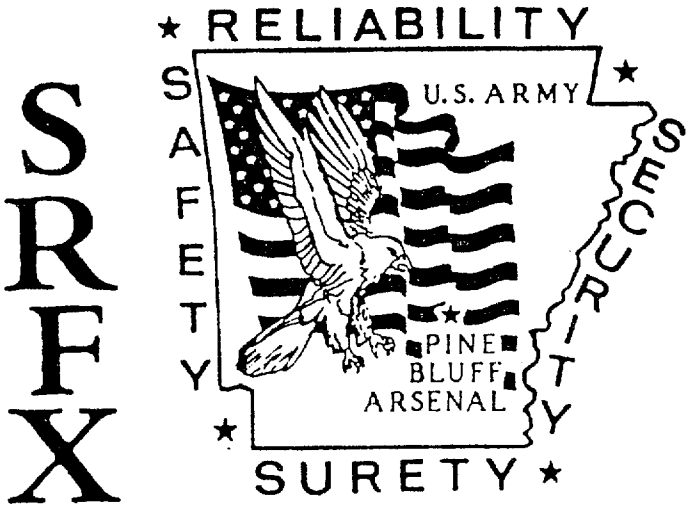
AFTER-ACTION REPORT
VOLUME I
(EXECUTIVE SUMMARY)



SRFX 1989

THE 1989 DEPARTMENT OF THE ARMY SERVICE RESPONSE FORCE EXERCISE

THE SRFX-89 WAS CONDUCTED BY THE U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL AND THE U.S. ARMY MATERIEL COMMAND SURETY FIELD ACTIVITY

The 1989 Department of the Army

Service Response Force Exercise

After-Action Report

Volume I

EXECUTIVE SUMMARY

The Service Response Force Exercise - 89 (SFRX-89) conducted at Pine Bluff Arsenal was the most valuable experience to date in providing the assurance that the Army, in conjunction with State and Federal Agencies, could respond to an off-post toxic chemical accident and manage the crisis responsibly.

Plans, concepts, equipment, facilities, and people were fully challenged and the exercise outcome provided valuable lessons to be incorporated in current plans and future operations.

It will take a lot of time and resources, but we must continue to plan, exercise and improve our Emergency Response Operations to assure ourselves and our community that the Army, along with Federal, State and Local Officials will be able to minimize the impact of a major chemical accident should it occur.

DAVID A. NYDAM
Brigadier General, USA
Commander
Service Response Force

VOLUME I

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SECTION A

INTRODUCTION

Purpose of After-Action Report

The Service Response Force Exercise - 1989 (SRFX-89) After-Action Report is based on observations made during the exercise, and focuses on Army chemical weapon accident response actions, policies and procedures.

The After-Action Report consists of two volumes. Volume I, EXECUTIVE SUMMARY, describes the program and provides significant conclusions. Volume II, OBSERVATIONS, is a compilation of observations of exercise events made by participants, accompanied by discussions and recommendations.

The After-Action Report is designed to serve as:

- A record of actions that occurred during SRFX-89 so that readers can appreciate the scope of activity during such a crisis.

- An action document for making improvements to Army concepts, plans and procedures. The appropriate lead agency is identified in Volume II for observations requiring action.

- A planning guide for the next SRFX by identifying subjects that should be explored.

Background

The U.S. Army Materiel Command Surety Field Activity and the U.S. Army Defense Ammunition Center and School conducted an Army Service Response Force exercise at Pine Bluff Arsenal, Pine Bluff, Arkansas, on 12-16 June 1989. SRFX-89 was the second in a continuing series of exercises to improve the Army's capability to respond to an accident at a chemical storage site.

Federal law requires the formation of the National Oil and Hazardous Substances Pollution Contingency Plan, referred to as the National Contingency Plan (NCP). The NCP establishes procedures for responding to oil spills and the release of hazardous substances, including chemical weapon accidents. The Department of Defense (DOD) is the lead national agency for responding to release of hazardous

substances from DOD vessels or facilities. The Department of the Army is the lead DOD organization for responding to chemical weapon accidents.

The SRFX program provides for coordinated and periodic training of Army response teams and is designed specifically to maintain and improve the Army's response capabilities. In addition, other federal and state response organizations have participated in and benefited from this program.

Army Regulation 50-6, Chemical Surety, dated 12 November 1986, assigns the Commanding General, U.S. Army Materiel Command (AMC), the responsibility to:

- Establish and maintain a Service Response Force (SRF) capable of responding to Army chemical accidents in the continental United States.

- Dispatch an SRF to the site of an Army chemical accident within eight hours after receipt of notification.

- Provide the Initial Response Force (IRF) and Service Response Force to assume command and control of on-site activities.

- Exercise the chemical accident response capability (IRF) at each AMC chemical storage site every 18 months.

- Plan for, budget and conduct biennial exercises of the Army's SRF.

The Director, U.S. Army Materiel Command Surety Field Activity, has the responsibility to exercise and evaluate individual AMC response forces at intervals not to exceed 18 months and to plan for, conduct and evaluate Army SRFXs biennially in coordination with the U.S. Army Defense Ammunition Center and School.

The Director, U.S. Army Defense Ammunition Center and School, has the responsibility to plan for, conduct and evaluate Army SRFXs biennially in coordination with the AMC Surety Field Activity and to establish and conduct special instruction to support Chemical Accident/Incident Response and Assistance operations.

Pine Bluff Arsenal, the host installation for SRFX-89, did an outstanding job of supporting the exercise. The contributions of the arsenal commander, his staff and the many other arsenal employees who participated in SRFX-89 were instrumental in assuring its success.

State and local authorities have the responsibility to minimize the adverse impact chemical accidents may have on the general population. Their participation in this exercise greatly enhanced the Army's understanding of joint chemical accident response operations.

Scope of Exercise Play

The objectives of SRFX-89 were to:

- Provide training for participants.

- Exercise current plans and test new concepts.

- Obtain lessons learned in order to make improvements.

SRFX-89 simulated an accident involving chemical weapons that presented many of the challenges and pressures which would face the Service Response Force Commander and the response teams under his control. The scenario is described in the Annex to this volume. The exercise provided training for 1100 participants in crisis management, hazard assessment, field operations, public affairs, legal, medical/health, security, logistics, communications, removal operations, and interaction with non-Army organizations.

The SRF was commanded by Brigadier General David A. Nydam, the Program Manager for Chemical Demilitarization. BG Nydam was also the designated on-scene coordinator. The deputy SRF Commander was Brigadier General Dennis L. Benchoff. The deputy on-scene coordinator was Mr. James Bacon, Executive Assistant, Pine Bluff Arsenal. The SRF consisted of U.S. Army Armament, Munitions and Chemical Command (AMCCOM) and U.S. Army Depot System Command (DESCOM) personnel; selected staff members from HQ, AMC, and various AMC installations; an Initial Response Force provided by Pine Bluff Arsenal, and commanded by Colonel Richard W. Smith, that was subsequently integrated into the SRF; Explosive Ordnance Disposal augmentation from U.S. Forces Command; and other military support elements.

Other players broadened the capabilities represented at the exercise site. Regional Response Team VI included Environmental Protection Agency and Federal Emergency Management Agency personnel. The State of Arkansas was represented by members of the Office of Emergency Services, the Department of Health, the Department of Pollution Control and Ecology, the State Police, and the State Adjutant General. Significant participation was provided by Jefferson County and the cities of Pine Bluff and White Hall. Several other counties and municipalities in the surrounding area also played their roles in the simulated emergency.

Still other organizations were engaged in exercise play at their home stations. These included the Army Staff, the AMC Headquarters Staff, the DESCOM and AMCCOM Emergency Operations Centers, and the CRDEC Emergency Operations Center.

More than one hundred controllers and support staff worked long hours to represent the simulated problems as realistically as

possible. They also learned a lot about emergency response and contributed directly to the accomplishment of exercise objectives.

SRFX-89 was a no-fault exercise wherein every participant had opportunities to demonstrate proficiency without fear that he or she would be criticized personally for errors. The satisfaction obtained from the experience should be a confidence builder for everyone involved.

Comments on this After-Action Report should be sent to the following address:

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SECTION B

SIGNIFICANT CONCLUSIONS

General

The actions taken by the Initial Response Force (IRF), Service Response Forces (SRF), and other federal, state and local teams to respond promptly to the simulated chemical accident, to mitigate the hazard, to effectively integrate and organize the response efforts, and to conduct initial removal operations were impressive.

Significant conclusions resulting from the conduct of SRFX-89 are summarized in the following paragraphs and are discussed in greater detail in Volume II.

Crisis Management

The PBA IRF response to the chemical accident was in accordance with their response plans and was very effective. Initial actions to mitigate the effects of the accident and to make appropriate notifications and warnings, were accomplished promptly and efficiently.

Organizational problems associated with the SRF in SRFX-87 appear to have been resolved with the publication of the Chemical Service Response Force Commander's Emergency Response Plan (CSRFCERP). This plan established a better organization of the SRF, and provided for the utilization of the best talent in the Army on the SRF.

The cooperation among the SRF, federal, state and local response organizations was commendable. This cooperative spirit contributed significantly to effective interagency working relationships at all levels.

Areas in need of improvement are summarized below.

- The process for integrating the IRF staff with the SRF staff needs attention.

- SRF staff members were not uniformly knowledgeable of the CSRFCERP and the provisions of the National Contingency Plan.

- Some of the SRF staff did not understand the separate responsibilities of the SFRC in his military commander's role and in his role as the OSC.

- The mechanics of off-post coordination and information flow

are in need of refinement.

- The requirement to predesignate the OSC had not been accomplished and the OSC Contingency Plan was not completed in accordance with the National Contingency Plan.

- DAPAM 50-XX should be published as soon as possible. It will provide a single source document describing the concepts and procedures to be used by an emergency response force.

- The use of technical terminology, acronyms and jargon not common to all response force elements caused some misunderstandings and delayed exchange of essential information.

Hazard Assessment

Determination of the hazard and identifying the extent of contamination is an important part of a chemical accident response. While SRFX-89 required some chemical hazard assessment simulations, exercise participants plotted contamination contours, operated a Joint Hazards Evaluation Center (JHEC), conducted field measurements, and planned for site restoration requirements. The interaction among response elements of the IRF, SRF and supporting teams in the area of chemical hazard assessment was accomplished properly.

The D2PC plume dispersion model is limited in its ability to predict the location of the hazard. A puff model, which simulates a continuously evolving agent release in time segments, permits a more accurate portrayal of the space and time at varying meteorological conditions and their effect on the agent cloud. Considering the limitations of the D2PC plume dispersion model, the PBA hazard analysis section performed a timely and accurate assessment of the chemical agent hazard, in part because of the presence of a staff meteorologist. His presence provided the necessary expertise and technical skills to apply meteorological factors to computerized contamination plot projections.

Personnel responsible for the deployment of field monitoring teams should have periodic training in the dynamics of chemical agent cloud travel and the limitations of the detectors used to establish the presence of agent.

Field Operations

Weapons recovery operations were conducted as nearly as possible as would be done for an actual accident. All tasks were accomplished eventually, but some operations were neither well organized nor performed efficiently.

Activities conducted by IRF, EOD, TEU and other augmentees in the field should be under the control of a single leader. In

addition, regulations, procedures and training for CAIRA must be standardized among AMC, FORSCOM and TRADOC.

Public Affairs

The proper handling of public concerns and media relations were critical aspects of public affairs play for SRFX-89. Opportunities to interact with the media were provided through the portrayals of press conferences, simulated TV and radio broadcasts, and media reports.

As in SRFX-87, SRFX-89 recognized that a chemical surety mission installation's Public Affairs Office (prior to SRF PAO augmentation) is not large enough to support the many requirements involved in responding to a chemical accident. PBA, however, has taken steps to address this problem by establishing memorandums of understanding (MOUs) with the local U.S. Army Corps of Engineers unit to provide Public Affairs support, and arranging for immediate administrative support augmentation to the local PAO from other arsenal offices.

The Joint Information Bureau (JIB) established at PBA was viewed as being strictly Army-oriented. Other federal, state and local agencies were not represented within the JIB, resulting in a poor flow of information to non-Army officials in the Off-Post Command Center, and lack of coordination of media releases.

The Department of the Army is responsible for the approval of all official public affairs releases emanating from an accident site. In an effort to expedite the release of these public affairs statements, DA accepted a verbal transcript of the release with a hard copy follow-up. This method enabled a more timely release of important information from crisis managers at the accident site to the general public.

Legal

Legal requirements, constraints and procedures influenced many critical actions. Claims processing and attention to legal responsibilities and liabilities for both on-post and off-post activities were some of the challenging areas in which the legal participants were exercised. The SRF legal staff handled a number of claims issues and other legal actions very efficiently.

Two issues require further attention. The legal basis for the establishment of a National Defense Area (NDA) should be more clearly defined and the consequences of administering life-saving antidotes should be accessed and incorporated into response planning.

Medical Health

As was the case in SRFX-87, heat stress remains a serious problem for response personnel working in protective gear. Twelve

persons suffered actual heat stress complications during the exercise. Work/rest cycles continue to be an area of confusion. The DA Surgeon General and the Department of the Army need to examine the issue of heat stress associated with a chemical protective posture.

A number of off-post medical personnel were trained in handling chemical casualties by the Army, and this was proven of great value by the excellent performance observed by those who were trained. This training should be provided to all health care facilities having external support agreements with chemical storage installations.

Decontamination of deceased casualties became a problem because there is no guidance on this subject. A plan was developed and agreed to by Army and non-Army players, but official policy is required.

The casualty prediction methodology currently in use at Pine Bluff Arsenal estimates seven on-post casualties if a maximum credible event occurs. The many casualties postulated during this exercise indicate a need for revision and standardization of this methodology to allow for more accurate prediction of the medical support requirements.

Security

Coordination and cooperation among military and civilian law enforcement agencies was excellent.

Areas which are in need of further attention include the need for a faster information flow to security forces investigating the event, and the need to ensure that security forces respond in the proper level of protective clothing.

PBA implemented a new and innovative method of providing credentials (badges) to response personnel, which proved to be extremely effective in expediting their access to the installation and work sites. Such a process (described in Volume II) should be implemented command wide as part of accident response planning.

Logistics

Logistical plans for acquiring local purchase items need to be reviewed to reduce the time needed for re-supply of basic items. Other military and federal agencies should be required to verify that they can provide the specific logistical support specified in the logistics response plan.

The IRF commander and SRF commander correctly gave logistical concerns a high priority. A "push-package" concept to provide immediate logistical support of hard to obtain resources to the installation was recommended by the PBA Commander.

Communications

PBA's communications assets were fully exercised in supporting the large-scale sustained emergency response operation. The scenario forced the IRF and SRF to consider what additional communications assets were needed, their availability, and measures to be taken to correct communications deficiencies.

Some of the communications challenges identified in this exercise were also identified in SRFX-87. These problems included an inadequate supply of radios, the threat of overloading telephone circuits, and the incompatibility of IRF radios with the radios used by the Explosive Ordnance Disposal detachment and the Technical Escort Unit. Communications support plans need to be improved.

Removal Operations

The concept of site restoration and the guidelines for site restoration and removal operations needs to be more clearly defined in Army doctrine.

There are no protocols, standards for clean-up, or authenticated procedures for the analysis of nerve agent GB in soil, water and various other matrices. It should also be noted that a similar condition exists for other stockpile chemical agents.

There are no quantitative or qualitative data to establish background levels for the more common hydrolysis or decontamination by-products of GB in soil or water. Without definitive baseline data, a determination of environmental impact or potential hazard, if any, would be extremely difficult.

The planning for removal operations was complicated by the non-persistent nature of the GB nerve agent, a physical characteristic which allowed for the bulk of the agent released to be reduced to very low levels within 24 hours. These remaining low levels of agent would have been very difficult to detect using current analytical monitoring instruments and techniques.

Non-Army Operations

The establishment of coordination, interaction and mutual support with other federal, state and local agencies constituted a major portion of exercise play. Full participation by state and local agencies presented realistic response opportunities, greatly enhanced the validation of the SRF's ability to respond to an accident involving a chemical agent, and served to identify several areas which need improvement.

The concept of an off-post mobile command center for use by non-Army personnel needs to be reviewed. There are certain pluses which

can be gained by the establishment of a fixed facility, especially in the area of communication and information exchange. A fixed facility would also be more conducive to the conduct of briefings and coordination meetings.

The flow of information between the PBA EOC and the Off-Post Command Center was inadequate at times, in that there were delays in providing hazard analysis data to the Off-Post Command Center. Furthermore, the hazard plots generated at the Off-Post Command Center from the data provided were not clearly interpreted by all participants as to the level of contamination involved and the resultant effects, (e.g., 1% Lethality, No Deaths, and No Effects zones).

ANNEX

SCENARIO

The SRFX-89 scenario portrayed the following simulated chemical accident at Pine Bluff Arsenal, Pine Bluff, AR.

On 12 June 1989 at 0330 CDT, the arsenal and the surrounding area experienced earth tremors that interrupted commercial power to the arsenal. Guards in the chemical munitions storage area reported slight structural damage to the exterior of one igloo. A subsequent inspection of the interior of this igloo revealed that large chunks of concrete had fallen from the ceiling, presenting the possibility that the ceiling could collapse on M55 GB rockets which were stored to near capacity in that structure. Based on the condition of the structure and the threat of further tremors, the decision was made to immediately relocate the rockets to another storage igloo.

Chemical workers moved six crates of rockets (15 rockets per crate) outside the damaged igloo to load them on a vehicle when a truck and a forklift collided and crashed into the rockets. The fuel in the truck leaked and burst into flame. The time was 0800 CDT.

Ten rocket warheads exploded from the impact and heat of the fuel fire, releasing GB nerve agent. Ten rockets were damaged and spilled their liquid nerve agent contents from which agent evaporated. Ten rocket motors ignited and propelled warheads in random directions, some of which flew beyond the installation boundary. Their condition and location was unknown and not fully resolved until the last day of the exercise. Sixty rockets were randomly displaced in the vicinity of the damaged igloo. They were damaged to varying degrees and were a safety hazard to move or handle. Chemical workers in the area were killed and injured. The immediate area and environs were contaminated with nerve agent. A northerly wind transported the agent cloud to the south, threatening the areas of White Hall and Pine Bluff. At 0900 CDT the wind shifted 40 degrees toward the southwest.