



Sgt. 1st Class Christopher Parker briefs Lt. Col. Paul Grant on his firing positions based on surface danger zone constraints on the range at Fort Stewart, Georgia, on Dec. 1, 2016. Surface danger zones and weapons danger zones are critical to setting up a successful range.

Realism Versus “Range-ism”: Using Surface Danger Zones to Plan Convoy Live Fires

■ By Maj. Emanuel Velez and Capt. Frederick Brown

Many sustainment leaders may encounter a convoy live-fire range with risk-averse controls that diminish realism or do not support the commander's training objectives. But few training events prepare sustainers for war better than a well-planned and realistically executed convoy live-fire exercise (CLFX).

In his fiscal year 2016 training guidance, Gen. Robert B. Abrams, the commanding general of Forces Command, stated, “Commanders of Combat Support and Combat Service Support units will ... train to

secure and protect their convoys and operating locations” under realistic conditions. In addition, he directed, “Unnecessary or outdated range control measures that inhibit realism will be eliminated through coordination with installation range control and safety personnel.” In part, Abrams speaks of the responsibility of leaders to incorporate range safety deviations to increase realism.

Maneuver units frequently use surface danger zones (SDZs) to apply range safety deviations and adequately train for war. Their proficiency in

live-fire exercise (LFX) planning and skilled execution of combined arms LFXs demonstrates an expert ability to win wars on complex battlefields. But their proficiency is due in large part to the emphasis they place on LFX planning during professional military education (PME), such as basic officer leader and captains career courses.

Currently, logistics branch PME does not provide instruction in LFX planning. Too many important subjects must be covered in a short time, such as calculating net explosive weights or fuel and water consump-

tion rates. But logisticians cannot wait until their maneuver counterparts say that LFX planning needs to be taught. The Army Logistics University must make it a priority.

The History of SDZs

The use of SDZs in training dates back to World War I. In response to aircraft attacks, ground troops would train to fire in the air to shoot down air threats. This resulted in ammunition landing on other troops that were in training areas kilometers away.

By the 1940s, publications such as Army Regulation (AR) 750-10, Range Regulations for Firing Ammunition in Time of Peace, and Technical Manual 9-855, Targets, Target Materials, and Training Course Layouts, (both now obsolete) provided policy and regulations for Army leaders to establish ranges for training.

However, as early as the 1970s, Army ranges developed overly cautious safety measures that hindered live-fire training, and the undue effects of “canned ranges” was obvious in low-performing units at combat training centers. An article published in the May–June 1985 edition of *Infantry* magazine, “Training Realism and Safety,” highlighted these problems and outlined six ways that safety measures adversely affect training.

Today, shooting between restrictive “candy canes” and “barber polls” does not provide adequate training because it facilitates a “play the game” behavior as Soldiers anticipate the lane. To mitigate this behavior, planners may implement range safety deviations through the smart use of SDZs.

What to Know

AR 385-63, Range Safety, and Department of the Army Pamphlet (DA PAM) 385-63, Range Safety, define an SDZ as the “ground and airspace designated within the training complex ... for vertical and lateral containment of projectiles, fragments, debris, and components resulting from the firing, launching, or detonation of weapon systems.” SDZs are calculated using ballistic firing tables and are a graph-

ic and probabilistic representation of where rounds will go.

SDZs are instrumental in firing safely because they account for rounds that ricochet, bounce, skip, and splash before and after they hit the intended target. A composite SDZ shows a combination of multiple danger zones and identifies total land requirements at a given phase of the LFX.

SDZs allow leaders to determine mathematically how close elements get to the target so that they can judge where, when, and if they want to accept risk. If constructed properly, SDZs give trainers the ability to maximize realism by allowing units the most freedom of maneuver within administrative constraints.

A maneuver box, according to Training Circular (TC) 4-11.46, Convoy Protection Platform Gunnery, is “the maximum distance a vehicle could travel and still have the target(s) exposed.” The maneuver box accommodates movement onto an objective, and the size of the maneuver box should be based on the average vehicle speed for the course and the target exposure time.

Planning a CLFX

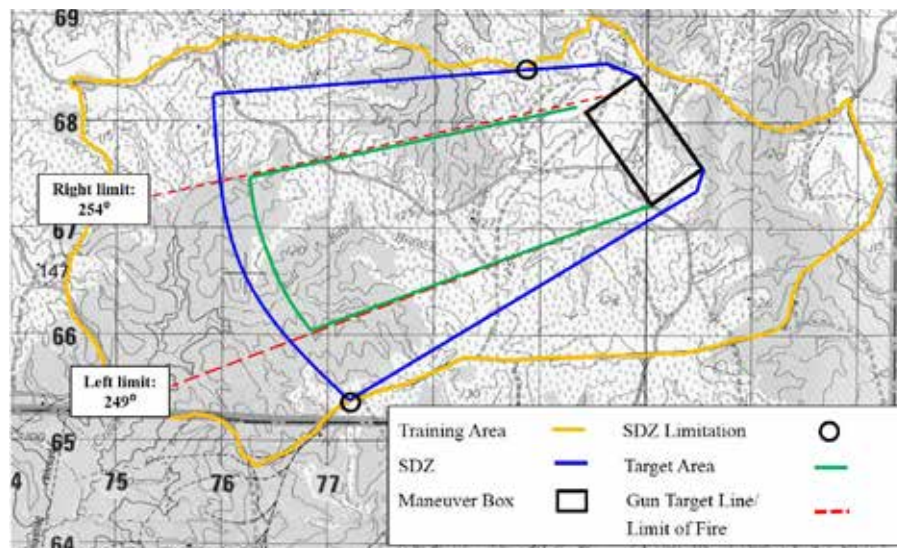
To sufficiently plan a CLFX, planners should use an SDZ overlay kit and consider range modifications

in accordance with AR 385-63 and DA PAM 385-63. Deciphering these texts might seem daunting, but if sustainment leaders can grasp the fundamentals of Chapters 3 and 17 of DA PAM 385-63, they will have enough information to transform any range into a realistic training lane.

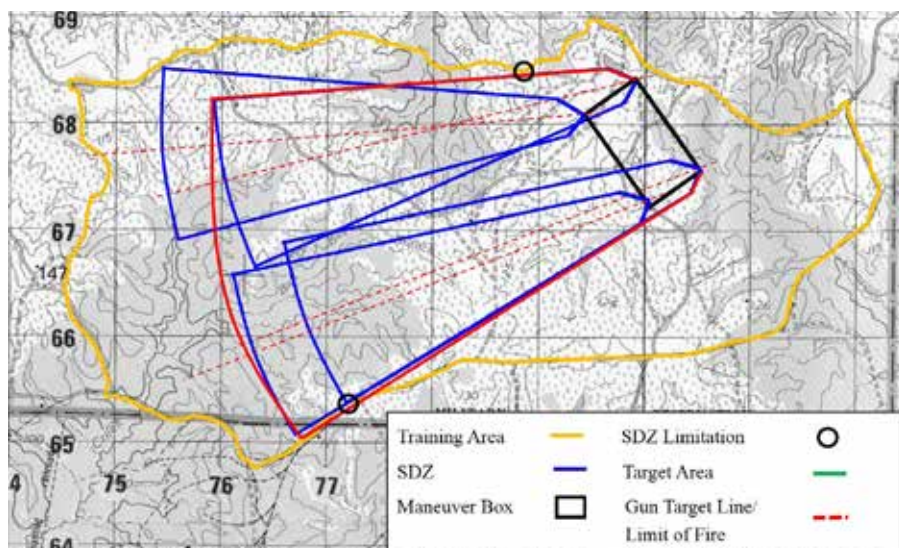
An SDZ overlay kit should contain the following:

- ☐ A copy of AR 385-63.
- ☐ A copy of DA PAM 385-63.
- ☐ A copy of TC 4-11.46.
- ☐ A copy of TC 7-9, Infantry Live-Fire Training.
- ☐ A 1:50,000-meter map of the training area.
- ☐ A protractor.
- ☐ A straight edge.
- ☐ A GPS device (optional for the range walk and validation of maneuver boxes).
- ☐ A lensatic compass (for the range walk and validation of left and right limits).
- ☐ SDZ templates (an acetate sheet may be used [national stock number 6730-00-401-9631 or 7510-01-269-2303]).

If unsure how to use an SDZ overlay kit to plan a CLFX, a sustainer can discuss it with a maneuver counterpart, preferably a leader familiar



Surface danger zones (SDZs) allow planners to establish limits of fire and the target area for each maneuver box.



Surface danger zones (SDZs) for each weapon system used in the live-fire exercise must be measured from each corner of the maneuver box, but the zone must not extend beyond the designated training area.

with mounted live-fire maneuvers.

Begin the process by identifying training objectives, task organization, and weapon systems to employ. Also, determine 8-digit grid coordinates for targetry and maneuver boxes. Using a map and SDZs traced on acetate sheeting, create an overlay that includes the SDZs from each corner of the maneuver box to ensure rounds from all weapon systems do not impact occupied friendly positions within the maneuver box or outside the training impact area.

Employ graphic control measures, such as terrain-associated phase lines or avenues of approach, to prevent fratricide and to force units into maneuver boxes. Finally, always validate observer-controller/trainer teams prior to the CLFX in order to create a shared understanding of administrative controls within the lane.

CLFX Planning in Logistics PME

In the Logistics Captains Career Course, the curriculum follows the critical task list of each branch (Ordnance, Transportation, and Quartermaster). Logisticians should determine what basic skills outside the logistics realm are essential in order to provide seamless sustainment, protect the force, and improve survivability.

Logisticians have to reassess the relevance of roughly 22 hours of training on the Command Post of the Future, Global Combat Support System-Army, and other systems. By reducing the hours of some of the highly technical blocks of instruction, instructors could introduce students to basic CLFX planning. Students do not have to be made into experts, but at a minimum they should be exposed to LFX planning.

If sustainment planners hear about CLFXs or brigade support area defense planning for the first time at a combat training center, they are already at a disadvantage compared to their maneuver counterparts. In today's Army, time and resources are precious commodities and the quality of training is vital. Even in the classroom, scenario-driven CLFX training can dramatically improve the tactical posture of convoys on the battlefield, and it might help change the "soft target" mentality within formations.

DA PAM 350-38, Standards in Weapons Training, states that LFX training should provide "a realistic threat with a target-rich environment. Each Soldier should have the opportunity to employ his weapon. The LFX should test the ability of the unit's chain of command to con-

trol and distribute fires effectively."

However, sustainers are frequently overwhelmed with maintaining equipment, preparing the next hot meal, transporting warfighters to the next line of departure, or moving and issuing ammunition. When they have the opportunity to train, they must do it in the most realistic of circumstances and capitalize on the opportunity to experience the uncertainty of battle in a simulated but accurate environment.

In order to adequately train mounted skill sets, sustainment leaders must be acquainted with applying SDZs in CLFX planning. Logistics PME curriculum designers should consider including an LFX planning block of instruction and exercise.

In the meantime, leaders must seek mentorship from maneuver counterparts and develop an understanding of using SDZ planning schemes to design range safety deviations in a CLFX. In doing so, sustainment leaders may bypass "range-isms" and plan a CLFX that incorporates realistic training with suitable safety measures.

Maj. Emanuel Velez is the executive officer for the 528th Special Troops Battalion (Special Operations) (Airborne). He served as an observer-coach/trainer at the National Training Center and as a Logistics Captains Career Course instructor. He holds a bachelor's degree from Interamerican University of Puerto Rico and a master's degree in managerial logistics from North Dakota State University.

Capt. Frederick Brown is an Advanced Civil Schooling graduate student at Virginia Tech and a former forward support company commander for the 1st Battalion, 325th Airborne Infantry Regiment. He is a graduate of the Logistics Captains Career Course, Aerial Delivery and Materiels Officer Course, and Jumpmaster Course. He holds a bachelor's degree from Georgia College and State University and a master's degree from the University of Oklahoma.