40,000 Train in Che

—air, land, maritime operations

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Soviet and Warsaw Pact powers continue to espouse the military utility of employing chemical weapons in warfare. The Soviets also continue to exploit technology for new or improved chemical warfare agents.

The size and scope of their activities demonstrate a formidable capability to carry out offensive chemical operations. This has been demonstrated most recently by their employment of chemical weapons in Afghanistan and their support of "client" forces in Southeast Asia.

Over the past several years, nations outside of NATO and the Warsaw Pact also have shown a strong interest in chemical weapons. The use of chemical weapons by Iraq against Iran in 1984 and again in 1985 indicate the capability, employability, and willingness to use chemical munitions by some Third World countries.

Currently, at least 11 countries outside of NATO and the Warsaw Pact have a chemical capability, a fact which has major impact on US forces' strategic planning.

Typical targets for chemical weapons might include nuclear delivery sites, air bases, naval bases and seaports, command and control facilities, storage depots, supply routes, troop concentrations, artillery and armor, and amphibious landing forces, including amphibious ships and supporting vessels.

How well do US armed forces perform on a chemically contaminated battlefield? An East Coast exercise where the forces of the Atlantic Command performed air, land, and maritime operations in a chemical environment reveals significant NBC results.

Solid Shield 87, the official name of the exercise, involved elements of the US Army, Navy, Marine Corps, Air Force, and Coast Guard, both active duty and Reserve Components. For many of the 40,000 participants, NBC will be remembered as one of the highlights of the exercise.

A major objective of Solid Shield 87 involved the evaluation of chemical defense in six critical areas: 1) chemical intelligence analysis and distribution; 2) command and control of a joint operation in a chemical environment; 3) individual and unit chemical defense; 4) the NBC Warning and Reporting System in a joint operation; 5) joint decontamination operations; and 6) the evacuation and treatment of contaminated casualties.

The chemical intelligence build-up began two months prior to the actual

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Editor's note: *LTC Milton E. Miles, chemical officer, USCINCLANT (US Commander in Chief, Atlantic), points out that biannual Solid Shield exercises are directed by the Joint Chiefs of Staff, and sponsored by USCINCLANT. Planning for Solid Shield 87 began 18 months prior to D-Day, 4 may 1987.*

Specific development of the chemical defense scenario was accomplished by the NBC Section, J-3, Joint Exercise Control Group, which was activated for planning in February 1987.

Over the next five months, 19 officers and DOD civilians representing the US Army, US Marine Corps, US Navy Reserve Detachment, ERTLANT (Emergency Response Team, Atlantic) 108, and Chemical Warfare Shipboard Systems Branch, NAVSWC (Navy Surface Warfare Center), Dahlgren, Virginia, contributed their expertise to the successful execution and completion of the chemical defense portions of the exercise.

The joint exercise provides the unified commander in chief a first hand indication of his forces' capability to operate in a chemically contaminated environment. The importance of an exercise such as Solid Shield cannot be overlooked in that it also provides the opportunity for inter-service coordination.

All photos used in this article are courtesy of US Navy.

mical Environment

test chemical defense performance

exercise. Weekly updates transmitted to the participating units contained chemical related intelligence, such as the enemy's offensive chemical warfare capabilities, reports of intensive enemy chemical defense training, and a deceptive psychological campaign conducted by the hostile government to cover the build-up. Part of the intelligence included documents, equipment, and even a container of "chemical agent" captured by the US Coast Guard during the Maritime Defense Zone portion of Solid Shield 87.

Initial reports to the Exercise Joint Control Group indicated the participating friendly units were taking the intelligence very seriously. It was apparent chemical defense refresher training was a high priority for the Navy's ship crews and Army and Marine units.

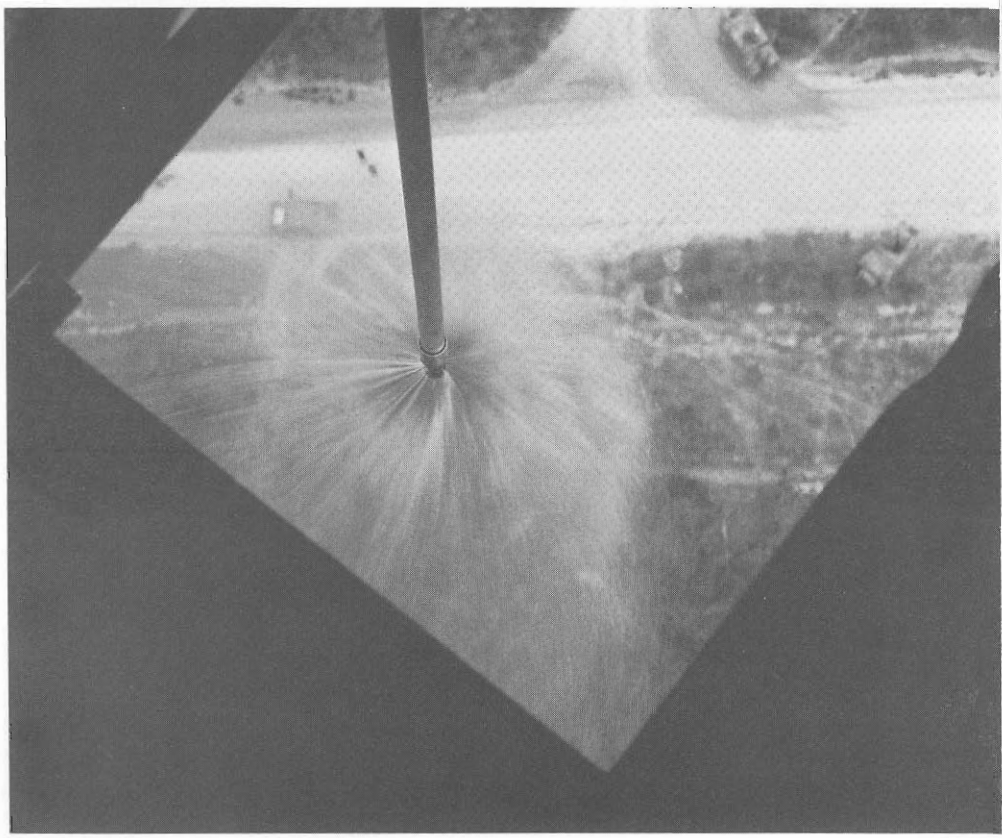
To evaluate individual and unit chemical defense readiness and maximize the training potential of the exercise, realism was foremost in the planning of chemical events during Solid Shield 87.

The chemical OPFOR (opposing forces) consisted of three elements. Marine A-4 aircraft equipped with spray tanks filled with PEG-200 and methyl salicylate attacked the ships of the amphibious task force. A Marine CH-46 equipped with a prototype sprayer conducted spray missions against friendly ground forces and forward airfields.

Two mobile ground teams employed M9 SPAL, BUSH, and smoke grenades to simulate artillery attacks. Also, BUSH "landmines" were integrated into obstacles the friendly forces would encounter. To exploit the psychological effects of chemical warfare, the "enemy" distributed leaflets among the friendly ground forces in an attempt to destroy trust in the protective equipment and enhance the always present fear of the effects of chemical weapons.

Naval forces also participated in the

Chemical controller checks for possible contamination with new Chemical Agent Monitor (CAM) shortly after a CH-46 Marine Corps helicopter chemical spray attack.



chemical battlefield. Ten spray attacks of simulant were scheduled against the Naval task force. Marine Corps A-4 aircraft carrying AERO-14B spray tanks were tasked to attack two ships per day during the five days of the amphibious assault phase of Solid Shield.

The simulant spray missions tested the training readiness of the *USS Bainbridge,* a guided missile cruiser; the *USS Saipan,* a helicopter and troop-carrying ship; the *USS Harlan County,* an amphibious vehicle and troop-carrying ship; the *USS Connely,* a destroyer; and the *USS Mount Whitney,* the amphibious task force command and control ship.

Standard procedures for shipboard NBC protection and contamination avoidance include activation of the ship's water washdown system. The system consists of sprinkler heads mounted in the ship's decks and activated whenever the ship enters fallout, rainout, or a chemical agent cloud; or prior to, during, and immediately following a chemical attack directed against the ship. Sea water is pumped into the system to wet down the ship and wash off any contamination.

Chemical agent simulant is sprayed on ships of the amphibious task force.

Some ships have the ability to energize selected portions of the water washdown system. Personnel then can continue to conduct helicopter operations on the stern of the ship while providing protection to the remainder of the ship. This can almost be thought of as the ship itself being in MOPP2— partially protected, with full protection attainable in a few moments.

Just as with ground forces, the ship's forces must train as a team to allow the ship to function and perform its mission in an NBC environment. Evaluators on board the ships provided extra training and assistance to help the crews learn how to deal with the challenges of operations afloat under chemical conditions.

Overall, the sailors did exceptionally well. Evaluators aboard the *USS Mount Whitney* remarked that the reaction of the crew to a chemical spray attack was "the best they had ever seen."

Many of the officer and enlisted participants ashore and embarked remarked how the realism in the chemical attacks made them not only more enthusiastic in their reactions, but also highlighted various aspects of chemical agent detector paper, and how liquid from a spray attack would actually be distributed over an area.

To evaluate command and control in a chemical environment, headquarters of several echelons received special attention from the chemical OPFOR. The targets included bat-

Ship's water washdown system flushes chemicals from deck.

talion operation centers, the 2d Marine Division Headquarters, the 2d Marine Air Wing Headquarters, and the *USS Mount Whitney,* the command ship for the joint amphibious and airborne assault. Overall, the operations of the headquarters were not degraded.

With over 50 chemical events taking place, the NBC Warning and Reporting System received more than ample usage. Because of standardized reporting formats and the use of JINTACCS (Joint Interoperability of Tactical Command and Control Systems), the actual exchange of chemical data between services was not a problem. However, as chemical reports moved up the chain of command, information tended to travel at a progressively slower rate.

A major goal of Solid Shield 87 was to evaluate the possibility of joint service decontamination. On one occasion, the support area of the 82d Airborne received a simulated persistent attack using PEG-200 with methyl salicylate as a tracer.

For this attack, Army decontamination assets were not available, and a request for decontamination support was forwarded to the 4th Marine Amphibious Brigade. The requirement was to provide rapid response to the 82d Airborne soldiers at Camp Davis, an old abandoned airstrip about 30 kilometers and one unbridged river (3 kilometers wide) away.

The decon mission was approved and tasked to Brigade Support Group 4 (BSSG-4). BSSG-4 requested two CH-53D helicopters from Marine Heavy Helicopter Squadron 461. Two M17 SANATOR decon units, a filled 500-gallon water bladder, decontaminants, chemical protective overgarments and miscellaneous equipment necessary for hasty vehicle decontamination, and chemical protective overgarment exchange were moved to a tactical landing zone.

Shortly after the helicopter request was approved, two CH-53D Sea Stallions arrived at Tactical Landing Zone BLUEBIRD. Helicopter Support Teams (HSTs) internally loaded the two SANATORs, two supervisory personnel from the 2d Force Service Support Group NBC platoon, HST personnel, and all other items except the water bladder, on one aircraft. The 500-gallon bladder was slung-loaded and externally lifted by the other CH-53D.

A short flight later, the Marine Decon Team arrived and set up a hasty decon site at Camp Davis. The HST personnel are cross-trained as extra duty decon team members and they assisted the Airborne soldiers in successfully accomplishing a hasty decon of their contaminated vehicles.

To check the thoroughness of the vehicle washdown, the new Chemical Agent Monitor (CAM) was used to detect and locate any remaining methyl salicylate tracer that had contaminated the vehicles. Once decon and chemical protective overgarment exchange were completed, the Marines redeployed by helicopter lift to TLZ BLUEBIRD and prepared the chemical equipment for future deployment.

Although a relatively new concept,

Survey team checks flight deck for contamination after washdown.

this phase of the exercise was highly successful for all involved. Heliborne delivery of the NBC platoon will be tested again by the Marine Corps. Future plans include standardizing a decon "package" for helicopter delivery of rapid response decon teams and assets.

The main reason for the success of this joint decontamination operation was the common chemical doctrine and training of Army and Marine Corps personnel at the Chemical School at Fort McClellan. Another factor contributing to success was the ability to use helicopters to transport decontamination equipment (including water), as a viable option for light infantry forces. The utility of helicopter-borne response to decontamination tasks cannot be overstated.

Use of chemical weapons in an otherwise conventional warfare scenario will result in significant impact on the medical capability to treat and handle casualties. Many medical facilities might be located near chemical target areas and may be subject to contamination.

These facilities include battalion aid stations, hospital and medical companies, casualty receiving and treatment ships, fleet hospitals, and hospital ships. Provision of medical care in a contaminated environment is extremely difficult due to the encapsulation of medical personnel in their individual protective ensembles.

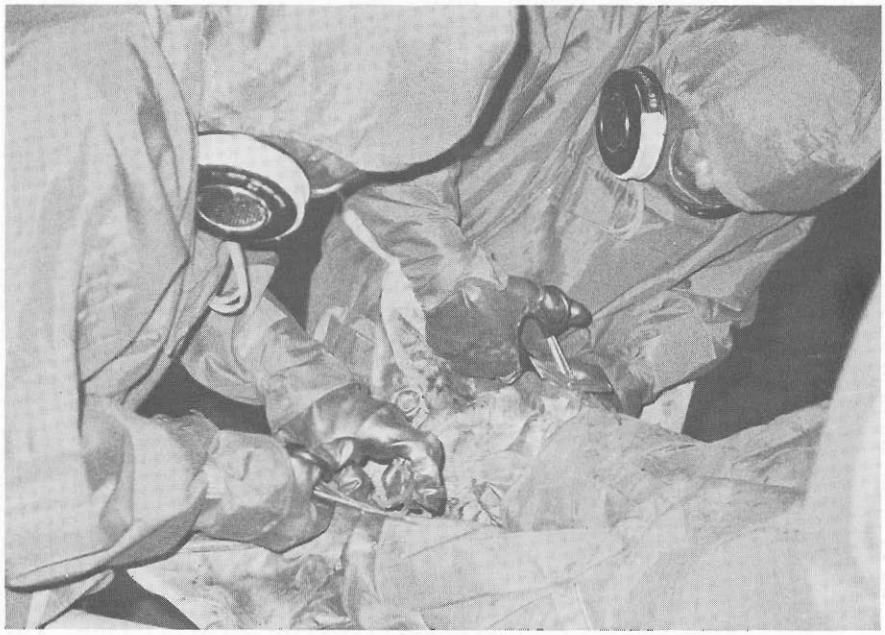
Medical care is best provided in an environment free of toxic agents. This environment might be provided by a collectively protected facility, or be in an uncontaminated area. Medical units ashore and afloat can expect to receive contaminated casualties and must be prepared to provide contaminated casualties with a comprehensive and thorough decontamination. This procedure is similar whether processing patients into a collectively protected facility or processing from a contaminated area to an area free of contamination.

All personnel must be proficient in the procedures involved in entering and exiting collective protection facilities. Individuals and units will have to be increasingly self reliant and confident in making decisions and taking actions without outside assistance.

Improved and new methods of simulating NBC attacks must be used during unit training exercises to create a suitable environment for evaluating the NBC Warning and Reporting System and a unit's ability to survive and operate in an NBC environment.

Simulants should be environmentally safe and medically acceptable, activate remote alarm and detector systems, and inflict a penalty against personnel with incorrectly fitted or

Decon team cuts contaminated clothes from casualty before transfer to ship's medical facilities.



Chemical controller sprays simulant on Marine during participation in the contaminated casualty handling exercise.

faulty NBC defensive equipment.

As LTC Bardill points out (in his article entitled "Training to Win") in the Spring (1987) *Chemical Journal,* NBC warfare is not a separate, special form of war, but is instead a battlefield condition just like rain, snow, darkness, electronic warfare, heat, and so on. Units must train to accomplish their wartime missions under all battlefield conditions. Whenever NBC is separated from other training events, we condition our soldiers to regard operations under NBC conditions as a separate form of warfare.

Solid Shield 87 provided an opportunity to exercise joint operations in a chemical environment. Shortcomings in training readiness and doctrine were identified. Corrective actions have been initiated. Innovative procedures were tested, and changes to unit SOPs are now being made. Joint operations in an NBC environment may be difficult, but well-trained units and staffs can make it happen.

From a medical perspective, casualties coming from areas where chemical weapons have been employed must be viewed as potentially contaminated. Upon receipt of the CAM by medical units, their contamination identification and isolation capability will be significantly enhanced.

The US Navy is developing new procedures for handling contaminated casualties aboard ships without disrupting ongoing activities, and, at the same time, limiting the spread of contamination.

To cap off the chemical portion of Solid Shield 87, a mass casualty exercise involving contaminated patients was conducted. To test the new procedures, 25 role players received moulages to simulate conventional wounds. Each role player then donned a chemical protective overgarment, mask with hood, overboots, and gloves, and was "contaminated" with PEG-200.

Tinopal, a black light tracer, was added to the PEG-200 to check for thoroughness of decontamination and detect any spread of contamination. From a medical clearing station on shore, the casualties were evacuated by CH-46 to the *USS Guam,* now performing in its role as primary casualty receiving and treatment ship.

For the medical team aboard the *USS Guam,* this was a crucial test of the proposed doctrine as well as the team's ability to work with contaminated patients.

Within 90 minutes, all 28 casualties were decontaminated and receiving treatment for their conventional wounds. A black light test of each casualty showed no contamination transfer to the unprotected underclothing or skin. Contamination spread within the ship was limited to the patient arrival and decontamination areas.

Solid Shield 87 provided numerous opportunities for individuals and units to train and practice their chemical defense measures in a realistic combat environment. As we have seen, realistic training reinforces the NBC defense system and reduces the physiological and psychological impact on combat effectiveness.

We know the Warsaw Pact and Third World countries have a very effective NBC capability. The training of US military personnel, units, and specialized NBC teams will become increasingly more important as the US and its allies acquire more sophisticated NBC defense equipment.

As commanders have stated, training must continue to emphasize not only individual survival, but also those sustained unit operations required for mission accomplishment in an NBC environment. NBC situations must be integrated early into all phases of individual and unit training, as well as in field, air, sea, and joint exercises to portray realistic Threat doctrine and capabilities.

All organizations must be trained in NBC detection and identification procedures, particularly units with an inherent reconnaissance mission. First aid and casualty handling, including mass casualty handling, must also be an integrated part of training. NBC contamination, medical, operational, and logistical problems should be evaluated and responded to realistically at all command and staff levels.

Particular emphasis must be placed on the ability of personnel to remove contaminated clothing and equipment while minimizing the transfer of contamination to unprotected skin or to nonprotective underclothing.

MAJ Walter Polley received his commission in 1974 from OCS at Fort Benning, Georgia. His past assignments include toxic chemical storage officer, brigade chemical officer, NBC readiness coordinator for the National Guard and Army Reserve, chemical depot operations officer, and assistant division chemical officer. MAJ Polley is a graduate of the Chemical Officer Basic and Advanced Courses and Combined Arms and Services Staff School. He participated in Solid Shield 87 in the Exercise Joint Control Group as the chief of NBC Plans and Operations. MAJ Polley is the US Army Liaison Officer to the German Army NBC School in Sonthofen, West Germany.

1LT Michael Dlugopolski was a distinguished military graduate from the University of Kansas in 1984. Following attendance of the chemical officer basic course at Fort McClellan, Alabama, he was assigned as chemical staff officer, 5th Battalion, 29th Field Artillery at Fort Carson, Colorado. 1LT Dlugopolski participated in Solid Shield 87 in the Exercise Joint Control Group as the NBC plans officer. He is currently assigned to the 31st Chemical Company, 4th Infantry Division (M) as a decontamination platoon leader.

CW03 William Hartzell enlisted in the United States Marine Corps in 1973. In 1976, he was assigned as an instructor at the Fleet Marine Force Atlantic NBC School at Camp Lejeune, North Carolina. In 1981, CW03 Hartzell was appointed a warrant officer, and has since served as an NBC officer in Hawaii and Camp Lejeune. He attended the US Army Chemical School at Aberdeen, Maryland, and the Technical Escort School at Redstone Arsenal, Alabama. CW03 Hartzell is currently the NBC officer for the 2d Force Service Support Group, Camp Lejeune and was an active participant in Solid Shield 87.