Tutorial Introduction

We claim that our rules are simple, but the reader contemplating artillery fire is immediately confronted with several pages of different kinds of fire missions, national differences, Call-for-Fire restrictions, etc. This tutorial is designed to introduce you to artillery with concrete examples.
Note: We made several modifications to the artillery rules that can be found on our official errata page. The examples below reflect these errata and may differ from the original rulebook.

The steps necessary for most fire missions are:

1. Choose a firing unit or organization, target and observer
2. Choose the type of fire mission and place the appropriate templates
3. Resolve the Call-for-Fire procedure to determine if the attack takes place.
4. Resolve the attack against any units caught in the templates.

This tutorial will show how you perform these steps and determine how to calculate fire missions.

Useful Links

For an extremely detailed study of British artillery, please check out the Royal Artillery page.

Shelling Attack/Basic Indirect Fire Resolution

Our first example examines the mechanics of resolving a simple shelling attack where an on-board unit sees its target and fires at it (and we therefore don't need to resolve call-for-fire). All indirect fire follows the same mechanism. You place one or more indirect fire templates, determine what units are affected by it, and then resolve one attack against each unit under the template. Note that an indirect fire template represents the fire of several actual gun tubes. A good rule of thumb is that a template or gun model represents 2-3 tubes for mortars and 2 tubes for larger artillery. Throughout the tutorial, we refer try to refer to "templates" rather than "guns", but keep this in mind if there is any confusion.

Step 1: Determine the Target and the Observer

X, a veteran German 8cm mortar (card GE-52) in Good Order is emplaced 18" from a veteran American infantry unit **A** that is moving across an open field. Consulting the spotting chart, we see that a troop unit without concealment will normally be seen at 10". However, if the target is moving, the spotting distance will be moved up one on the Modified distance chart to 20". The German unit spots the American infantry.

In the next German Offensive Fire Combat Phase, the mortar decides to attack the infantry using its indirect fire

strength. Unlike direct fire, which is resolved in both the offensive and defensive fire phases, indirect fire occurs only in the offensive fire phase. If the target were within 5" the mortar would use its direct fire rating, representing the crew picking up their rifles and personal weapons and engaging in a firefight. However, because the range to the target is more than 5" mortar is using its indirect fire modifiers (the yellow weapon ratings) and the attack is resolved as indirect fire even though the mortar can see the target it is firing at.

Step 2: Determine the type of fire mission

The first step in the Offensive Fire Combat Fire Phase is to "Call for friendly indirect fire support". The mortar unit sees its target and is not attempting to combine its fire with any other unit, so it will use "Fire by Section" (p.36). Fire by section is restricted to "shelling" (p.39) and "smoke" missions (p.40). The mortar unit is attempting to damage the target, it will use a shelling mission instead of smoke. Shelling missions are the most basic type of indirect fire attack and are resolved without any die roll modification to the basic weapon rating because of the mission type.

Step 3: Place the template

An indirect fire attack is initiated by placing the template representing the "beaten zone" (p.38) of the mortar on its target. Examining the unit card of the mortar, we see that it uses a small template. In 15mm scale, a small template is 2 1/2" by 1 3/4" and is represented by template C on the sheet provided with the game (the smaller ones are used for 1/285th scale) This template is placed on the target unit centered on the one of the aiming points of the target. Because the fire is being performed by an on-board unit, the template is aligned lengthwise along the direction of fire (p.37 Fig 34).

Step 4: Determine if the attack arrives

Usually, a call-for-fire roll is performed to see if the indirect fire roll is successfully initiated. However, as the mortar unit spots its target, and is firing by section, the call for fire is automatically successful (p.38).

Step 5: Resolve the attack

The indirect fire weapon rating of the mortar against T class targets is +0 out to 60". This is found in the yellow section of the T G sV line of the unit card. All types of fire combat are resolved using the Fire Combat table, but indirect fire attacks use only the indirect fire support modifiers. Looking down the Indirect Fire Modifiers, we see that the only one that applies is the discipline rating of +1 for good order veteran troops firing. A D10 is rolled with a +1 modifier, and the result cross-referenced into the Fire Combat chart against a veteran target. If a 5 were rolled, the modified die roll of 6 would result in a Suppressed result.

In this example, there is only one target with an aiming point under the template. However, if there were more than one, every target with an aiming point under the template would be attacked, with a separate combat resolution made for each target.

If an artillery unit cannot see a target, they need someone else to tell them where it is and if they are hitting it. This is the essence of "Calling for Fire". There are two essential elements to calling for fire:

1. An observer who is capable of seeing the target and requesting a fire mission.
   The observer must be able to contact the firing unit or battery. This can be done by telephone, radio, or even flags and hand-signals. The observer must also be skilled enough to adjust fire onto the target.
2. A firing element (gun, battery, or battalion) who is able and authorized to respond to a request for fire.
   The firing element must be allowed to respond to the request for fire. If they are not assigned to help you, or are busy elsewhere, you won't get your fire mission.

Call-For-Fire

In Battlefront:WWII, all of the above considerations into a single die roll on the Call-for-Fire table. This table shows the chance of successfully calling for fire based on:

- Nationality
- Observer type
- Level of Support

	OBSERVER / LEVEL OF SUPPORT	Organic Fire Support	Direct Fire Support	General Fire Support
German	Forward Observer	3 or more	4 or more	7 or more
	Commander	4 or more	5 or more	---
	Troops	6 or more	---	---
Russian	Forward Observer	3 or more	4 or more	---
	Battalion Cmdr	4 or more	5 or more	---
	Scouts	---	6 or more	---
American	Forward Observer	3 or more	4 or more	6 or more
	Commander	4 or more	5 or more	7 or more
	Troops	5 or more	6 or more	8 or more
British	Forward Observer	3 or more	4 or more	5 or more
	Commander	4 or more	5 or more	---
	Troops	5 or more	---	---

Nationality

Different nations had different doctrine for calling for artillery fire. We are going to examine some of these in excruciating detail later in the tutorial.

Observers

Forward Observers

Forward observers are trained to call for fire missions. They have special radio equipment and are authorized to contact off-board artillery. Often they are the actual commander of an off-board battery. They will almost always have a better chance of calling in fire missions. Also, with the exception of the Americans, FOs are the only ones who can call for artillery in General Support.

Commanders

Commanders were often trained to act as observers, but did not usually have the skill of forward observers.

Troops

Troops were sometimes able to act as observers for artillery directly attached to their unit.

Scouts

Because of a lack of education and training, most Russian troops were not able call for fire missions. However, Russian scouts were trained to act as observers.

Level of Support

Level of Support specifies how unit or battery is supposed to cooperate with your forces. The level of support must be specified for every fire support element and unit capable of indirect fire. The support level will determine which units can act as observers and also how easy the missions are to call.

Organic Support

Organic fire support is attached to a specific organization. Individual on-board *units* (guns and mortars) are attached directly to a maneuver or headquarters element. Organic fire support *elements* are usually attached to a specific battle-group. While organic support is the easiest to call, only units in its organization are allowed to act as observers. For a good example, look at the German Infantry Battalion BG-10 (p.72) that has 3 80mm mortars as Organic Support *attachments* and a German Heavy Mortar Platoon (FS-01) as an Organic Fire Support *Element*. Any unit in the entire Battalion can act as an observer for the FS-01. However, as per p.58, the 3 80mm mortars **MUST** be attached to either a maneuver element or the Headquarters element. Once a mortar has been attached, only units of that element may call for fire from that mortar. This is why they usually are split out among the companies to give each company its own organic support.

Direct Support

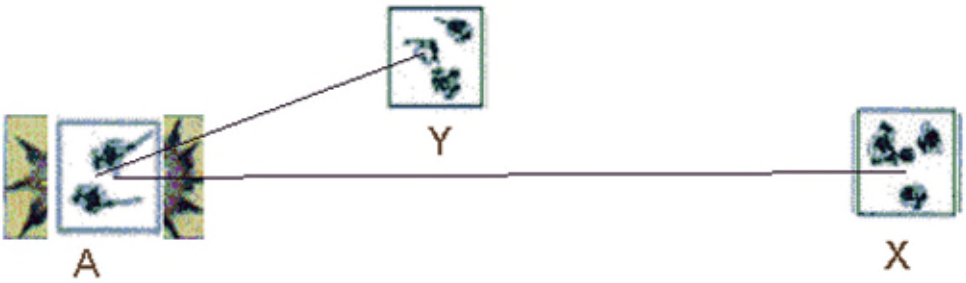
Direct support fire support elements are dedicated to the battle as opposed to a specific organization. They almost always have their own forward observer, who can more effectively control them. Unlike Organic fire support elements, DS elements can be called by any eligible observer. However, the chances of successfully

calling them is less, and national differences in the Call-for-Fire chart will sometimes restrict the types of units that can be used as observers. For all nationalities except for the U.S. only Forward Observers and Officers were trained to call fire. Usually DS elements are off-board batteries or Battalions.

General Support

General support elements represent artillery that may be in use elsewhere and therefore is not available for your fire mission. Often, they are "slices" of fire support that are controlled by higher level organizations (division, corps, and army) that usually do not take part in a Battlefront:WWII battle. Therefore a roll for GS is less likely to succeed. Also, with the noticeable exception of the Americans, the equipment and authorization to call for General Support Artillery was available only to designated forward observers.

Example 2 - On board fire - Observed shelling attack, Call For Fire



Step 1: Determine the Target

A veteran German 8cm mortar (card GE-52) **X** in Good Order is attached to a German infantry company maneuver element as Organic support (p.36). It is emplaced 48" from a veteran American infantry unit **A** that is moving across an open field. Consulting the spotting chart, we see that a troop class unit without concealment will normally be seen at 10". However, if the target is moving, the spotting distance will be moved up one on the Modified distance chart to 20". The German mortar unit cannot spot the target by itself. However, the commander of that company (veteran, suppressed) **Y** is located 10" from the target and spots it. The commander has the option of contacting the mortar to conduct indirect fire.

Step 2: Determine the type of fire mission

The mortar unit is firing by section and attempting to damage the target, so it will use a shelling mission.

Step 3: Place the template

The mortar template is placed on one of the aiming points of the target. As the firing unit is on the board the template is aligned along the direction of fire.

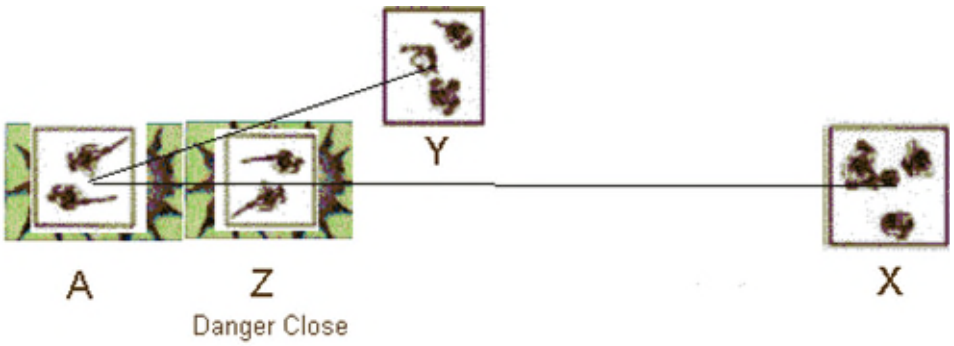
Step 4: Determine if the attack arrives

The fire does not automatically arrive. Instead, a die roll on the Call-For-Fire table (p.35) is made to see if the attack can be resolved. This die roll represents the skill of the observer in correcting fire and the chance of making contact with the artillery. In this case a German commander is attempting to contact Organic Fire Support, so a 4 or more must be rolled on a d10. This is modified by the Commander's discipline rating (Suppressed/Veteran = -1). If a 5 or higher is rolled, the attack is resolved as before.

Step 5: Resolve the attack

Assuming that the call-for-fire roll is successful, the attack will be resolved using the indirect fire ratings of the mortar. As in example 1, the veteran/good order modifier will be applied to the attack die roll because the mortar is on the board. If the mortar were off-board, the discipline rating modifier would not apply. Note that observer's discipline rating modifier applies to the call for fire, while the firing unit's discipline rating modifier applies to the attack itself.

Danger Close



Sometimes a mistake will cause artillery rounds to fall short and this can endanger friendly units. This is called "Danger Close".
The situation is almost the same as in the previous example. In addition to the German mortar **X** and commander **Y**, there is a disordered German infantry **Z** 2" away from the target infantry **A**. The commander is attempting to bombard the American unit before it can close and destroy his squad. However, he rolls an unmodified 10 in the call-for-fire roll resulting in a "Danger close" situation (p.38). The attack against the target infantry is resolved normally, but an additional template is placed along the direction of fire that will attack the disrupted German infantry. This attack is modified as follows:
weapon rating 0
discipline rating +1
danger close attack -1
disrordered unit +1
for a net modifier of +1.
A 9 is rolled on the danger close attack, knocking out the German infantry.
There is no such thing as "friendly fire."

Danger Close only applies to fire missions where the firing unit cannot see its target and an observer resolves a call-for-fire roll with a natural 10.

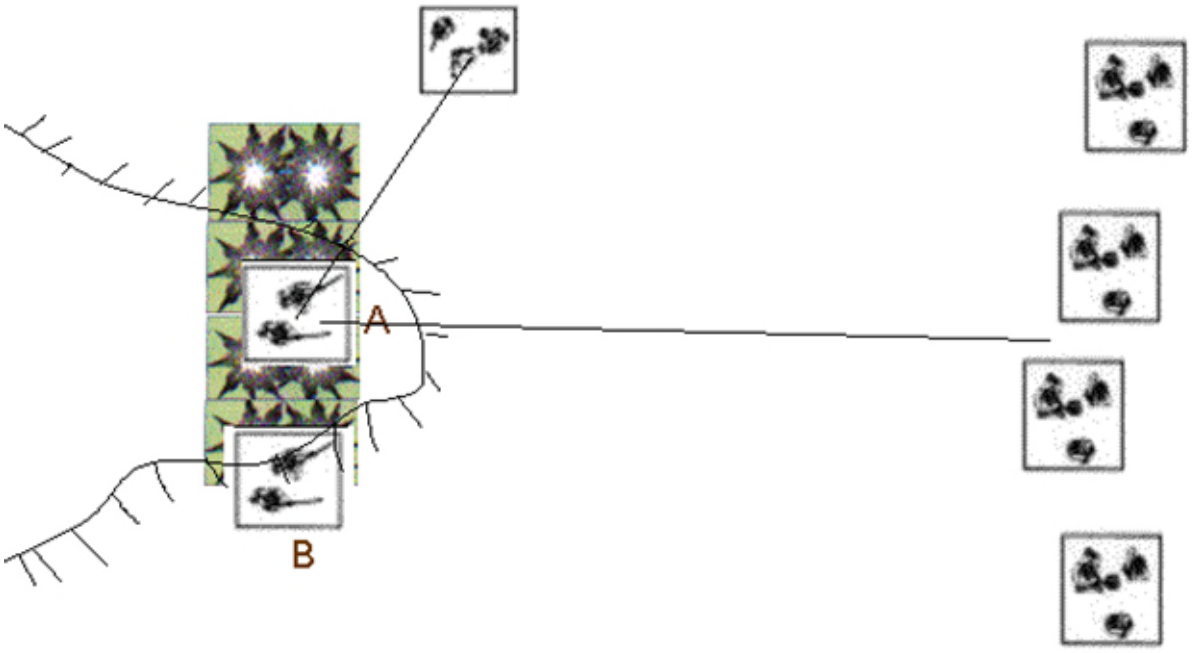
Battery Fire

The examples up to this point have all shown a single firing unit conducting a *Shelling* attack. To be really effective, artillery and mortars were grouped in larger organizations (batteries and battalions) that can fire as a group. Grouping artillery in this way allows several units to:

- Be called with a single call-for-fire roll
- Use different missions that can increase their effectiveness.

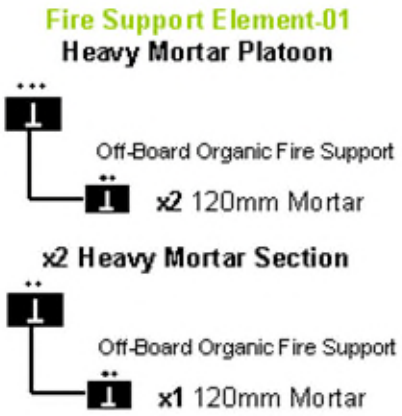
The smallest group of artillery units that can operate together is the *Battery* or *Platoon* (for Battlefront purposes, platoons are essentially equivalent to batteries). The scenario should specify the battery organization and level of support for all batteries in the game. When you specify a battery fire mission, you place all of the templates for the battery together and roll once for all of them on the call-for-fire table.

A Shelling Mission by on-board Battery



A trained Russian mortar battery consists of 4 x 82mm mortars (card RU-27) and a forward observer in good order in Organic Support. All 4 of the mortars can fire as a battery with a single call-for-fire roll.
Note that if they could see their targets, each mortar could choose a separate target and fire individually. However, if they cannot see their targets, each separate fire mission would require a separate observer, and Russians have very few units capable of calling for fire. Firing by battery s generally the best way for the Russians to use their entire battery. As they are on-board, the templates must be aligned perpindicular to the

direction of fire, measured to the center of the battery. For Russian units in organic support, a call-for-fire die roll of 3 or more is needed for the mission to arrive. This is modified by the discipline modifier of the observer, who in this case is the forward observer/battery commander. Although the fire mission must be placed on a legitimate target (unit **A**), once the mission is successfully called, targets that have an aiming point under the beaten zone (such as Unit **B**) are attacked even if they are not seen by the observer. Note that that random shelling die roll modifier is NOT used against **B** in this situation because the primary target is under observation (spotted or suspected) by the observer. Against infantry units in the open, the basic weapon value of the Russian 82mm mortar is a 0. Because the mortar units are on-board, this is modified by their discipline rating (also 0). A separate fire combat resolution roll would be made against each of the two targets under the template (A and B) using the basic 0 value.



Artillery Batteries are capable of performing several different fire missions. For our example we will look at the German Heavy Mortar Platoon (FS-01 p.75).

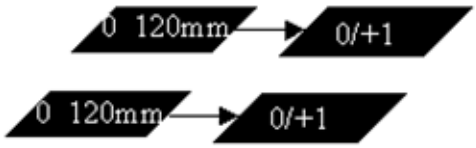
- The German FS-01 contains 2 120mm mortar sections. The off-board artillery table on p.37 shows that each mortar section will place a large template with a weapon strength of 0 against armored vehicles and +1 against troops. These weapon strengths cannot be modified by discipline class because the artillery units are off-board.
- The German FS-01 is designated as being ORGANIC support. This means that it is attached to a specific on-board organization and can be called by any unit in that organization that is eligible to call artillery. Unlike many off-board batteries, it does not have its own forward observer and relies for spotting on the organization to which it is attached.

This small but potent element has four possible fire missions.

1. Independent Fire By Section
2. Battery Random Shelling
3. Battery Shelling
4. Battery Concentration

In the examples below and throughout the rest of the tutorial, we show the stacking of the various templates and the mission modifiers on the left side, and the shape of the beaten zone and the final attack modifiers on the right, taking into account the type of artillery firing. For example, +1 120mm means that the a +1 modifier is applied to the basic 120mm weapon values. A 0/+1 means that the attack will be resolved with a 0 modifier against V targets and a +1 attack against other targets.

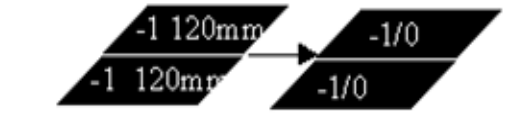
Independent Fire By Section



Independent Shelling by Section

Almost unique among off-board artillery batteries, the German FS-01 has the option of firing each of its two templates as an independent fire mission. Each of the missions can either be a smoke or shelling mission (the number of available smoke missions must be specified in the scenario) and requires a separate observer and call-for-fire roll.

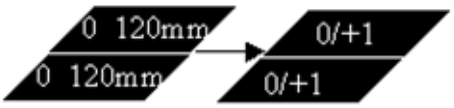
Battery Random Shelling



Random Shelling By Platoon (Battery)

Random Shelling may only be conducted by battery sized organizations (p. 39), and requires that all of the templates in the battery participate. It does not require a spotted or suspected target, but can be called onto the edge of a terrain feature. Random shelling is subject to a -1 modifier, to indicate that it is not focusing in on an actual target, and is probably more dispersed than is actually indicated by the template. Place all of the templates from the battery side by side and center them on the terrain feature being shelled.

Battery Shelling



Shelling By Platoon (Battery)

A Battery Shelling mission requires that all of the templates from the battery participate. Battery shelling requires a spotted or suspected target. There is no modifier to the basic attack values of the artillery for a shelling mission.

Battery Concentration

Platoon (Battery) Concentration

A concentration mission increases the attack values of the battery by 1 but reduces the size of the beaten zone to a single template. In essence, all of the templates of the battery are stacked on a single target. The +1 modifier is the same whether the battery contains two templates (as does the German FS-01) or 3 templates. Concentration missions may be called on spotted or suspected targets. A 120mm mortar concentration can devastate an exposed soft target, with the +2 modifier yielding a 30% chance of a knocked-out result.

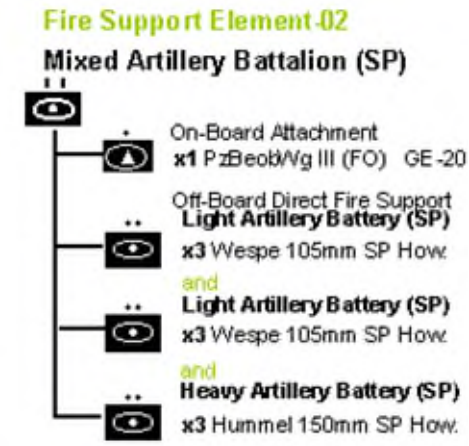
On-board Batteries

The German FS-01 is an off-board battery, but the rules are similar for on-board batteries such as the Russian FS-01 (p.67) While on-board units are capable of spotting for themselves and firing by section, to use battery fire they require a qualified forward observer and must perform a call-for-fire roll. Also, if any one unit that is part of an on-board battery fires by section, the rest of the units in that battery may *NOT* combine into a battery fire mission.

Battalion Fire

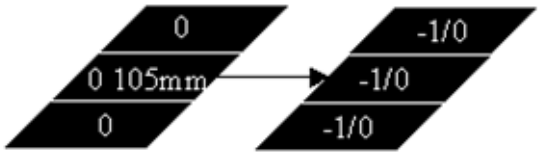
Just as several sections of artillery can combine to form battery fire missions, multiple batteries can combine to form even larger missions that can increase the size of the beaten zone, the modifiers to the die roll, or both. We start by looking at the mechanics of battalion fire.

We are going to examine the German FS-02 Mixed Artillery Battalion because all of the batteries are at the same support level (Direct), but it has mixed weapon types.
The 105mm howitzers have a basic strength of -1 vs V and 0 vs T, G, sV (-1/0). The heavier 150mm have a strength of (+1/+2). Because of the mixed weapon types, part of the pattern will have a different die roll modifier. Again, in the examples below we will show the pattern and mission modifiers on the left, and the final modifiers adjusted by weapon type on the right.



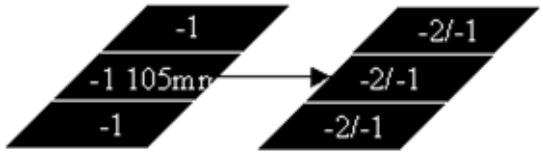
Battalion Random Shelling and Shelling Patterns - Scenario specified

A key rule for battalion fire is found on p.39, where it says "a battalion is reduced to one battery when firing a shelling mission". This also applies to random shelling missions. As the batteries in the battalion are of different types, you thus have a choice of firing a battery shelling pattern with one of the two 105mm batteries, or using the heaver 150mm. Which would you choose? :-)



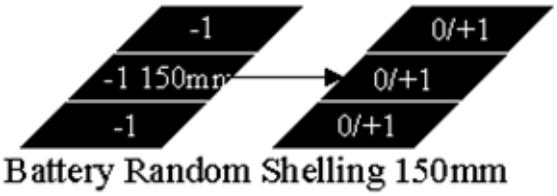
Battery Shelling 105mm

Obviously, if given the choice, the wargamer will ALWAYS use the heavier battery. In reality, as shelling missions are usually called on speculative targets, the army would probably use the lighter battery.



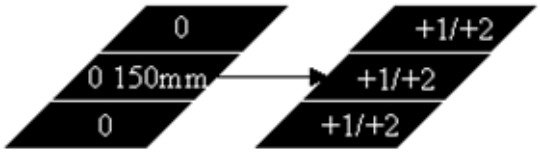
Battery Random Shelling 105mm

Given that the rules also imply that you can split up battalion fire (see the third paragraph of "firing by battery" on p.37), why would any wargamer decide to fire by battery and lose potential fire missions? In fact, national doctrine often forced fire by battalion and/or breaking up a battalion would cause later control problems.



Battery Random Shelling 150mm

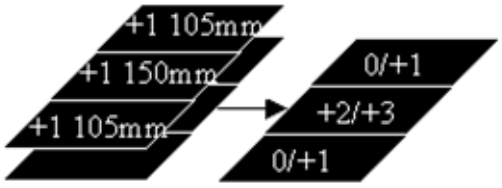
Both of these situations require the intervention of the scenario designer. Where you want to force rational behavior, or resolve ambiguous situations, feel free to impose scenario rules. For example, it is perfectly reasonable to restrict the gamer to using the lighter 105mm pattern or force battalion fire. We are going to examine National Doctrine later in the tutorial to give guidelines for imposing scenario rules.



Battery Shelling 150mm

Concentrations

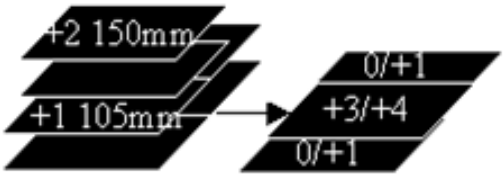
Battalion Concentrations can be fired at spotted and suspected targets and allow the full weight of the battalion to be used. You essentially have 3 battery concentrations that are used together as a single mission. Each battery concentration has a beaten zone of one template. The simplest method is to lay the three beaten zones side-by-side. With the German FS-02, you must specify which of the 3 templates represents the heavier battery. The figure shows the 150s in the middle, but they could just as easily be to one side.



Battalion Concentration

Thickened Concentrations

By stacking two of the 3 battery patterns 2 deep, it is possible to get an extra +1 modifier for a "thickened" concentration. Where you have two battery patterns overlapping, the die roll modifier of the strongest artillery is used as a base. In this diagram the 150mm pattern thickens the center of the two 105mm patterns. With the basic concentration mission, you get no extra thickening benefit for stacking 3 instead of 2 batteries deep.



Battalion Concentration
Thickened Center

Calling for Battalion Missions

With the notable exception of the Americans, most nations limit who can call for battalion fire missions to forward observers and officers. It sometimes reasonable for a scenario to limit battalion fire to specific observers as well.

General Support

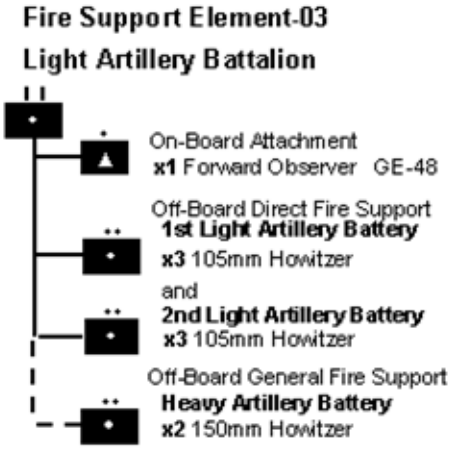
Most off-board artillery support is in Direct Support of the battle group in the game. This makes it easier to call and more flexible. There often were batteries and sometimes even Battalions available to the general area of the battle that could be called on if they were not busy elsewhere. If they are available, their primary use is to thicken direct support fire missions. General support artillery usually cannot fire on its own (except for the Americans) and the scenario should specify the availability and limitations on GS artillery. Also, that you should not be generally be able to thicken Organic Fire Missions with GS artillery, only Direct Support Missions.

	OBSERVER	LEVEL OF SUPPORT	General Fire Support
German	Forward Observer		7 or more
	Commander		---
	Troops		---
Russian	Forward Observer		---
	Battalion Cmdr		---
	Scouts		---
American	Forward Observer		6 or more
	Commander		7 or more
	Troops		8 or more
British	Forward Observer		5 or more
	Commander		---
	Troops		---

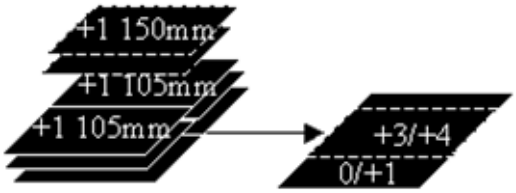
Single Die Roll
When GS artillery is added to a Direct Support fire mission, a single die roll is made for the entire fire mission. If the die roll is high enough for General Support, the GS artillery arrives, otherwise the pattern reverts to the Direct Support pattern.

General Support Thickening - Attached Batteries

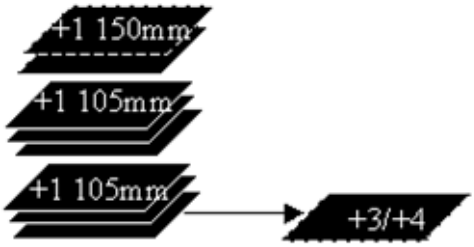
The basic German FS-03 has a battery of General Support 150mm howitzers attached to its two batteries of Direct Support 105mm howitzers. The 105mm howitzers have a basic strength of -1 vs V and 0 vs T, G, sV (-1/0). The heavier 150mm have a strength of (+1/+2).



General Support batteries attached to an off-board element should not be used by themselves, but only to support a fire mission that has been initiated for the DS batteries. As shelling and random shelling missions cannot be performed by more than one battery of a battalion, the GS artillery can therefore only be used to thicken battalion concentrations. Furthermore, the 150mm must also fire a concentration so the area affected by the 150mm is essentially 1 template wide. There are thus two possible patterns that can be fired by a basic German FS-03:



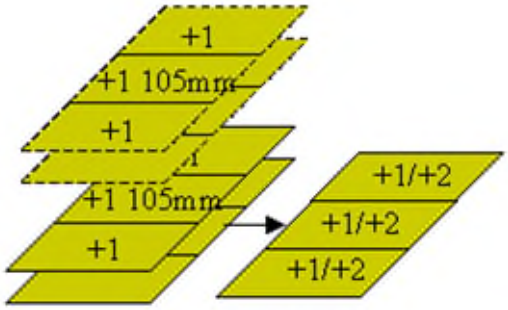
The GS artillery is used to thicken the center of the two battery concentrations. If it arrives, the center area receives the thickened modifier and the higher 150mm die roll modifiers.



In this option, the two 105mm batteries thicken each other automatically. If the GS artillery arrives, the pattern uses the higher 150mm die roll modifiers. Note that you do not get an extra thickening modifier in this case, as the two direct support battery patterns have already qualified for thickening.

Battalions in General Support

The Americans and British often have entire battalions (called regiments by the British) in General support. As we will see in the National Doctrine part of the tutorial, there are slightly different rules for how these are used, with the U.S. being more flexible. One possible mission for GS artillery is to thicken a DS pattern: This figure shows a battalion of DS 105mm artillery being thickened by a GS 105mm Battalion. If the General support arrives, the entire pattern receives the thickened modifier. Note also that some of the special missions, such as the British MIKE and the U.S. Time-on-Target, require General Support rolls.



Scenario Artillery

Up to this point the tutorial has dealt with the mechanics of artillery fire in the game. These are relatively straightforward once you know the available fire support elements and their support levels. Many of the questions we have received point out contradictions in the rules that deal more with the setup of the scenario than the mechanics. For example, the rule on p.39 that limits battalion missions to a single battery conflicts with the description of battery fire on P.37 which implies that individual batteries within a battalion can fire separate missions. Another question arises in the orders of battle where a battalion has the option of operating as independent batteries, each of which could theoretically call for general support, while the battalion as a whole gets one battery of GS artillery. Is is possible that independent batteries get more GS missions than the battalion?
When apparent contradictions exist, which rule is correct? The answer is **"They all could be"**, depending on the national doctrine and specific situation. The discrepancies arose because when we wrote a particular rule, we were thinking of a particular practice followed by a specific nation and didn't always resolve contradictions between them. However, while this may sound like the designers of the game are abdicating responsibility, we are not going to leave you in the dark. The rest of the tutorial will describe how to use the rules, orders-of-battle, and National Doctrine to design coherent and non-conflicting artillery support for your scenario.

Scenario Artillery Setup

The scenario artillery should define:

1. The number of batteries and battalions that are available.
2. The support level for each independent Fire Support Element or section.
3. If not immediately obvious, the observers who can call each element.
4. Pre-plotted fire plans, including any pre-registeration.
5. Any special rules, such as a limitation on the number of smoke rounds or fire missions that can be called.
6. Any changes to the general rules, such as allowing general support elements or individual batteries in a battalion to fire independent missions.

The key idea here is that *when a conflict exists between the scenario rule or order of battle and the rulebook, the scenario takes precedence.*

Some ideas for scenario rules

- Ammunition restrictions can be modeled either by counting fire missions or changing the rolls needed for success on the call-for-fire table.
- Feel free to change the rolls needed for success to simulate communications difficulties or especially good conditions.
- You can limit the control of fire support elements to specific observers to simulate command/control restrictions
- You can allocate smoke rounds either by the mission or the template.
- For referreed games, the umpire can act as a brake on unrealistic behavior. Wargamers being what they are, they will want to use all of their artillery every turn, even if the target would not warrant it. So when

the the player attempts to call down a corps-level Time-on-Target on a horse-drawn wagon, feel free to act as the voice of reality and limit it to a single battery. In our Optional Rules we give some ways of curbing unrealistic behavior within the game system.

Command, Control, and Communications

When we describe the national doctrines, we will refer to three critical ideas that have a great effect on the flexibility and use of artillery. (the terms below are distilled from the excellent Royal Artillery webpage):

- *Command* - the allocation of resources.
- *Control* - the allocation of firepower.
- *Communications* - The methods used for coordinating fire

Command

The level of command defines how easy it is to coordinate between different organizations. A high level of command indicates that resources can be shared without difficulty. You don't need to reassign an off-board element to allow its use by someone else.

Control

Control defines who can call for artillery support. Most nations limited their calls-for-fire to officers and designated forward observers. The lower the level of control, the more flexible the artillery.

Communications

At the beginning of the war, most nations relied on ground communication lines. These were susceptible to interruption when the wires were cut. Also, they restricted communications to those places where wire had been strung. Although wire was still used throughout the war, especially in static positions, radio assumed more importance. The radio "net" was a prime reason for the flexibility of the U.S. and British systems.

A little history-World War I legacies

To understand World War II artillery doctrine it is helpful to look at its origin.

Pre-WWI

At the beginning of the 20th century, artillery doctrine was still in its infancy, and had not advanced very far from its Napoleonic, ACW, and Franco-Prussian origins. The battery commander often chose his own targets, often using direct fire at targets that could be seen from the gun positions. The basic ammunition was the shrapnel shell, designed to decimate troops in the open. The battery commander was supposed to dash forward, smother his target with direct fire shrapnel shells, and watch the enemy melt away. One of the first clashes that this had with reality occurred in the Boer War, where the British found that their opponents were not kind (stupid?) enough to fight from positions in the open. Instead, they dug in and fought from hidden positions. Shrapnel had very little effect on dug-in troops, and the British found their gunners being picked off by hidden riflemen. Indirect fire quickly became the name of the game, but communications had yet to be developed to allow it to be controlled effectively. The basic method was to use ranging shots, bracketing the target until fire could be brought down on top of them. The battery commander or observer would often communicate corrections to fire back to hidden batteries. Of course by the time that fire was landing accurately on the prospective target, it often had moved away or gone underground.

Early WWI

At the beginning of World War I, when trench warfare first took over the battlefield, artillery started to be used in massive barrages that were designed to obliterate the enemy positions by sheer weight of fire. In practice this rarely happened. Not only were the shrapnel shells (which comprised much of the ammunition stocks), relatively ineffective against trenches, but the week-long barrages that preceded the infantry assaults often did not have their desired effect. Enough front-line positions survived to allow reserves to be brought up to stop the attacks. Also, after the initial shock of the barrage wore off, troops in dug-outs found that they had survived and could continue to function.

The British

The British developed many techniques for controlling artillery such as the "creeping" barrage, the "box barrage" and the idea of concentration of fire rather than concentration of guns.

Georg Bruchmüller-a modern artillery theorist

On the other side of the trenches, Georg Bruchmüller was a World War I German Colonel whose theories refined the techniques used by both sides in the the war. His theories concentrated on several ideas:

- Artillery should be centrally controlled, with each component having a specific task. This was a relatively radical idea at the time, but definitely showed up later (especially in U.S. and French World War II doctrine).
- By using mathematical techniques, it is possible to calculate where a shell will land with reasonable accuracy. It is thus not necessary to "register" the artillery by firing ranging shots (thus revealing that an artillery attack is coming, giving the targets a chance to get under cover). If done right, the first knowledge the targets should have are the shells crashing down around them.
- It was possible to increase the psychological effects of the pre-attack barrage by varying its intensity. If you could induce the enemy to come out of his protection you could hit him again with a new barrage. After doing this a few times, the enemy troops would be reluctant to leave shelter and your infantry could move in with less opposition.
- By establishing communications between the forward observers and a centralized command, you could shift your fires as needed.

Bruchmüller's techniques were first tried on the Russians in the battle of Riga in 1916, and later in the 1918 offensives on the Western Front. Combined with the new Stosstrupp tactics, they proved extremely effective. The troops gave him the nickname "Durchbruchmüller" (Breakthroughmuller). He published his theories in the 1920's, and his legacies have great influence on artillery doctrine even today.

Evolution

At the end of World War I, almost all of the theoretical groundwork needed to control artillery had been developed in one form or another. World War II techniques were refinements of those used in World War I, and differences in National Doctrine were really caused by a different emphasis on the key ideas of Command, Control, and Communications.

Introduction to German Artillery

At the end of World War I, the German military was forcibly dismantled by the Treaty of Versailles. Long-range and heavy artillery was destroyed and the largest artillery piece was limited to the 105mm Field Howitzer. Whereas the emphasis in the final years of WWI had been on centralized control of massed firepower, in the 1920's more weight was put on individual artillery batteries and the authority of the individual battery commander. After Hitler repudiated the Treaty of Versailles, heavy artillery reappeared in the inventory, and Bruchmüller's theories were reintroduced. However, the emphasis on battery control was never completely erased. Also, the Field Artillery was definitely a forgotten stepchild when it came to equipment, the Luftwaffe and Panzer forces being favored for modernization, especially in communications equipment. The result was that the Germans entered the war with a system at the divisional artillery regimental-level and below that was little more advanced than in World War I, with radios supplementing field telephones. It could be responsive and highly accurate at the battery level, but had little or no capability of massing fires, especially over short periods of time. German artillery also suffered from a general lack of equipment, which was offset somewhat by the use of heavy mortars and rocket launchers.

The German emphasis was on "destruction of point targets". With true Germanic :-) precision, they would do the calculations intended to drop the initial rounds on top of the intended target. This requires accurate range estimation and incorporation of lots of correction factors for weather conditions, relative heights of the battery and target, barrel wear, etc. In his lecture, David Weseley says that when engaging targets of opportunity, they retained a relative inefficient method of computing range and direction that required them to know the relative range and bearing of the target, observer, and battery instead of the methods used by the British and U.S., who needed only the map positions of the target and battery. His point is that these calculations took time, and the average response time from call-for-fire to mission was on the order of 10-12 minutes. Whether this technique improved during the war is debatable, and unfortunately most sources tend to discuss German equipment rather than doctrine. On defence or for deliberate attack, the emphasis on precision was not a problem, as the German observers and survey parties would do the calculations for lots of potential fires. A concentration could then be brought down by means of a code word and a map reference. The artillerymen of Grossdeutschland summed up their defensive technique as "many tubes, few rounds, suddenly, on a single point." and it often slowed up or stopped a Soviet breakthrough.

The Germans liked to fire by battalion, but the batteries could split up to support individual infantry battalions, providing a small volume of relatively responsive fire, especially when the infantry battalion had a separate mission. They then would reform when the battle was concluded. On defence, or in a deliberate attack, the Germans were well drilled on combining the fire of multiple batteries and even battalions. At higher levels of command, the Germans retained great administrative flexibility. They would parcel out artillery from the army reserve into task-oriented forces and reorganize artillery as needed and they still retained the ability to do Bruchmüller-style artillery fire plans. However, this flexibility will generally not be seen in a Battlefront game, because it was part of the preparation for the battle instead of the execution of the battle. They also made one attempt to reorganize their artillery based on a coherent divisional organization, but this was submerged in the Russian flood. Also, as German artillery remained numerically weak throughout the war, and gathering large artillery formations at one point would require stripping other areas of the front of some of their support.

Finally, much of the German artillery (and indeed much of their army), relied on horse-drawn transport. Reducing their pace to that of the horse and meant that they took longer to get into position. As Battlefront

games generally begin with forces in place, this will not usually effect things.

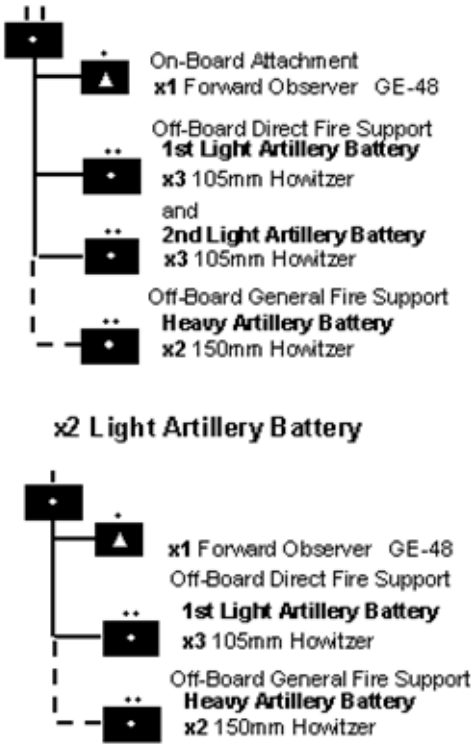
German Artillery can be classified:

- Command - Medium-High level. While the Germans often permanently assigned batteries and battalions to support specific units, they kept some of their artillery in reserve and parceled it out to the areas of the front where it was needed. While they were capable of using coordinated strikes in a prepared fireplan, they didn't do this well against targets of opportunity.
- Control - Medium. Forward observers and officers made most of the calls-for-fire for the artillery. They were generally tied to controlling specific elements.
- Communications - Average. Radios were not as prevalent as might be expected for a modern army. Ground-lines were used heavily. When they did use radios, they were used to connect the observer to the individual elements that were under his control. Unlike the British and Americans, the Germans did not fully develop the concept of a radio *net* that allows the rapid sharing of resources. In Battlefront, this means that the Germans do not have any special multiple-element missions.

Using German Artillery in Battlefront

- German Forward Observers should be associated with a specific Fire Support Element and should not be able to request fire for other elements.
- The Germans should have no special multi-battalion missions. The Germans should perform no thickening missions outside of their battalion organization.
- You can provide multiple FOs for a battalion, but only one can call-for-fire from the battalion on any one turn. If they break up into battery fire, each FO should be assigned to a specific battery.
- If the Germans are attacking, you can allow them can break up their artillery battalions into batteries (as per the FS-03 to the right), once the batteries are broken down, they generally will lose the ability to recombine into a battalion mission within the scope of the game. You can also specify that the artillery will fire as a battalion for the duration of the game and not allow breakdown. Note that if the battalion fires a 1-battery shelling mission (as per the restriction on p.39), this does NOT constitute a breakdown into batteries. This restriction should not apply when the Germans are on defence, where they should be allowed to fire individual battery missions and then recombine.
- The Germans should generally be limited to a single GS battery in a battalion (as in FS-03). If the battalion splits into batteries, the GS battery must go with a specific DS battery and FO and not be used with any other.

	OBSERVER	LEVEL OF SUPPORT	Organic Fire Support	Direct Fire Support	General Fire Support
German	Forward Observer		3 or more	4 or more	7 or more
	Commander		4 or more	5 or more	---
	Troops		6 or more	---	---



Fire Plans

You can give the Germans flexibility in assigning pre-game fire plans. Also, when defending, be sure to give the German some preregistered points as part of a defensive fire plan.

Other Countries

The German methods were quite similar to those in use in WWI, and it is reasonable to use them for Axis minor countries such as the Romanians and Hungarians, and other minor combattants whose methods are unknown. French methods were also, popular, especially in Western Europe.

Introduction to Russian Artillery

In Battlefront:WWII, the Russians are severely restricted in the number and type of fire missions they may perform. Many gamers will be surprised by this, as the Russians were famous for the emphasis they placed on artillery and the large amounts of artillery they fielded. However, at the level that we are simulating in BF, the masses of Russian artillery will not appear. By the time a Battlefront scenario begins, the corps and army level artillery will have already done its work. At the tactical level, the Russians were inflexible in their artillery tactics, as they had few troops with the education and experience needed to call artillery, and relatively primitive communications equipment (they relied extensively on ground lines). With the exception of pre-planned barrages, BF artillery fire is simulating on-call fire on targets of "opportunity" and this type of fire was extremely difficult for the Russians to perform.
Russian Artillery can be classified:

- Command - High level. The Russians tended to control their artillery centrally (as they did everything else). This did allow them to share assets and prepare massive strikes, but they were not flexible enough to use this at the tactical level.
- Control - High level. The Russians planned their fire missions centrally as well. You will not see the larger artillery on the Battefront gaming table except as part of a pre-game fire plan. Only a few units are capable of calling-for-fire.
- Communications - Poor. The Russians relied on ground lines extensively. When they are displaced from their prepared positions, their ability to call-for-fire is impaired.

The Russian Call For Fire Table

Russian OBSERVER	LEVEL OF SUPPORT	Organic Fire Support	Direct Fire Support	General Fire Support
Forward Observer		3 or more	4 or more	---
Battalion Cmdr		4 or more	5 or more	---
Scouts		---	6 or more	---

The Russian call-for-fire table has one important feature - *Very few units can call-for-fire.*

- The Russians have **NO** General Support artillery.
- Only forward observers, *Battalion* commanders and above (p.36), and scouts may act as observers for Direct Support Artillery.
- Only forward observers and Battalion commanders may observe for organic support artillery. If a Russian Mortar company FS-01 is attached to a battalion, it will have two potential spotters, the forward observer and the battalion commander.
- Company commanders *cannot* spot for organic support artillery. Russian company mortars have NO units available to them that can call for indirect fire. They must set up so that they can spot their own targets. This usually isn't a hardship as this is probably the best way to use them anyway.

Another important limitation is that only Russian Forward Observers in an observation post using preregistered fire missions may call concentration missions (p.41).

Scenario Setup-How you start is how you operate.

The setup of the scenario will determine the exact fire missions that can be used by the Russians throughout the game. Unlike the other nations, the Russians should not be able to split off and combine off-board fire. Keep the following points in mind:

- Forward Observers should be tied to a specific fire support element. They should not be able to command artillery from other organizations. If the FO is lost, only Battalion Commanders and scouts can command the asset, and it would not be unreasonable to have the ability to contact the asset lost altogether. Scenario rules could also tie scouts to specific assets.
- The scenario must note whether preregistered fire is available, who can use it, and where it can be used. On defense or when attacking from static positions, the Russians would have preregistered their fire. You can either have them specify a number of preregistered points for each asset or set their FOs up in observation posts and assume that anything within their Line-of-sight is preregistered (this is easier). The level of preregistration should depend on the scenario context. Defenders on the first day of Kursk should have lots of preregistration, but if the Russians are defending a newly captured position, they may only have a few points registered.
  Remember that the Russians can only do preregistered fire from observation posts. If an FO displaces

from his OP or becomes a casualty, you should no longer receive the preregistered bonus or use concentrations from his asset.
- Batteries in Russian artillery battalions (FS-04, FS-05, FS-06) *should not* split off to fire independent missions. The battalion must fire battalion level missions only. Combined with the restrictions on preregistered concentrations, this restriction will cause many fire missions to be shelling missions. The Russians will often encounter the restriction on p.39 that says that battalion shelling missions are limited to a single battery.
- Independent Fire Support Batteries (FS-01, FS-02, FS-03) *cannot* combine to thicken other fire support missions.

The above rules show how limited the Russian artillery is in a fluid situation. You can understand why they often used their artillery pieces as direct fire weapons instead of off-board support (FS-03, FS-04, FS-05). The scenario designer may give a choice to the Russian player on how to deploy these assets, but this choice cannot be changed during the course of the game.

Fire Plan

The Russians can have several turns of preplotted fire plans available when on the attack. You can even use the larger guns (152mm guns +1 vs V/+2 vs T,G, sV) that are not listed on the chart on P.37. Unlike the British, a Russian Fire Plan should be relatively uncreative. Static barrages or concentrations should be the rule. The Russian player should plot any such fire before seeing the German deployment.

You can also give the Russians some on-call concentrations from off-board artillery which could also include the larger guns. Target them against a specific geographic point or terrain feature. Once designated, they cannot be adjusted. To use them, a Russian commander, FO or scout must have a clear LOS to the target position and make a successful call for direct support.

Scouting and set-piece battles

Charles Sharp had an interesting way of simulating the pre-planned barrages that were sometimes available at the start of a Russian attack on German defensive positions. He allowed the Germans to have full-strength organizations to start the game along with lots of dummy counters. The Germans would start with each unit represented by a counter (either dummy or real). The Russians would then receive a certain number of "scouts" that represent the intensive reconnaissance that often preceded Russian offensives. Each scouting attempt is resolved separately by revealing German setup counters one-at-a-time until a real German unit is found (i.e. each scout can reveal a single German real unit). At the end of this process, all revealed German units are eliminated to (no die roll required) reflect the massive artillery concentrations that would precede a Russian attack. You can modify this process to restrict scouting attempts to certain parts of the board, or allow each scout to reveal only a certain number of counters, but the basic idea is that known German positions would be annihilated by massive artillery strikes when the Russians started their attack.

Introduction to British Artillery

As with all participants in World War I, the British had considerable experience with the calculations necessary to deliver effective indirect fire. In addition, they came up with a really simple system that used map grid references, brought about by the hyper-accurate mapping of the Ordnance Survey. Previous calculations had required that you know the position of the observer relative to the guns and the position of the target relative to the observer. Then you could use trigonometric functions to figure out where to point the guns. The map grid reference system required that you know the position of the target and the guns relative to a map and did not require the position of the observer. This decreased the time needed to deliver fire on a target to approximately 2-3 minutes from the call-for-fire to the arrival of the shells. The British sacrificed some accuracy for speed, and their larger patterns tend to be somewhat wider than those of their American cousins. This was acceptable because the aim of British artillery was often not to *destroy* the enemy with fire but to *neutralize* him to make the job of other units easier.

Although their tactics up to regimental level were established in the pre-war period and did not change much during the war, in 1941 Brig HJ Parham, the CRA (*Commander Royal Artillery*) of 38 Division, invented and tested new procedures for coordinating fire from higher echelon assets. These culminated in demonstrating a 144 gun concentration (approximately 6 regiments) against an opportunity target within 5 minutes of the target being called. In mid-1942 XIII Corps conducted further trials and new doctrine was issued late that year. Under the new doctrine, each Corps had an AGRA (Army Group Royal Artillery) directly attached to it, which was a brigade-sized formation comprised entirely of artillery and designed to provide swift and devastating fire support to all Allied units within its range. An AGRA in NW Europe typically consisted of one Field Regiment, four Medium Regiments and a Heavy Regiment. By 1945 these were supplemented by a Super Heavy Regiment and Land Mattress rocket launchers. AGRAs were also formed in the Mediterranean and the Far East, though composition varied.

The standardized concentrations of this new doctrine were known as Mike (regiment), Uncle (division), Victor (corps), William (army) and Yoke (army group) targets and always initiated by the radio call "Mike Target, Mike Target, Mike Target" (or Uncle, etc) that galvanized Command Posts and guns to action. This system allowed them to put vast amounts of firepower in the hands of a single Observer, combining fire from diverse missions into an overwhelming single strike (although usually in Battlefront you will not see the largest missions). This system gave them one of the two most effective artillery systems used in World War 2 (the other being that of the U.S.-partisans of both systems can conduct a theological argument about which was "best"-the Germans didn't appreciate being on the receiving end of either of them).

The British were also very skilled at preparatory barrages, and preplanned fire, and many scenarios can start with several turns of pre-planned barrages or concentrations.

British Artillery was never "in reserve", even if the combat formation it was supporting was not in contact with the enemy. It was available for use on targets within range. There were two basic command and control relationships:

- 'Under Command'; and
- 'In Support', which made firepower available, normally all guns within range, and enabled firing across divisional and higher formation boundaries. In this respect the British Artillery system was more flexible

than the American, as American commanders occasionally felt proprietary towards the artillery formations assigned to them.

The consequence of these simple arrangements was highly flexible mobile firepower that could be provided where and when it was needed. 'Under Command' meant that control was centralized under the commander, while 'In Support' meant decentralization. Typically a regiment 'under command' of a division would be 'in support' to a particular brigade, but this did not prevent it firing in support of formations to its flanks.

British Artillery can be classified:

- Command - High level. The British commanded their artillery from a high level. This allowed them to share assets and prepare massive strikes.
- Control - Low-medium level. Battery Forward observers were able to order strikes from their own batteries and request strikes from almost any level in their hierarchy. Even though the ability to call for fire was limited to trained observers and officers, the British generally deployed many observers and they worked closely with the formations they were supporting.
- Communications - Good. Forward observers utilized both radios and ground lines and this allowed them to rapidly place calls-for-fire.

British Off-board Artillery Ratings

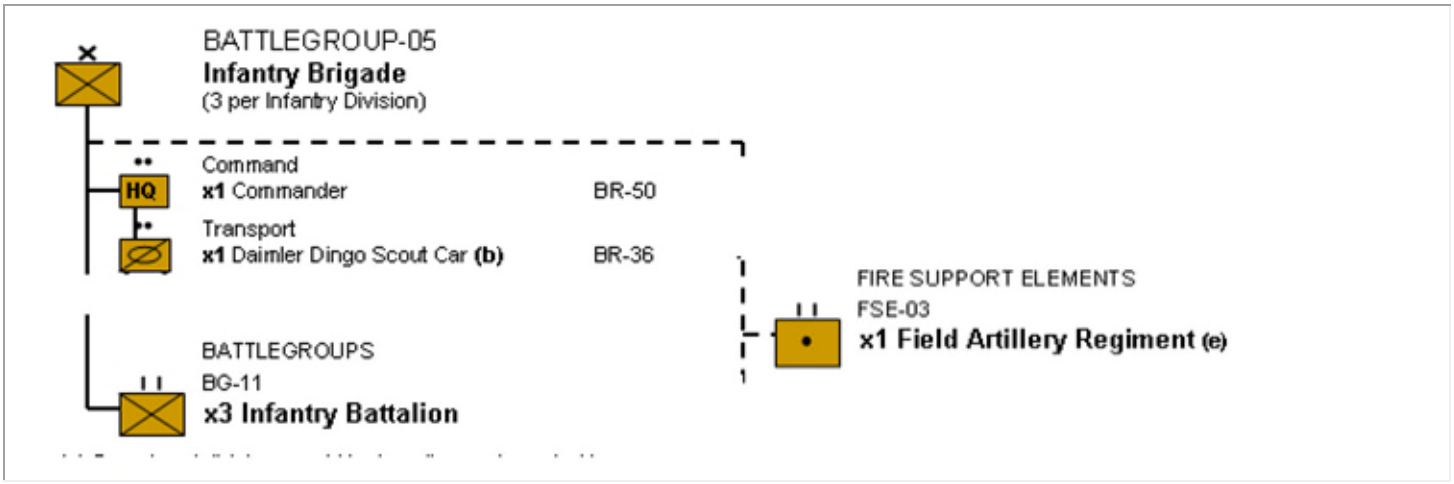
Towed or Sp Gun	Template Size	Shelling Die Roll Modifier vs. V/T,G,sV
Availability: (E) = Early War (approx 1939 to 1941 or 1941 to 1942 in Far East) (M) = Mid War (approx 1941 to 1943) (L) = Late War (approx 1944 to 1945)		
Land Mattress 76.2mm Rocket Launcher (L)	2 x Large	-1/0
3.7-in. Mountain Howitzer (EML) 18-pdr Field Gun (E) M3 GMC SP 75mm Gun (ML) M1 75mmm Howitzer (ML)	Small	-1/0
25-pdr Field Gun (EML) Bishop SP 25-pdr Field Gun (M) Sexton SP 25-pdr Field Gun (L) Priest SP 105mm Howitzer (ML) 4.2-in. Mortar (ML)	Large	-1/0
4.5-in. QF Howitzer (E)	Large	0/+1
4.5-in. Gun (ML) 5-in. (60-pdr) Gun (EM)	Large	0/+1 (+1/+2)
5.5-in. Gun (ML) 6-in. (26-cwt.) Howitzer (E) 155mm Howitzer (L)	Large	+1/+2 (+2/+3)
7.2-in. Howitzer (ML)	Large	+2/+3 (+3/+4)
9.2-in. BL Siege Gun (E) 12-in. BL Siege Gun (E) 8-in. Howitzer (L) 230mm Gun (L) Naval Gunfire (All Calibres) (EML)	Large	+3/+4 (+4/+5)
Note that shelling patterns will not generally be used for the larger guns, except perhaps in pre-planned fire plans. Instead, their attack factors will use the concentration modifier of +1 as indicated in parentheses.		

British Divisional Artillery 1942-45

OBSERVER	LEVEL OF SUPPORT	Organic Fire Support	Direct Fire Support	General Fire Support
British	Forward Observer	3 or more	4 or more	5 or more
	Commander	4 or more	5 or more	---
	Troops	5 or more	---	---

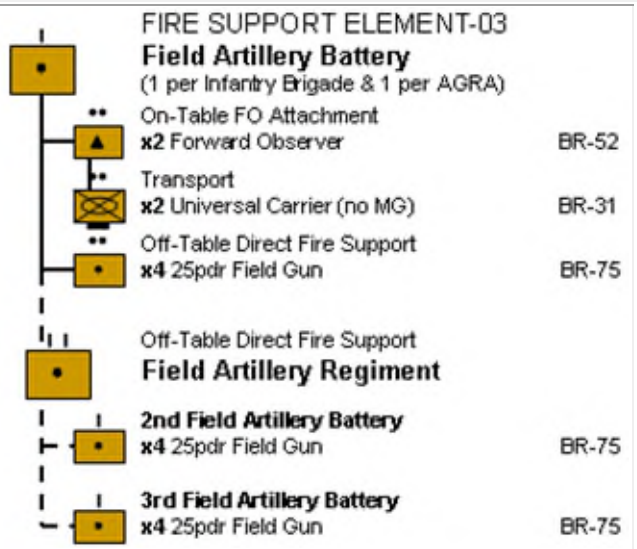
The late war British artillery control system relied heavily on trained artillery observers. Artillery Troop commanders were Captains and Lieutenants and became their battery's main observers. They operated as either Observation Post Officers (OPO) if the battle was static or Forward Observation Officers (FOO) otherwise. However, these were not the only spotters available. The Battery Commander, warrant officers, and suitably experienced sergeants could also function in this capacity when necessary. In our system, all of these different kinds of observers are represented by generic Forward Observers (FO) or Observation Post (OP) tanks. All of these are tied into the artillery radio net and can control the larger missions. Other types of troops cannot call for fire from the higher echelon assets as is reflected in the Call-for-fire table.

One of the results of the reorganization of British artillery was the standardization of artillery support. The basic British ORBAT lists standard infantry and artillery organizations in the Commonwealth forces. An infantry division usually had 3 infantry brigades (BG-05) and the standard artillery support for each brigade was a Field Regiment (FSE-03) which consisted of 3 batteries of artillery. The BG-05 infantry brigade organization shows one Field Artillery Regiment (FSE-03) supporting an infantry brigade.
The type of artillery in the FSE-03 was standardized to the 25-pdr Field Gun, an excellent 88mm artillery piece with a high rate of fire. In BF, a single template of 25-pdr artillery (representing 2 tubes) places a Large template with a base attack strength of -1 vs V targets and 0 vs T,G, and sV targets.

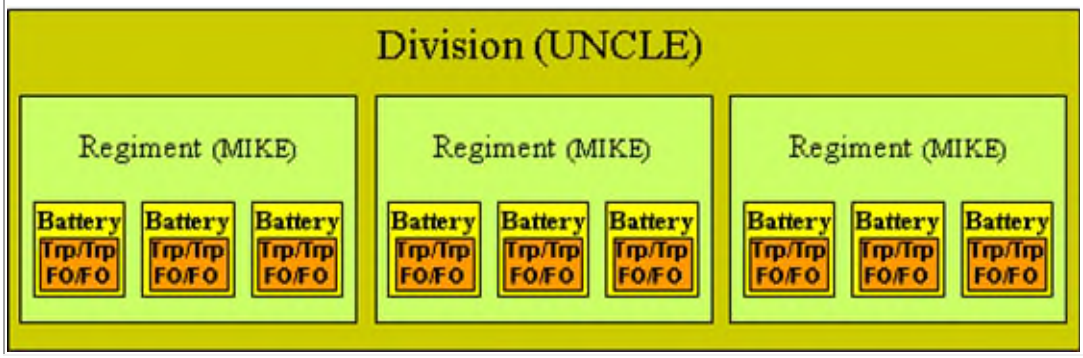


Each of the batteries in the field regiment is often assigned to one of the 3 infantry battalions in the brigade, but the 3 batteries are all part of the same regiment. As described below, a forward observer (FO) could call for fire for guns up to the entire regiment. Note that each battery has two FOs - each directly controls a 'Troop' or Half-Battery.

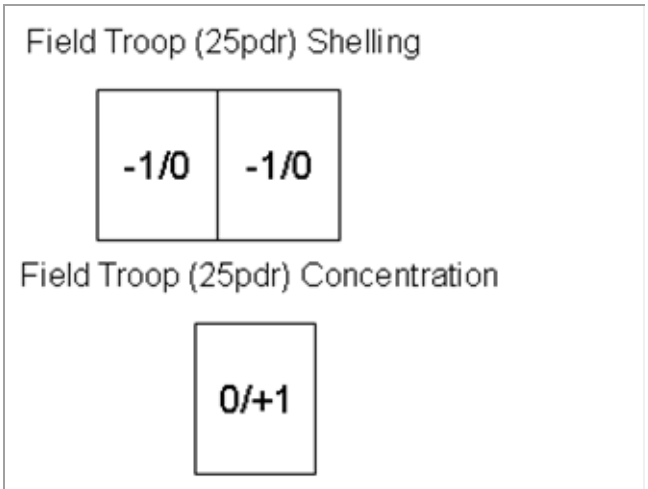
Typical tactical employment was for each of the two FOs to be attached to the lead two Infantry Companies in the Battalion, while the Battery Commander (not normally represented in the game, but see the special rules below) would attach himself to the Infantry Battalion HQ. When attached to Armoured Regiments the FOs would be mounted in OP tanks of an appropriate type (see British TO&Es).



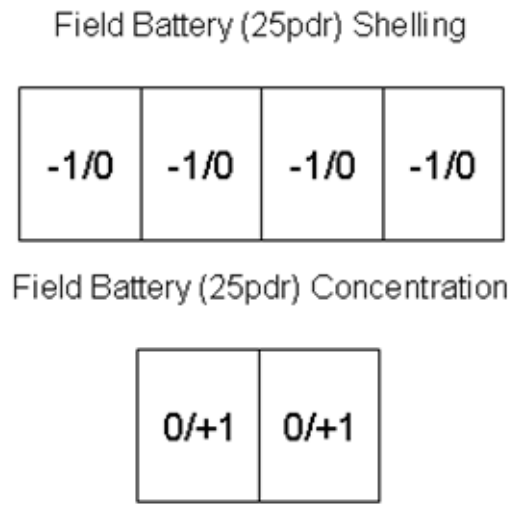
Each infantry division usually consisted of 3 infantry brigades. As each infantry brigade had a Field Regiment assigned to it, the division had 3 Field Regiments available. This led to the following hierarchy of artillery for the division. Note that it was possible for all of the guns available to the division to be called down as a single "Uncle" fire mission:



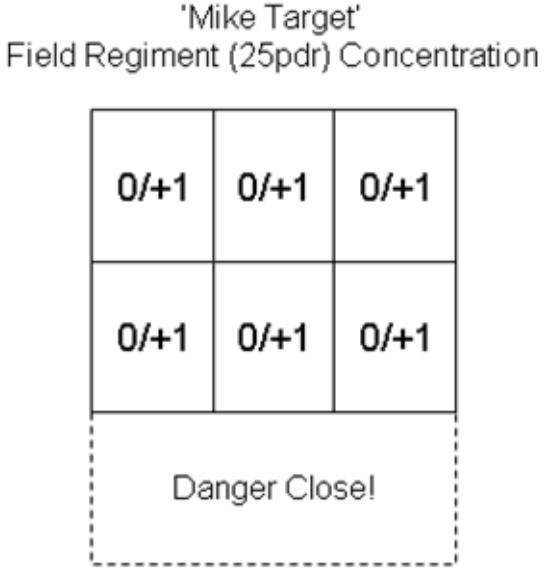
The basic building block of the British Field Artillery is the Troop of four guns (2 BF templates). Troops could either fire shelling missions or concentrations. A FO calling for fire from his own troop would typically call for Organic Fire Support.



The two troops were organized into a battery, which could fire as a single mission. When Firing by Battery, either a shelling or concentration pattern could be chosen. This may be called by either FO as Direct Fire Support (obviously only one of the two battery FOs may call for fire in that turn).

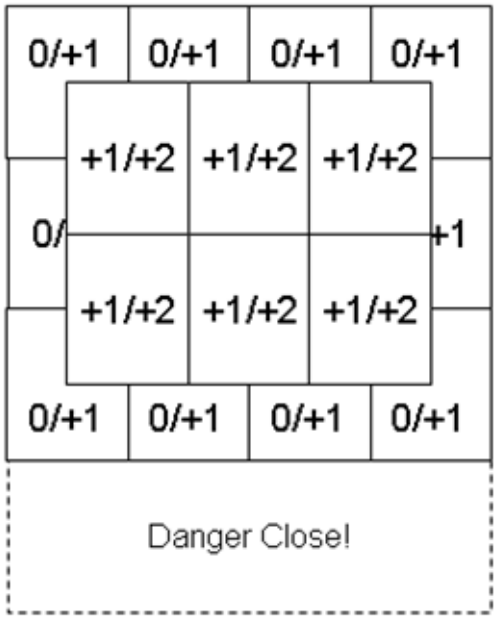


If a target of sufficient value was detected, then all the guns of the field regiment (24 guns) could be brought down in a "Mike" pattern as General Fire Support. Note that in Mike and all of the higher level patterns, only concentrations are used. This means that a Mike pattern of 24 actual tubes (12 BF templates) covers only 6 BF templates. Also, as mentioned in the introduction, some accuracy was exchanged in return for quick response times, so there is an *automatic* Danger Close with all "Mike" and higher-level British artillery concentrations. For Mike patterns, this is one template deep, but "Uncle" and higher concentrations will have an automatic Danger Close depth of two templates.



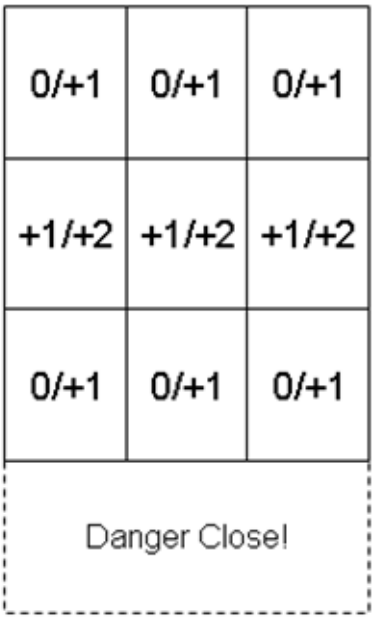
Even more important targets could warrant an "Uncle" mission, which brings down all of the guns (72) from the 3 field regiments in one attack. Rather than spreading out to cover 18 templates, the Uncle mission covers a 4 wide x 3 deep area and the center of the pattern is "thickened" with higher attack values.

'Uncle Target'
Infantry Division Concentration
(Three Field Regiments)



Some divisional organizations (especially armoured divisions) were supported by only 2 field regiments instead of 3. Up through Mike, the missions were the same, but the Uncle pattern had fewer guns. Here is an Uncle pattern made up from 2 field regiments. Two regimental concentrations overlap in the centre, resulting in higher fire values.

'Uncle Target'
Armoured Division Concentration
(Two Field Regiments)



Other Common British Artillery (AGRA)

Although the 25-pdr formed the basis of the standard artillery support, many larger guns were available and may occasionally show up in BF scenarios.

One or more Medium Regiments (FSE-06) may be available for a Preparatory Barrage mission or in General Support for a Defensive Fire Mission. Medium Regiments were also used to thicken the larger missions fired by AGRA (i.e. 'Victor', 'William' & 'Yoke' Targets). Alternatively, a single Medium Regiment may be available as General Support to thicken a divisional 'Uncle Target' (add +1 to the values in the center of the Uncle templates above). Medium regiments generally used 5.5-inch inch guns, although occasionally 4.5-inch guns were used. Medium Regiments consisted of 2 batteries of 8 tubes each. While 8 tubes would normally result in 4 BF templates/battery, Medium Regiments were important assets that were not generally assigned to shelling missions, except perhaps in pre-specified fire plans. If the target is large enough to warrant a medium regiment, it also warrants a concentration. This means that Medium batteries will usually only appear as concentration

Medium Battery (4.5-inch) Concentration

+1/+2	+1/+2

Medium Regiment (4.5-inch) Concentration

+1/+2	+1/+2
+1/+2	+1/+2

Medium Battery (5.5-inch) Concentration

+2/+3	+2/+3

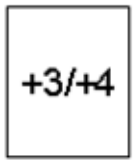
Medium Regiment (5.5-inch) Concentration

+2/+3	+2/+3
+2/+3	+2/+3

patterns.

One Heavy Regiment (FSE-07) may be available for a Preparatory Barrage mission or in General Support for a Defensive Fire Mission, or for thickening AGRA (i.e. 'Victor', 'William' & 'Yoke' Targets). Heavy Regiments were not normally used individually, although the scenario may allow it.

Heavy Battery (7.2-inch or 155mm) Concentration



Heavy Regiment (7.2-inch & 155mm) Concentration

Competing for Assets

The scenario designer should keep in mind the limitations outlined on our Notes Section below for the larger missions and also look at the organizations to which the FOs are attached.

Each Troop FO has the full authority to control his troop and select targets for that troop as Organic Fire Support.

Each Troop FO may also call for a Battery shoot as Direct Fire Support. This means that the two Troop FOs in the battery are competing for the same assets. The player must therefore decide which of the two FOs will cease fire for that turn.

When the call goes out for MIKE and larger missions, FOs will again be competing for the same assets. The normal way of resolving this is to put the entire regiment in General Support to a Troop FO. If you use a MIKE or an UNCLE, all of the assets from the regiment are devoted to the mission and only one of the regiment's six FOs can direct a fire mission that turn.

The British often resolved conflicts between FOs in the same regiment at the regimental command level. In a Battlefront Game, there should be one player in charge of resolving these conflicts to decide who gets the MIKE and who doesn't get to shoot.

Alternatively, allow one player to request the MIKE or UNCLE while the other batteries place their templates normally. Resolve the larger request first. If the general support roll succeeds, resolve the larger mission and pick up the other templates from that regiment. If it fails, roll normally for the other missions. Also, see the optional rules below.

Firing by Troop-Using Commanders

As mentioned above, the FOs and Battery Commanders worked very closely with their associated Infantry Battalions (to which they were permanently assigned and often got to know very well indeed). Consequently, Company and Battalion Commanders may call for Direct Fire Support, which includes Troop and Battery fire missions. Occasionally a scenario rule may also permit this to include 'Mike' targets.

British Artillery Options

- Although our basic organization allows for 1 FO for each Troop, there were often other artillery battery and regimental commanders, aircraft spotters, AGRA FOs, etc. who were also trained to act as artillery observers and can reasonably be added to a Battlefront scenario to give the British extra artillery flexibility. If you add extra observers, specify which assets they can control and what support level they can use.
- Although Troop FOs could request a Mike or higher level mission, they might be competing with other requests for fire. We simulate this by having Mike and higher level missions require a General Support roll. However, higher level officers sometimes functioned as observers and they had the authority to override competing requests. It is perfectly reasonable for a scenario to specify that a specific FO stand has that authority. In that case, the observer can call in the higher level strike with a single Direct Support roll. This would especially true if an AOP (Aerial Observation Post) were available.
- Very occasionally a Medium Regiment might be directly under the command of a battlegroup or specific AGRA observer (such as an AOP) and might be the only artillery support available. This was most common where formations had very little organic artillery (such as in the case of Airborne Divisions or Special Service Brigades), or where the formation was operating beyond the range of 25pdrs (such as in a rapid advance or reconnaissance or airborne operation) or for a number of other reasons - it did happen! Other oddities might be a Royal Naval observer attached to Commandos with purely naval guns under his control. In this instance, treat these assets in the same manner as a regiment of 25pdrs, simply substituting the higher values.
- Only trained FOs can call in General support and if the observers all become casualties, the British may lose the ability to call in MIKE and UNCLE missions. However, in the British system, regiments had a pool of 'first reinforcements' which included a Captain as well as more junior officers, and in if an observer became a casualty the Battery Commander would order one of the gun position officers up to the line as a replacement. On the first friendly player turn after an observer becomes a casualty roll a d10. On a 1, a replacement FO and appropriate transport becomes available on the friendly map edge. Keep rolling every turn, increasing the chance of success by 1 until the replacement arrives. Of course the original casualty will count for victory conditions and morale purposes even if replaced.
- While most Observers in our system are attached to specific organizations, the British did allow Observers to call fire from other organizations. To simulate the problems of coordinating such fire, treat all such requests as General Support.
- Commanders of Royal Artillery Anti-tank and Anti-aircraft Batteries were also trained as Forward Observers, and could call fire from off-board artillery if necessary. Allow them to call fire using General Support rolls.

Pregame Fire Plan

While the emphasis in Battlefront:WWII is on firing at "targets of opportunity", the British were masters of pre-planned fire and you should always think about giving them a fire plan at the start of the game. Here you are free to use any missions, add in massive artillery from the AGRA, combine concentrations, moving barrages and lifting barrages to your heart's content.

A good way to do this is to have several turns of preplanned fire in which the artillery designated for direct support takes part. After the fire plan is completed, or if the British player aborts it, the extra artillery drops away and you are left with your standard supporting elements.

Although pre-planned fire should be inflexible once it begins, you can make the plan itself quite inventive. Moving Barrages can change direction, lift for a turn and then begin again, concentrate and then spread out, etc. All of these things must be *prespecified*, and should be done without a detailed knowledge of the enemy dispositions. You can violate some of the standard rules when planning a barrage. For example, all of the batteries of a regiment can perform a shelling attack (instead of just one). Once the preplanned fire is completed, you revert back to the standard rules.

Remember not to overdo it in your scenarios as it can easily overbalance the game. The typical duration for a barrage should typically be 2 or 3 turns; 4 at the absolute maximum and only one if the guns are short on ammo, plus one turn of smoke. Remember that these barrages require A LOT of preparation and ammunition and that gunners get tired. Also remember that the artillery firing the preparatory barrage might not be available for some time afterwards to fire emergency Defensive Fire (DF) missions such as 'Uncle', 'Victor' etc... possibly not even in the same scenario!

The typical building block of the barrage was the regimental 'Stonk'. This equates to a concentration roughly 500 yards wide (6 by 1 templates at 0/+1 or 6 by 2 templates at -1/0). Some divisions preferred a wider 'Stonk' of 1,000+ yards (12 by 1 Templates at -1/0), so the choice really is yours. Regimental Stonks will always have an automatic 'Danger Close' zone one template deep. These Stonks would often be combined to form a rolling or lifting barrage (maybe with a 'box' around the target area to catch units leaving/reinforcing the area). The Medium and Heavy Regiments would typically fire standing concentrations on likely or known strongpoints.

The intention of the Barrage was to suppress the enemy, not necessarily to destroy him. The infantry therefore were ordered to 'Lean In' to the rolling element of the barrage as close as they dared, in order to be on top of the enemy before they recovered. Inevitably this required the infantry to accept some casualties from 'drop-shorts' (i.e. our automatic 'Danger Close' zone).

Note that the deeper your Stonk is, the quicker your barrage will roll forward.

Here's an actual example, taken from the well-known breakout by the Irish Guards Group from the Neerpeldt Bridgehead at the commencement of Operation 'Market-Garden':

The rolling barrage comprised two parts: The first was fired by the 25pdrs of six Field Regiments - 147 (5 AGRA), 74 (50th Division), 94, 112 & 124 (43rd Division), plus the Dutch and Belgian Independent Batteries. Note that the remaining two Field Regiments of 50th Division and the two Field Regiments of Guards Armoured Division did not fire, as they were mounted up, ready to move north with the column. This initial part of the barrage equated to a block 13 templates wide by 6 deep, with a combat value of -1/0, rolling forward along the highway for four turns.

The second part of the barrage was fired simultaneously to the first, but just beyond it, falling into thick woodland and the likely main line of enemy resistance. It comprised 7, 64 and 84 Medium Regiments (5 AGRA) and equated to an area 8 templates wide by 3 deep, with a combat value of +1/+2, rolling along the highway for four turns.

This is just one example, but there are countless variations on the theme. Note that the barrage here was actually quite light in terms of combat values, as it was designed to roll forward rapidly (leaping six templates at a time

in game terms) to allow the armour to forge ahead (in the actual event it proved TOO fast). A slower infantry assault might therefore require the artillery to be slower, but more concentrated... You decide.

The Far Eastern Experience

The new artillery doctrine was employed by Slim's 14th Army in Burma late in 1943. However, it was not always easy to implement for reasons that are reasonably obvious:

25-pdrs were relatively rare in Burma (usually only one regiment per division) and were tied to motorable roads. This means that they were frequently not within range of where they were needed. The mobility problem was largely solved by the use of large numbers of Mountain Regiments (usually one or two regiments per division), equipped with mule-packed 3.7-inch Howitzers and by Jungle Regiments (one in most divisions by 1944), which employed a mixture of 25pdrs or 3.7s and large numbers of 3-inch Mortars. However, these weapons lacked sufficient range to be mutually supporting and frequently the directly-attached battery of 3.7s or mortars were the only artillery support to be had by infantry in the jungle.

In NW Europe and Italy the problem of range would be rectified by long-range 4.5 and 5.5 Mediums, but these were extremely rare indeed in Burma due to their very serious mobility and logistical requirements. This role had to be filled by air power, which became integrated with the Army to a degree unseen outside the USMC.

The problems were also exacerbated by communications, where jungles, mountains and damp all conspired to make radio communications extremely difficult indeed.

In 1945 and the breakout onto the Burmese Plain, these problems became less significant and large concentrations of artillery finally became possible, with SP artillery in the form of Priests also playing its part.

Consequently, until 1945 you should only allow 'Mike' targets in tight, defensive battles (e.g. defending a Brigade 'Box') and then only as General Support and never as Direct Support. Sometimes even battery missions should be considered 'General' - particularly as there was frequently not enough artillery to have one battery supporting each battalion. 'Uncle' missions should not be allowed until late 1944 and then it would be a mixed bag of calibres and template sizes. 'Victor' would simply be an 'Uncle' thickened by maybe a single battery of 5.5s.

Notes on using British Artillery - Mission restrictions

Artillery use should be tailored so that it doesn't overwhelm the scenario. Here are some suggested restrictions:

1. UNCLE MISSIONS and above
    - Allow the British player only 1 or 2 Uncle missions for the entire game.
    - To call an Uncle mission, the player must use a forward observer (not a commander or troop)
    - A spotted target is required for an UNCLE mission unless it is part of a scenario specific pre-registered Defensive Fire plan.
    - The player must declare that he is calling for an Uncle mission before performing the call-for-fire roll.
    - Uncle missions require a successful roll for General support. If it is not successful, an ordinary concentration mission will arrive.

    - 'Uncle' Targets and higher were usually employed where a 'Mike' had already been used yet German attacks were still coming in. Therefore, it might be an idea to require a Bracketed 'Mike' to be in place before an 'Uncle' can be used (but do not apply the 'Bracketed' +1 call-for-fire modifier).
2. MIKE MISSIONS
    - Mike missions require a spotted target.
    - Mike missions require a forward observer (not troops or commander).
    - Mike missions a successful roll for General support. If it is not successful, an ordinary concentration mission will arrive.
    - Unlike UNCLE missions, there should generally be no restrictions on the number of Mike missions that can be called.

As can be seen from the explanations above, the 'Mike' and 'Uncle' missions can be quite effective. However, there were even higher levels of artillery 'Stonks' - 'Victor', 'William', and 'Yoke'. Victor missions were the divisional artillery, thickened by the Corps' AGRA. The William mission consisted of every AGRA in the Army firing at the target, plus any available 25pdrs in range. The Yoke mission crossed Army boundaries and was basically every single gun within range, including US Army and naval assets (if they were available). However, these super-heavy concentrations should appear on the Battlefront:WWII game table rarely, if ever, as they require an immense ammunition expenditure, extra planning, and are not normally appropriate for the basically tactical scale of our game.

While a few historical examples can be cited of 'William' or 'Yoke' missions being employed in defence of a single British battalion, they were usually interdictive in nature, falling upon the enemy forming-up areas which would normally be off-table and outside the normal scope of a BF game. It is also worth mentioning that in each historical instance they utterly routed the German attacks - so not much of a game!

Below is a sample template for a Victor Mission:

'Victor Target'
Divisional Concentration Thickened By AGRA
(4x Field Regts, 4x Medium Regts, 1x Heavy Regt & 4.2-inch Mortar Company)

+1/+2	+3/+4	+3/+4	+3/+4	+3/+4	+1/+2
+3/+4	+3/+4	+4/+5	+4/+5	+3/+4	+3/+4
+3/+4	+3/+4	+4/+5	+4/+5	+3/+4	+3/+4
+1/+2	+3/+4	+3/+4	+3/+4	+3/+4	+1/+2

Danger Close!
(2 Templates Deep)

This is formed by a 6x4 'base' of concentrated 25pdrs, thickened in the centre by the Heavy Regt, surrounded by the four Medium Regts and in the corners by the mortars.

N.B. It is quite likely that a proportion of the Mediums would be 4.5s rather than 5.5s so it may be better to drop the four flanking +3/+4 squares to +2/+3.

Sources

For an exhaustive look at British Artillery practises, check Nigel Evans' awesome Royal Artillery page. Also note that Mr. Evans contacted me and with his permission I have liberally quoted and paraphrased him and his site on this page and on the French/Blitzkrieg descriptions below. My apologies to Mr. Evans for any inaccuracies I have introduced.
I would like also to thank the incredibly prolific R. Mark Davies, who added lots of ideas and details for the use of British artillery in Battlefront Games, including the template patterns for the various missions.

Introduction to U.S Artillery

American artillery fire control and doctrine made it among the most flexible in the war.

American OBSERVER	LEVEL OF SUPPORT	Organic Fire Support	Direct Fire Support	General Fire Support
Forward Observer		3 or more	4 or more	6 or more
Commander		4 or more	5 or more	7 or more
Troops		5 or more	6 or more	8 or more

One major difference between U.S. artillery and that of other nations is found in the Call-for-Fire table, which shows that U.S. troop units are capable of calling General Support artillery. In ***Closing with the Enemy***, Michael C. Doubler says: *"Artillery FOs with infantry battalions often became casualties or were not in a good location to call for fires. To solve these problems, infantry regiments in Sicily and Italy began to train all personnel, down to and including platoon sergeants, in FO procedures. At the same time, artillery units began to train all members of FO teams in call for fire techniques. By having more people qualified as FOs in the front lines, infantry regiments helped ensure the availability of constant, responsive fire support."* In Battlefront, every U.S. troop unit a potential spotter. Most other nations followed the doctrine developed in World War I, where only the trained observers and officers were expected to control fire missions.

The Americans independently developed the "map reference" technique developed by the British, but went a step further by developing precomputed visual and mechanical aids that automated most of the calculations needed to conduct fire missions. This allowed them to bring down fire with the speed of the British (about 3 minutes from request to firing) and the precision of the Germans. One of the factors computed by these aids was the time-of-flight of the shells. By timing when the batteries fired, the U.S. fire direction centers were able to have the fire from all of the assets in a mission arrive at the same time in a single deadly strike known as a "Time-on-Target" mission. It should be noted that all nations were able to do these computations, but the American advantage was that they were pre-computed. This allowed the U.S. artillery to use the computations without having to actually do the computations, greatly speeding the task.

For a true (and extremely readable) account of American artillery in action, we would like to recommend Robert Weiss's excellent book "Enemy, North, South, East, West". He and another U.S. FO, their radios, and massive artillery support kept elements of two German S.S. Divisions from mounting an effective attack on a single surrounded U.S. infantry battalion for almost 5 days during the Mortain counterattack in early August 1944.

We also recommend David Weseley's lecture on artillery that can be purchased at Europa 2000 Lectures

U.S. Artillery can be classified:

- Command - High level/Diffused. The U.S. was able to allocate artillery as needed, even from different organizations.
- Control - Lowest level. Although Battalion Fire Direction Centers (FDC) made the actual decision on which missions to fire, and trained Forward Observers were the favored artillery spotters, the ability to request missions was given to most front-line troops. If the FO becomes a casualty, the ability to contact the artillery is not lost.

- Communications - Excellent. Almost everyone had a radio and ground lines were also used when available. This allowed calls-for-fire not only to be easily placed, but also heard and possibly responded to by anyone on the "net".

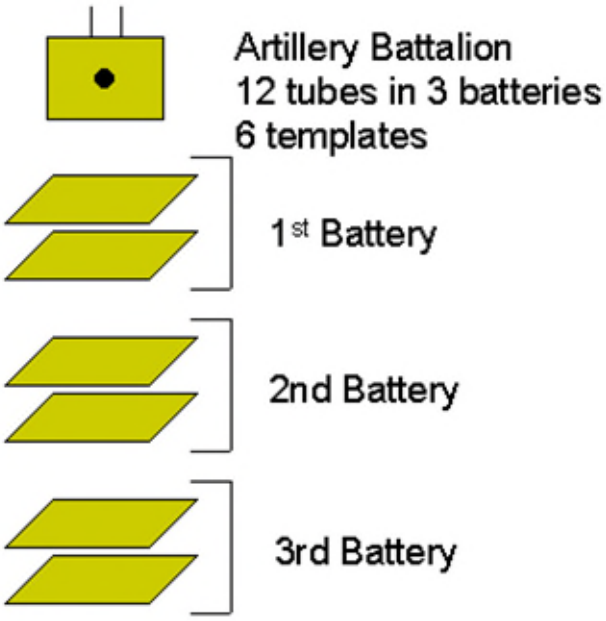
Using U.S. Artillery in Battlefront

The key to U.S. artillery is its flexibility.

- U.S. batteries of direct support battalions can fire independent missions without penalty (other than that every mission will require a separate spotter). Unlike the Germans, they will be able to recombine into battalion fire later. According to David Weseley, the Battalion FDC was capable of directing two separate fire missions at a time. Also, with an historical response time of about 3 minutes from call-for-fire to fire mission, it would not be unreasonable to allow all 3 batteries of a DS battalion to fire independent missions in the 10 minute period that the Battlefront turn represents. Note that calling for fire from higher level organizations (divisional, corps, etc.) added about 3 minutes to the response time for each additional level. A reasonable restriction would be to allow 3 separate fire missions from a DS battalion if no general support artillery was added, but allow only 2 separate missions if one of them calls for general support, and allow only one of the missions from the battalion to call for general support in a turn.
- If the US FS-01 deploys as separate batteries with separate observers, you can allow them to operate as a battalion as well. Remember that in the U.S. system, the FOs request the fire, but the Battalion FDC decides the fire missions. Compare this to other nations, where the FOs each control their own battery and combining their fire requires more negotiation (the British overcame this by doctrine, but other nations did not). The U.S. deployed 4 forward observers from each artillery battalion forward with the regiment it was supporting.
- General Support Battalions can thicken Direct Support Battalion missions.
- General Support for a Battery mission should only come from within the element (see FS-01)
- Although the favored use of General Support is to thicken Direct Support Missions, General Support Battalions (not the GS battery within FS-01) are able to fire independent missions under limited circumstances:
    1. They should not fire shelling or random shelling missions. The battalion FDC contacted by the observer would not call for extra support unless a good target were available.
    2. They can fire independent missions only against SPOTTED targets. They can thicken DS missions against SPOTTED or SUSPECTED targets as per the normal rules.
    3. Batteries within independent GS battalions should not fire separately.
- Any eligible unit can call for a separate fire mission. However, you will find that it is best to use the forward observers if you have them because of their higher chance of success. If they become casualties or cannot see a critical target, you can use other spotters as per the call-for-fire table. In other nations losing the FO sometimes means loss of the support of their battery. This is not the case for the U.S.
- Feel free to modify the support levels and the die rolls needed for success at a Fire Support Element level. For example, a US-FS-03a (Armored Artillery Battalion) would usually be in direct support of an armored combat command, taking the place of the FS-01, but might be available as an independent battalion in General Support.

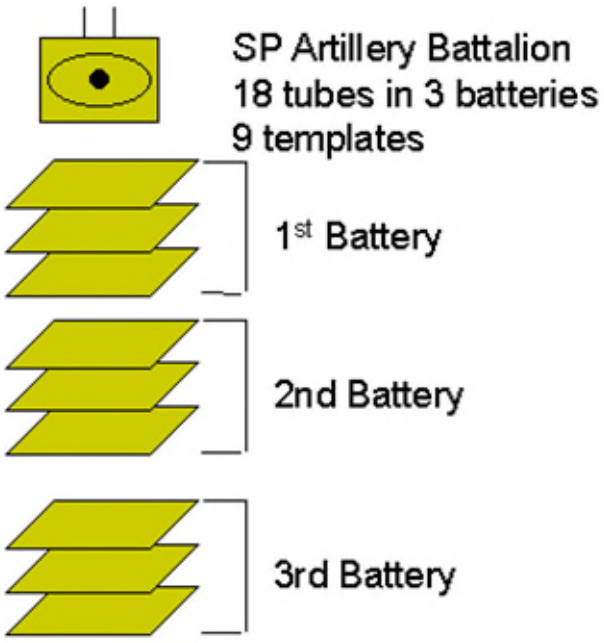
U.S. Artillery Organization

After the game was published, we found some mistakes in our U.S. artillery organizations. Please see the **errata** for the correct organizations.



Almost all U.S. artillery was organized into Battalions. A battalion of artillery usually contained 12 guns organized into 3 batteries of 4 guns each. In Battlefront terms, two guns form a template, so each artillery battery is capable of placing two templates and the entire battalion is capable of placing 6 templates. This organization is reflected in FS-01, FS-03, and FS-04, modified by the errata. Note that the artillery in the 3 x Regimental Cannon Companies (FS-02) was sometimes combined into the divisional artillery, adding another 18 guns (9 templates) to the divisional artillery, or 3 templates to each battalion. This would make the FS-01 consist of 3x3 template batteries instead of 3x2 template batteries (our original FS-01 organization before the errata). However, the cannon companies were often used as infantry, especially when the infantry replacement needs became critical in late 1944, so the standard battalion organization of 3x2 template batteries should be used unless your research indicates otherwise.

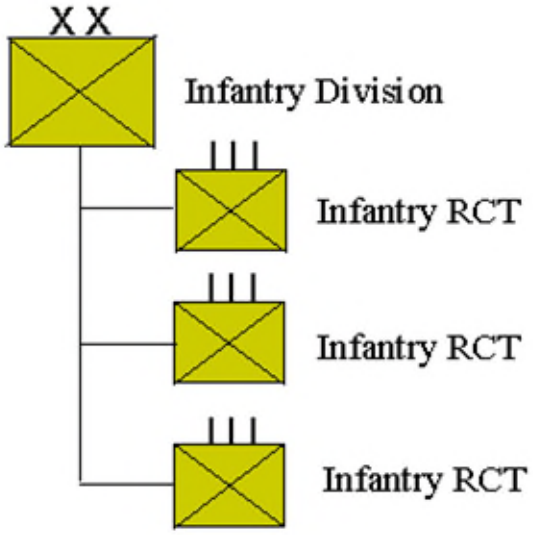
The most common U.S. artillery piece was of 105mm caliber, either a gun or howitzer. These were used in the “Medium” artillery battalions. In BF, the basic 105mm template is large with an attack strength of -1 vs V and 0 vs T, G, sV. . There also were heavy artillery battalions based on 155mm guns or howitzers (large template, +1 vs V, +2 vs T, G, sV). While there were some other organizations using even larger artillery (8”, 240mm), these will rarely be seen in a Battlefront game as they were primarily used for counter-battery and interdiction missions deep behind the front lines. Smaller artillery pieces (75mm – small template, -1 vs V, 0 vs T, G, sV) were often used by airborne troops.

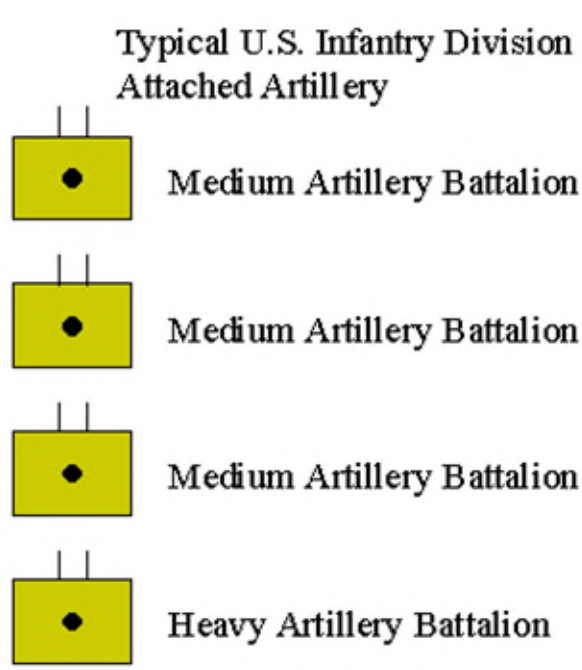


The major exceptions to the 12 gun organization were the Self-propelled Artillery 105mm Battalions which contained 18 self-propelled 105mm howitzers (BF card US-06 Priest) organized into 3x6 vehicle batteries. Each of these batteries is capable of placing 3 templates and the battalion as a whole is capable of placing 9 templates. This organization is found as FS-03a in the errata. The FS-03a is available as direct support for the armored combat command (BG-01). However, unlike the Infantry Divisions, the Armored division did not usually have a heavy SP Battalion permanently attached, but used 3 of the larger 105mm SP Battalions. Note also that the heavy (155mm) SP battalions only had 12 SP guns, not 18.

U.S. Divisional Artillery and the U.S. FS-01

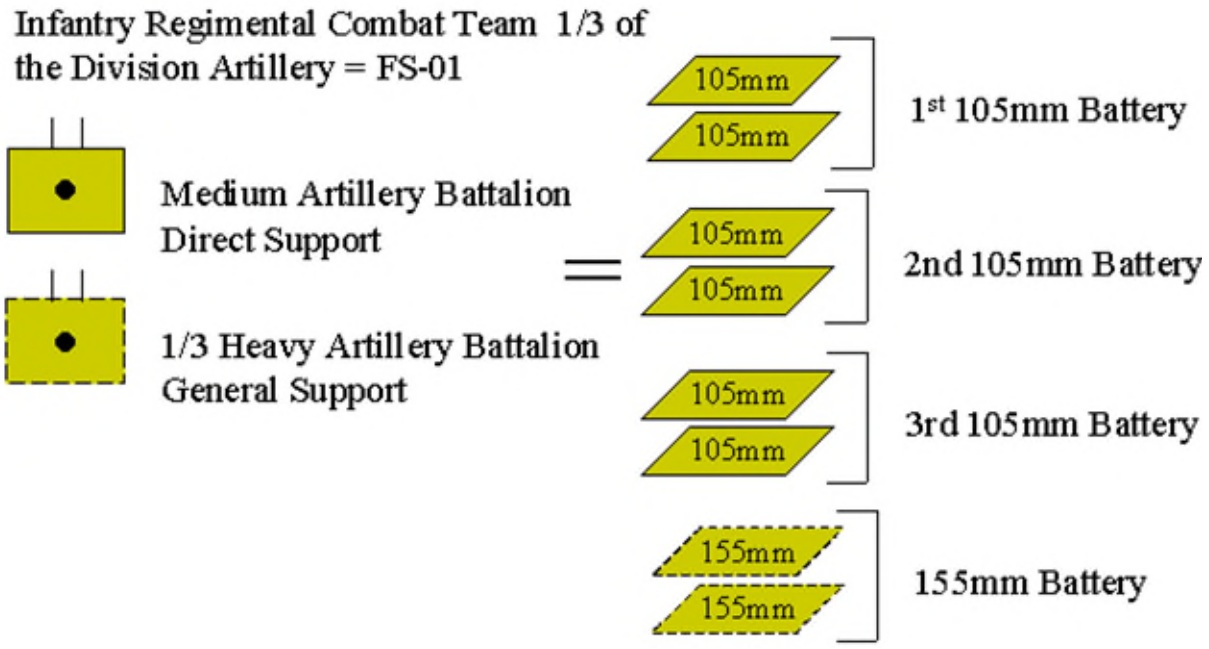
The U.S. had **LOTS** of artillery battalions. Many of these were independent and were attached to organizations according to circumstances. However, each U.S. Infantry Division usually had several battalions of artillery attached to it on a semi-permanent basis.

	U.S. Infantry Divisions used an essentially "Triangular" organization. There were 3 Regimental Combat Teams (RCT) in a division. This 3-way organization was repeated at lower organization levels, the RCT further divided into 3 Infantry Battalions, each of which had 3 Infantry Companies. At each level of the organization, extra assets were available.



The Artillery support for a division mirrored the triangular organization. Usually, there were 3 battalions of 105mm artillery (Medium) and 1 battalion of 155mm artillery (Heavy) assigned at the divisional level.

The divisional organization leads to the standard U.S. fire support element for a U.S. Regimental Combat team (BG-04, p.59). This element is called the FS-01 in the Battlefront:WW2 TO&E (p.61 and the errata).

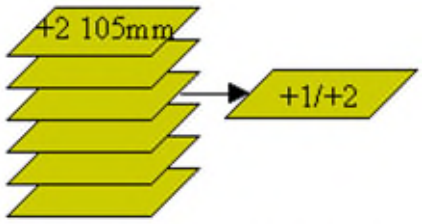


Each of the 3 regimental combat teams was given the support of approximately 1/3 of the divisional artillery. This means that a RCT would have 1 Medium (105mm) artillery battalion in direct support, and the general support of approximately one battery (1/3) of the 155mm divisional artillery.

This organization is not rigid, although it should be used unless a high-value target is engaged. For example, the other two Medium battalions and the rest of the Heavy battalion could augment a mission. Also, support could be requested from other artillery organizations, such as independent battalions. Any support outside the standard FS-01 should usually be considered General Support, unless the scenario specifies otherwise.

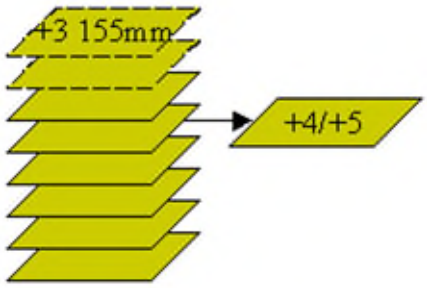
U.S. Time-on-Target Attacks

A time-on-target attack is a special type of attack that is available to only U.S. forces in Battlefront, although you might allow the British to use it in a pre-plotted fire plan. It essentially combines many batteries of artillery into an attack on a single template. The strongest artillery in the attack is used as a base and then the modifier is calculated based on the number of templates firing (as specified in the errata, you get a +1 modifier for every 3 templates firing rounded up). The smallest artillery element that can be added to a TOT attack is a battery.



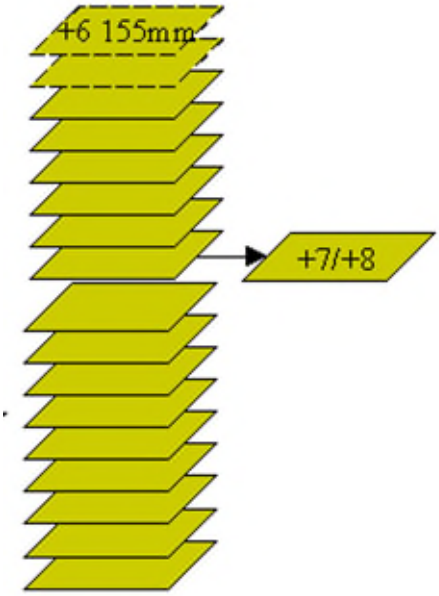
Time-on-Target Basic

By itself, a US FS-01's time on target attack is not very impressive. In fact, it is the same as a thickened concentration but only covers a single template. The modifier is a +2 (6 templates divided by 3 rounded up) added to the base attack strength of the 105mm artillery (-1 vs V, 0 vs T,G,sV).



Time-on-Target
With General Support

However, watch what happens when the general support arrives. Not only do you use the 155mm attack factors, but there are now 8 templates firing so the modifier is +3 (8/3 rounded up added to the base attack strength of the 155mm artillery (+1 vs V, +2 vs T,G,sV). This will definitely get the attention of almost all targets and will be devastating against soft Targets.



Time-on-Target
FS-01 + FS-03a
With General Support

Time-on-target really gets interesting if there is more off-board artillery available. Here is an attack launched by a combined US FS-01 where the general support arrives (8 templates) and FS-03a (9 templates). The net modifier is a +6 (17/3 rounded up) added to the 155mm factors. This is a dangerous attack for even the heaviest armored vehicles.

Command and Control

The key point in the U.S. system is that the Battalion Fire Direction Center allocated the actual fire missions, while observers requested fire. If necessary, the FDC would request extra support from other HQs if the target was attractive enough. This decision was not in the hands of the FO. Thus, even though the FS-01 is a typical "slice", an infantry regiment could often call for support from other battalions in and outside of the divisional organization. At Mortain, Lt. Weiss was primarily supported by the 230th Field Artillery Battalion, but some of his missions used the other two divisional 105mm battalions and he also received support from the divisional heavy artillery and other artillery when available. He did not always know what support would arrive. Instead, he described the target and asked for a fire mission. Also, after being in place for a little while, some of the targets around prominent geographic features were registered and could be hit accurately with minimal effort. He would say "Fire Concentration 359" and the coordinates and settings would be repeated. This led to both fast and accurate responses. Under the German system, an attack from an unexpected direction could expect to be free from artillery fire for about 10-12 minutes as the fire was adjusted onto the target. Using the American system, this time was sometimes reduced to under 3 minutes. The British were even faster but sacrificed some accuracy.

Preplanned Fire

The U.S. system was geared toward the rapid delivery of concentrated fire in an effort to *Destroy* the enemy rather than *Neutralize* him. While they knew how to do all of the complicated calculations for the more sophisticated fire plans, such as moving and lifting barrages that change direction, pregame fire plans for the U.S. should be slightly less sophisticated than those of the British. On defence where the U.S. forces have been

in place for any length of time, be sure to give the U.S. player some preregistered concentration points and possibly allow him to establish new ones during the course of the game.

Weaknesses in the U.S. System

The weaknesses in the U.S. system were more "psychological" than real. Unlike the British system, where artillery was never considered in reserve and was always available to support other formations, Divisional commanders in the U.S. Army occasionally regarded artillery supporting their formations as their own property. This occasionally hindered coordination of strikes involving several different divisions' assets. However, this problem was mitigated by the large number of independent formations that were available at Corps and Army level. It also would not surface until you get to a multi-divisional level battle and so will generally not effect battles at the level of a Battlefront game.

Early War U.S. Artillery-Tunisia

U.S. Tunisia			
Forward Observer	3 or more	4 or more	6 or more
Commander	4 or more	7 or more	9 or more
Troops	5 or more	9 or more	---

As Mr. Doubler's quote at the beginning of the page suggests, the training of all U.S. troops to call artillery was a result of the experiences of the U.S. Army in Tunisia, where it found that it needed to update its inter-war doctrine. In Tunisia in 1942 and early 1943, the doctrine was much more dependent on the Forward Observer teams, with few others trained to call fire. While scrounging around a used bookstore, I was fortunate enough to discover a book from 1944 entitled "Forward Observer", which was the personal memoir of an FO who participated in the Tunisian battles, including Kasserine Pass and the final assault on Tunis in 1943. He describes in detail the artillery practices used to support the infantry (essentially FS-01 as described above), but also indicates that it was unusual for anybody except the trained FO teams to call artillery, although the artillery commanders could walk through front-line troops through the procedures in an emergency (the book describes an instance of this). To simulate this, for Tunisian battles, modify the U.S. call-for-fire tables to reduce the chance of troops contacting Direct and General support artillery. The book also describes how FO teams were used aggressively, often being positioned in front of the U.S. lines. In one case, his FO team infiltrated and called in fire on the Germans from behind the GERMAN front line. Although this resulted in their capture, they were able to operate long enough to completely disrupt the German position.

WWII French Artillery

At the beginning of World War II, the French artillery system was based on the lessons they had learned in World War I. They refined the techniques learned in the "Great War" and their artillery tactics worked well when given the chance to function as intended. At the Battle of Gembloux, the French Artillery-Infantry defense stopped the German Blitzkrieg, allowing the French to hold their positions until they were outflanked to the South. The fact that the Germans were able to score a quick victory was not due to a deficiency in the artillery, although the battle of movement that occurred in 1940 often prevented the French artillery from being used to its maximum effectiveness.

The Fire Plan

The mathematics and techniques of bringing indirect fire down on specific locations from separate battery positions had been worked out thoroughly in the 1914-1918 period and were used in some form by almost all nations at the beginning of WWII. Whenever the French moved to a new position, the first priority of the artillery was to establish a *Fire Plan*.

In other places in the tutorial, we use the term *fire plan* to refer to a pre-game set of barrages and fire missions that will land on specific turns in the game. When considering French Artillery, the meaning is different. It means the integration of artillery assets into an overall control structure. Of course in a Battlefront games, the French can have preplanned fire missions as well, but when discussing the French artillery practices, we are using the more general meaning.
Establishing a French Fire Plan requires that:

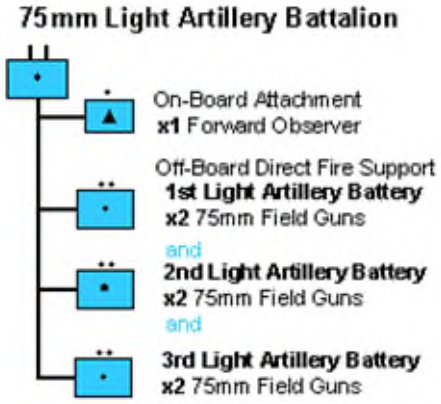
- Forward Observer positions be established from where they could see the area to be attacked/defended by artillery
- Battery Positions be established and their positions relative to the FOs be determined precisely.
- Communications be established between the FOs and the firing assets.

Rather than having the FOs connected with specific single batteries, as was often the German practice, the French added a twist by establishing the *poste central du groupe* which was a small headquarters subordinate to the commander of the artillery battalion. The *poste central du groupe* calculated the data necessary for firing all three batteries of a battalion at the same target and Battery commanders simply followed the instructions given them. The advantage of this system is that it allowed an artillery battalion to mass the fires of its batteries quickly on a single target. The disadvantage is that it took battery commanders out of the loop. In many ways the *poste central du groupe* has a similar function to the late-war U.S. Fire Direction Center (FDC), the primary difference being that the French system was still tied closely to the Forward Observer, and the flexibility of the U.S. map system and calculation aids had yet to be invented. If they had been allowed the time, the French Artillery might have evolved into a much more flexible system. In game terms, the effect of the French organization is that off-board artillery should almost always fire by battalion.

The Moroccan division at the Battle of Gembloux had an artillery fire plan within 24 hours of occupying their positions in Belgium. This included registering some artillery battalions from an adjacent division that were allocated to support the Moroccans. This indicates that a scenario designer can assume that a basic fire plan has been developed if the French have been in their positions for a day or more. The longer that the French occupied a position, the more sophisticated the fire plan is likely to be. More batteries were registered, and

communications were improved. A scenario can specify that some battalion assets are part of the plan and others are not (and are therefore less effective). An extreme example of a fire plan is found in the main Maginot Line positions, where virtually every angle and position had been pre-plotted over the months of construction. Despite our modern contempt for these fortifications, it should be noted that in 1940 they were considered "state-of-the-art" and the Germans never made a serious attempt to force them by frontal attack.

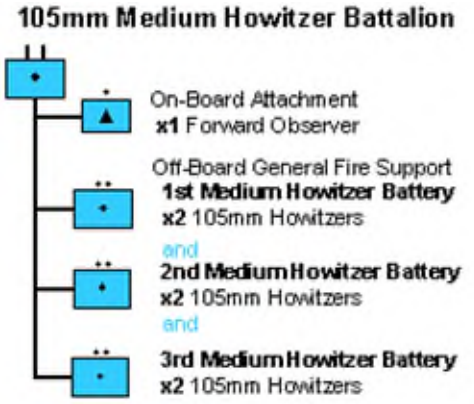
Equipment



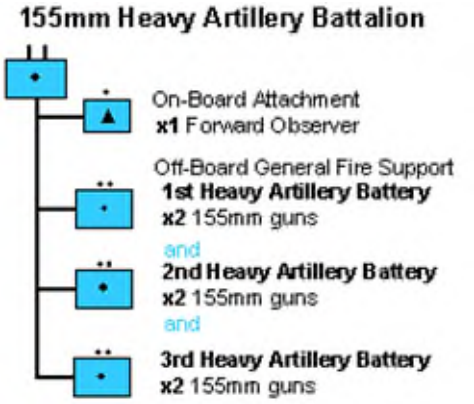
Small template -1 vs. V, 0 vs. T, G

The basic artillery support for an Infantry Division was 3 Battalions of 75mm Guns (12 in each battalion), one battalion usually assigned to support each infantry regiment. These were often the 75mm Model 1897 gun (the famous "French 75"). While most countries were standardizing on 105mm howitzer as the basic weapon of the artillery the French were unable to do so for political and budgetary reasons:

- They had a lot of 75mm guns left in their arsenal. It was hard to convince politicians to allocate money for new artillery, especially while the bulk of the defense budget was now being allocated to the Maginot line. Also, much of the heavier artillery was procured during World War I and was of relatively recent design.
- Many of the Generals who had advocated the virtues of the 75mm gun were in positions of high responsibility. They were unconvinced that new artillery was needed.
- After all, they won WWI using this gun, it couldn't be all bad.



Large template -1 vs. V, 0 vs. T, G



Large template +1 vs. V, +2 vs. T, G

In addition to the 75mm guns the French had some battalions of 105mm and 155mm artillery available. Divisions usually had 1 or 2 battalions of 155mm howitzers. Corps artillery had 2 battalions of 105mm guns and 2 battalions of 155mm howitzers. Divisional and corps artillery are usually only in general support as part of an integrated fire plan.

On attack-The "Deliberate Advance"

Their experiences in 1914-1918 had convinced the French High Command that mobile warfare was unlikely. Instead, they based their idea of an offensive on a plan called the "Deliberate Advance". This was designed to give a slow but extremely safe method of attacking, designed to maximize enemy casualties and minimize friendly casualties. Of course it also minimized the chance of rapidly winning the war. There was a common saying in vogue at the time that "The Artillery conquers, the Infantry occupies", and the Deliberate Advance certainly mirrored this theory. The basic idea of the DA was for friendly artillery to pulverize enemy front line positions and neutralize the enemy artillery, after which friendly troops would occupy their trenches. If this seems similar to what happened in World War I, it is not coincidental!

The deliberate advance was to be done in distinct stages:

1. Reconnaissance
   Using infantry patrols, air reconnaissance, and sound-ranging equipment, the French would determine the German (the French had a pretty good idea of who they were going to be fighting :-)) front line and artillery positions.
2. Preparation
   Divisional and corps artillery assets would be brought forward and carefully sighted. A comprehensive fire plan would be developed designed to attain artillery supremacy. Prewar planning specified the extensive use of chemical weapons, and it is one of the few small mercies of WWII that they were not employed.
3. Bombardment and Attack
   The plan would be put into effect. After the artillery plan had smashed the enemy artillery and forward positions, the infantry, accompanied by tanks, would occupy the enemy positions. Tanks were never seen as a breakthrough weapon, but were designed to act as mobile artillery platforms to overcome local strongpoints that survived the initial artillery concentrations.
4. Consolidation
   After advancing 6-10km (the limit of the artillery support), the friendly forces would stop (ignoring that annoying Charles De Gaulle fellow screaming for them to continue on to Berlin), dig in and establish new trench lines and artillery positions. A new fire plan would be developed for the next stage of the advance.

The deliberate advance cycle could be repeated about once every 7-10 days. Although an adequate fire plan to defend the positions could be developed within a day, the reconnaissance necessary to for the next deliberate attack would take longer. This would give an average advance of 1km/day which was quite respectable by WWI standards. The key to the Deliberate Advance was the word *Deliberate*.

During the "phony war", the French used this a couple of times but then stopped (Poland had disappeared and there was no hurry). The basic defensive mindset of the French in 1939-40 meant that the Deliberate Advance was never really put to the test. However, it relied on its power upon a certain amount of cooperation from its opponent. If the enemy front-line trenches were heavily occupied and batteries fired from fixed positions, the DA could cause severe casualties. However, the build-up needed for a DA would be fairly easy to detect, and by deception operations the Germans could ensure that the massive blow would fall mainly on empty ground. They could then counterattack when the French attempted to consolidate.

On Defense-Forts and Concrete

The French could see World War II coming, but spent much of their defense budget on concrete instead of tanks and mobile forces. In hindsight, the Maginot line was a waste of money, especially as it was not extended along the entire Northern frontier (for both political and budgetary reasons). The Germans simply went around the end of the fortification line. However, at the time, the idea of an impregnable shield on the border supported by mobile forces to the rear seemed to be sound doctrine. By the standards of 1939, the Maginot line WAS formidable, and the Germans did not really attempt a break-through. One of the features of the Maginot line was that almost every inch of ground around it was plotted for artillery support. It would have been very difficult to take by direct assault. When defending static positions, the fire plan should be comprehensive and well-developed.

On Defence-Mobile situations

The key to defending in mobile situations is whether the French have been allowed time enough to register their artillery. As stated earlier, it took the French about 24 hours to establish a basic fire plan.

Communications

Along with most nations during World War II, the French relied on wire communications between their forward positions and their firing assets. These were generally reliable, but could sometimes be broken up by shelling/bombing the rear areas.

French Artillery can be classified:

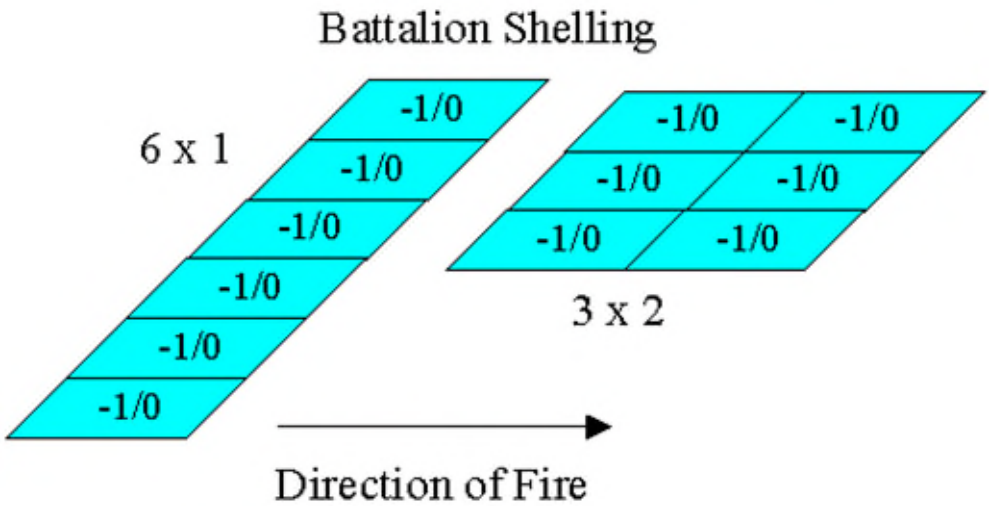
- Command - High level*. When they were given the time to establish a fire plan, the French were able to allocate artillery from Corps and Division into their fire missions. The poste central du groupe allowed them to control all fire of the battalion from a relatively high level. This was one of the main differences between their artillery system and that of the Germans, where FOs were often tied to specific batteries. The fire plan would improve while the French occupied the same positions with more assets being tied into the plan. If they were not given time to establish a fire plan, their artillery was considerably less effective.
- Control - Medium. Dedicated Forward observers made most of the calls-for-fire for the artillery.
- Communications - Average. As long as they were using their established positions, they could expect relatively good communications. They were not particularly flexible in the advance. If their FOs left their observation posts, their communications would become less reliable until they had the opportunity to string new wire.

French Artillery Rules in Battlefront

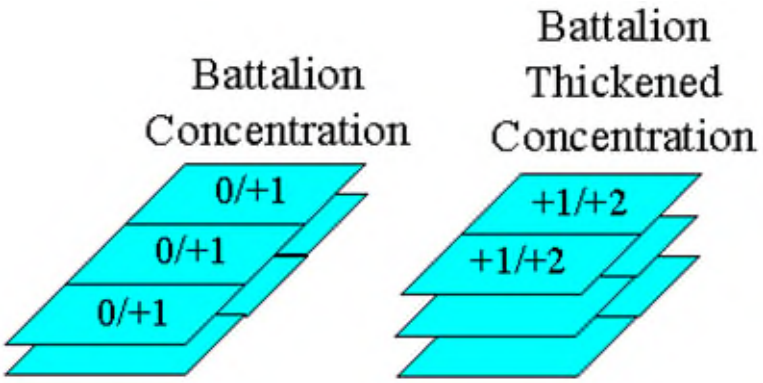
For Battlefront, the scenario designer must decide if a fire plan exists and which assets are integrated into the plan. It is possible to have both fire plan and non-fire plan assets available in a scenario. The French use the call-for-fire table to the right. Also, if a fire mission is called by a forward observer who has not moved from his initial position, and consists of battalions that are part of a fire plan, apply the pre-registered modifier to the call-for-fire roll.

OBSERVER	LEVEL OF SUPPORT	Organic Fire Support	Direct Fire Support	General Fire Support
French	Forward Observer	4 or more	5 or more	7 or more
	Commander	5 or more	6 or more	---
	Troops	6 or more	---	---

Once a fire plan has been established, French Off-board Artillery may only fire by Battalion. However, it may always use ALL of the guns in the battalion (6 templates for the typical 75mm battalion). The French are **NOT** limited to fire by a single battery when firing a shelling pattern by a battalion that is part of a fire plan. For a typical 12 gun (6 template) battalion, they may arrange them either as a linear (6 wide, 1 deep) or rectangular (3 wide, 2 deep) pattern. The full battalion shelling pattern is the French "special" mission. To the right are the typical shelling patterns fired by 75mm battalion, where the basic IDF fire strength is -1 vs. V and 0 vs. T,G,sV.

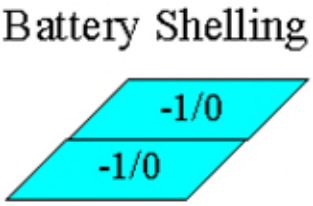


Concentration and thickened concentration fire missions may only be used by battalions that are part of a fire plan. Once again, the entire 12 gun battalion is used as a unit. To the right are the possible concentration patterns fired by a 12 gun 75mm battalion.



When firing mixed/smoke patterns by battalion, halve the number of templates in the regular pattern.

- General Support Artillery is available only if there is a fire plan and may fire only in conjunction with battalions that are part of a fire plan.
- Battalions that are part of a fire plan cannot be combined with those which are not in the plan within the same fire mission.



For battalions which are NOT part of the fire plan, only shelling, smoke, and mixed shelling/smoke fire missions may be fired. Also, no pre-registration bonus is used on the call-for-fire table. However, the types of missions that can be fired depend on how far along the fire plan has progressed. Mark Hayes thought that they always would fire by battalion, as this is their basic doctrine and training. He recommended that they immediately be allowed to use the 3x2 shelling pattern above (or a 3x1 with mixed shelling/smoke). My (your not-so-humble webmaster's) feeling is to be somewhat more restrictive, especially at the early stages of the fire plan, because if the batteries were not located in the same geographic area (and they often dispersed to make them more difficult counter-battery targets), they would not be able to coordinate battalion fire. I would consider limiting them to the almost useless single battery pattern to the right at the beginning of the plan preparation (more to reflect the difficulty of coordinating fire than any specific doctrine) and have them work up to different battalion shelling patterns without pre-registration if they have been in place for a few hours. In any case, the referee should specify the patterns they can use and it would be perfectly reasonable to allow them to use more effective patterns as the game progresses. If anyone has any more definite knowledge of how they developed their plan, let us know and we will incorporate it into this tutorial. It should be noted that the French really did not expect to fight without a plan, as they anticipated battles to develop at a slower pace. Indeed, our sources almost exclusively describe the French doctrine assuming that the plan has been established.

On-board Fire Support

75mm batteries can be placed on-board at the start of the game as determined by the scenario designer (they were sometimes brought forward to augment the antitank defenses). This would be the only on-board FS element for the French in the game other than organic mortars.

Other Nations in the Early War Period

Early-war British

While the early-war British artillery was not the flexible, deadly tool of 1944, it still was effective when used properly. Although most of the tactical doctrine remained the same throughout the war, and indeed the procedures at artillery brigade (regiment) level had been established and practiced since around 1930, above that level they were almost non-existent until late-1942, when the system described in our British Artillery Page was developed and promulgated as official doctrine. Also, while in France the BEF had spent months in static positions using line communications. When the invasion started there was insufficient user experience in the use of wireless (which had been little used during the 'phony war' for security reasons) and the environment of withdrawal and rapid defence gave the British insufficient time to put down comprehensive line networks and coordinate defensive fire. On the other hand the campaign in East Africa was exemplary and the artillery well handled in both defensive and offensive operations. After Dunkirk (where they were forced to abandon large amounts of equipment) and up through 1942, the British suffered more from a lack of artillery than any problems in doctrine. They were often forced to use 2-battery regiments (instead of the more effective 3-battery regiments).
To simulate this:

- In the BEF period, the standard Field Regiment was organized into 2x12 gun (6 template) batteries and the troop size was 4 guns (2 templates). The battery patterns for a Field Regiment in the BEF period were 3 wide x 2 deep shelling pattern or a 3 wide x 1 deep concentration. Note that there were only 2 batteries in a 1940 Field Artillery Regiment and this did not mesh well with the three Battalions in the Infantry Regiment that an FA regiment was usually assigned to support. Part of the reorganization that occurred after Dunkirk was the reallocation of the same 24 guns into 3 8-gun batteries. Each battery could then support a battalion.
- When engaging targets of opportunity, do not allow the British to use MIKE, UNCLE, and higher level concentrations until after Alamein. For an early war Field Regiment, the other batteries in the regiment can thicken the 3x1 concentration as General Support.
- In Northern France, the British should use the French Call-for-Fire numbers, and the scenario may call for additional negative modifiers to simulate poor communications.

Germans

The German methods did not change as much during the war (see the German Artillery tutorial, and scenario artillery introduction). In tactical situations, the Germans did not centralize the control of their artillery assets as their own theorist (Bruchmüller) had advocated. They tended to give more control to the lower level Forward Observers/Battery Commanders rather than allocating fire missions from centralized HQs. While they were fairly flexible in their allocation of Fire Support assets to various task groups (this would show up in pre-game fire plans), they tended not to combine them all at a tactical level (on-call fires). Later in the war they tried out a centralized artillery division on the Eastern Front. It was effective but soon was swept up in the Russian flood. Use the standard German artillery rules for the early war period.

Other countries (except the Finns)

Most of the "minor" (with apologies to our Italian friends) countries in Europe, with the exception of the Finns, used an artillery doctrine that could trace its roots directly to WWI and probably did not evolve much during the course of the war. While specific information is hard to come by except for the major nations, the comments in this section can probably apply to Italy, Romania, Hungary, Poland, and any other of the smaller nations of Europe without being too far off.
Essentially, this doctrine resembles French doctrine, with its emphasis on pre-planned fire and central control, but would lack the flexibility given to the French by the *poste central du groupe*. It also has some of the limitations of Russian doctrine. Pre-planned fire would be about the same as everyone else (most of this was derived from WWI), but Ad hoc fires are more limited.

Some Ideas for ad hoc fire from other nations.

- Use the French Call-for-Fire table.
- Artillery Battalions should be designated to support specific infantry regiments.
- Forward Observers can control specific Artillery Battalion organizations.
- Any call for a mission outside of the assigned assets should be treated as General support. Note that when using the French Call-for-Fire table, only FOs can call for general support.
- The Italians had more FOs available. Allow Italian Battalion HQs and Regimental HQs to call-for-fire, in addition to designated FOs. For other nations, allow only the Regimental HQs and FOs to call for fire.
- Don't allow ad hoc concentrations except from pre-established Observation positions (the Russians already have this restriction in the rulebook).
- Limit shelling missions to a single battery (unlike the French).

The Finns

During the inter-war period, the Finns developed a sophisticated artillery doctrine. However, they were hampered by a severe ammunition shortage that never let them use their doctrine to its full potential, and during the Winter War they suffered somewhat from a lack of trained observers. See the Finnish OOB ZIP format or PDF Format for more specific Finnish Artilery organizations. Essentially the Finns use the French methods, including Battalion shelling, and are always considered to have a fire plan in effect. During the continuation War, the Finns rectified their observer shortage so every Battalion and higher HQ stand can use the Forward Observer line of the Call-for-Fire table. During the Winter War, only designated FOs can use this line.

Sources

- Europa Artillery Lecture by David Weseley
- Two articles on the Battle of the Belgian Plain (published in the April 1992 and January 2000 editions of the JOURNAL OF MILITARY HISTORY) by Jeffrey Gunsburg
- ON ARTILLERY by Bruce Gudmundsson.
- Steel Wind - Colonel Georg Bruchmüller and the Birth of Modern Artillery by David T. Zabecki
- Nigel Evans' awesome Royal Artillery page.
- Axis and Allies on the Ostfront by Bob Mackenzie (available from Brookhurst).

WWII Japanese Artillery

First some quotes:
"Japanese use of artillery is subject to much criticism. The fundamental fault is that there is generally not enough of it. The weakness in artillery may be the result of lack of appreciation of the need for adequate fire support, or of a feeling that past experience has not demonstrated the need for stronger artillery. The period of daylight fire for adjustment prior to the fire for effect reduces tactical surprise and diminishes the moral [sic] effect of the preparation. This unwillingness to fire the preparation unobserved at night would suggest low gunnery efficiency. Also the absence of general support artillery reduces the flexibility of the artillery fires and limits the ability of the division commander to intervene promptly in the action by use of his artillery. From the picture drawn in the tactical problems, one can feel reasonably sure that the Japanese infantry will jump off, even though their extensive preparations have neither destroyed hostile wire nor neutralized the enemy artillery and machine guns. The detailed workings of the direct support fires are not described in the problems studied; hence, no estimate of their effectiveness can be made other than that implied be the absence of detailed plans for infantry-artillery liaison."

"The weakness of the division artillery makes extremely difficult the support of an operation on a wide front such as a river crossing. It becomes difficult to allot any artillery to a distant fight, without which there cannot be much deception."

"The Japanese dislike for using their light artillery at long ranges tends to keep delaying positions relatively close together (3000-4000 yards). Japanese artillery has little experience in fire with air observation."
-Handbook on Japanese Military Forces, TM-E30-480, US War Dept, Oct 1944

"The Japanese Army has neglected to keep pace with other major armies in the development of modern artillery techniques."
- from War Dept. Intell.Bulletin vol.III, No. 10 (June 1945)

How to handle Japanese artillery for a Battlefront WWII game? The above quotes give some indication - Japanese artillery is "not like the others". Because of organizational defects, it was rare and difficult for Japanese forces to mass the fire of entire artillery units, the way other WWII armies could. In the Japanese system, each artillery battery had to register its own weapons on any potential target, and once battle was joined, fire control was decentralized to each battery - there were no fire direction centers.

This decentralization of technique also applied to organization. It was quite common for the Japanese to detach a battery, a section, or sometimes even individual weapons, and use them as roving units, widely separated from the remainder of the artillery unit. Also, guns of different calibers were mixed within units, again sometimes down to section level. Different sections of a given battery were often emplaced 300-1000 yards apart from each other, and often sited in great depth within their positions (the guns were widely staggered). All of these factors greatly hindered rapid registration, massing of fires, and shifting of fires. Japanese artillery fire, for most of the Pacific War, was conducted on a section-by-section, or battery-by-battery basis (however this did facilitate the "hiding" of artillery in pillboxes and caves, where they could be very difficult to destroy).

On the other hand, Japanese artillery fire was often very accurate. It was common (especially during static or defensive situations) for a Japanese artillery battery to employ bilateral observation - an Observation Post would be established on the gun-to-target line, and another OP set up on both flanks. This permitted the center OP to

concentrate on deflection adjustments while the flank OPs adjusted for range. The method was slow, but accurate.

Generally, the Japanese only fired a few guns at a time in any one sector (the exceptions came later in the war at large defensive battles such as Iwo Jima or Okinawa - see below). Even in sectors occupied by an artillery battalion or regiment, fire was often delivered by only a section or battery at a time. Generally, volleys were not fired; each section salvoed at a given rate. Sometimes each section's tubes would fire just one round each, then cease fire for a few minutes while the other sections would each fire their rounds in turn, thus keeping up a slow, steady harassing fire. It was also not unusual for a battery to fire at two or more targets simultaneously, different sections or individual guns having been assigned different fire missions. Generally, by other WWII armies' standards, few rounds were fired at any one target, but those that were, were very accurate.

In a Japanese artillery regiment or battalion, fire control duties were handled by battery commanders. The unit commander would prepare before-battle fire support plans and battery positions, but once combat was joined, artillery support generally broke down to the point where one battery supported one infantry battalion, and was not usually available to join a companion battery in rapidly adjusting to provide mass fire upon a single target. Instead, each battery or section would have its own observer whose concern would be targets appearing in his own sector. Because of this decentralization, each battery of a battalion would have to register on a new target separately, before beginning fire for effect.

Liaison between infantry and artillery units was also poor. Japanese doctrine placed heavy emphasis on the role of individual infantrymen, and the value of artillery fire tended to be held in less esteem, and infantry commanders often tried to force their idea of proper artillery support upon their supporting artillery unit, rather than let the artillery work in its own fashion.

For most of the war (most) Japanese artillery units had to work with a limited amount of ammunition, hence the slow ROF and careful ranging. Their artillery seemed almost lazy in comparison to other doctrines. An occasional round here and there-but then a sudden sharply defined volley of fire on target.

Okinawa and Iwo Jima

"During the height of the Okinawa campaign, soldiers and marines of the U.S. Tenth Army experienced Jap artillery fire on a scale never before faced by our troops in the Pacific."
- from War Dept. Intell.Bulletin Vol. III, No. 12 (Aug. 1945)

The tactics and procedures outlined in the introduction hold true as a description of Japanese artillery practice for the great majority of the Pacific war. Even as late as the fighting in The Philippines during 1944-45 saw "spotty and inefficient" use of Japanese artillery. However, increasing exposure to the devastating firepower brought to bear by the Western Allies during their drives toward Tokyo brought a new appreciation to Japanese military leaders of the power of massed modern artillery, and for the last battles, on Iwo Jima and Okinawa, they did all they could to maximize their artillery assets.

The Japanese were in no position to alter their doctrine - they hadn't the time. Consequently, to provide for massed artillery fire, they still had to operate without fire-direction centers. But they could and did provide the

defenses of Iwo and Okinawa with a central artillery headquarters or "controlling authority" to plan a complete integration of all artillery units and enforce an overall fire plan. For the first time during the Pacific fighting the Japanese planned to mass the fire of several batteries, or even several whole battalions, upon single targets. They were able to do so by planning their defensive positions well in advance and then installing the available artillery in the best positions possible so as to be able to cover their defensive zones. In addition, extensive communications were set up to enable control of the various battalions/batteries. At Okinawa, the major portion of the medium and long-range artillery was grouped in the center of the defensive zone, and were situated so as to provide overlapping fields of fire.

A typical battery was located so as to provide maximum protection from aerial observation, and from air or naval bombardment. Wire communication connected the Forward Observer post with the battery. The Japanese had ample opportunity to pre-register each battery, before the battle, on check points and prospective target areas. Once the battle had begun, Battery FOs then were able to report targets to the overall artillery headquarters which in turn would order one or more batteries to fire according to their previously plotted registration. This allowed the Japanese, for the first time, to hit enemy troops with artillery concentrations immediately upon the enemy entering a particular area (though the fact that fire was not immediately received on each such occasion shows that the Japanese still had not developed a proper fire-direction center). Indeed, the Japanese fought bitterly to hold or recapture dominating terrain where artillery observation posts were maintained.

In summary, the Japanese at Iwo Jima and Okinawa, for the first time, made maximum use of their artillery assets according to their doctrine. Their observation system always provided for accurate fire; during these last battles they finally were able to combine accuracy with massed fires. The system would not have worked in other than a stable setting with plenty of preparation time, but for the 1945 battles, Japanese artillery became quite deadly.

Japanese Artillery in Battlefront:WW2

	OBSERVER	LEVEL OF SUPPORT	Organic Fire Support	Direct Fire Support	General Fire Support
Japanese	Forward Observer		3 or more	4 or more	---
	Battalion Cmdr		5 or more	6 or more	---
	FO-Iwo/Okinawa		3 or more	4 or more	7 or more

- Except at Okinawa and Iwo Jima, Japanese infantry battalions may have a section (a single template) or a battery (2 templates), at most, of artillery in direct support.
- Except at Okinawa and Iwo Jima, **NO** General Support Artillery is available.

- Except at Okinawa and Iwo Jima, Artillery Forward Observers are attached to a specific Battery or Section. They may only call for fire from their own assets.
- Other than Artillery Forward Observers, only Battalion Commanders may call for fire, and then only from a assets that are attached to their battalion.
- Each artillery battery in direct support, for defensive/static offensive scenarios, can employ up to 3 on-table FOs. For mobile situations, you should only deploy 1.
- Except at Okinawa and Iwo Jima, Japanese artillery concentrations should generally be limited to battery size. Battalion Concentrations should be permitted only for pre-game bombardments, and then only for 1-2 rounds of firing.
- An exception should be made for games set during the Iwo Jima or Okinawa campaigns; The scenario can specify artillery in General Support. Forward Observers who are in in their original emplacements can call in missions with General Support. Also, the FOs in their original emplacements can call normal artillery concentration and thickened concentrations.
- Japanese mortars were organized into independent mortar battalions and companies, which were then assigned to individual infantry divisions/regiments/battalions. If assigned to a battalion, treat the mortars as Organic; if assigned to higher level, treat the mortars as Direct Support. Knee-mortar stands function as direct fire weapons and do not use call for fire procedures.
- To simulate ammo limitations and slow rate of fire, you can restrict the beaten zone of Japanese Artillery to Small templates as a scenario rule, even for the larger caliber weapons.

Knee Mortars

The Japanese made extensive use of grenade dischargers, often mistakenly referred to a "Knee Mortars" (the base of the grenade discharger was curved, giving the impression that it was designed to be braced against the user's leg. However, it was really designed to be braced against a tree trunk or on the ground, and shattered the bones of those who attempted to fire it braced against their bodies). While nominally an indirect fire weapon, the grenade discharger's was really used as a company support direct fire weapon. Its special characteristics require some special rules.

1. When engaging units within 5" Knee Mortars use direct fire procedures and modifiers (this represents rifle fire from the crew). From 5"-15" Knee Mortars use Direct Fire procedures, but use Indirect Fire modifiers. This makes cover less effective, and also negates the "suspected target" modifier.
2. Knee Mortars do not fire in the indirect fire phases, but fire as direct fire weapons in the Offensive, Defensive, and Overwatch fire phases. They may also conduct opportunity fire.
3. As with other DF weapons, Knee Mortars need not emplace to fire.
4. Even when using their indirect strengths, Knee mortars fire at individual targets.
5. Knee Mortars may fire only at targets in their Line of Sight. As with other direct fire units, they may only fire at suspected or spotted targets. Other units may not act as observers for knee mortars.
6. Knee Mortars fire individually. They may not engage in concentration missions.
7. Knee Mortars may fire over intervening friendly units, but only in the 5-15" ranges AND when the intervening friendly unit is more than 2" away from the target.

Sources

- A posting on the forum kindly provided by Roger Kumferman (quoted almost verbatim above). His sources were:

1. Soldiers Guide to the Japanese Army; Military Intelligence Service, War Dept., Washington, DC, 1944
2. Japanese Field Artillery Methods; Military Intell.Division, War Dept. Intelligence Bulletin Vol. III, No.10, June 1945
3. Iwo Jima Was Ready - Japanese Plans for Defense; Mil.Intell.Div., War Dept. Intell. Bull. Vol. III, No.11, July 1945
4. Latest Tactical Ideas - Okinawa Brings New Jap Developments; Mil.Intell.Div., War Dept. Intell.Bull. Vol. III, No.12, August 1945
5. Artillery on Okinawa; Mil.Intell.Div., War Dept. Inell.Bull. Vol. III, No.12, August 1945

- Steven Lee and Jon Rigley worked out the knee mortar rules over many playtests.

Pre-planned Fire

The standard artillery rules in BF simulate the use of on-call fire against "targets of opportunity". This was actually a small part of the artillery usage in the war, as much of the fire was conducted as part of a fire plan. The techniques for developing fire plans were well established in World War I, and most nations were capable of doing them (although at the beginning of the war the Soviets had difficulties, due to losses and lack of trained personnel, by 1943 and later their higher level organizations were fully competent). The key elements of fire plans were their creativity and their inflexibility (which may seem incompatible, but really are not).

- Creativity - To make a fire mission land in a designated area takes time, and coordinating several different organizations takes more time. For pre-planned fire, the time was available. Most nations had the flexibility to combine barrages and concentrations in almost any way that they wanted within the limitations of the available batteries.
- Inflexibility - Once the fire plan started, you could call it off, but it was difficult to change. If the target happens not to be where you thought he was, you cannot adjust the pre-planned artillery onto his position

Using Fire Plans in BF

You can create a several turn fire plan at the start of a game. The types of missions should be consistent with the nationalities:

- The British and U.S. can pretty much do what they want. They can use a lot of extra artillery that is only used during for the duration of the fire plan. They can use concentrations, moving barrages, lifting barrages, plans that stop for a turn and restart, etc. Smoke can be mixed in with HE.
- The Germans should usually not have more than a Battalion or two in their plan because of their command limitations. However, they should allowed to be creative as well.
- The Russians can have a lot of artillery, but they should be limited to fairly simple plans. You can have pre-plotted standing barrages and concentrations, but they should generally not be under the control of the player.

Fire plans should generally not last more than 3 or 4 turns or they can overwhelm the game.
Either the referee should plot the plan, or the player with the artillery should do it before seeing his opponent's setup.

Defensive Preregistration

Once a defender has had time to set up, one of the first things that is done is to preregister artillery targets and set up a defensive fire plan. There are several ideas that can be utilized:

- Allow all calls for fire to be preregistered. This is the easiest, but it is extremely powerful. You probably should limit this to areas that can be observed from the defender's front line.
- Assume that registration is done for all prominent geographic locations (bridges, crossroads, hilltops, etc.).
- Allow the defender to designate a limited number of preregistered points around which he can get the preregistered bonus (and the Russians can use concentrations).

- You can also allow the defender to preset some on-call defensive barrages and fire missions. These can even be set up to be irregular shapes, such as "Box Barrages" that conform to the defender's defensive position. Make sure that you specify the support level of the barrage so that it can be called appropriately. Unlike most on-call artillery, these would be actual barrages and would last throughout the defender's turn and the opponent's next turn.

Use whatever method you wish in your scenarios, but just be sure that you make clear where preregistration can be used and who can use it.

Offensive Preregistration

Just as defenders can use preregistration, so can attackers if they are moving from a static position. You should limit preregistration to those areas of the board which can be observed from the attacker's front line.

Optional Rules

The following rules are suggestions on how to make artillery usage more realistic. Feel free to tailor them to your use.

The "Cry Wolf" Modifier

Artillery was an important asset that was not to be wasted, especially if there was an ammunition shortage such as that which afflicted the Western Allies in late 1944. In the book "Payoff-Artillery-WWII" by Frank Armstrong, (a unit history of an independent US field artillery battalion), the author describes how some observers became trusted by the FDCs to call only valid targets. When they called for a fire mission, they almost always received the support they needed, even when supply shortages had severely limited the ammo supply. Other observers were known to exaggerate and their calls did not receive priority.
The British primarily used long-service professionals as forward observers, and trusted their judgment to call missions that were appropriate to their targets. The Americans allowed almost anybody to request missions, but relied on experienced personnel at the Fire Direction Center to decide the type of mission and assets to be used. However, wargamers being what they are, you can expect them to attempt to call all of their artillery on every possible target. If the referee finds a player routinely calling in major artillery assets on technically legal but frivolous targets, (such as a corps level Time-on-Target mission on a SPOTTED horse-drawn limber), the referee can feel free to award him a "cry-wolf" modifier of -1 to his call-for-fire die rolls for the duration of the game.
The Cry-wolf modifier:

- Should not apply to shelling missions, smoke, pre-planned fire, and battery concentrations.
- Should only be "awarded" when the culprit is using a mission that requests General Support, uses a Battalion Concentration, or uses one of the special patterns (MIKE, UNCLE, TOT) on a target that contains less than three potential targets and does not contain an armored vehicle or a gun. You let the player resolve the mission, but then roll a die (0-4 on a d10 would be good odds) to see if he has "cried-wolf".
- Will apply to all call-for-fire rolls for battalion and special missions by that player for the remainder of the game. If you want, you can make it specific to an on-board FO instead of a player.

Target Priority Modifier for General Support

This is similar to the previous modifier in that it attempts to limit the use of General Support artillery against unknown or frivolous targets. It is probably more applicable to the U.S., where the FDC controlled the assets based on the observers reports. Place the templates, including the call for General Support. When resolving the call-for-fire, add the following modifiers to the die roll when resolving General Support only:

Target Type	Die Roll Modifier
Suspected Target Only	-1
Single spotted Troop or unarmored vehicle	-2
More than 4 targets in beaten zone (including passengers and towed guns).	+1

Hard-to-contact Elements

Certain Fire Support Elements can be made harder to contact by applying a -1 modifier to calls for their fire. For example, independent U.S. general support elements might be harder to use than the 155mm General Support battery that is a dedicated part of a US FS-01.

Ammo Shortages

You can count missions, or to avoid paperwork you can apply a negative modifier to the call-for-fire roll.

Artillery vs Fortifications

BF artillery rules are designed to simulate the fire against troops in the open or in light field fortifications. As it is possible to get very large modifiers, especially with the TOT mission of the U.S., this system doesn't work that well in simulating attacks on fortifications and bunkers. Concrete fortifications provided protection against almost anything except a direct hit, although the occupants could be made extremely uncomfortable. To simulate this, you might limit the final attack with IDF against units within concrete fortifications to a maximum of -1, no matter what the nominal attack value would be for the mission. Similarly, limit attacks on non-concrete bunkers to 0. There are several ideas discussed on the Engineering Playtest Page, and a referee should feel free to impose scenario specific limitations on the effectiveness of IDF against fortifications.