

Module 3. Advanced Operations

Rule 46: Low Light Operations

While Assault assumes mostly daylight hours in combat, the truth is different. Most professional armies, are very good at operating in low light level environments and train extensively to do so. The Low Light system works best when using the unit status markers in the Neutral Marker page; i.e. laser, moving unit, direct fire, and missile fire markers.

A. Low Light Devices

There are 6 types of “night” vision that will be addressed, un-aided, star-light, white light, infrared, thermal (including FLIR), and low light level TV (LLTV). The Advanced capabilities spreadsheets list the optics available for each unit type.

1. Un-aided: All units can use un-aided spotting; i.e. optics with no low light devices and eyesight, are very restricted in their low light level combat capabilities.

2. Star-light: Star-light night vision devices, such as the U.S. AN/PVS-7B, uses the ambient light available to enhance the wearer’s night vision capability. These type devices are worn as headgear, attached to helmets or mounted on weaponry; i.e. rifles and machineguns.

3. White Light: All Vehicle Units are equipped with white lights. Units using white light are automatically spotted by units with an LOS.

4. Infrared Light: An improvement over white light, Infrared spotlights equip most Warsaw Pact vehicles up to the T-72. A major drawback to Infrared equipped units is that the Infrared light source is visible to all other devices except the un-aided eye and white light.

5. Thermal Imaging: Low light level combat capabilities made great leaps when TI began showing up. Vehicles such as the M2 Bradley and the M1 Abrams lost very little in spotting and combat thanks to this system. In fact, thermals are used 24/7 in conjunction with the day sights. This type device also includes Vehicle, Aircraft and Helicopter FLIR (Forward Looking Infra- red) systems.

6. Low Light Level Television: LLLTV equipped tanks like the M60A3. This type low light device actually had better thermal imaging system than the Abrams until the Abrams were upgraded in the 21st century.

B. Low Light Spotting

The spotting tables for daytime are replaced by Low Light Spotting Tables. These tables are organized by device type and range. Modifiers are applied as specified. Vehicle units low light vision equipment are listed in the *Advanced Capabilities Spreadsheet* on each nation's home page. All units are considered to have white light and un-aided night vision at a minimum. All Special Forces, Ranger, SPETZNAZ, Scout, Recon and Commando "P" class units have thermal imaging capability. All units with Anti-tank Guided Missiles as the primary weapon or a round of ammunition have thermal imaging capability unless otherwise identified in the *Advanced Capabilities Spreadsheet* for the particular nation. All "P" class units have "Starlight Night Vision" capability.

1. Procedure:

- a.** Determine the unobstructed range to the target unit.
- b.** Determine the base chance to spot using the Low Light Spotting Table by cross referencing the Low Light Device type with the range in hexes. All units may select un-aided spotting if desired and not use the assigned device. If the spotting unit uses White Light or Infrared Light, place the appropriate marker on the spotting unit. These markers, White Light and Infrared Light, remain on the unit until the end of the next Fire Phase.
- c.** Check the target status and apply the appropriate modifier.
- d.** Roll the Die.
- e.** Apply the appropriate modifiers from the Low Light Spotting Roll Modifiers Table to the die roll. Modifiers are cumulative. A die roll equal to or less than the Base Chance results in the target unit being spotted.
- f.** RADAR equipped units are not affected by Low Light conditions and may spot and conduct combat normally.

In the Soviet Fire phase, a Soviet T-62A with IR low light device attempts to spot a Belgian Leopard 1A5 that is in a clear hex under cover at a range of 6 hexes. The Leopard has fired at another unit. The base spotting chance is 5. The base chance is modified by +4 because the Leopard fired at another target. The modified Base Spotting chance is now 9.

Low Light Spotting Table

- Un-aided
- White Light
- Starlight
- Infrared
- Thermal Imaging
- Low Light Level TV

Low Light Device	Base Spotting Roll												
	Range in hexes												
	0	1	2	3	4	5	6	7	8	9	10	12	
●	10	6	-	-	-	-	-	-	-	-	-	-	-
●	10	8	6	5	-	-	-	-	-	-	-	-	-
○	10	10	10	6	5	-	-	-	-	-	-	-	-
●	10	10	10	8	6	6	5	-	-	-	-	-	-
●	10	10	10	10	10	8	6	6	5	4	4	3	3
●	10	10	10	10	10	10	10	8	6	5	4	4	4

CITV / TI equipped Units Modifier (-2) to Spotting Die Roll

The Soviet player then rolls the die and rolls a 6. The Leopard is in clear terrain (-4) but is under cover (+2) for a modifier of -2 to the die roll. $6-2=4$. Since the modified base chance to spot is 9 and the final modified die roll is 4, the Leopard has been spotted by the T-62A.

Low Light Spotting Roll Modifiers

Target Type	CLEAR	WOODS	MARSH	Rough	URBAN STRIP	Ruins	Cover ①	Used White Light	Used Infrared Light ②	Used Laser ②	Natural Light Modifier	
											Half Moon	Full Moon
H	+2	+1	+1	0	+1	0	+4	n/a	n/a	-2	-1	-2
P	-2	-1	-2	+3	+2	+3	+3	n/a	n/a	-2	-1	-2
W	-3	-2	-2	+1	0	+2	+2	n/a	n/a	-2	-1	-2
V/AFV	-4	-3	-3	0	-2	-1	+2	Auto	-4	-2	-1	-2

① Cover modifier applies to units in bunkers, entrenchments, hull down positions and cover.

② modifier only applies if spotting unit is using Starlight, Infrared, Thermal Imaging or Low Light Level TV (LLTV)

All modifiers are cumulative.

Radar-equipped units are not affected by Low Light conditions and spot as normal

C. Low Light Combat

Low light devices have an impact on combat. The Thermal and LLLTV systems allow the unit to engage targets almost as well as if daylight. These modifiers are applied in addition to other modifiers as specified on the Anti-Armor and Conventional/Indirect Fire tables.

1. Procedure: Determine the range that the combat takes place by cross referencing the range with the device type. The maximum range for the weapon system is dependent upon the Low Light Level Device being used and NOT the ammunition type. Engagement range is any range with an assigned Low Light Combat Modifier value. Now, find the appropriate base Hit for the Low Light Device selected. Apply all appropriate modifiers for combat.

a. For Anti-Armor combat apply the Low Light Combat value to the base Hit chance. Roll the die and apply the appropriate modifiers to determine if a hit occurs. Then check for penetration. Low Light Combat value ONLY affects the Base Hit Chance in Anti- Armor Combat.

b. For Conventional/Indirect fire apply the Low Light Combat value to the DIE ROLL.

c. The use of FLARES and Ambient Light may affect the use of Low Light Combat Modifiers (See Rule 46.V.)

d. Only Helicopters organically equipped with ATGM or have an ATGM as a weapons pod option may conduct Low Light Combat. These weapons systems use thermal imaging integrated into the weapons package. Air Defense units with a ** or † may conduct SAM or AAA attacks as normal. IR Seeker and Radar guidance weapons systems are not affected by lighting conditions. **f.** All Aircraft are considered to be equipped with a Thermal Imaging (FLIR) Laser Designating weapon system with the applicable Low Light Combat modifiers.

The Soviet T-62A, having spotted the Belgian Leopard 1A5, decides to engage the Leopard with a HEAT round at 6 hexes. Since the range of 6 hexes is within the IR low light device range, the T-62A has a +3 modifier to the Base Hit Chance DIE roll.

Low Light Combat Modifiers

Low Light Device	Base Hit Modifier											
	Range in hexes											
	0	1	2	3	4	5	6	7	8	9	10	12
●	+2	+3	-	-	-	-	-	-	-	-	-	-
○	0	+1	+2	+3	-	-	-	-	-	-	-	-
○	0	0	0	0	+1	-	-	-	-	-	-	-
●	0	0	0	0	+1	+2	+3	-	-	-	-	-
●	0	0	0	0	0	0	0	0	0	0	0	0
●	0	0	0	0	0	0	0	0	0	0	0	0

Apply to Die Roll for Base Chance to hit
Apply to Conventional Fire Die Roll

The HEAT round has a base hit chance of 3 at 6 hexes. Since the Leopard is under cover this is multiplied by ½ and rounded up. The base chance to hit now is 2. The die is rolled and only a rolled 1 will hit since a rolled 1 always hits. If the chance to hit die roll is 2 or more add +3 to the die roll.

T-62	AP	1	8:18	9:18	8:17	7:17	6:17	4:16	3:15	2:14	1:13	—	—	—	—	—	4	—
	HEAT	1	8:18	9:18	8:18	7:18	5:18	3:18	1:18	—	—	—	—	—	—	—	3	—
	HE	1	1	4	8	8	8	8	7	6	5	4	—	—	—	—	6	—
	SCAP*	2	6:5	8:5	4:4	2:3	1:2	—	—	—	—	—	—	—	—	—	5	—
	SA	2	3	5	5	3	1	—	—	—	—	—	—	—	—	—	40	—

D. Low Light Movement

Low light level affects the movement capability of V/AFV class units. Units may choose to use Un- Aided movement, White Light movement or Aided movement. Un-aided movement is just that, the unit moves under black out conditions. White Light movement occurs when the unit uses headlights to illuminate the area in front of it. Aided Movement occurs when using a low light driving aid; i.e. infrared viewer for the driver. These type devices do not provide modifiers to spotting attempts.

1. Un-aided Movement: Units using unaided movement subtract -3 from their movement allowance. Movement allowance may not be reduced below 0 and all units may move at least 1 hex. All units may move at least 1 hex regardless.

2. White Light Movement: Units using white light movement move at normal movement allowance. A White Light marker is placed on the vehicle and may not be removed until the end of the next Fire Phase. Units using White Light Movement suffer all the penalties associated with being the target of spotting attempts.

3. Aided Movement: NATO (including Sweden and Austria) units using aided movement subtract 1 from their movement allowance. Warsaw Pact (including Finland and Yugoslavia) units using aided movement subtract 2 from their movement allowance. Movement allowance may not be reduced below 0 and all units may move at least 1 hex. Only AFV/AIFVs may use Aided Movement. V class units may not use Aided Movement.

4. Helicopters: All helicopters are considered to use Aided Movement. Only Helicopters organically equipped with Thermal Imaging (FLIR) may engage in combat (See Advanced Capability Chart in Charts & Tables for listing). Helicopter Low Light Movement is a modification of the Maneuverability Rating. NATO helicopters add +1 to the Maneuverability Rating. Warsaw Pact Helicopters add +3 to their Maneuverability Rating.

5. Aircraft: Aircraft add +1 to their altitude value; i.e. Attack Aircraft fly at 2 levels above the terrain in low light conditions instead of 1 level.

E. Artificial Light

Artificial light sources, such as flares, are used to provide short term illumination to a small area. Flares can either be of the handheld type, trip-flares or the artillery deployed type. Ambient light would be that light produced by a full or half-moon. Ambient Light mainly affects those units equipped with un-aided, starlight, white light and infrared light; providing the latter two with an option of not using the equipment but relying on un-aided spotting.



1. Trip Flares: These flares are generally emplaced prior to the start of play. Each infantry or engineer “P” class unit may emplace 1 trip flare in any hex (except all-water hexes) within a 1 hex range. Record the location of a Trip flare on the Engineering Log-sheet as if it were an engineering action. Trip flare markers are placed as soon as an enemy unit enters the hex during a movement phase. Trip flares illuminate the hex that they are placed in. All spotting attempts in this hex are conducted as if under daylight conditions and normal spotting rules apply. Remove the Trip Flare marker at the end of the next Fire Phase.



2. Hand-launched Flares (HLF): These type flares are hand-held/launched, (think supersize Roman candle). Each “P” class unit has 2 hand-launched flare available per game. Record the use of a HLF as if it were a round of ammunition. HLF is a movement oriented action but does NOT require Operation Point expenditure. A “P” class unit may use a HLF in any Movement Phase regardless of who the phasing player is.


- a. Place a marker 2 hexes from the firing unit in the designated hex.
- b. Spotting may occur in the hex and within a 1 hex radius from the flare marker as if under daylight conditions; normal spotting rules apply.
- c. At the END of the next Fire Phase remove the flare marker.

3. Artillery Emplaced Flares (AEF): These flares are launched from field artillery and mortars. They have a longer duration than hand launched flares and are affected by wind. See the Indirect Fire Data charts for availability of flares. Some small caliber mortars (U.S. M224 60mm Mortar) have flares in the ammunition section of the Direct Fire Data Charts.

- a. Record the Flare Mission just as you would any Indirect Fire Mission (exception: Enhanced SPG {Rule 18.E.1.} and direct fire mortar, both of which may fire and place the flare in any eligible Fire Phase); do NOT place a fire mission marker.

b. On execution of the fire mission, place a  marker in the designated hex.

c. Spotting may occur in the hex and within a 2 hex radius from the flare marker as if under daylight conditions; normal spotting rules apply.

d. At the end of the next Fire Phase replace the flare marker with a  marker; if there is a moderate wind move the marker 1 hex in the wind direction. If there is a strong wind move the marker 2 hexes in the wind direction.

e. Spotting may occur in the newly illuminated hex and within a 1 hex radius from the flare marker as if under daylight conditions; normal spotting rules apply.

f. At the end of the next Fire Phase remove the flare marker.

4. Flares and Combat: If a unit is spotted by a spotting attempt that used flare illumination and the flare marker is still in place, combat may occur as if in daylight conditions with no Low Light Combat modifiers applied.

F. Ambient Light

At the setup determine the level of Ambient Light available after determining the weather status. Ambient Light will only be available in clear weather. Roll the die and cross reference for the available light and the applicable Spotting Die Roll modifier on the Ambient Light Table. Note this information on any of the record sheets.

Ambient Light Table

	Full Moon	Half Moon	1/4 Moon	New Moon
Moon Roll	1-3	4-6	7-8	9-10
Spotting Roll Modifier	-1	0	+1	+2

G. Imaging Equipment

Imaging Equipment is specified for units on the Unit Data Cards. CITV and Thermal Imagery are explained in Rule 9 Spotting and Low Light equipment is explained in Rule 46. This section will explain the quick reference system. The Advanced Capabilities Spreadsheets have specific optic type equipment identified in the OPTICS section.