

Training to Win

—training devices create realistic environment

The history of warfare leads to only one conclusion: man will use all possible means to win. This statement includes weapons of mass destruction and weapons that indiscriminately kill and maim. Modern man has used his technology to elevate the levels and types of these weapons to the extent that it is no longer safe to train soldiers using them.

To properly create the NBC battlefield conditions and environments, the Army uses training devices, simulators, and simulations. The United States Army Chemical School (USACMLS) has the proponenty for developing the strategy and devices required to support the total Army. This issue of *CML* is designed to assist in integrating the devices, simulators, and simulations into the commander's training plan.

The mission of any unit must be to fight and win. Therefore, training must replicate all aspects of actual warfare, short of casualties and death. Just as a unit must march in convoy in the daylight before it attempts a night

road march, so must the unit be able to accomplish its mission under simple conditions before it advances to training under NBC battlefield conditions.

The commander is the focal point for assessing the unit's capabilities and developing a training strategy that continues to challenge the unit. Integrating NBC into the plan calls for simulations and training devices to achieve the desired NBC conditions. The NCO is the driving force behind the actual training events. He or she is the expert in teaching the fundamental skills of survival and winning.

Intelligence aspects. The military intelligence community uses an array of techniques to gather information. Periodic reports are then issued as intelligence summaries. The commander's staff first utilizes these reports in the development of the Operations Plan (OPLAN), gleaned only those bits of information important to the mission. In developing the NBC environment, a series of intelligence reports will precede

the mission. These reports lay the background of the threat and the possibility of encountering NBC warfare hazards.

Staff responsibilities. The commander's staff works the training strategy into a set of functional plans and orders. These plans allocate the resources for accomplishing the mission. Personnel, intelligence, operations, and logistical support are keys to success. Omitting even one section of the team dooms the mission. Therefore, staff actions and interactions are a vital consideration in training.

Training strategy. Army Regulation 350-42, dated 14 October 1988, places full responsibility on the unit commander to develop and design training to accomplish his unit's missions in an NBC environment. Commanders normally have a starting point for their missions under ideal conditions. They must analyze how those missions will be affected by NBC conditions. Each section of this issue of *CML* will focus on one leg of NBC and smoke training and associated devices.

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Training Integration and Commander's Strategy

Ideal Conditions

The commander first analyzes the unit's mission under ideal conditions. This performance becomes the base line standard. As different conditions are applied, adjustments to time and/or distance are made to the mission completion standard. For example, a mission will take longer to complete at night because of limited visibility; a unit may not travel as far due to wet, muddy road conditions. Commanders cannot control these environmental conditions to the same extent they can control integration of NBC with training devices.

Nuclear Conditions

The choice of integrating nuclear conditions has two options: the threat of use, or the actual employment of weapons. The threat-only option factors significantly into the planning phases with minimal integration problems in the execution of the mission.

Little or no use of training devices would be expected in this option. However, soldiers are required at least to carry the devices, since they would not know if or when employment would occur. Neglecting to carry the training devices is akin to leaving actual equipment behind. Don't leave home

without them! Soldiers will know that no nuclear training will occur if they do not have the appropriate equipment or training devices.

The employment option fully utilizes the training devices to replicate those battlefield conditions—either as the simulation of the weapon explosion effects or as the simulation of the residual radiation hazard.

Chemical Conditions

Chemical conditions have the same two options as nuclear: threat only or actual employment. Should the commander choose to use only the threat of chemical weapons, he must ensure that all defensive measures are in place and that standing operating procedures (SOP) are followed.

Often commanders specify the MOPP level as 1 or 2, but fail to provide the background information to make the threat seem real. Soldiers simply end up wearing the overgarments as their chemical training.

Employment of chemical training agents demands that the unit operate in MOPP4. This alone is difficult. Chemical training agents can be persistent or nonpersistent, as the scenario calls for.

Persistent agents require that decontamination efforts be performed to decrease the MOPP level. Nonpersistent training

agents will dissipate, so the M256 TRAINS kit confirms the “all clear” conditions.

Smoke Conditions

Smoke training is a double-edged sword for commanders. It creates the same advantages and disadvantages for both sides. While it provides concealment for the unit, it hinders the soldiers' ability to see and acquire targets.

Mission results are similar to nighttime conditions. Longer times are required and distances covered may be shorter. Training devices for smoke conditions concentrate on safety aspects for soldiers. Any type of burning grenade or smoke pot uses a mixture of chemicals to produce the smoke.

Some chemicals have proven harmful or irritating to soldiers breathing the fumes. Training devices are generally safer than their real counterparts.

The combat vehicle defensive obscuration smoke system (CVD OSS) produces an immediate screening smoke which allows vehicles to move under concealment. Using the CVD OSS in training is hazardous to dismounted soldiers who may be hit by the flying canisters. The CVD OSS training device allows it to be employed without this danger.

Mission Profiles

All units are required to train for wartime missions with the knowledge that NBC warfare can be initiated at any time, thus complicating the mission environment. The commander relies on the Army Training and Evaluation Plan (ARTEP) and the Mission Training Plan (MTP) as the starting point for designing the training requirements for his unit. The commander challenges the unit to perform the same missions both in an NBC environment and without NBC.

Strategies. Once a mission is selected as a priority training item,

“The commander first analyzes the unit’s mission.”

an OPLAN is developed to support the training. The OPLAN includes an equipment support listing; the task/device matrix can now be used to illustrate where the training equipment is used to support the tasks (figure 1).

Devices. NBC training devices have been developed and fielded to create the environment through simulation of visual, audible, physical cues, or replication of equipment used by soldiers.

Nuclear Simulators and Devices

Nuclear warfare is categorized as the most destructive form of fighting, yet once the explosions and fires have subsided, a potentially deadly force still exists—residual radiation. The devices used in a simulated nuclear environment fall into two types. First, the replication of the visual, audible, and physical cues of the nuclear explosion; second, the simulation of equipment used to detect and monitor radiation levels.

Nuclear Weapons Effects Simulation

The *M142 Atomic Simulator* consists of a 55-gallon drum containing an explosive charge and the assorted firing chain equipment. The drum is dug into the ground at a preselected site. At the designated H-Hour, the explosives are ignited. The result is a tremendous blast effect and a

dark cloud of smoke and dust that rises from ground zero. This device is no longer procured, but is available in some areas.

The Nuclear Weapons Effects Simulator (NWES) is currently in development, with projected fielding for FY94. This device consists of a series of three projectile charges that are launched into the air. The first charge gives the illusion of a brilliant flash of light and a white smoke ball approximately 100 meters in the air.

The second charge is launched after a slight delay from the first, and explodes within the first cloud, rendering a thunderous boom. The third charge is optional for use, since it simulates the stem effects of a ground burst. The device is more mobile in the employment stages, since extensive excavation is not required to dig in the projectile charges. The device is also safer, since the shrapnel effect is decreased.

Flame Field Expedient atomic burst simulation is also available for use. A more complete description of this type of device is given on page 10. At H-Hour, the device is ignited. The resulting effect is a tremendous fireball and a rising cloud of thick dark smoke. The cloud effect continues to rise, giving a typical mushroom shape. The FFE nuclear simulator is relatively low in cost, but requires

qualified personnel to prepare and employ the explosive charges.

Employment of an atomic simulator demands extensive planning and coordination for successful simulation. The device itself must be forecasted well in advance through the ammunition management cycle so it is available at the time of training.

The scenario of employment must take into consideration the safety constraints of the device and the location of the troops who view the device.

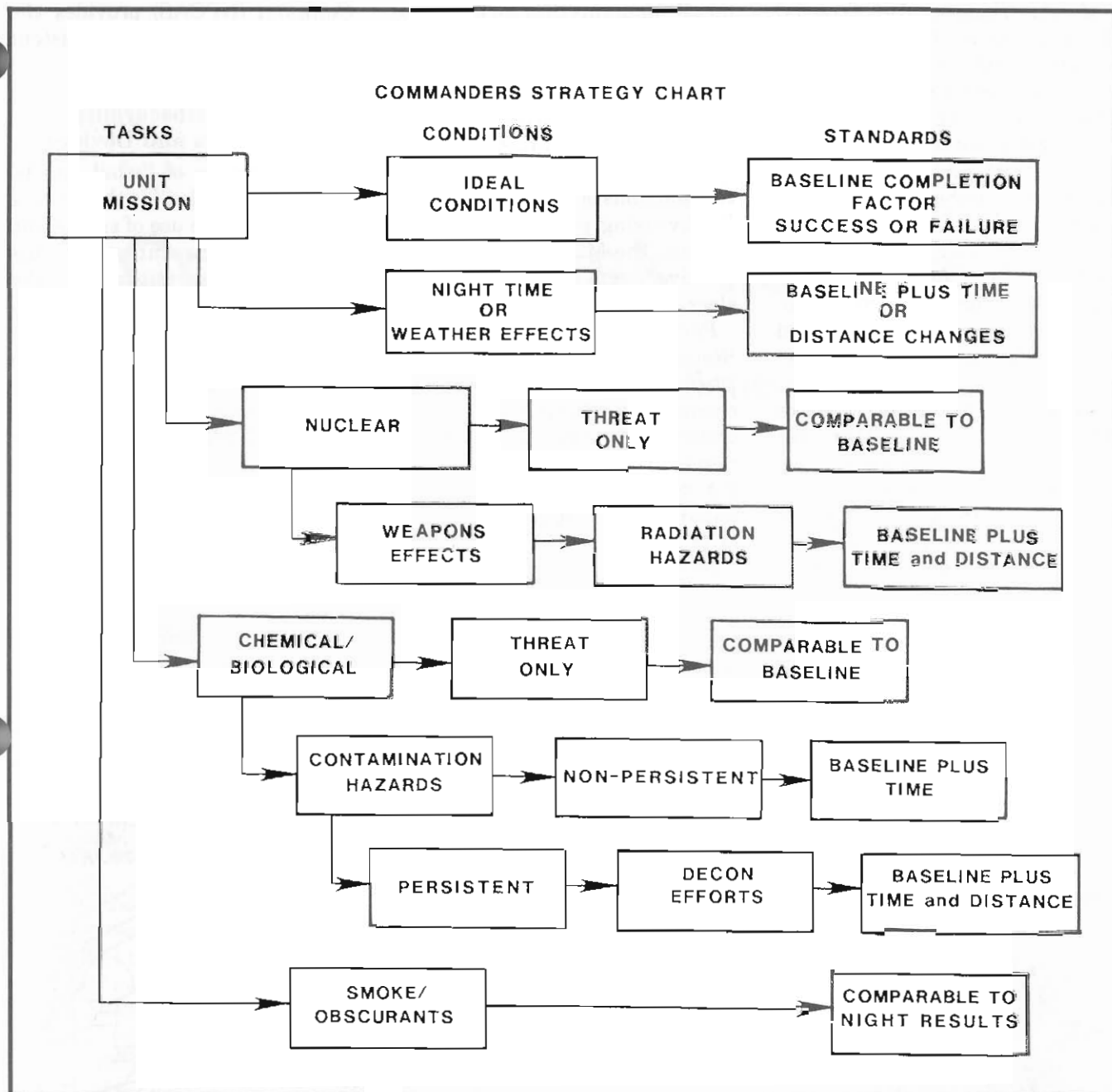
An alternative method to actual employment of a device is to use the communications network and the NBC warning and reporting system (NBCWRS) to simulate a ground zero at a location where the effects would not be seen by the soldiers in training.

Another advantage of the NBCWRS is the capability to simulate the detonation of more than one nuclear weapon, without the expense or preparation of multiple nuclear simulators. The unit in training then takes the necessary protection against fallout. Consideration for the type of report issued is important. A tactical unit below battalion level would most likely receive a nuclear STRIKWARN or an NBC3 report from their next higher headquarters.

Units above battalion level expect to receive NBC1 observer reports from subordinate units, and STRIKWARN messages from higher headquarters. Other reports that affect the traffic flow are weather reports of wind direction and speed and the effective downwind message from NBC elements.

Nuclear Radiation Simulation

The *AN/TDQ-T1, Large Area Radiac Training Set (LARTS)* replicates the pattern of residual radiation associated with a nuclear burst. The transmitter has a series



of power output settings and a directional antenna.

The receivers are mockups of actual radiacmeters (IM-174A) or radiac probes (AN/VDR2). The probe for the AN/VDR2 is due for fielding in FY91. The receiver sets give the simulation of radiation by moving a needle or digital readouts on the meter.

The NBC Casualty Assessment System (NBC-CAS) uses radio

waves to simulate the radiation pattern. However, unlike the T-1 LARTS, individual soldiers wear a player detection device (PDD) that receives the radio signal and translates it into a simulated radiation dose. After a soldier has been exposed to a simulated incapacitating total dose of radiation, the PDD alarm sounds. The NBC-CAS will be compatible with MILES equipment for force-

on-force training. Therefore, a radiation casualty is depicted in the same manner as any other casualty.

Chemical/Biological Simulators and Devices

The realm of chemical warfare is best remembered as the clouds of choking and mustard agents drifting across the trenches in France during World War I.

M58A1, Training Aid, Personal Decontamination Kit, NSN: 6910-01-101-1768, replicates the M258A1 Decontamination Kit. The M258A1 cannot be used in training due to its caustic action on skin. The M58A1 contains only water and alcohol as the decontamination solutions.

NBC Casualty Assessment System (NBC-CAS) is a tactical engagement force-on-force simulation system supported and issued by the Training Aids Support Center (TASC). Individual soldiers wear a player detection device (PDD). The transmitter set replicates the contamination pattern by radio waves.

Simulator Projectile Airburst Liquid (SPAL), DODIC L595. This ammunition item will disperse

liquid simulants over an area. The kit has 20 bottles which are projected into the air and explode, showering out the simulant.

M256 Chemical Agent Detector Tickets Simulator (M256 TRAINS), NSN: 6665-01-112-1644, replicates the functions of an M256 Detector Kit by using pretreated detector tickets. The M256 has tickets for positive agent presence and all clear conditions.

Persistent Chemical Agent Simulant (PCAS); Chemical Agent Disclosure Solution (CADS) replicates chemical agent characteristics for training. PCAS can be mixed as G nerve agent or H blister agent. CADS is sprayed over a contaminated area to indicate the presence of PCAS by color change.

Non-Persistent Chemical Agent

Simulant (NPCAS) provides the visual cues of a non-persistent chemical agent attack.

Smoke/Obscurants Simulators and Devices

The principle of "what can be seen, can be killed" is the driving force behind the use of smoke and obscurants. Training in this environment is critical for the realism of force-on-force engagements. The record of success for units utilizing smoke properly is well documented and serves as the bedrock for the smoke training program. USACMLS is the center of all smoke and obscurants planning and developments for the Army. The training devices under development benefit the commander and the soldiers involved in training.

