20. INDIRECT FIRE AND ARTILLERY

Briefing

1. Indirect fire is used to bring enemy forces under fire by artillery pieces that cannot directly observe them. In order to fire on enemy pieces that it cannot see, an artillery piece must have the enemy pieces spotted for it and reported by a friendly piece. Refer to the following rules for more information: Rule 21. Spotting, and Rule 22. Communications.

2. Artillery weapons include guns, howitzers, mortars and artillery rockets. Many of these weapons can use the direct fire mode as well as the indirect fire mode.

3. The normal hit/miss determination is not used for indirect fire. Instead the firing player marks the target point and the random fall of shot procedure is used to determine actual hit locations.

Random fall of shot procedure

1. This procedure is closely related to the projectile scatter procedure used to determine the hit location of misses for direct fire.

2. The firing player begins by choosing a target point. To determine the direction in which each projectile lands from the target point, the player rolls one ten-sided die.

Die roll	Direction
1	North
2	Northeast
3	East
4	Southeast
5	South
6	Southwest
7	West
8	Northwest
9	On target
10	On target

3. If the result is "on target" no further hit location procedure is needed. The firing player should proceed to place the effect area for the projectile and determination any penetration and damage.

4. If the result is a compass direction, the firing player should then determine the distance from the target point that the projectile landed.

a. To determine the distance the projectile landed from the target point, roll a ten-sided die and refer to the tables below, based on the range of the target from the firing piece.

Firing distance	Die roll	Distance
Up to 60 inches	1 to 3	1 inch
	4 to 6	2 inches
	7 to 8	3 inches
	9 to 10	4 inches

Firing distance	Die roll	Distance
60+ to 120 inches	1 to 2	2 inches
	3 to 4	3 inches
	5 to 6	4 inches
	7 to 8	5 inches
	9 to 10	6 inches

Firing distance	Die roll	Distance
120+ to 240 inches	1 to 2	3 inches
	3 to 4	4 inches
	5 to 6	5 inches
	7 to 8	6 inches
	9 to 10	8 inches

Firing distance	Die roll	Distance
240+ to 480 inches	1 to 2	4 inches
	3 to 4	5 inches
	5 to 6	6 inches
	7 to 8	8 inches
	9 to 10	10 inches

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Firing distance	Die roll	Distance
480+ to 960 inches	1 to 2	5 inches
	3 to 4	7 inches
	5 to 6	9 inches
	7 to 8	11 inches
	9 to 10	12 inches

b. The number rolled on the die equals the distance from the target point in inches.

5. The direction and distance from the target point give the actual impact point. The effect area of the projectile is centered over the impact point and any results are determined.

Use of indirect fire

1. Guns, howitzers, mortars, artillery rockets and tactical missiles may utilize indirect fire.

2. Indirect fire may not be employed as interceptive fire because of the time delay that results from the process of establishing communications between the spotter and the artillery.

3. A piece may both move and perform indirect fire in the same turn. (See the optional rule below on indirect fire while moving.)

Off-board artillery

1. The rules assume that the warheads of artillery weapons fired on the board will impact immediately. Off-board artillery fire may be delayed by one or more turns if the firing piece is a considerable distance from the target.

2. The delay in the impact of warheads fired by off-board artillery pieces will be determined by the range of the artillery piece from its target.

a. Before the game begins a player with off-board artillery pieces should write down how far they are from the edge of the board.

b. When a target is chosen during the game, a player can then measure the distance of the target from the edge of the board and add that to the distance of the artillery piece from the edge of the board.

c. The delay given below is based on the total distance from the artillery piece to the target.

Distance in inches	Delay
0 to 240	None
241 to 480	1 turn
481 to 720	2 turns
721 to 960	3 turns

3. This system simulates the lag time of distant artillery fire by imposing time delays for artillery that provides support from far off the tabletop.

Artillery weapons in direct fire mode

1. With the futuristic technology of **LaserGrenadiers** many artillery weapons may be used in direct fire mode. In cases where the artillery or vehicle crew can observe the target the weapon may utilize direct fire procedures.

2. The weapon tables provided for artillery weapons have three sets of ranges assigned – for high trajectory indirect fire, high trajectory direct fire and low trajectory direct fire.

3. Artillery weapons normally use high trajectory fire when firing indirectly. When an artillery piece is capable of being used in direct fire, the artillery piece may utilize either high trajectory or low trajectory direct fire, or both, depending on its mounting. Not all weapons will be capable of utilizing all fire modes.

4. Players must designate in the descriptions of their artillery pieces and self-propelled artillery vehicles which of the following fire modes the weapon may utilize:

- high trajectory indirect fire
- high trajectory direct fire

- low trajectory direct fire

5. The determination of whether or not an artillery weapon may utilize low trajectory fire is dependent upon two factors: 1) the way the weapon is mounted on its carriage or vehicle, and 2) the way in which the weapon is loaded and fired. If an artillery weapon can be brought to a horizontal position, the weapon may be fired with a low trajectory.

Examples:

a. Most mortars cannot be fired with a low trajectory because the tube is mounted at a high angle and the bomb is dropped down the tube to fire it. However, a breech-loading mortar mounted in an armored vehicle could fire with a low trajectory if the mortar can be lowered to fire directly at the target.

b. A mortar mounted on a vehicle at a fixed angle will only have one firing mode since it cannot be elevated or lowered to change its mode.

6. An artillery weapon in direct fire mode uses the normal hit/miss determination procedure. Refer to Rule 14. Hit/Miss Determination.

7. High trajectory fire has a longer maximum range but is restricted by the fact that it also has a minimum range. In low trajectory fire the maximum range of a weapon is greatly reduced because of the flattened arc of the projectile's path, but there is no minimum range. For game purposes, the farthest range for direct fire is restricted to 144 inches.

8. When determining the cost of artillery weapons, the range factor for high trajectory indirect fire is used, not the range factor for direct fire.

Counter-battery fire (Optional rule)

1. Counter battery fire is the assignment of artillery pieces to respond to enemy indirect artillery fire. The artillery piece is on standby, ready to respond at a moment's notice to enemy indirect fire.

2. An artillery piece assigned to counter battery fire cannot perform any other fire missions during a turn.

3. A player that has off-board artillery assets can assign them to counter battery fire.

4. An artillery piece assigned to a counter battery fire mission is directed by an artillery detection vehicle which utilizes radar to track the flight of an enemy artillery shell or mortar bomb and trace it back to its source. It can respond within seconds.

5. A player may choose to create and field a vehicle with artillery detection capability, or the players may agree to have the capability assigned to off-board assets, which do not enter the board and do not have to be represented by a vehicle model. For example, the players may agree that a detection vehicle will be included in any off-board artillery support available as a result of an uncontrolled event.

6. When an artillery piece fires a counter battery fire mission, the indirect fire procedures are used to determine if the artillery projectiles hit their target. The target point is assumed to be the center of the firing weapon.

7. This optional rule is best used only against indirect artillery fire that originates on the tabletop, not off-board artillery support. In this way the players will not have to determine the impact of counter battery fire on imaginary guns. However, this does not preclude players from conducting such counter-battery fire if they choose to do so.

Indirect fire while moving (Optional rule)

1. Weapons that move while firing indirect fire will be less accurate than weapons that remain stationary.

2. Based on the movement rate of the firing piece, the following tables provide modifications to the hit location determined by the random fall of shot procedure.

Movement rate	Direction
Stationary	Random fall of shot procedure is not modified
Slow	If a 10 is rolled the shot is on target. Reroll a 9.
Moderate or Fast	Reroll a 9 or 10

Movement rate	Additional inches added to the distance rolled for a miss
Stationary	None
Slow	+2 inches
Moderate	+4 inches
Fast	+6 inches

3. A terminally-guided or target-tracking warhead has the ability to correct its course in the final portion of its flight. Refer to the optional rules in Rule 18. Warheads and Guidance Systems, for details on these weapons.

Reduced artillery ranges (Optional rule)

1. Although the normal trend in weapon development has been to increase the ranges fired by indirect fire artillery, there are tactical situations where it is desirable to bring very large caliber weapons to bear at shorter ranges. In order to reduce the minimum ranges that artillery pieces may fire, several range reduction technologies were developed to decrease warhead velocities.

a. Some weapons employ a collar that deploys around the rear of the shell after firing to increase drag and slow the shell. Another technology includes a baseplate and ring that produces counterthrust, decelerating the shell sufficiently to impact at shorter ranges.

b. These technologies allow warheads to impact at ranges their weapons cannot achieve with normal propellant charges. Some nations have used reduced charges to decrease the initial velocity of a shell, but these methods are not considered as effective due to losses in accuracy.

2. Range reduction technology cuts the minimum range in half for the particular type of artillery piece utilizing it in indirect fire. For example, an artillery piece that could not fire at targets closer than 120 inches will be able to fire at targets at 60 inches or more when it uses range reduction technology. The additional range capacity is considered to be an extension of short range for the artillery piece.

3. The cost of this capability is 25 points for each weapon.