

M17-Series Mask Chemical Maintenance Facility in Saudi Arabia

By CPT John P. Murphy

Never in the history of modern warfare had the threatened use of bulk quantities of lethal chemical agents on the battlefield been as dreaded as it was in the Persian Gulf War. Iraq's Saddam Hussein demonstrated his willingness to unleash his chemical arsenal on any armed opponent when, during Iraq's eight-year war with Iran, Hussein repeatedly employed lethal agents as well as incapacitating agents against the Iranians. His use of deadly nerve and blood agents against rebellious Iraqi Kurds within the borders of his own country in 1988 resulted in the deaths of hundreds of innocent civilians — including women and children.

Iraq's capability to project the chemical threat across the theater was unquestioned since multiple delivery means including fixed and rotary wing aircraft (bombs, spray tanks, and air-to-surface missiles) as well as artillery and surface-to-surface missiles could be utilized. There was no reason to believe that Hussein would hesitate to use chemicals again, this time against the hundreds of thousands of U.S. and coalition forces poised to forcefully evict Iraqi forces from Kuwait. The ability of the individual soldier's chemical protective equipment to perform as it was designed and to protect against a real-world chemical threat suddenly took on a new level of importance.

The effective performance of the soldier's individual protective equip-

ment, especially his mask, would enable him to fight effectively in a chemical environment. The protective mask being most important since respiratory protection against lethal vapor hazards is critical from a survivability standpoint. The care and maintenance of masks, especially in the Desert Shield/Storm theater of operations where NBC training was at

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an all-time high and the environmental conditions were harsh, became increasingly significant. Timely and accurate preventive maintenance checks and services (PMCS) performed by the individual soldier, as well as mask fit-testing by unit level NBC personnel provided the best way to ensure mask serviceability and operational readiness. What was a soldier to do, though, if PMCS or fit-testing determined that a mask was unserviceable?

Because the threat use of chemicals

was so great and the need for mask maintenance seemed a necessity, Army Chemical Corps leadership directed that a maintenance organization be established in the Southwest Asia theater to provide a general support/depot level mask maintenance capability. This organization, called the chemical maintenance facility (CMF), was staffed by U.S. Army Armament, Munitions and Chemical Command soldiers and DA civilians from both Pine Bluff Arsenal, Arkansas, the peacetime depot responsible for this mission, and the U.S. Army Chemical Research, Development, and Engineering Center at Aberdeen Proving Ground, Maryland. The CMF was attached to the U.S. Army Support Group-Forward (USASG-F), an in-theater depot organization responsible for some GS and all depot level maintenance on Army equipment in the theater.

Once a decision was made to establish the CMF in Saudi Arabia, the mask repair/rebuild operation at Pine Bluff arsenal packed and palletized their test equipment and repair parts and shipped them to Saudi Arabia where the test line and repair operation was reassembled in the USASG-F facility north of Dammam, Saudi Arabia. The facility became mission capable on 10 Dec 1990.

The specific mission of the CMF was to inspect, repair, and test theater M17-series mask assets turned in as unserviceable through normal unit

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and intermediate level supply channels, and, upon successful repair and test, return the masks to theater stocks for reissue. Although the CMF had the capability to fit-test and machine-test all U.S. masks, repair/rebuild operations were set up for the M17-series mask only since approximately 75 percent of Army forces carried that mask. Depot level maintenance on M24- and M25-series masks was accomplished, as usual, at PBA in CONUS. Additionally, the CMF was the designated theater issue point for a limited number of M40 masks which were issued to soldiers in the theater only after extensive fit tests, administered by skilled NBC personnel, determined they could not be fit with any size M17 mask.

The operation at the CMF mirrored that of its Pine Bluff Arsenal counterpart; upon receipt, masks were screened and, based on degree of unserviceability, were assigned a condition code. The masks with catastrophic damage (for example, tear in the rubber faceblank or dry-rot) were cannibalized for serviceable components then packaged and sent to CONUS for demilitarization at Pine Bluff Arsenal. The reparable masks were stripped of components and thoroughly cleaned, sanitized and dried. The masks were then sent to the rebuild line where major components and assemblies were replaced. They were then sent down the test line consisting of numerous test stations where

machines would evaluate the protective integrity of the major components of the mask which could be subject to the formation of a leak-path (for example, the drink tube, outlet valve, and faceblank). The entire mask was subjected to extremely rigorous challenge testing to certify its protective capability before it was accepted and validated as being serviceable and returned to theater stockage for reissue.

Those masks which failed any of the challenge tests had suspect faulty parts replaced and were retested. If it failed again, it was coded for demil at PBA. Only the masks which passed these tests of potentially life-or-death protective capabilities were sent back for reissue. It was imperative that in this theater where the chemical threat was so great that no mask mistakenly be returned to a soldier for use unless it was operationally sound and would provide the protection needed to survive and fight on a chemically contaminated battlefield.

After the facility opened on 10 Dec 90, business was slow the first two weeks because most theater units were still unaware of the CMF's existence and physical location. Gradually, as a result of notification of units through theater command channels and word-of-mouth notification, business began to pick up. In fact, for a three-week stretch in late December and early January, business from walk-in "customers," soldiers and DA

civilians who had the chance to get to the CMF in person, was overwhelming. Some days lines of soldiers started forming at the door at 0300 hours for help with minor repairs or requests for fit-testing service. In fact, a 24-hour capability was established to handle the large number of soldiers and minimize their waiting time. The soldiers were well aware of the magnitude of the chemical threat and took it very seriously.

Although the use of normal supply return channels was stressed to soldiers, no soldier who legitimately needed maintenance done on his mask was turned away. The CMF operation was extremely customer-service oriented. Each employee knew that his ability or inability to perform this important maintenance function accurately could have possible life or death implications. The appreciation shown by the soldiers who visited the CMF was tremendous. They were extremely grateful for the personal service rendered on such an important piece of their individual protective equipment. One soldier from the 82d Airborne Division said, as he exited the facility after testing had indicated that his mask worked fine, "Knowing that my mask will protect me if Saddam starts using chemicals gives me one less thing to worry about in the midst of a fire-fight and allows me to concentrate more on doing my job as an infantry soldier." A decision was eventually made by command channels to eliminate the walk-in service because it was determined that adequate unit and intermediate level supply channels had been established which could effectively facilitate the flow of unserviceable masks to the CMF for the necessary maintenance.

In addition to the on-site maintenance service provided at the Dammam CMF location, several mobile mask maintenance contact teams were requested by Corps units for urgent forward maintenance and

fit-testing assistance. These contact teams would move forward with repair parts and fit-testing equipment, along with a stockage of serviceable masks of various sizes in case a direct exchange was required, and link up with units to accomplish the needed maintenance. On one trip, elements of seven different 18th Airborne Corps units were serviced. The feedback from unit commanders and soldiers for this service was extremely positive. It required nothing of them except to be at the established link-up point with the people who needed help. A platoon leader from the 101st Airborne Division (Air Assault) commented that, "By having the maintenance capability come to me, it saves valuable training time by not sending soldiers to the rear, and at the same time, a critical maintenance requirement for some of my soldiers gets taken care of. It's a win-win situation for me."

A valuable lesson learned from the CMF concept might be that, although the fixed-site CMF was an extremely

valuable and useful maintenance asset, if an endeavor like this is ever undertaken again in the future, it might be useful to have a number of designated mobile mask maintenance and testing teams who could provide a certain level of minor repair and fit-testing in the field to forward deployed units. These teams could be managed by the corps chemical cells who would prioritize their efforts.

To be sure, the CMF concept established to support the soldier in the field during Operation Desert Shield/Storm was a great success. It was a capability quickly organized to meet a much-needed wartime maintenance requirement. Between the time the facility became operational on 10 Dec 90 and when it shut down in late March 1991, repair work or fit-testing services were performed on over 14,000 masks by the skilled employees of the CMF. If a soldier's performance is enhanced by confidence in his equipment, then, in judging from the comments, smiles and sighs of relief from the soldiers

whose masks were serviced at the CMF, the Iraqis didn't stand a chance.

At the time this article was written, CPT John P. Murphy was stationed at the US Army Chemical Research, Development, and Engineering Center (CRDEC) where he is the project manager for several chemical defense programs for special operations forces. CPT Murphy was the commander of the chemical maintenance facility in Saudi Arabia. He was commissioned in 1985 from the University of Notre Dame's ROTC program where he received a BS degree in chemical engineering. He attended Northwestern University where he received an MS in chemical engineering as a participant in the Army's Technical Enrichment Program. CPT Murphy's previous assignments have included a tour as a battalion chemical officer for the 5th Battalion, 16th Infantry Regiment, 1st Infantry Division (Mech), Fort Riley, Kansas; chemical engineer in the Munitions Directorate of CRDEC working on the design of the Binary Chemical Munitions Production Facilities; and then as the Aide-de-Camp to the commanding general of CRDEC.

Army Receives First Fox Vehicles

*Public Affairs Office,
Chemical Research, Development, and Engineering Center
Aberdeen Proving Ground, Maryland*

The first eight FOX nuclear, chemical, and biological reconnaissance system vehicles were delivered to the U.S. Army in Germany 11 October by General Dynamics Lands Systems Division and Thyssen Henschel, Kassel, Germany.

The Army is purchasing 48 FOX vehicles to provide an urgently needed capacity.

The FOX, a wheeled armored vehicle designed to detect contamina-

tion on the battlefield, was accepted by the office of the Project Manager for Nuclear, Biological, and Chemical Defense Systems which is headquartered at Aberdeen Proving Ground, Maryland.

A high-speed amphibious vehicle, the FOX contains a dedicated system of detection, warning, and sampling equipment to include the mass spectrometer. Through the use of a secure communications network, the

FOX provides warning to the soldiers to avoid the contaminated area. The vehicle is a non-developmental item currently used by the German army. Germany provided 60 systems which were used by the U.S. Army during Operations Desert Shield and Storm.

The production of the first eight systems is a milestone in filling an urgently needed requirement and in international cooperation.