

THE ART OF SUPPORT BY FIRE

SFC CARTER H. CONRAD
SFC JOHNNY TINSLEY

The Army Strong theme is not a phrase — it is a way of life. The U.S. Army is strong because it uses procedures of mutually supporting actions to accomplish the mission. The concept of Soldiers and units supporting each other while conducting military operations is paramount to any unit's success. Each element of the team has a specific function and role to help the commander accomplish his/her mission. During a deliberate attack for example, the assaulting force is supported by the support-by-fire (SBF) element. The SBF element's focus is to gain fire superiority and cover the maneuver of the assaulting force as it gains a foothold onto an objective.

Establishing the SBF is as critical to the deliberate attack as conducting the assault. Without the SBF, the assaulting element has to contend with an enemy that is presented with only one problem. When the assault element is covered by the SBF element, the enemy is now presented with a dilemma. A dilemma causes the enemy to change their plan as they contend with multiple problem sets causing a weakness in their force, disruption of their current plan, and their ability to fight effectively. More discussions about dilemmas can be found in FM 3-21.8, *The Infantry Rifle Platoon and Squad*, paragraph 1-103.

A Soldier with A Company, 5th Battalion, 20th Infantry Regiment, 2nd Infantry Division provides suppressive fire as squad members bound to cover during a squad live-fire exercise in Diyala Province, Iraq, 27 June 2010.

Photo by MC2 Ted Green, U.S. Navy

Over the last decade of combat operations, Army units have lost the experience and, therefore, the expertise of establishing and effectively utilizing the SBF in the conduct of offensive operations. This article will discuss observed problems with SBF occupation, employment, fire control measures, rates of fire, and communication during rotations at the Joint Readiness Training Center (JRTC) at Fort Polk, La. The objective of this article is to discuss these areas to better prepare units for combat operations around the globe.

Occupation

Before occupying the SBF, leaders must understand the science of the SBF and know how to employ each section and weapon system in the support-by-fire element. FM 3-34.2, *Combined-Arms Breaching Operations*, paragraphs 1-12 and 1-13 state:

“Suppression is a tactical task used to employ direct or indirect fires on enemy personnel, weapons, or equipment to prevent or degrade enemy fires and observation of friendly forces. The purpose of suppression during breaching operations is to protect forces reducing and maneuvering through an obstacle.



Effective suppression is a mission-critical task performed during any breaching operation. Suppressive fires in sufficient volume serve to secure the reduction area. Successful suppression generally triggers the rest of the actions at the obstacle.”

Leaders must perform adequate analysis of the terrain and select positions for the SBF that provide the best vantage points for adequate fields of fire to support the assaulting element. During the leader's recon, the weapons squad leader (WSL) will identify the positions to place the SBF element as well as the last covered and concealed position prior to occupying the position. The WSL will lead the SBF element to the last covered and concealed position to avoid exposing the unit to the enemy on the objective.

Once the WSL reaches the last covered and concealed position, he will assume the prone position to indicate that the element has reached the point where each member will assume the appropriate movement technique necessary to move forward to occupy the SBF position. The last covered and concealed position is a good location for the SBF element to cache any unnecessary equipment as extra weight and bulky assault packs may make it difficult to occupy the SBF position undetected. The success of the deliberate attack depends initially on the SBF element's ability to move undetected into position; therefore, leaders and Soldiers must be disciplined in selecting the correct movement technique to move into position so they do not compromise the operation. At JRTC, Soldiers are regularly observed walking or crouching as they move into their positions instead of low crawling, which compromises the operation.

WSLs will dictate the appropriate individual movement techniques that will be used to move into position such as low crawl, high crawl, and 3-5 second rush. Leaders recognize that low crawling with a machine gun is different than a rifle. Gunners should be encouraged to low or high crawl by gripping the top of the bipods just underneath the barrel as they crawl forward. The machine gun is oriented in the direction of travel to avoid being caught on vegetation or obstacles on the route to the SBF position. This method decreases the gunner's fatigue and the time it takes to travel to the next position.

Machine-gun crews must properly employ their weapon systems. Many gun teams are not properly trained to execute the crew drills outlined in appropriate manuals. These manuals illustrate the correct steps for putting a gun into action, yet JRTC Live Fire Division NCOs routinely observe units that have not practiced the steps needed to properly emplace the machine gun. The crew's leaders will train each member of the gun crew on their individual tasks. Once the individual tasks are performed to standard, then the Soldiers will perform their individual tasks as a team. Rehearsals and troop leading procedures (TLPs) will provide the available time for the gun team to practice the

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steps necessary for their assigned mission.

Leaders will emplace one machine gun at a time. This action allows for covering fire for the rest of the SBF element and reduces the signature of a large force moving into position. The WSL will emplace the first machine gun in the SBF position on bipod prior to bringing the remaining gun teams to the SBF location. With the first gun team in position, the assistant gunner (AG) from the second gun team will move

forward to emplace his tripod. The WSL will then signal for the second gunner to move forward and mount his gun on the tripod, perform the necessary actions to put his gun into action, and start scanning the objective. After gun two is set on tripod with rounds on the feed tray, spare barrel pulled out, ammunition linked together and the gun laid on target, team one can put its gun on the tripod. Time constraints or enemy contact may require the SBF elements to conduct a hasty occupation of the SBF which may not allow for the guns to be set in one at a time. In these situations, the WSL will expedite the occupation plan but still emphasize the concealed movement into the SBF so the element is not compromised before the guns are set in position.

SBF leaders should consider the acronym **OKOCA** (observation, key terrain, obstacles, cover and concealment, avenues of approach) when emplacing the SBF position. **Observation** is an important factor in emplacing the guns because the gunner must be able to see the objective and the target areas. Gun teams will give feedback to the WSL if their position does not offer optimal fields of fire. Identifying **key terrain** is important so units can place their SBF positions in areas that deny the enemy the ability to use the terrain to maneuver on the SBF element. Locating **obstacles** on the objective give the SBF the ability to provide suppressive fires as the assault element breaches the obstacle to continue the assault. **Cover and concealment** is important for protecting the SBF and identifying areas that the enemy forces could use as fighting positions. **Avenues of approach** for enemy movement should be identified from the SBF position; a plan for the SBF's withdrawal from the objective should also be identified.

Leaders will ensure the gun locations are not too close or too far away from each other. Gun teams that are too close can both be easily engaged from one weapon system or damaged by enemy indirect fires. Gun teams that are too far apart may provide a challenge to the WSL's ability to effectively command and control the SBF element. The SBF leadership will consider plans for additional leadership on the SBF positions to help with command and control issues. Before the WSL contacts the commander to report that the SBF is set, he will make adjustments as needed if time is not a factor. Once the engagement begins, leaders will make corrections to the SBF positions to support the assault element or engage the enemy as needed. The SBF element will continue to prepare for the upcoming engagement by



Soldiers with 3rd Battalion, 509th Infantry Regiment, 4th Infantry Brigade Combat Team (Airborne), 25th Infantry Division keep watch from a fighting position at the Joint Readiness Training Center in Fort Polk, La., on 18 April 2014.

Photo by SSG Christopher Klutts

scanning the objective area as a sensor and keep the WSL informed of any critical information.

Once the SBF positions have been properly occupied, each gun team will be prepared to execute its mission in support of the assault element. Each team has clearly identified primary and secondary sectors of fire with target reference points (TRPs) and specified engagement criteria. The SBF element is now ready to support the commander as he prepares to take the objective. The next critical step is the employment of the SBF.

Employment

The machine-gun employment in support of the assaulting element leads into the “art” of the SBF. This section is based on the common sense and observed best practices that leaders of the JRTC Live Fire Division have observed in more than 300 combined arms live-fire exercises involving SBF and assaulting elements. Many WSLs do not understand the principles of fire control measures and controlling rates of fire. Machine-gun placement and proper machine-gun employment begins in the planning phase. Leaders will identify what terrain and/or threat-based fire control measures they want to use to control and coordinate direct fire weapon systems based on current intelligence, imagery, or map reconnaissance. During this time, the WSL and platoon leader should develop a rates-of-fire plan in order to determine how long the SBF can support the assault. Refinement of fire control measures and rates of fire should occur in the objective rally point (ORP) after the leader’s recon is completed. This article focuses on fire

control measures and rates of fire because they are the most often misused or underutilized aspects of machine-gun employment.

At some point, it will be time for the SBF element to initiate direct and indirect fires from the SBF position. Army Doctrine Reference Publication (ADRP) 3-90, *Offense and Defense*, states, “The first aspect of the art of tactics is the creative and flexible application of the means available to the commander to seize the initiative from the enemy and to retain it. Because the enemy changes and adapts to friendly moves during the planning, preparation, and execution of an operation, there is no guarantee that a tactic which worked in one situation will work again. Each tactical problem is unique.”

With the above reference in mind, the SBF creates the ability for the commander to achieve fire superiority and the support by fire needed to execute the assault. The commander will normally initiate the SBF element to start firing on the objectives by designating TRPs, target areas, or priority targets. Regardless of what the commander has designated, there should be a predetermined amount of time and ammunition that the SBF has prepared to facilitate each phase of the deliberate attack. The crucial times for the SBF elements are: the initiation, the breach, establishing the foothold on the objective, and shift and lift fires. The two most dangerous periods for the attack are the breach and establishing the foothold.

The initiation of the SBF on planned TRPs and target areas ensures that fire superiority is established. The commander will assess how much time is needed to obtain the fire superiority based on the enemy situation and use this time to ready his breach and assault elements to start their tasks. During this time period, the SBF positions are

firing either at the rapid or cyclic rates of fire depending on the enemy situation. Once the SBF has achieved the fire superiority, it is common to return to a sustained rate of fire on the objective.

The next phase is the obstacle reduction or breach. The commander is prepared to send Soldiers to a location that is normally covered by indirect or direct fire weapons or observation. To protect the breach element, the commander should increase the rates of fire from the SBF element. This increased fire, along with any indirect fire, smoke, and small arms fire from the breach and assault elements, greatly enhances the dilemmas discussed earlier in the article. The rate of fire from the SBF should continue at a higher rate until either the breach is completed and the far side of the breach is established or the breach element has placed the explosive charge needed to reduce the breach and returned to their last covered and concealed positions. Once completed, the SBF returns to the sustained rate of fire.

The SBF element will increase its rate of fire once the assault element starts maneuvering to establish the foothold. This is the last moment the enemy may try and stop their perimeter from being breached. The possible enemy response may cause the SBF element to increase its rate of fire to protect the assaulting element in establishing the foothold. The SBF element can be quickly overwhelmed with enemy actions, fires, and managing the support required by the assaulting element. Fire control measures are in place to assist the commander and leaders in ensuring mutual and interlocking fires have been established on the objective before and during the assault.

Fire Control Measures

Fire control measures assist the commander in controlling direct fires on the objective. Fire control measures are used to coordinate fires on enemy positions and prevent fratricide as friendly troops advance on enemy positions. FM 3-21.10 identifies 18 different fire control measures, and they are divided into two categories: terrain-based and threat-based. For an in-depth explanation of each, machine-gun leaders should read Chapter 9 of FM 3-21.10.

The Infantry company commander uses terrain-based fire control measures to focus on a particular point, line, or area rather than on a specific enemy element. A majority of the leaders that execute live-fire training at JRTC focus primarily on sectors of fire and TRPs to control their unit's fires. Leaders who focus on the use of sectors of fire and TRPs are able to execute their live-fire density safely by having a shared understanding of the plan to control direct fires.

A TRP is an easily recognizable point or location on the objective that is used to orient friendly forces and control direct fires. Soldiers in the SBF tend to focus on that specific point and do not engage targets in close proximity of the TRP. Leaders must coach this aspect of using the TRP system and allow Soldiers to use disciplined initiative when engaging targets on and around a designated TRP. Leaders must stress the use of the TRP for just what it is — a reference point. Soldiers will be trained to prioritize targets and engage the greatest threats first, then engage secondary targets.

The quadrant method of terrain-based fire control measures is a good method to ensure the SBF is supporting the commander during the assault. Quadrants are subdivisions of an area created by superimposing imagery with perpendicular axis over the terrain to create four separate areas, or quadrants. When units use quadrants in conjunction with TRPs, they are called terrain-based quadrants. By splitting the objective into sections, Soldiers use an area to engage rather than a point target. A benefit to using the quadrant system is it gives a leader the ability to establish left and right limits of fire and change those left and right limits easily as the assault element advances through the objective. If a leader simply assigns a sector of fire for a machine-gun team, he will have to either shut that gun down or shift his fire (usually off the objective) as friendly troops enter that gun's sector of fire to prevent fratricide. If the objective is split into four quadrants, the leader only has to shut down the quadrants that are occupied by friendly troops, allowing the guns to continue to engage targets in the other quadrants.

The Infantry company commander uses threat-based fire control measures to control direct fires by directing the unit to engage a specific enemy element or position rather than fire at a point or area. Threat-based fire control measures allow the commander to control what the SBF engages by setting his priorities for fire on the objective. The commander is able to control what order to engage targets and what weapons systems to use during the engagement based on the enemy movement and activity. Most units know this type of threat-based fire control measures as engagement priorities or criteria. Engagement criteria are another form of threat-based fire control measure available to control machine gun teams. Engagement criteria are a specific set of conditions that specify the circumstances in which subordinate elements are to engage.

A WSL will know what to do when the enemy situation changes if he has been issued engagement criteria. At JRTC, most of the observed WSLs are not being given engagement criteria. The commander and subsequent leaders need to develop their fire control measures and disseminate those measures down to the element leaders prior to executing the mission. Fire control measures that work on one objective may not work on another. As leaders learn and understand the fire control measures outlined in Chapter 9 of FM 3-21.10, they will increase their ability to put accurate fires on the object as well as minimize the potential for fratricide.

Rates of Fire

As discussed earlier, there are distinct phases of rates of fire being employed by the base of fire element: the initial heavy volume (rapid rate) to gain fire superiority, the slower rate to conserve ammunition (sustained rate) while still preventing effective return fire as the assault moves forward, the increased (rapid or cyclic [if needed]) rates as the assault nears the objective, and the lift and shift to targets of opportunity.

Most WSLs do not understand how or why they control

rates of fire. Rates of fire are given by the SBF leadership based on the enemy situation and the current phase of the assaulting element. Rates of fire are changed by verbal and non-verbal commands by the leadership. Machine-gun teams alter the number of rounds fired in each burst (i.e., sustained rate of fire is characterized by a 6-9 round burst every 4-5 seconds). Each rate of fire has a suggested burst count and suggested time between bursts and the suggested times for gunners to change barrels.

The FM gives a table as a guide for machine-gun teams to utilize during their SBF mission. SBF leaders and machine-gun teams will operate with disciplined initiative to perform their mission and manage the ammunition requirements needed for the entire mission. A primary concern for the machine-gun team is running out of ammunition. All Army unit missions are planned and deliberate; therefore, units will ensure that their mission planning incorporates the resupply of ammunition and needed equipment for follow-on missions. Training units only focus on the basic load and do not request or have a plan to order or carry more ammunition based on the need to accomplish the mission. The SBF leaders will conduct the necessary analysis to ensure their Soldiers do not run out of ammunition during the mission.

Commanders will consider the assets needed for the SBF. An Infantry company should have six M240B machine-gun teams in the organization. Splitting the gun teams across the objective hinders flexibility and control for a SBF element. However, there may come a time when the enemy situation warrants SBF dispersion. The unit will then have to figure out how to employ, utilize, support, and resupply the machine-gun teams. Some of the planning considerations include: time for the initial engagement to gain fire superiority, time to cover the breach team, time to cover the assault element establishing the foothold, and the shifting and lifting of fires to include the ammunition requirements for a counterattack. The planning considerations must include the basic load

requirements, additional mission-essential ammunition that the unit must request and carry, and the approximate times the unit will take to conduct each phase of the operation.

The figure below is an example of how a unit may formulate a plan and establish a time table for a deliberate attack. The chart could be used to do the math required to forecast and plan ammunition requirements. Obviously, the availability of required ammunition and the enemy situation may limit or constrain the commander's plan which will have an effect on additional ammunition. Units will plan for and request the ammunition needed to accomplish the mission. Once additional ammunition is received, the unit will figure out the best way to accomplish the mission. If additional ammunition is received, the SBF leaders will consider how the elements will carry or cross-level additional ammunition across the SBF element. For ammunition shortages, the plan will have to be adjusted to ensure that the SBF element can still support the breaching and assaulting elements. Commanders will consider the reduction in the support for the assault, shift fires, lift fires, and counterattack ammunition to maintain the needed fire support during the most dangerous times in the mission. Resupply plans should focus on the timing of the resupply without disrupting the mission and still allow the SBF to continue to support the commander.

Communication

The WSL must understand the commander's intent and control the SBF element using disciplined initiative. The WSL must communicate effectively to the elements of the SBF, the commander, and the assault element. His ability to communicate is instrumental to the success of the overall mission. Rehearsing with the machine-gun teams and ensuring they understand the concept of the operation allows the WSL to control the SBF element during the mission. A gun team that knows to shift fires when the assaulting element reaches TRP #1 will do so without the WSL saying a

Example Plan for Establishing Time Table for Deliberate Attack

Gun #	Initial (20 sec)	Breach (45 sec)	Foothold (3 min)	Assault (3 min)	Shift Fires (3 min)	Lift Fires (as needed)	Ammo Needed for Mission	Additional Ammo Needed
1	Cyclic	Sustained	Rapid	Sustained	Sustained		1,541	341
2	Sustained	Cyclic	Sustained	Sustained	Sustained		1,533	331
3	Cyclic	Sustained	Rapid	Sustained	Sustained		1,541	341
4	Rapid	Cyclic	Sustained	Sustained	Sustained		1,566	366
5	Sustained	Rapid	Sustained	Sustained	Sustained		1,083	None
6	Cyclic	Sustained	Rapid	Sustained	Sustained		1,541	341

Notes:

1. The cyclic rate of fire for the M240B is 650-950 rounds per minute (RPM). The chart above uses an average of 800 RPM for the initial and breach calculations.
2. The cyclic rate of fire also calls for a barrel change after one minute of continuous firing, however, the gun would transition from cyclic to sustained reducing the number of barrel changes based on only shooting 1/3 of the 800 round belt.
3. The chart calculations are only an example of how a unit may plan a company deliberate attack. The enemy situation and target exposures

- will affect the amount of required ammunition. The commander may decide that the SBF will not need additional ammunition and adjust the planning times to accomplish each phase of the operation. The important aspect for rates of fire is the planning factors and considerations for the unit's leaders and SBF element.
4. Rehearsing the plan will assist the WSL to identify the best times to conduct the required barrel changes. This example of the detailed planning can be used to ensure the commander and the assault element is supported throughout the mission.
 5. Basically, the formula starts by dividing the RPM by time.

single word. Rehearsals are paramount to an effective SBF machine-gun team.

The SBF internal communication will be challenging during the mission once the firing has been initiated. The WSL must select positions for the gun teams to provide the level of command and control necessary to accomplish the mission. The WSL must rehearse and practice the verbal and non-verbal signals for the mission. These rehearsals should be incorporated into the unit SOP and adjusted based on the mission given to the unit. In the event terrain does not allow for a desirable machine placement, the commander or platoon leader may elect to have the first sergeant or platoon sergeant help control a section of the machine guns.

The WSL will personally inspect the machine-gun lines of sight and fields of vision. Sometimes, there is a need for the machine-gun team to move to continue to support the operation. The machine gunner should immediately notify the WSL if the gun team cannot observe the necessary fields of fire. The AG may assist in directing the gunner to the appropriate targets as needed. The entire machine-gun team will echo fire commands and the gun status during the conduct of firing. Rehearsals and a shared understanding of the concept of the operation will assist the WSL in controlling communication, rates of fire, and when barrel changes should take place during the mission.

Elements separated by time or space are challenged by effective communication restraints. Communication between Soldiers, teams, elements, and leaders can present significant challenges during the operation. The commander must have a formal and rehearsed communication plan before executing the mission. The primary, alternate, contingency, and emergency (PACE) plan is critical to the success of the mission. The PACE plan provides a redundant ability to communicate across an objective and increases the probability of mission accomplishment. In many instances the following PACE plan will apply to many Army units: the primary method of communication could be a FM radio; the alternate method could be a handheld flare, star cluster, or smoke grenade; the contingency method could be a whistle, voice, or hand and arm signals; the emergency method could be a runner or messenger.

Leaders will account for distance between elements, terrain, and weather conditions when determining the most effective alternate, contingency, and emergency communication plans. Smoke and flares may be affected by timing and weather conditions; therefore, leaders must be cognizant of the environmental conditions. Units will plan for how they will send the confirmation signal. A parachute flare shot from the assault position should be echoed from the SBF position to confirm that the action resulting from the signal has been acknowledged or completed.

There have been some discussions of who initiates the signal in accordance with the PACE plan. Leaders from the SBF have initiated a shift fire for the machine guns on their own and without the commander or assault leader's knowledge. The assault element or the commander will initiate the decision for the SBF element to shift fires. The

commander, in his planning process, should consider surface danger zones (SDZs) and the appropriate time to shift and the lift fires on the objective.

Rehearsals continue to be an important theme in conducting a military mission. Just as the SBF, breach, and assault elements conduct a rehearsal, the devices used during a mission should also be rehearsed. Leaders must know how to activate the type of pyrotechnic device they will use on the objective. On many occasions, leaders fail to properly launch a star cluster flare because they have not been properly trained. Soldiers often throw the smoke grenade without pulling the pin.

It is important for leaders to employ a signaling device in the correct location. If the SBF is using smoke to signal confirmation of shift or lift fire, they must not throw it out in front of their position as the smoke will obscure the objective. The SBF element leader should throw the smoke laterally towards the assault element side of the SBF so the assault element can see the confirmation signal. The star cluster and parachute flares should be fired in a direction that will maximize the chances that the assault element or commander will see or hear it. Leaders should fire the flare so that it flies at a 45-degree angle across the objective. The assault element will be focused on the objective and more likely to see the flare.

Conclusion

Soldiers and units support each other while conducting military operations. In offensive operations, the SBF element is responsible for supporting the breach and assault elements and therefore perform mission-essential tasks during the mission. The SBF element's focus is to gain fire superiority and cover the maneuver of the assaulting force as it gains a foothold onto the objective. The enemy is presented with a complex dilemma when effectively engaged by the SBF element which helps the breach and assault elements in the performance of their duties.

Over the last 13 years, Army units have lost the experience and, therefore, the expertise of establishing and effectively utilizing the SBF in the conduct of offensive operations. This article discussed observed problems with SBF occupation, employment, fire control measures, rates of fire, and communication. We hope this article can serve as a basis of discussion for units and leaders to better prepare their units for combat operations around the globe.

SFC Carter H. Conrad currently serves as an observer/coach/trainer (OCT) with the Live Fire Division, Operations Group, Joint Readiness Training Center (JRTC), Fort Polk, La. He previously served as a platoon sergeant with C Company, 1st Battalion, 32nd Infantry Regiment, 3rd Brigade Combat Team, 10th Mountain Division, Fort Drum, N.Y. SFC Conrad earned a bachelor's degree in fisheries science from Virginia Tech.

SFC Johnny Tinsley currently serves as an OCT with the Live Fire Division, Operations Group, JRTC, Fort Polk. He previously served as a platoon sergeant with B Company, 2nd Battalion, 12th Cavalry, 4th Brigade Combat Team, 1st Cavalry Division, Fort Hood, Texas. He earned a bachelor's degree in criminal justice with an emphasis in forensics from American Military University.

As OCTs, SFC Conrad and SFC Tinsley have both observed more than 150 company and platoon live-fire exercises since May 2012.
