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THE USE OF THE .50" HEAVY MACHINE GUN IN THE 50 YEARS AHEAD

1. .50" Heavy Machine Guns (HMG) last a long time. Ones from World War Two are still in use today, fifty years later. The basic gun is kept but is updated with a better barrel, a better mount and a better sight.

2. Ammunition will be improved during the life of the gun but since it is expended in training, old stocks are not wasted when new natures are bought. In anything but a world war it is difficult to replace the equipment but easy to update the ammunition.

3. The sight type(s) to be bought depend on the use of the gun which, in turn depends on the types of engagement (target, range, on the surface or in the air) and on the ballistics of the ammunition to be used.

4. It is impossible to foresee the nature of the engagements over a span of fifty years but clearly the fire can be surface to surface, air to surface (surface can include sea as well as the ground). The targets can be lightly armoured vehicles, soft vehicles, men in the open, men under various forms of cover, aircraft, helicopters and boats. Certainly we can expect an enemy to be widely equipped with night vision aids especially Night Vision Goggles (NVG). So the sights bought must be suited to engaging all these targets by day and by night.

5. Of course it would be possible to optimise a range of sights so that each type of sight suited each type of engagement. But when the cost of this, and the problem of having the right type of hand, and zeroed to the gun, in time to engage the particular target, are calculated, the prudent OR officer should seek a more practical solution.

6. This has been outlined in our EyeImp paper and in Fraser Scott's talk to the 1993 European Small Arms Symposium. For the .50" HMG, Ring Sight LC-40-100-NVG is the general purpose solution. It deals with all the likely targets:-

a. Stationary targets

These can certainly be engaged with sufficient accuracy at least to 1500 metres as has been found by GIAT both in France and in the Middle East (the latter using soldiers of the country). The LC-40-100 should have an elevation graticule to match the weapon ballistics. A matching laser rangefinder is being designed to provide accurate range if thought necessary: this rangefinder can have a ballistic unit to provide a false range for ballistic solutions other than the one chosen for the graticule (if, in the future, time fuses are provided for the .50", this ballistic unit can provide the time of flight).

At night the sights is used with NVG. Its aperture is larger than that of NVG and its dichroic beamsplitter provides minimum degradation of the light used by them.

The problem of engaging targets at long range is not that of aiming the sight but of finding and identifying the target in the first place. For this magnification may be required: and we recommend the use of Head Mounted Binoculars (HMB). The LC-40-100 sight can be used with HMB since there is plenty of aperture and eye relief. So the gunner can find, identify and engage a long range target without removing his HMB.

b. Moving targets on the ground or in the sea

For these the LC-40-100 is provided with lead marks on the graticule so that the gunner, having estimated crossing speed and direction, can aim accordingly for both lead and elevation.

He observes the strike (while maintaining his aim) against the graticule pattern and puts this spot on the target for the next rounds (“burst on target”) thus taking out the error (he has established the “correction of the movement” including target movement). It will be found that gunners quickly learn to do this effectively. Of course the same technique can be used with stationary targets to correct for wind etc.

He can engage moving targets at night using NVG and, if really needed, at longer ranges using HMB.