General James Longstreet: The Confederacy's Most Controversial Soldier, Jeffry D. Wert. New York: Simon and Schuster, 1995.

I am not sure that Longstreet qualifies as the *most* controversial southern soldier—General Bedford Forrest or Daniel Harvey Hill might give him some competition. The author is, of course, referring to *after* the war. During the war, Longstreet was Lee's strong right arm—his "old war horse."

The problem for poor old Pete Longstreet is that he was the only one of the major subordinates of Lee to survive the war—Jackson and A.P. Hill, and others, were killed in battle. Since Lee was a southern icon, someone had to bear the responsibility for Gettysburg and other problems. Longstreet was the man.

The author pens a most interesting portrait of this civil war celebrity that is interesting yet leaves the reader with the view that the "real" Longstreet has yet to be seen. The author does not shrink from taking on the most controversial aspects of Longstreet's tenure with the Army of Northern Virginia—the Seven Days and Gettysburg.

One of the more interesting aspects of the book is the author's portrayal of the "turf" wars between and among southern generals. He shows that they were a

contentious lot who seemed to be constantly at war with each other as much as with the Yankees. Longstreet was constantly battling with A.P. Hill, sometimes "Stonewall" Jackson [who in his own right was on bad terms with most of his subordinates at one time or another], and even Lee himself. There is no doubt that the author has captured the essential ambition of Longstreet to command a major army and how far he (Longstreet) would go to achieve that end.

The author deals with all the aspects of Longstreet from birth to death, but he focuses most on his Civil War career, particularly on the aspects that created the controversy. He also calls it as he sees it. He takes Longstreet to task a number of times for poor judgment and pettiness that should not be present in a senior commander.

With this biography, the reader will come as close as is currently possible to learn what really made Longstreet tick.

If you have time to spend reading, this book would be a good investment for that time. What made Longstreet a good subordinate but a bad independent commander bears on how you might have to perform one day.

Victory: The Reagan Administration's Secret Strategy that Hastened the Collapse of the Soviet Union, Peter Schweizer. New York: The Atlantic Monthly Press, 1995.

During World War II, the Allies engaged in a conflict equally as important as armed combat, but this war did not normally make the newspapers. The combat was in the economic realm. To deny the Germans the economic support they needed from neutral countries or countries then under their control was a major part of the Allied strategy.

To a degree, the success of allied arms in the battles of World War II in Europe owes a great deal to the economic warfare waged by Britain and the United States during the war. There is a tie-in with the recent demise of the Soviet Union.

That the former Soviet Union fell because of internal problems and the basic flaws of the communist system is self-evident, but what is not is the extent to which the United States and its allies hastened the inevitable fall. In a new book entitled *Victory*, the author, Peter Schweizer, takes the reader into the center of the plan to force the Soviet Union to implode economically. The genesis of the plan began in the minds of some of the Reagan Administration's top officials, including the President himself. The author fingers the late head of the CIA, Bill Casey, as the point man for the strategic plan.

In a sense, the strategy was not particularly brilliant because it used tactics already well known in history. Its success was that the President grasped its essentials immediately and supported it without reservation throughout his administration. He can rightly claim a part in the demise of what he called the "evil empire."

The strategy worked in three ways—first, to deny the

Soviet Union needed hard currency; secondly, to format expensive guerrilla operations that would drain the USSR of both blood and treasure—particularly treasure; and third, to deny Western technology that helped fuel the Soviet effort to make hard currency.

This was partly how economic warfare was practiced during World War II, and it was just as effective in the 1980s as it was in the 1940s. The USSR had to use much of its dwindling currency reserves to shore up the satellite countries—particularly Poland, which had accumulated huge loan debts over the previous decade, and to keep the conflict in Afghanistan. The Reagan administration saw to it that weapons and equipment reached the Afghan fighters through Pakistan and that money, printing presses, and so forth, reached the Polish Solidarity movement in Poland when the Russians forced the Polish government to crack down on its own dissidents.

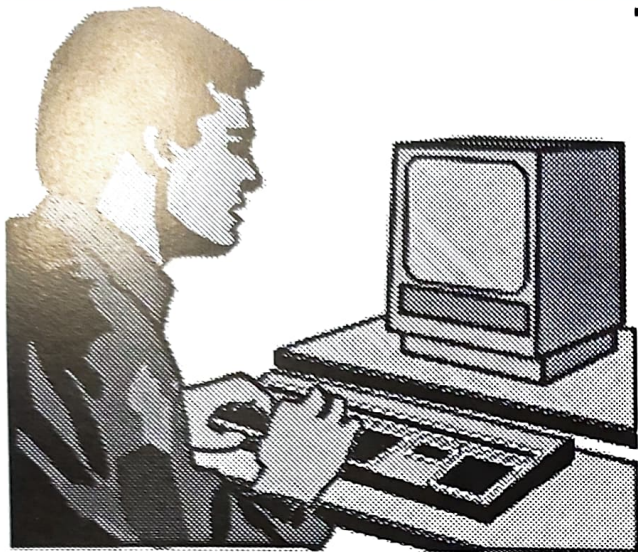
The Iceland Summit at the end of the book was one of the shorter, yet most interesting, chapters. There was no hint in the press at the time that Russia was in such a state. Gorbachev had made it clear by his own words to the press that Russia was in a bad way, and that he intended to do something about it. But the public was never told how bad it truly was.

The most important part of this book is what it should teach the United States. What can be used against the Soviet Union can be later used against this country. We are not quite as economically vulnerable as the USSR, but if some of the "doom merchants," such as Ross Perot and those who think like him are only *half* true, we could be in for a similar assault sometime within the next two decades. If you want to see why it is important to get this country's fiscal house in order, read *Victory*. It is well written and well researched.

National Ambient Air Quality Standards Application to Military Obscurants

In June 1997, the head of the US Environmental Protection Agency, Ms Carol Browner, informed the Department of Defense that new, lower particulate National Ambient Air Quality Standards will be applied "ensuring that local area(s) not be redesignated as a non-attainment area(s) 'solely on the

basis of use of obscurants or smoke.'" Ms Browner further assured DOD that EPA "is focusing on more regulation of fine particles rather than coarse particles contained in dust that arises during military field activities." For further information, contact Ms Gina Callahan, (303) 289-0517.



Keeping Our Guard Up

Operations security—the good old OPSEC of our youth—has gotten short shrift since the dawn of the information age, and now is the time to take a good look at the way we do business.

The information superhighway is a toll road, and we need to examine the potential costs before we sign up for a trip we may not be able to afford. Today, we can transmit so much information, so fast, that we may not stop to think

whether we should be doing so. There is a lot of E-mail traffic shuttling back and forth, and most of it is highly vulnerable to interception.

Electronic mail has a number of legitimate uses, and in our profession the exchange of ideas is at the top of the list. Today it is possible to get fast input from a variety of sources and levels of organization without the delays of routing staff actions through a conventional distribution system. This is fine, so long as key issues and players don't get bypassed for the sake of expediency. But while we're busy sharing our thoughts with our colleagues, we cannot afford to forget that there may be other parties who are equally interested in our discussions.

The Internet has become the Sears Roebuck catalog of the information age, and our thoughts are now accessible to a far wider audience than any of us would have dreamed a decade ago. Today, when you come up on the web, the world is listening. Legitimate interest in our military affairs can range all the way from the curious hobbyist to the men and women in uniform who read our journals for information that will support their professional development and help them do their jobs better. But there's another audience that listens attentively, dissidents at home and potential enemies abroad, and we still need to be careful what we reveal to them.

The dissolution of the Warsaw Pack—long regarded as the greatest threat to our security—did not sweep away the host of bad guys out there; indeed, it gave rise to a host of new ones, all intent on monitoring our capabilities and intentions. Nowadays, in open sources, we can read of unit deployments, unit and national strength figures, courses of action, weapons capabilities and employment options, and a host of other succulent bits of information. When a threat rears its head, experts appear on television to describe our options and likely courses of action. Time was, we sought to keep the enemy guessing; today his biggest challenge is to decide which channel can give him the most information.

You and I may have little—if any—control over these leaks, but we can decide what traffic we will pass over unsecure systems. Information doesn't have to be classified to be of value to an enemy; if you think a piece of data is sensitive, treat it as such and be careful how you transmit it. At the beginning of this note, I mentioned the possible cost of riding the information highway. If we're prudent, the cost will be measured only in dollars, and it will be the normal price of doing business. If we do not keep our guard up, however, the cost will be measured in lives.

Make changes where you can, train your soldiers to do likewise, and watch your lane. When troops go ashore to be met by alerted news media, it's bad; when they land to face an alerted enemy, it's inexcusable.

This editorial by Russell A. Eno, editor, Infantry, originally appeared in that magazine.



NSC and the JRTC Experience. See page 9.

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