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“Strike the Enemy”

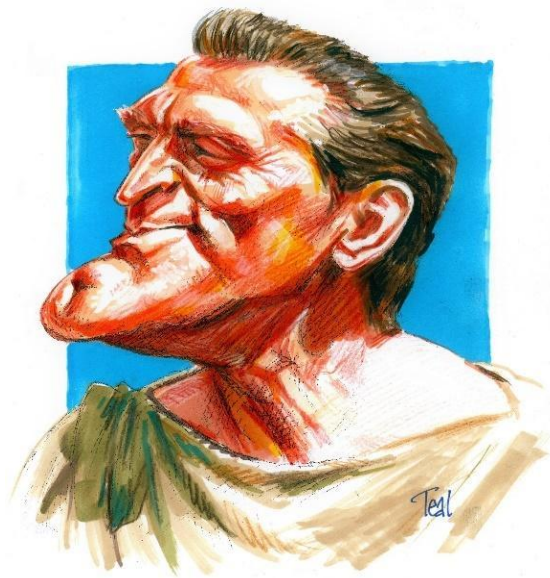


Do you have what it takes to join self-propelled artillery?

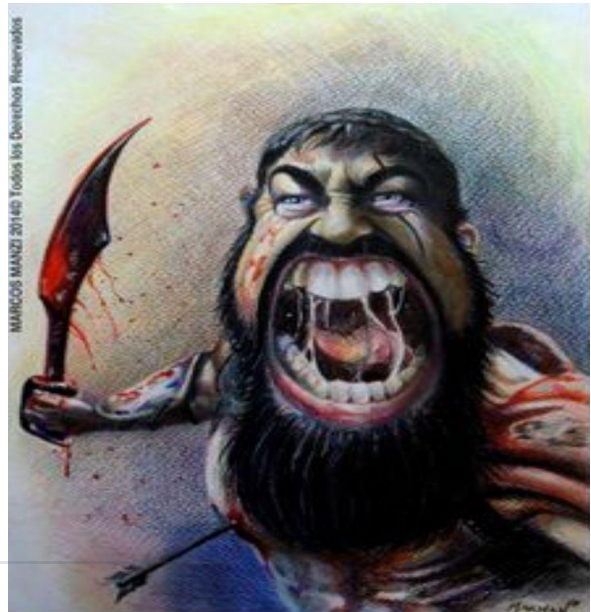
Are you ready to train, explore, and help your team win?

If you are ready to become a SPARTY then check out the “Quick-Start Guide” below and learn how to implement the SPARTY motto of *hostem ferire*.

Meet our command staff:



Commanding Officer 1



Commanding Officer 2

Self-Propelled Mortars Quick-Start Guide

Congratulations, you have spawned the first WWIOL platform that is motorized with true indirect fire with range(s) up to 3,000 meters. Each of these platforms has specific characteristics so learn their strengths and limitations. Review the specific pages for each platform to help familiarize you with each mortar carrier.

Now what? Let's get some basic things done so you can *hostem ferire* (strike your enemy).

FIRST STEPS

Keymapping is **CRITICAL** to your success with this unit so save yourself the frustration and do this upfront. This is applicable across all SPARTY platforms.

- Spawn the unit, press M, and select the KEYMAPPER tab.
- Scroll down to the appropriate unit under the AT & AAA Guns section and make the following modifications to your key mapper:

FUNCTION	SECONDARY KEYMAP (1)	SECONDARY KEYMAP (2)
TURRET TRAVERSE	LEFT ARROW	RIGHT ARROW
TURRET ELEVATE	DOWN ARROW	UP ARROW
PRIMARY WEAPON	SPACE BAR	--- N/A ----
CYCLE AMMO	BACKSPACE	--- N/A ----

Table 1

NON-GROGNARD MATH

Alright, so you have your keymapping programmed but now we need to talk about a difficult subject – math. Thankfully, it's not "new" math. 😊

Overall, there really is not much math needed to use this indirect fire equipment however if you take the time to read and grasp this information you will have a much better result when using this piece of equipment. More importantly, you will contribute more effectively to your team's effort.

When working with others you will need to communicate using terms like meters, degrees and MILS whether you are a Forward Observer (FO) with a direct line of sight on the target or the actual gunner. In the table below you will see that MILS is a much more accurate method for adjustment and has been used in artillery since the First World War.

UNITS OF MEASURE	CONVERSION (ROUNDED UP)
1 degree	17.77 or 18 MILS (round up to 20)
360 degrees	6400 milliradians (MILS)
Binocular View – Small Grid	10 MILS (roughly .5 degrees)
Binocular View – Large Grid	10 MILS (roughly .5 degrees)
1 Chat Channel Bar	10 MILS (roughly .5 degrees)

Table 2

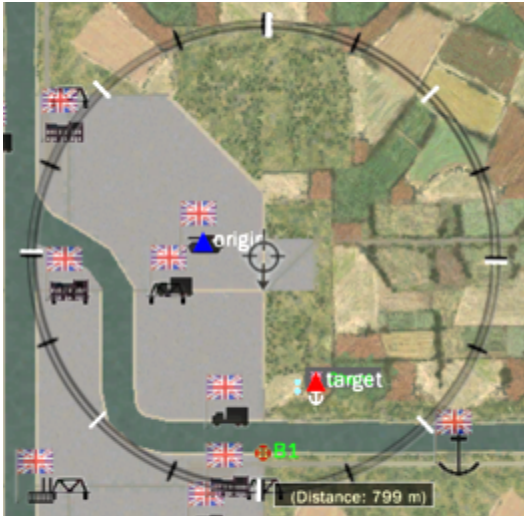
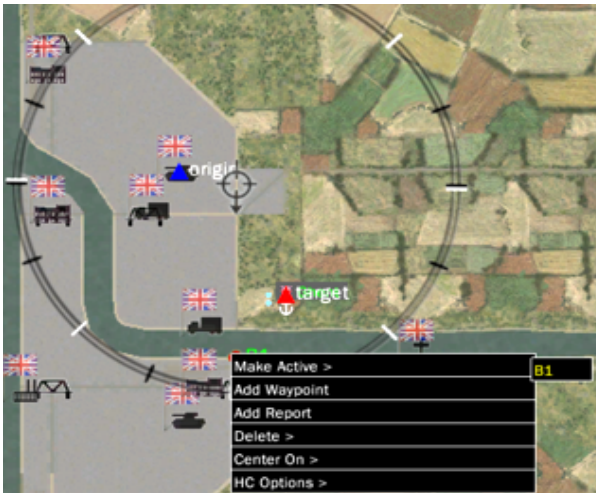
HOW TO ORIENT AND FIRE

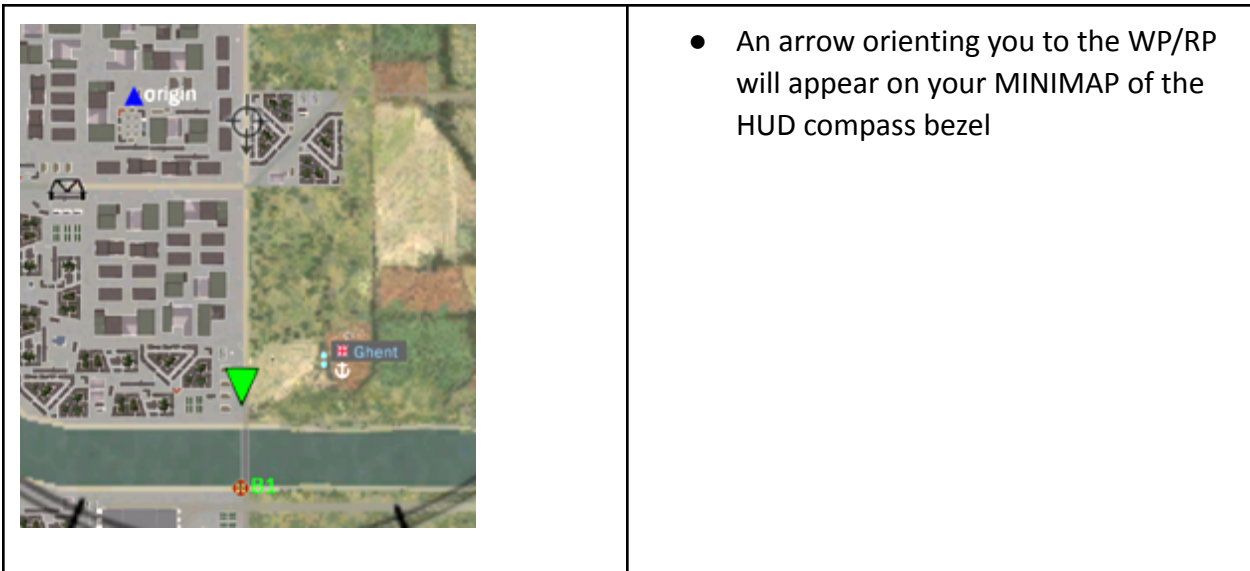
With the latest hot-fix on 1.36.18, the following items were addressed:

- identical traverse speeds for all mortars
- each individual mortar crewman can “hide” by pressing the O-key
- prior to the introduction of the American’s and Lend-Lease, French ground forces will be issued the Universal Carrier with appropriately modeled French crewmen

In addition, the half-track commanders have two new capabilities:

- the ability to rotate 360^ (previously it was 180^)
- use the rangefinder function (g-key) to receive a target bearing

	<ul style="list-style-type: none">● Maneuver your mortar carrier to a chosen spot on the battlefield● Determine your target and place a Bombard Point (B), Waypoint (WP) or Rallypoint (RP) on the target (this also determines your range to target as soon as you place the B/WP/RP)
	<ul style="list-style-type: none">● You can activate the B/WP/RP by hovering over the WP/RP and selecting “Make Active”

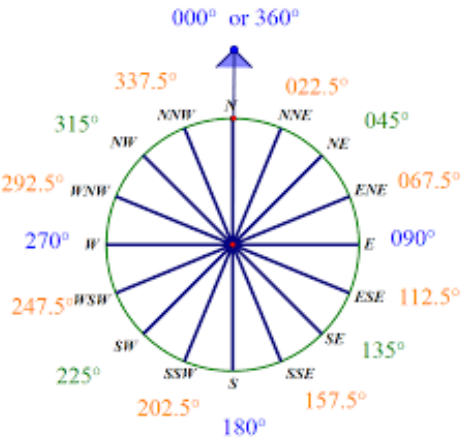


- An arrow orienting you to the WP/RP will appear on your MINIMAP of the HUD compass bezel

From pressing the (G) key from the Commander Position (#2), the crosshairs of the binoculars produce the following information from the rangefinder:

“Rangefinder determines range to be approximately 900 meters (984 yards) and bearing to target is 180 degrees.”

The bearing of 180 degrees is the direction in degrees from the Drivers position (ie vehicle position) to the target.



DO NOT CONFUSE THE ABOVE INFORMATION with your displayed information from the Gunner's position (#3)

At the Gunner's position, the left-hand image should only be used for adjustment of fire, NOT as a measurable guide for a bearing to the target. If you attempt to use the Gunner's compass on the Universal Carrier, you can inadvertently become confused and NEVER hit the target. The right-hand MINIMAP provides the proper orientation to the target and the useful zoom-in/zoom-out feature using the plus/minus feature.



NOTE: If you are dead-set on using the Gunner's compass, ALWAYS (without fail) orient your UC mortar carrier to **DUE NORTH** (0 degrees) **EVERY TIME PRIOR TO FIRING**. From the 0 degrees orientation, the rangefinder bearing information translates correctly to the Gunner's compass. Your **unzoomed** display will look like this:



See below:

Once you zoom-in from the Gunner position, the MINIMAP arrow will swing 180 degrees as it is tied to the Drivers (#1 position) viewpoint (which is looking due north or 0 degrees). This particular aspect will occur on ANY mortar carrier once you press maximum magnification.



ADJUSTMENT OF FIRE

The mortar carrier is generally oriented and ranged to the specified target so rounds are fired.

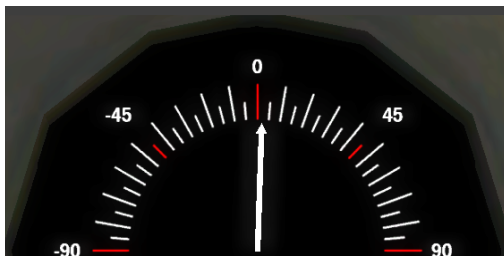


The initial rounds land to the right TWO GRIDS from the intended target (the AI MG Tower).



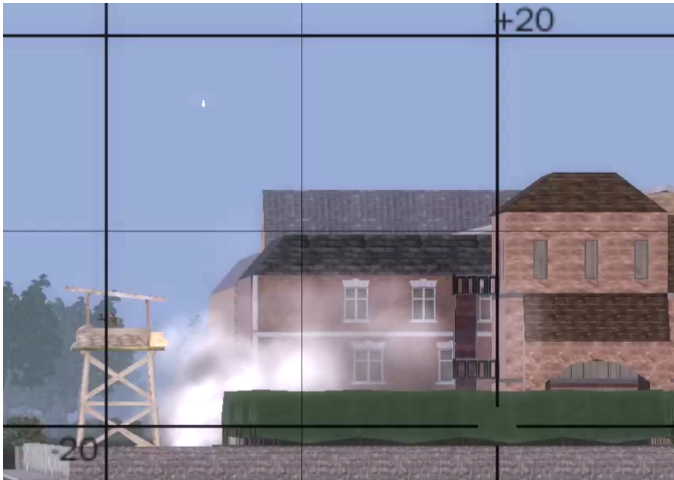
Each grid within the Commanders Binoculars is equal to 10 MILS. Two grids (10 + 10) equals 20 MILS. And we know approximately 20 MILS (17.77) equals 1 degree in a 360-degree circle from Table 2 (UNITS OF MEASURE) mentioned at the bottom of page 3.

- The mortar needs to adjust LEFT 20 MILS or 1 degree
- It is important to know what your degree of orientation is PRIOR to making adjustments as it defeats the purpose of observation of your fire
- Adjustments made using arrow keys, mouse, or joystick
- A comparison of Gunner Compass pictures above and below, shows 1 degree at less than 1,000 meters can make a difference in placing your fire accurately on the target.

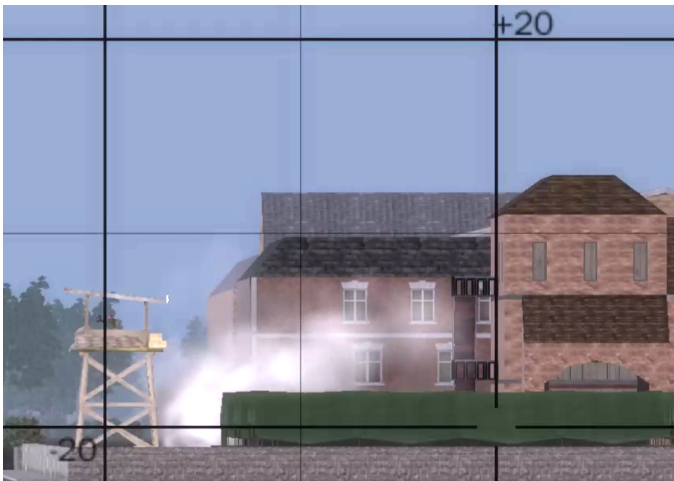


A coordinated effort in observations of fire can lead to a saturation of high-explosive rounds on the target. See the screenshots below of three consecutive rounds fired onto the target.

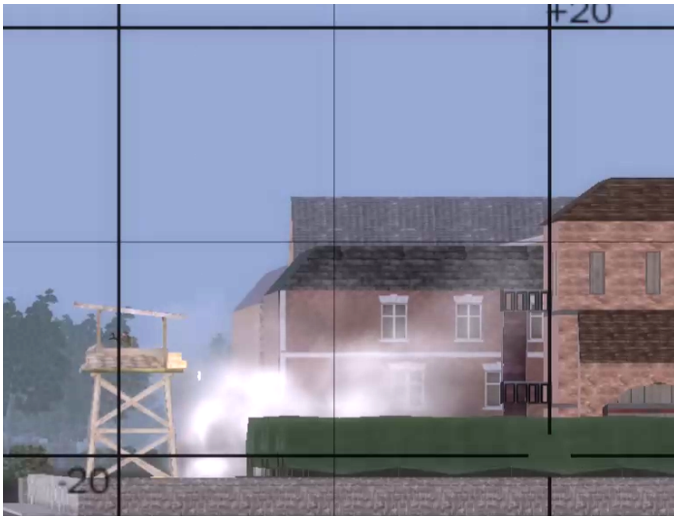
Round #1



Round #2

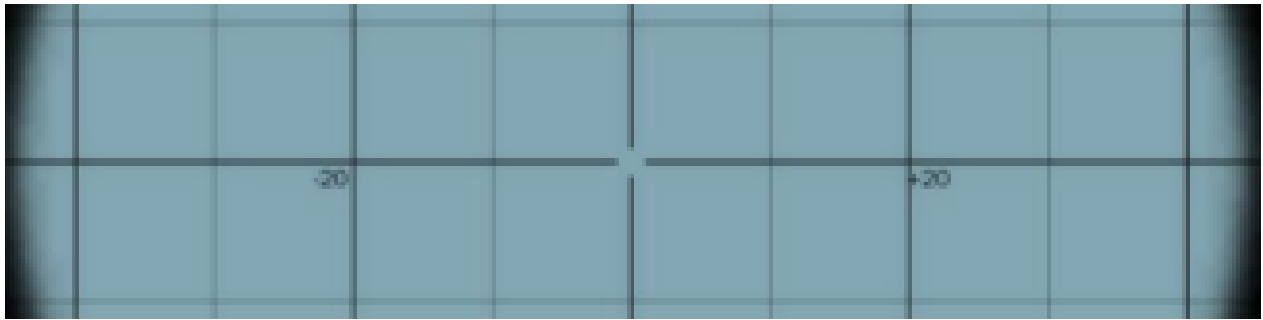


Round #3



HOW TO ADJUST FIRE - WITH & WITHOUT BINOCULARS

From your half-track commander binocular viewpoint, you have a grided view at 10 MILS and 20 MILS increments. This same measurement format will likely need to be used from other platforms with grided commander binoculars to ensure accurate indirect fire.

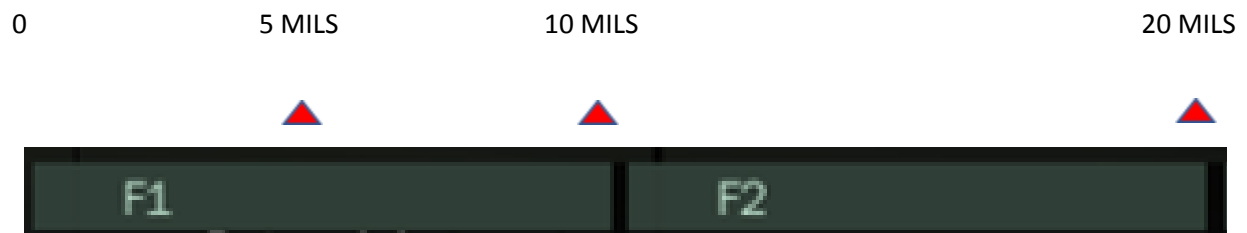


Question: What do you do if you do not have the commander view on your vehicle or instead you are an infantryman? How can you provide critical information to adjust the fire of the mortars?

Here is a quick work-around! Your communication channels, F1 thru F6, can provide a rough unit of measure as EACH CHANNEL is approximately equal to 10 MILS. The width of one-half of a channel equals 5 MILS.

EXAMPLE: FO observes rounds are FOUR comm channels to the right of the target but the range is good.

- $4 \times 10 = 40$ MILS
- From Table 2, you know that 1 degree equals 20 MILS
- Divide 40 MILS by 20 = 2 degrees
- FO advises gunner, "Range good, LEFT 2 degrees."



TOWING

Each mortar carrier can tow light anti-tank and anti-aircraft guns.

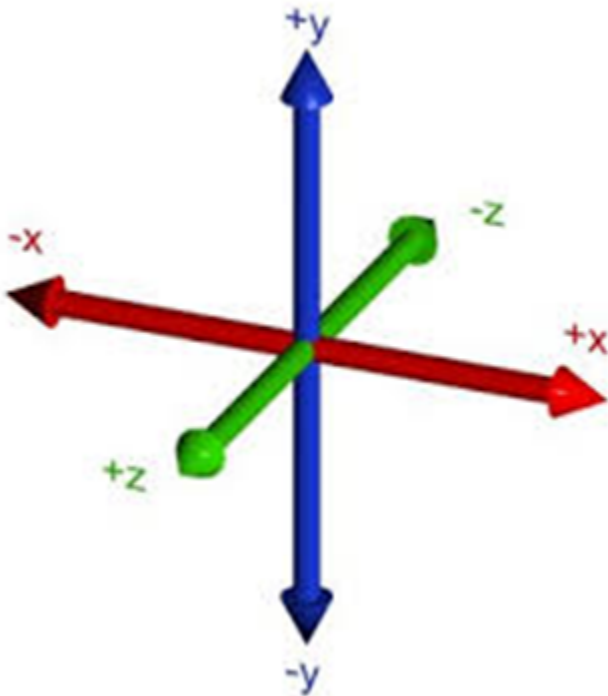
NOTE: The carrier can not deploy a mobile spawn or ammo cache.

FINAL REMINDER

Each platform has unique characteristics and to maximize the potential for each unit, having those keymaps programmed will pay immediate dividends when you receive or pre-plot your fire missions.

GUNNERY QUICK-TIPS #1 – HORIZONTAL PLANE X-AXIS VS UNEVEN TERRAIN

If possible, always fire from level terrain (X-AXIS). Currently, there is no tool or function to level your artillery piece so uneven terrain will dramatically impact your rounds.



It does not take much change in your X-AXIS horizontal orientation to cause rounds to be wildly inaccurate.

This can be very frustrating, especially in an urban environment where line of sight (LOS) is limited for the Forward Observer. Continue to work with your Forward Observer and once your rounds have been sighted by the FO, you will likely have to reposition your platform to account for the uneven terrain.

DO NOT be surprised should you have to cant 40 degrees (roughly two quadrants on your gunner's non-zoomed mini-map) to bring initial spotter rounds into the view of the FO.

Continued experimentation is ongoing to provide a general "rule of thumb" when firing from uneven terrain to be more efficient in bringing indirect fire onto the target.

****NOTE: In the near-future CRS will introduce the ability to level the mortar carrier and artillery gun platforms ****

GUNNERY QUICK-TIPS #2 – REGISTERING A TOWN (OR AREA) TARGET PRIOR TO FIRE MISSION

The Forward Observer (FO) needs to select a target for registration that is on level ground in relation to the target area. This helps establish a base elevation and allows for the gunner to factor in Vertical Interval to get an accurate range to the target.

GUNNERY QUICK-TIPS #3 – DO NOT ORIENT GUN FROM THE GUNNER ZOOMED VIEW

From the Gunner position, orient the gun to the intended target using the arrow keys (left/right) from the STANDARD (UNZOOMED) view. This is critical as when you ZOOM-IN, the gunner's perspective changes so if you orient based upon the zoomed view, your rounds will be DRASTICALLY OFF-TARGET. Once oriented, set the gun angle and fire.

GUNNERY QUICK-TIPS #4 - FIRING FROM A CANTED POSITION (OFF-SET)

The position of your gunner MATTERS when attempting to orient your mortar. If you fail to take this into consideration you will waste time and ammo while reducing your potential to help your team.

Scroll down to Table 3 and find your piece of equipment. The table will tell you whether your gunner is canted left or right. As the gunner is positioned to the left or right, the gunner's perspective to the aimed target will be skewed or canted versus the correct orientation if the gunner were looking directly over the tube. Remember this simple rule, **“Gunner left, miss left. Gunner right, miss right.”**

NOTE: The “cant orientation” also affects the Commander's perspective.

Once you recognize this and are lining up to fire the weapon, you will need to make a slight adjustment left or right. I would recommend a 1^ adjustment initially or as close to 1^ as you can using your arrow keys.

The GREATER the range to target the larger your error will be when firing the initial round(s).

GUNNERY QUICK-TIPS #5 – VERTICAL INTERVAL

Terrain elevation matters so do not forget about the VERTICAL INTERVAL (VI).

- If you are firing from a position that is a greater elevation (higher) than your target, your rounds will travel **FARTHER** as the rounds plunge longer through the firing arc. Result? You need to **DECREASE** the range to account for the elevation change and still strike the target.
- If you are firing from a position this is lower than your target, your rounds will travel **LESS DISTANCE** as the rounds do **NOT** plunge through their normal firing arc. Result? You will need to **INCREASE** the range to strike the target.

If you come across either of these situations, you will need to adjust your fire accordingly for it to be accurate.

- Estimate the elevation difference between your firing position and the target (EX: The **DIFFERENCE** in elevation between the Dinant W AB and the Dinant Cliff on the East Bank is estimated at 100 meters).
- Take the difference and divide it by two (EX: $100 \text{ Meters} / 2 = 50 \text{ Meters}$).
- Adjust the range by **DECREASING** 50 Meters.
- If you **REVERSE** the firing position to the W AB in Dinant to a target on the Dinant Cliffs, the **VERTICAL INTERVAL** still comes into play. (EX: $100 \text{ Meters} / 2 = 50 \text{ Meters}$).
- As you are firing uphill, you would **INCREASE** the range 50 Meters.

A simple rule is, **“Above your enemy, less range. Below your enemy, more range.”**







GUNNERY QUICK-TIPS #6 - POSITIVE OR NEGATIVE SLOPE OF TERRAIN (Z-AXIS)

Positive or Negative sloped terrain (+Z or -Z) which places your platform upward or downward from the target **WILL** impact your range and cause your rounds to undershoot or overshoot dramatically. Use the feedback from a Forward Observer to determine the fall of your rounds.

Also, remember to factor in Vertical Interval as needed.

Remember **“Gunner left, miss left. Gunner right, miss right.”**

GUNNER POSITION GAUGES: TRAVERSE & TUBE ANGLE

COUNTRY	TRAVERSE - ORIENTATION (LEFT/RIGHT)	TUBE ANGLE FOR DISTANCE (UP/DOWN)
DE	 <p>A traverse gauge with a central vertical red line at 0. The scale is linear with major markings at -15 and 15. The needle points to 0.</p>	 <p>A tube angle gauge with two scales. The top scale is 'Range / M x 1000' with markings from .5 to 1.7. The bottom scale is 'Tube Angle' with markings from 85 to 40. The needle points to approximately 1.2 on the range scale and 70 on the tube angle scale.</p>
FR / US	 <p>A traverse gauge with a central vertical red line at 0. The scale is linear with major markings at -30 and 30. The needle points to 0.</p>	 <p>A tube angle gauge with two scales. The top scale is 'Range / M x 1000' with markings from .4 to 2.5. The bottom scale is 'Tube Angle' with markings from 85 to 40. The needle points to approximately 1.4 on the range scale and 70 on the tube angle scale.</p>
UK / FR	 <p>A circular traverse gauge with a central vertical red line at 0. The scale is circular with major markings at -45, -90, -135, 45, 90, 135, and 180. The needle points to 0.</p>	 <p>A tube angle gauge with two scales. The top scale is 'Range / M x 1000' with markings from .4 to 2.1. The bottom scale is 'Tube Angle' with markings from 85 to 40. The needle points to approximately 1.1 on the range scale and 70 on the tube angle scale.</p>

- Orient your platform to the Target thru the Driver's position
- From the Gunner position, press M for the map (you must be at your general view, not zoomed). It should look like this:



- From here you can use your LEFT ARROW or RIGHT ARROW to fine-tune the tube onto the target.
- NOW you can zoom your gunner view, press M to double-check the range to target. Adjust the range to hit your target (considering Vertical Interval, Positive/Negative Slope (Z-Axis), etc) using the UP ARROW or DOWN ARROW.
- Before you start firing, make a mental note of what your TRAVERSE (Orientation) Gauge is set to hit the target. You can memorize this info, use the chat bar to record your data, or use the old pen & paper. It becomes hard to recall all the data when targets are shifting.

PRO-TIP: The Free-look "Bug"

Sometimes when you are pressing M and moving to other crew positions, etc . . . the free-look can sometimes stick OR when you try to orient the tube from the gunner position the map view will skip and the tube will not traverse.

How to reset or clear this "bug"? Go to another crew position then go back to the #3 gunner position and press M then attempt to traverse the weapon. You may have to repeat this one or two times to clear the issue.

WEAPON CAPABILITIES

	DE	FR	UK / FR	US
RANGE – MAX	2,400M	3,000M	2,500M	3,000M
RANGE – MIN	500M	400M	400M	400M
TOTAL TRAVERSE	30 DEGREES	60 DEGREES	360 DEGREES	60 DEGREES
AMMO – HE	50	60	37	60
AMMO – SMK	16	37	15	37
RATE OF FIRE (ROF)	EVERY 5 SEC	EVERY 5 SEC	EVERY 5 SEC	EVERY 5 SEC
TIME OF FLIGHT (TOF)	30+ SEC	30+ SEC	30+ SEC	30+ SEC
SECONDARY ARMAMENT	MG34	.50 CAL	N/A	.50 CAL
COMMANDER OFF-SET	LEFT	RIGHT	RIGHT (REAR)	RIGHT
GUNNER OFF-SET	RIGHT	LEFT	LEFT	LEFT

Table 3

LATERAL ADJUSTMENTS IN THE TARGET AREA

RANGE	DEGREES	MILS	LATERAL ADJUSTMENT
1,000M – CHANGE OF	1^	20	25M
	2^	40	50M
	3^	60	75M
	4^	80	100M
	5^	100	125M
1,500M – CHANGE OF	1^	20	38M
	2^	40	75M
	3^	60	113M
	4^	80	150M
	5^	100	188M
2,000M – CHANGE OF	1^	20	50M
	2^	40	100M
	3^	60	150M
	4^	80	200M
	5^	100	250M
2,500M – CHANGE OF	1^	20	75M
	2^	40	150M
	3^	60	225M
	4^	80	300M
	5^	100	375M
3,000M – CHANGE OF	1^	20	100M
	2^	40	200M
	3^	60	300M
	4^	80	400M
	5^	100	500M

Table 4

GERMAN – 251/2 Ausf. C 81-MM MORTAR



	DE	FR	UK	US
RANGE – MAX	2,400M	3,000M	2,500M	3,000M
RANGE – MIN	500M	400M	400M	400M
TOTAL TRAVERSE	30 DEGREES	60 DEGREES	360 DEGREES	60 DEGREES
AMMO – HE	50	60	37	60
AMMO – SMK	16	37	15	37
RATE OF FIRE (ROF)	EVERY 5 SEC	EVERY 5 SEC	EVERY 5 SEC	EVERY 5 SEC
TIME OF FLIGHT (TOF)	30+ SEC	30+ SEC	30+ SEC	30+ SEC
SECONDARY ARMAMENT	MG34	.50 CAL	N/A	.50 CAL
COMMANDER OFF-SET	LEFT	RIGHT	RIGHT (REAR)	RIGHT
GUNNER OFF-SET	RIGHT	LEFT	LEFT	LEFT

****SMOKE ROUNDS MAX RANGE: 2,500M****

GERMAN – 251/2(C) 81-MM	TOTAL TRAVERSE: 30-degrees (540 MILS)	
DEGREES	KEYMAP TRAVERSE	MILS (ROUNDED UP)
0.5	1 PRESS	9 (10)
1.0	2 “ “	18 (20)
2.5	5 “ “	45 (50)
5.0	10 “ “	90 (100)
7.5	15 “ “	135 (150)
10.0	20 “ “	180 (200)
12.5	25 “ “	225 (250)
15.0	30 “ “	270 (300)

FRENCH - M21 81-MM MORTAR



	DE	FR	UK	US
RANGE – MAX	2,400M	3,000M	2,500M	3,000M
RANGE – MIN	500M	400M	400M	400M
TOTAL TRAVERSE	30 DEGREES	60 DEGREES	360 DEGREES	60 DEGREES
AMMO – HE	50	60	37	60
AMMO – SMK	16	37	15	37
RATE OF FIRE (ROF)	EVERY 5 SEC	EVERY 5 SEC	EVERY 5 SEC	EVERY 5 SEC
TIME OF FLIGHT (TOF)	30+ SEC	30+ SEC	30+ SEC	30+ SEC
SECONDARY ARMAMENT	MG34	.50 CAL	N/A	.50 CAL
COMMANDER OFF-SET	LEFT	RIGHT	RIGHT (REAR)	RIGHT
GUNNER OFF-SET	RIGHT	LEFT	LEFT	LEFT

****SMOKE ROUNDS MAX RANGE: 2,500M****

FRENCH – M21 81-MM	TOTAL TRAVERSE: 60-degrees (1,080 MILS)	
DEGREES	KEYMAP TRAVERSE	MILS (ROUNDED UP)
1	1 PRESS	18 (20)
5.0	5 " "	90 (100)
10.0	10 " "	180 (200)
15.0	15 " "	270 (300)
20.0	20 " "	360 (400)
25.0	25 " "	450 (500)
30.0	30 " "	540 (600)

UK / FR – UC 3-INCH MORTAR



	DE	FR	UK	US
RANGE – MAX	2,400M	3,000M	2,500M	3,000M
RANGE – MIN	500M	400M	400M	400M
TOTAL TRAVERSE	30 DEGREES	60 DEGREES	360 DEGREES	60 DEGREES
AMMO – HE	50	60	37	60
AMMO – SMK	16	37	15	37
RATE OF FIRE (ROF)	EVERY 5 SEC	EVERY 5 SEC	EVERY 5 SEC	EVERY 5 SEC
TIME OF FLIGHT (TOF)	30+ SEC	30+ SEC	30+ SEC	30+ SEC
SECONDARY ARMAMENT	MG34	.50 CAL	N/A	.50 CAL
COMMANDER OFF-SET	LEFT	RIGHT	RIGHT (REAR)	RIGHT
GUNNER OFF-SET	RIGHT	LEFT	LEFT	LEFT

****SMOKE ROUNDS MAX RANGE: 2,500M****

UK – UC 3-INCH MORTAR	TOTAL TRAVERSE: 360-degrees (6,400 MILS)	
DEGREES	KEYMAP TRAVERSE	MILS (ROUNDED UP)
1.7	1 PRESS	30
5.0	3 " "	90 (100)
10.0	6 " "	180 (200)
15.0	9 " "	270 (300)
20.0	12 " "	360 (400)
25.0	15 " "	450 (500)
30.0	18 " "	540 (600)
35.0	21 " "	630 (700)
40.0	24 " "	720 (800)
45.0	27 " "	810 (900)

US – M21 81-MM MORTAR



	DE	FR	UK	US
RANGE – MAX	2,400M	3,000M	2,500M	3,000M
RANGE – MIN	500M	400M	400M	400M
TOTAL TRAVERSE	30 DEGREES	60 DEGREES	360 DEGREES	60 DEGREES
AMMO – HE	50	60	37	60
AMMO – SMK	16	37	15	37
RATE OF FIRE (ROF)	EVERY 5 SEC	EVERY 5 SEC	EVERY 5 SEC	EVERY 5 SEC
TIME OF FLIGHT (TOF)	30+ SEC	30+ SEC	30+ SEC	30+ SEC
SECONDARY ARMAMENT	MG34	.50 CAL	N/A	.50 CAL
COMMANDER OFF-SET	LEFT	RIGHT	RIGHT (REAR)	RIGHT
GUNNER OFF-SET	RIGHT	LEFT	LEFT	LEFT

****SMOKE ROUNDS MAX RANGE: 2,500M****

US – M21 81-MM	TOTAL TRAVERSE: 60-degrees (1,080 MILS)	
DEGREES	KEYMAP TRAVERSE	MILS (ROUNDED UP)
1	1 PRESS	18 (20)
5.0	5 “ “	90 (100)
10.0	10 “ “	180 (200)
15.0	15 “ “	270 (300)
20.0	20 “ “	360 (400)
25.0	25 “ “	450 (500)
30.0	30 “ “	540 (600)

FORWARD OBSERVER GOLDEN RULES

- If at all possible, spawn on the same mission as your gunner to prevent any confusion.
- Don't get killed. It takes time to get back into position and that slows down accurate artillery fire to enemy targets. The next available trooper may NOT have your expertise in being a Forward Observer so don't be a "hero". Your job is to avoid the enemy and provide accurate information to the gun(s).
- You do not have to be close to the target to be effective.
- Mark all observed rounds on your map so your gunner can see where rounds are landing in relation to the selected target.
- Your gunner is blind to what you see so if he is inaccurate he needs more information from you.
- All information needs to be communicated from the gunner's perspective. This ensures no confusion as to what is being told; otherwise, your information has to be transposed and the gunner has enough on his collective plate to have to remember to do a "180" on the information given so help him out.
- Your teammate is firing an AREA weapon so anything with 25M of the target is a huge "W". Enjoy the hard-fought success because when you get your gunner dialed in and there are targets . . . it is GLORIOUS to watch all that HE exploding on the enemy.

CRITICAL

The Forward Observer (FO) needs to select a target for registration that is on level ground in relation to the target area. This helps establish a base elevation and allows for the gunner to factor in Vertical Interval and is more efficient in establishing an accurate range to additional targets in the area.