

 <p><b>DEFENCE ESTATES</b> Delivering Estate Solutions to Defence Needs</p>	<p align="center"><b>TECHNICAL ADVISORY SECTION (ROYAL ENGINEERS) (TAS(RE))</b></p> <p>Headquarters Defence Training Estate Blenheim Hall Land Warfare Centre, Warminster, Wiltshire BA12 0DJ Tel: 0044 1985 222434 FAX : 2259 Email: <a href="mailto:frank.compton251@land.mod.uk">frank.compton251@land.mod.uk</a></p>	
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**RANGE ADVICE NOTE 2/10**

**GALLERY RANGE (GR) 50m FIRING POINT**

See Distribution

Your reference:

Our reference: 28-14-01

Reference:

Date 9 Mar 2010

A. JSP 403 Vol.2 Change 5.

**Background**

1. Several RAU are quite rightly looking to meet the new AOSP 50m practices on GR keeping expenditure down to the minimum. One way to achieve this on those ranges without shooting in boxes already in the mantlet is to continue to use the targets on the mantlet. In developing the new AOSP practices on GR the principles used for LNV shoots with targets mounted on the range floor was adopted. High attrition in the mantlet is not a new issue as can be seen from the need to install dense rubber blocks in mantlets over the last 5 years or so. Many ranges have installed shooting in boxes in mantlets to overcome high maintenance problems prior to the new AOSP shoots being introduced. In determining alternate options for 50m practices on GR it is necessary to explain as far as possible the justification for the LDA of 1830m from the GR target line.

**Origins of Gallery Range Design.**

2. There is no formal design detail in the TAS(RE) archive relating to the gallery design however what is understood is explained below.

3. The primary element on the GR that justifies the LDA is the elevated Cone of Fire (CofF) centred at targets on top of the mantlet. Firing from established, elevated firing points at the elevated targets the chance of ground ricochet is minimised. Low angled ricochet with the potential to re stabilise and travel beyond the LDA is expected to be captured by the stop butt. High angled ricochet will cause rounds to tumble and fall within the LDA.

4. The worst case Quadrant Elevation (QE) on a GR is that from the prone position on the 100 firing point to targets on the mantlet. For 5.56mm and 7.62mm ammunition a QE of 70mils (the QE for a standard GR on a perfectly horizontal level) will take the rounds at the top of the Cone of Fire to the end of the GR danger area. Also weapons are zeroed from 100. For these reasons the stop butt criteria for GR is derived from the 100 firing point.

5. LNV shoots at targets mounted on the range floor are possible only back to 75m. Beyond 75m stable ground ricochet could clear the stop butt and leave the LDA.

**Options for the new 50m practice on GR.**

6. **Standard Option.** The standard option set out in JSP 403 is to establish the 50m firing point and place targets in lane, in front of the mantlet. A potential alternative to this is to establish the firing point at 60 – 75m and targets in lane 50m in front of that firing point. In order to ease de leading, shooting in boxes should be provided where mantlets are not constructed from sand.

7. **Full Danger Area Ranges.** On GR where there is already a 2900m RDA, providing the 150mils (110mils to target centre) for 2900m RDA is not exceeded, targets in the gallery or in FETs on the mantlet may be engaged from 50m. This includes those ranges already on a combined GR / FDA template.

8. **Negative QE.** On GR such as those at Tregantle with negative QE, engaging targets in the mantlet may not exceed the 70mils to target centre required to meet LDA criteria. TAS(RE) should be asked to confirm QE in these cases.

9. **LDA Extension.** LDA extensions are only currently possible to overcome QE issues on compliant GR from original GR firing points. As the 50m firing point was never envisaged in the original range design TAS (RE) cannot assume that an extension to cover a high QE from the 50m firing point is appropriate. Ranges that seek this solution will need to be assessed by WDAAPS.

10. **GR Approved Range Status following WDAAPS.** Where a GR is authorised as an Approved Range based on WDAAPS advice the range will need to be re assessed to include practices from the 50m firing point.

*Original Signed*

F S Compton  
Technical Officer  
TAS(RE)

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