

## CHAPTER 26

### AIR RIFLE RANGES

#### INTRODUCTION

2601. **Definition.** Air rifles in this chapter are defined as weapons which fire lead pellet using compressed air provided by either a spring loaded piston or a compressed air reservoir and rated at not more than 12 ft lbs (16.26J).

2602. **Aim.** This chapter describes the design and construction required for air rifles to be fired on existing and temporary ranges. It covers:

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2603. **Purpose.** Air rifles are not issued military SA and air rifle ranges are not scaled as a separate training facility. They are provided out of various funds, in particular for Cadets, Youth Training Teams and Display Teams.

#### DANGER AREAS

2604. **Indoor Ranges.** The principal dangers from air rifles are pellets bouncing back from striking a hard or reflective surface, such as the rubber anti-splash curtain of a rimfire range (see paragraph 2609).

2605. **Outdoor Air Rifle Range - Layout and Danger Area.** The layout and RDA for a 6 lane outdoor Air Rifle Range established on a grassed area is shown at Figure 26-1.

#### DESIGN

2606. **Criteria.** Ranges on which air rifles are fired as part of authorised military training have to conform to the requirements of this Chapter. The normal engagement distance for air rifles is 5.5m. The target centre is used to determine the dimensions of any protective elements. If there is more than one target height, the outer points of aim are used. Targets should be mounted so that the target centre produces a depressed LofS.

## CONSTRUCTION

### EXISTING 25 M INDOOR RIMFIRE RANGES

2607. **Bounce-back.** 25m indoor ranges used for air rifle shooting require an essential modification to ensure that the anti-splash curtain or the bullet catcher does not cause pellet bounce-back. The anti-splash curtain provided for .22" ammunition must be removed or a separate pellet stop set up in front of the anti-splash curtain. Air pellets are known to bounce off softwood.

2608. **Bullet Catcher.** The existing angled plate and sand bullet catcher designs are safe for use. However, flat plate bullet catchers will cause pellet bounce back and must be covered with a suitable anti splash back material that allows the pellet to pass through such as hessian sheet or replaced with a purpose designed pellet stop. NSRA and similar proprietary bullet traps are safe for use with issued cadet air rifles.

2609. **Pellet Stop Materials.** Bounce back is most likely to occur from the wide variety of pellet stop materials used behind pellet catchers. Softwood is particularly unreliable as an anti bounce back pellet stop. Ridged materials angled at 45 degrees will deflect pellets down to the floor. If vertical rigid pellet stops or Linatex or similar curtains are used they must be faced with a hessian or similar sheet suspended at least 50 mm clear of the backing material. Pellets striking the hessian that is in direct contact with the backing material such as around the frame or bracing may produce bounce back. Where porous materials such as Hessian are used in a dual use range they are to be removed from the range after use.

2610. **Pellet Stop Size.** The minimum size for a pellet stop is calculated by adding a safety angle to the LofS horizontally on each flank and vertically. The safety angle for ranges built before 1998 is 71 mils (4°) and 80 mils (4.5°) for ranges built thereafter.

a. **Height.** The pellet stop extends from the floor to a point at least 80 mils above the highest LofS which is established in accordance with Chapter 2

b. **Width.** From each flank LofS an angle of 80 mils projected from the firing point establishes the minimum width.

2611. **Targetry.** Only penetrable or light fall-when-hit targets are to be used. Targets are to be mounted on softboard, light cellular plastics or on wires stretched across the pellet stop. Light pins or rubber bands are used to secure the targets as drawing pins with large heads are hazardous. Target retrieval systems require careful design so that no part of it within the pellet stop area causes bounce-back. TAS(RE) can also advise on proprietary target systems that are available.

2612. **Lighting.** Target lighting can be provided by fluorescent strip lights with a reflector behind. They may be set on the range floor with an angled baffle to deflect pellet strike or suspended above the bullet catcher height.

2613. **Prone Firing Positions.** When adopting the prone firing posture at any range, the firer should be 450 mm (T) off the range floor (see Chapter 2 for definition). Firers are spaced 1-1.5 m apart.

### TEMPORARY INDOOR RANGES

2614. **Construction.** When a purpose built range is not available, any room or building 7.5m or more in length may be adapted to a temporary range. The fabric or cladding of all normal buildings will contain an air rifle pellet. It requires only the openings, such as down-range windows and vents, to be covered and all down-range doors to be bolted from the inside. Openings should be covered with:

- a. **Range Sides.** 5 mm thick plywood, dense particle board or similar material.
- b. **Direct LofF.** 10 mm thick soft board or dense particle board or softwood / ply protected with loose hung hessian.

2615. **Pellet Stop and Firing Point.** The pellet stop and firing point are the same as in paragraphs 2609, 2610 and 2613.

2616. **Clear Line of Sight.** Care is required to ensure that there are no obstructions, such as columns, partitions or fixtures, near the LofS. A clear height of at least 600 mm above the LofS at the firing point and 250 mm above the LofS at the target is essential. Sides must provide a minimum of 500 mm clearance from each flank LofS.

### RANGE IN A VEHICLE

2617. **General.** A range mounted in the back of a vehicle is often required for displays and recruiting purposes. Firing is normally from the standing supported position with one to four firers leaning into the range protected structure.

2618. **Construction.** With engagement distances as close as 5.5m anti bounce back measures are important. Pellet catcher and pellet stop as described in paragraphs 2608 & 2609 are to be provided with the pellet stop covering the complete back wall. To stop pellets leaving the range, the sides and top of the structure are to be either 5mm thick plywood, dense chip or particle board, or 1 mm thick MS sheet. The height of the top or roof from the range floor is not to be less than 1m. A pellet stop as described in paragraph 2609 covers the complete back wall. Firer spacing may be reduced to 750mm for the standing supported position.

2619. **Targetry and Lighting.** A target retrieval system operates below the range floor with a wire target holder running in a slot in the floor. Targets and target mounting are the same as stated in paragraph 2611. If lights are required, they are recessed into the roof with an angled baffle to stop the edges causing bounce-back.

### TENT RANGE

2620. **Pellet Stop and Targetry.** The pellet stop may be constructed with straw bales or with the materials specified in paragraph 2609. The dimensions are to

be in accordance with paragraph 2610. Targets and target mountings are the same as paragraph 2611.

2621. **Sides and Roof.** Consideration must be given to protecting the sides and roof of the tent against wild shots. Any ricochet inducing surfaces between the firing point and the target are to be protected.

2622. **Firing Points.** The most suitable firing position is standing supported by a bench or table set at the appropriate height. A raised platform 450 mm (T) high can be used for prone firing.

## **OPEN NO DANGER AREA RANGES**

### **2623. Stop Butt Height**

a. **10 m Range.** On an open 10 m NDA range where the LofS in the standing position is either horizontal or depressed, a stop butt height of 2.3 m is required to cater for:

- (1) A maximum competition target centre height of 1400 mm ( $\pm 200$  mm).
- (2) 800 mm, the 80 mils safety angle at 10 m (see also paragraph 2610).

b. **Ranges Greater than 10 m.** Ranges in excess of 10 m will require a higher wall to a maximum of 3 m as at longer ranges the pellet trajectory falls off steeply.

2624. **Stop Butt Width.** The stop butt has to be wide enough to cover the intervals between firers and the 80mils safety angle from each flank LofS. At 10m the latter will be 800 mm, which in practice should be increased to 1m to allow an extra measure of safety for the wind effect on pellets, and at increased ranges it will be greater (see also paragraph 2610).

2625. **Firing Point.** To retain the depressed LofS from the prone and kneeling positions, a raised firing point 450 mm (T) high should be constructed and the target centre height set between 300 and 600 mm above the range floor.

## **FIRING OUTDOORS**

2626. When firing outdoors without NDA structures the WDA template at Figure 26 -1 is to be applied

## COMMUNICATIONS

2627. A means of summoning the emergency services is to be available.

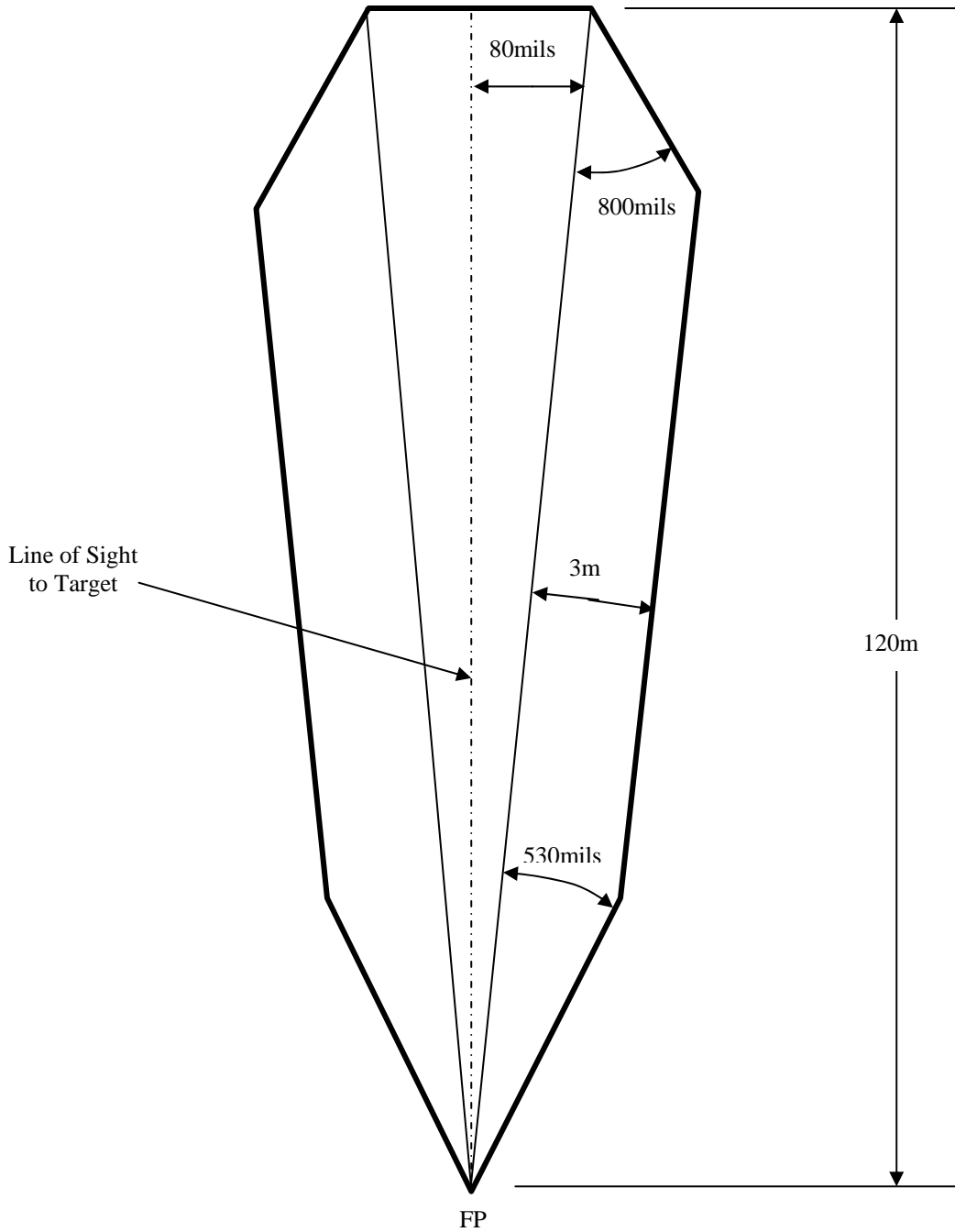
## MAINTENANCE

2628. As well as normal range maintenance requirements, air rifles create the additional tasks of:

- a. **Lead.** After each use pellets are to be removed and the range cleaned to prevent a build-up of lead contamination. Lead is to be disposed of in accordance with current instructions (see Chapter 30).
- b. **Pellet Stop.** The pellet stop requires careful inspection to ensure that it will not cause bounce-back.
- c. **Hygiene.** The firers, as they handle lead pellets, are to be instructed on the danger of lead poisoning and to observe strict hygiene in eating, drinking and smoking. In addition hand washing facilities are to be available.

**Not to Scale  
Not to be Copied**

**Reference:  
ITDU Report 08/00 dated Mar 00  
SASC /10/2 dated 15 May 00**

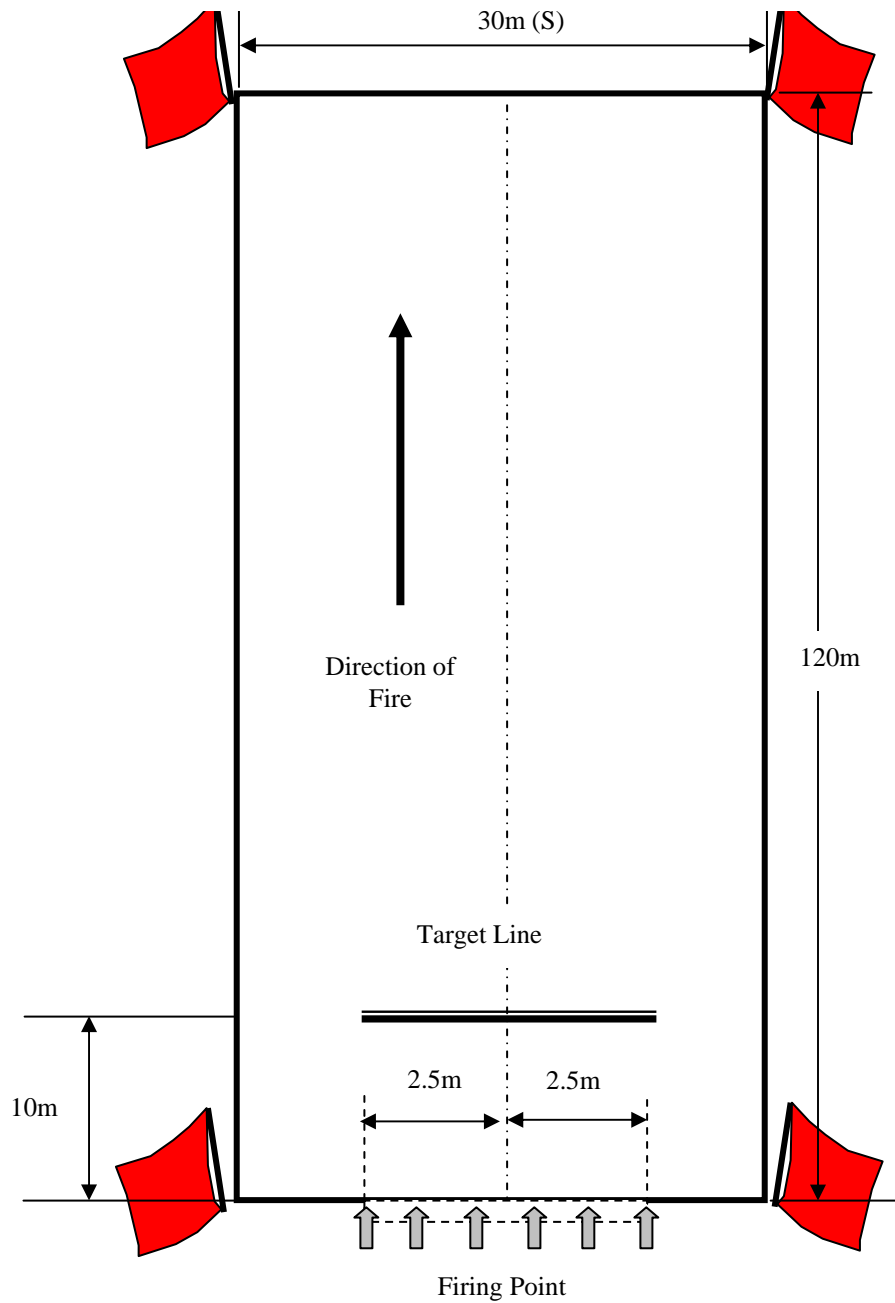


**Figure 26-1. WDA Template, Air Rifle**

**Not to Scale**  
**Not to be Copied**

**Reference:**  
**ITDU Report 08/00 dated Mar 00**  
**SASC/10/2 dated 15 May 00**

The diagram shown here represents a 6-lane Air Rifle Range allowing 1m between firers. The dimensions are only applicable to ranges established on a grassed area.



- Restrictions on use**
1. Only for use with .177" Air Rifles with a firing pressure of no greater than 12ft/lbs.
  2. Firing is only permitted from the established firing point.
  3. No fire and movement.
  4. The target line is to be established at 10m forward of the firing point.
  5. Minimum distance between firers 1m.
  6. Target heights should reflect the firing position used, thereby ensuring the weapons remain approximately parallel to the ground.

**Figure 26-2. Air Rifle Range, Layout, Including Range Danger Area (RDA).**