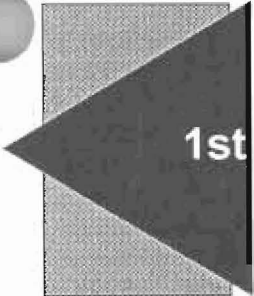


Information Age Army

—the Chemical Corps' role



1st Place

By CPT Mark Lee

*Somewhere in Southwest Asia
26 Aug 2004
0100*

Concern etched the face of the mobile strike force (MSF) commander. His MSF was rolling along the desert battle space toward enemy positions 25 kilometers distant.

The foe he faced today was far superior to the one he faced as a company commander in Operation Desert Storm. Equipped with advanced anti-tank guided missiles and up-armored T80 variants, the foe demonstrated his capability while blowing through the defense of his western-equipped neighbor in the weeks prior.

The dispersion of the MSF as it moved across the desert reflected the CO's concern. Spread out in a box 10 kilometers wide and 5 kilometers deep, the MSF presented no lucrative targets to the enemy.

Suddenly the message alert buzzer in the battle command vehicle brought the commander out of his current event's review and back to the task at hand. Unmanned aerial vehicles (UAVs) over the objective spotted a launch of enemy rocket artillery. The impact footprint of the volley appeared immediately on his tactical display. He ordered a change in the axis of advance for the MSF to

avoid the area. The order, instantly transmitted to all vehicles, enabled the MSF to wheel as one.

Relieved to see the unit icons change direction in unison, the commander then adjusted the orders to reflect the changes in route.

Suddenly the hazard warning receivers alerted. One of the NBC reconnaissance vehicles in the battle formation had detected a thickened G-series nerve agent within the rocket impact area. All the remaining stand-off detectors in the MSF turned to the area. The size of the vapor cloud, along with its resulting downwind hazard area, quickly appeared on the commander's tactical display. Again the MSF pivoted as one to avoid the contamination.

As the MSF passed through the edge of the vapor hazard area, the icons for the company closest to the hazard area changed from green to amber. Their on-board detectors had detected enough vapor to alarm. Most of their vehicle detectors cleared once the MSF had emerged from the vapor cloud. One platoon did not clear. They were closest to the impact area.

As the MSF surged towards the objective, the formation closed. The contaminated platoon received a change in mission through its Inter-Vehicular Information System (IVIS).

They would support the attack by fire, but would not participate in the initial breach.

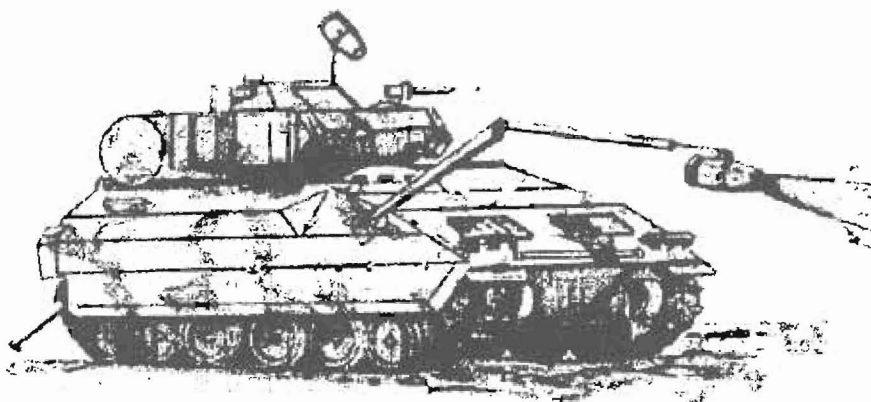
The movement, coordinated by the on-board navigation systems and the IVIS, took place quickly. Total situational awareness allowed the merging to take place smoothly.

Advanced field artillery systems, coupled with real time targeting from UAVs, began to place fire on the enemy positions just as the MSF rolled into direct fire range.

The artillery barrage, coupled with the devastating direct fire from the MSF, destroyed most of the enemy's direct fire capability with the first volley.

Approaching the obstacle belt, engineer assault vehicles, paired with third generation smoke vehicles, broke ahead of the fighting vehicles.

Just as they closed in on the engagement range of the remaining enemy positions, the smoke vehicles projected their multi-spectral obscurants over the breach area. The obscuration, tailored to blind enemy sensors only, was all but invisible to the MSF. They could still freely engage targets. For the enemy's gunner, it was as if someone pulled a window shade over their sights. They were unable to see anything beyond 100 meters in front of their positions.



A robot arm unwound itself from the top of the FDV and arched over to the contaminated tank.

Using liquid explosives, the engineers quickly breached the obstacle belt. The engineers transmitted data on the cleared lane to the task force. Computer-aided planning allowed the MSF vehicles to quickly flow through the breach and resume the attack formation.

Dismounted infantry, equipped with the Soldier Integrated Protective Ensemble (SIPE), quickly cleared and secured the objective. Meanwhile, the contaminated platoon moved to link up with the Forward Decon Vehicle (FDV). Notified of the platoon's impending arrival, the FDV operator quickly powered up the detection laser and activated his guidance system. The first vehicle, guided by digital cues from the FDV, pulled into position a few minutes later. A robot arm unwound itself from the top of the FDV and arched over to the contaminated tank. The arm began a pre-programmed, systematic search for contamination. The search took just under five minutes and detected no contamination.

As the decon specialist reset the robotic arm, the next vehicle moved into position. Halfway through the scan, the detector found several spots of contamination. After precisely outlining the extent of the contamination, the robotic arm rotated the decon head into position. Pinpoint applications of an ionic-resin

decontaminant, coupled with a negative pressure return system ensured complete decontamination. The return system transferred the contaminated resin to the internal processing tank. Once inside, the agent was enzymatically removed from the resin and neutralized. The processed resin was returned to the dispersion tank, ready for future use.

Once spot decontamination was complete, the scan resumed. The detector found three more areas of contamination, removing them quickly. Total time for this vehicle was 15 minutes. One other vehicle had spots of contamination, the final one cleared. Total time for the entire platoon was 35 minutes. Consolidation on the objective was almost complete as the platoon returned to the objective.

The hazard alert warbled once again. The task force commander watched as the icon for an incoming tactical ballistic missile appeared on the edge of the tactical display. Switching to a larger scale, he saw that the predicted point of impact was in the corps rear area.

Two more tactical ballistic missile icons appeared, also targeted at the rear target. "Ought to keep those guys on their toes," thought the commander.

Just then, two of the icons disappeared, signifying a successful

intercept by the Theater High Altitude Area Defense and third generation Patriot missiles over enemy territory.

Suddenly, the third icon changed in color and shape, signifying a partial intercept. The recalculated impact point centered on the MSF and its recently secured objective.

Minutes later, the remnants of the modified SCUD-E slammed into the ground almost five kilometers from the MSF position. The stand-off detectors immediately detected nerve agent and the MSF once again found itself in a downwind vapor hazard area.

Since the tactical display clearly showed the time of arrival of the vapor cloud, the task force was able to move to its alternate positions well before the cloud arrived. As the deadly cloud passed over the recently occupied position, the MSF was rolling toward its next objective...

The platoon leader of 2010 is in the first grade.

The dawning of the information age will fundamentally change the conduct of warfare. Information age technology, where information becomes a form of combat power, will change our doctrine, training, and operational style. We will no longer organize people around weapons systems, but will instead organize people around information. The force projection Army must execute any mission, any time, anywhere.

Doctrine drives change. It's our charter to ensure the Chemical Corps doctrine evolves alongside Army doctrine. Our fundamental mission will not change. We must ensure our forces are chemical trained and ready. We must prepare to fight in the future as a joint and possibly coalition force.

The ambiguous threat facing our future force creates a tremendous challenge. The proliferation of weapons of mass destruction propagates one of the fastest growing threats our nation faces today. Placing

these weapons and their delivery systems in the hands of rogue nations and other global gladiators represents a tremendous power shift from the bipolar world of the Cold War era.

Another fundamental shift in "things chemical" is our policy on the use of chemical weapons. The United States will no longer use chemical weapons to retaliate in kind. On the tactical level, the ability to equalize the battlefield was a strong deterrent. The asymmetrical battlefield we now face drives a major shift in the way we do business. A vigorous chemical training program that minimizes the impact of these weapons will be our best means of deterrence. Emerging technologies in target acquisition represent another threat to our future force. First generation night observation devices are readily available on the commercial market. The break-up of the Soviet Union unleashed a flood of these devices. It's only a matter of time before the next generation of these devices becomes readily available to anyone with a "gold card." Once highly classified satellite imagery is now for sale. Non-military satellites such as SPOT and LANDSAT now offer resolution down to 10 meters. We can't forget the intelligence provided to any potential foe by the ever-present media, providing a real time accounting of our every operation.

An Information Age Primer

Far from egg-headed future-speak, information age represents a logical progression of our society and military. The different sources may call them waves or ages, but the meaning is the same.

First Wave or the Agrarian Age states fit into our image of a pre-industrial age society. They make war at the operational level. Victory comes with the destruction of their armed forces.

Second Wave or Industrial Age states include the major forces of World War II and the Iraqi Army of

1990. Mass production of arms and men was the way of conducting operations. Victory over an industrial state requires the destruction of not only a large part of the armed forces, but also a large portion of its industrial base.

In *Third Wave* or Information Age states, productivity results not from mass but from precision. This type of organization is based more on a network model than a factory. Shared information leads to situation awareness. Militarily, this precision refers to target identification and engagement. Victory over an Information Age foe will require destruction of the armed forces and industrial bases, but also we must dominate its information system.

Using the network model, it's easy to make the next step and envision a battlefield without massed formations. In fact, one of the properties found in Information Age organizations is their de-massification. Precision replaces mass. The servicing of strategic targets in Iraq by precision-guided munitions represents a good example of the application of precision over mass.

To take the next step, consider what the Chief of Staff of the Army said in a recent paper on War in the Information Age. "Information age armies will develop a shared situational awareness. This awareness results from having common, up-to-date, nearly complete friendly and enemy information distributed among all elements of a task

The ability to add value to the information is the key to digitalization.

force... This shared situational awareness, coupled with the ability to conduct operations day and night, is what will allow information age armies to observe, decide, and act faster and more precisely than their enemies."

The velocity of weapons systems (both muzzle and ground velocities) has almost reached its limits. By leveraging information, an information age force can apply its combat power at the time and place of its choosing and decimate a numerically superior, industrial-based foe.

The road to the information age Chemical Corps will not be an easy one. Our evolution must be an information-based one. No longer can we afford to develop equipment and doctrine separately. The entire development and acquisition cycle, from factory to foxhole, will occur simultaneously. Our participation in the Louisiana Maneuvers and in the TRADOC battlelabs must ensure that America's Army remains chemical trained and ready.

Information Age Warfare and the Chemical Corps

A simply stated path to an information age fighting force addresses two Third Wave principles, "Digitalize and De-massify." These two concepts readily apply to Chemical Corps operations.

Digitalize (Chemical Information)

Digitalization represents the best way to create the shared situation

awareness General Sullivan spoke about. The human ear/brain combination cannot process the volume of information needed for this task.

However, digitalization cannot be a simple passing of information from one source to another. Each processing station must be able to manipulate and add something to the data it passes along. The ability to add value to the information is the key to digitalization.

The power of the microprocessor will eliminate the NBC Warning and Reporting System messages as we now know them. NBC1 reports, processed on site, define a precise hazard alert area. The information age Army can calculate the precise hazard warning predictions that took two Cray super computers to execute in the Gulf War. The commander will no longer have to keep the GTA 3-6-3 in his pocket. Warnings, like those in the vignette, will appear on the tactical display as an overlay.

Digitalization will reach far beyond the turret of the future fighting vehicles. Logistical plans and data will also move across the digital battlefield. Moving information to the combat supporter will allow them to use real-time data to plan and execute their sustainment operations.

De-massify (Chemical Operations)

Precision replaces mass. With chemical operations, mass refers to far more than numbers. The application of de-massification, as it applies to our major battlefield mission, follows.

Smoke Operations. De-massification in smoke operations refers to the type and way we use obscurants on the battlefield. Sensor proliferation will drive us to the development of the next generation of multi-spectral obscurants. We will develop the

capability to tailor these obscurants to blind specific wavelengths used by the enemy while ours will be unaffected. The "dial-a-smoke" capability will allow us to still enjoy the advantage provided by our current family of obscurants.

Smoke delivery systems will become more maneuverable, survivable, and effective. They can place these tailored obscurants anywhere within the immediate battle space at a moment's notice.

Contamination Avoidance. Stand-off detection, accelerated (digital) alert procedures, and precision vapor modeling will act together to take some of the mass out of weapons of mass destruction. De-massification will let us break the ATP-45 hazard prediction model. While these weapons will still impact over a large area of the battlefield, a precise definition of the hazard will give the maneuver commander more options than he enjoys today. In future cases the commander will be able to define the operational risks that he will accept in contamination avoidance. Considering the chemical officers' recommendation, he could accept some risk in passing through a vapor hazard area in order to meet the mission requirements.

Decontamination. De-massification of decontamination operations is an extension of the principles of decontamination.

Decontaminate as soon as possible, as far forward as possible. Moving as an integral part of the maneuver element, the FDV will give the commander a quick response decontamination asset. New technologies in decontaminants will break our water dependency. Again, robotics will enhance their capability by allowing for precise application

and removal. Removal and regeneration of decontaminants will stretch our capability and reduce the hazards on the battlefield. Imagine a decon site without sumps!

Another principle is decontaminate only what is necessary. Robotics, executing a precision search for contamination, coupled with new detection technologies, will allow the FDV to quickly process potentially contaminated vehicles. On-board detectors will speed up the screening process for all tactical vehicles.

Our Challenge

The change we initiate today will determine whether the mobile strike force commander will benefit from the chemical systems described. The superstar weapon systems of *Operation Desert Storm* began in the late 1970's and represent the vision of leaders of that time. Our challenge is to display that same vision.

The Chemical Corps is stepping out toward the 21st Century. The spread of nuclear, biological, and chemical weapons across the globe gives us one of the few growth threats our forces face. Chemical trained and ready is a journey, not a destination. We know where we are going and are moving out.

At the time this article was written, CPT Mark Lee was attending the Chemical Officer Advance Course. His previous assignments include battalion chemical officer, 4th Battalion, 325th Airborne Infantry Regiment, 82d Airborne Division; platoon leader, 21st Chemical Company (Airborne), 82d Airborne Division; NBC staff officer, 82d Airborne Division Chemical Section, and aide-de-camp to the Chief of Chemical. CPT Lee is a graduate of the Chemical Officer Basic Course, Airborne, Air Movement Operations, and Jumpmaster Schools.