Chapter 24

INFANTRY ANTI-TANK WEAPON RANGES

INTRODUCTION

2401. **Aim.** This chapter sets out the range design and construction requirements for two infantry anti-tank weapon systems NLAW, Javelin. The ranges are likely to be suitable for existing and replacement weapon systems. It covers in particular:

SECTION 1 - NLAW

GENERAL

2402. **Introduction.**

a. NLAW. The NLAW is a rocket with a High Explosive Anti-Tank (HEAT) warhead. In training it is fired on a purpose-built range, the main components of which are shown in Figure 24-1.

b. NLAW. These weapons are designed for use in urban areas and from vehicles. For basic training, the purpose build LAW 94 HEAT range would be suitable.

RANGE DANGER AREAS

2403. **Weapon Danger Area Template.** The WDA template for the NLAW HEAT round is shown in Figure 24-4.

a. **Clear Zone.** The clear zone extending 220 m forward from the firing point at an angle of 192 mils either side of the LofF is to be clear of all obstructions that may initiate the missile including targets, trees, shrubs or outcrops of rock.

b. **Backblast Area.** The backblast area extends 100 m behind the firer over an arc 455 (800 mils) either side of the LofF. The area has to be flat or falling away from the firing point and completely clear of any obstructions.

c. **Burst Safety Distances.** Behind each firing point and centred on the LofF are the N and RBSD with radii of 315 and 220 m respectively (see Figure 24-2). Refer to Reference B (Pamphlet 21) for the application of BSD.

2404. **Impact Areas.** Refer to Chapter 2.

SITING

2405. The site for a LAW range has to ensure that:

a. There is an unobstructed LofS from the firing bay to each target.

b. Targets are positioned so that misses detonate on a stop butt or rising ground behind the target.

c. The backblast area should have no obstructions.

d. The RCO should be best positioned to conduct practice safely.

CONSTRUCTION

2406. **Targets.** Targets will normally be AFV hulks but they may be solid simulations with a facing of a minimum thickness of 2.5 mm MS to ensure detonation. Further details of anti-tank targets and movers are contained in Chapter 29. No target may be less than 220 m from the firing bays, which is the minimum training engagement distance. Although battle engagement is possible up to 500 m, practice engagements with HEAT missiles do not normally exceed 300 m in order to increase the probability of hit.

2407. **Initiating Stop Butt.** There should be a bank or rising ground behind the targets to catch and initiate rounds which miss the target. If not, an initiating stop butt should be constructed at 270 mils (15^0) (S). Where topography inhibits locating blinds the risks should be assessed and consideration given to establishing a controlled or closed impact area (see Chapter 2).

2408. **Range Floor.** The range floor must provide a clear LofS to the target with no ridges or high points which could cause a missile to ground. Ideally it should be concave. Raising the target on a bank may also help.

2409. **Firing Bays.** Up to three bays, the maximum an RCO can control, may be provided. Bays are constructed to protect firers and safety supervisors from the effects of an in-flight premature detonation of the missile

and from the reflected noise off the firing bay wall. Bays are sited at least 10 m apart either in a straight line or slightly angled to direct backblast away from adjacent bays. The wall may be constructed in sandbags or 215 mm hollow concrete blocks filled with 10 kN/m^2 concrete and reinforced with 12.5 mm MS bar. The weapon is fired through an aperture with raised side walls which provide additional protection to the safety supervisor. The high sound pressure level reflected from the wall is reduced by angling the upper section of the protective wall outwards. The protective wall may be constructed with revetted earth or sandbags or timber for the upper angled section. The floor and area behind are to be firm and level. The surface is to minimise obscuration and to provide a safe footing, for which dry lean concrete on a 150 mm deep hardcore bed is suitable.

2410. **Observation Post.** An open OP, normally a tower or raised platform, may be provided clear of the backblast area so that the RCO can conduct practices safely. The walls of the OP should be 1.35 m high and those facing the firing point should provide a similar level of protection as at the firing point.

SECTION 2 –JAVELIN

INTRODUCTION

2410. **General.** The Javelin is a free flight missile with top attack capability.

RANGE DANGER AREAS

2411. **Weapon Danger Area Template.** The WDA for Javelin is at Figure 24-2 with the firing point danger zone illustrated at Figure 24-3.

SECTION 3 - COMMUNICATIONS and MAINTENANCE

COMMUNICATIONS

2412. **External.** A means of summoning the emergency services, ideally a land laid telephone, is to be available.

2413. **Internal**

a. **NLAW.** Telephones or radios are required between the CP, firing points, target and range controls.

b. **Javelin.** A communication system is not essential as the RCO can control firers and safety supervisors in the firing bays as well as waiting details and other personnel on the range by voice or loud hailer.

MAINTENANCE

2414. **Responsibilities.** Maintenance is the responsibility of the RAU. Responsibilities may be divided as follows:

a. **Property Management.**

(1) Grounds.

(2) Fencing and sign posting (may be DIO). (See Chapter 2).

(3) Structures, roads and drainage including stability of slopes and erosion control.

(4) Water and electricity supplies.

(5) Periodic refurbishment of the range structure.

b. **Equipment Management.** Repairing and servicing equipment installed by single Service contract.

2415. **Frequency.** Proper maintenance is dependent upon good liaison between the Range Warden and the RAU, and on properly scheduled maintenance periods. A heavily used range may need one day's maintenance each week plus one or two days' maintenance by the Range Warden each month. Two closed periods of a week or so may be needed each year for building and earthworks repair; this work should be combined with the contract repair of equipment.

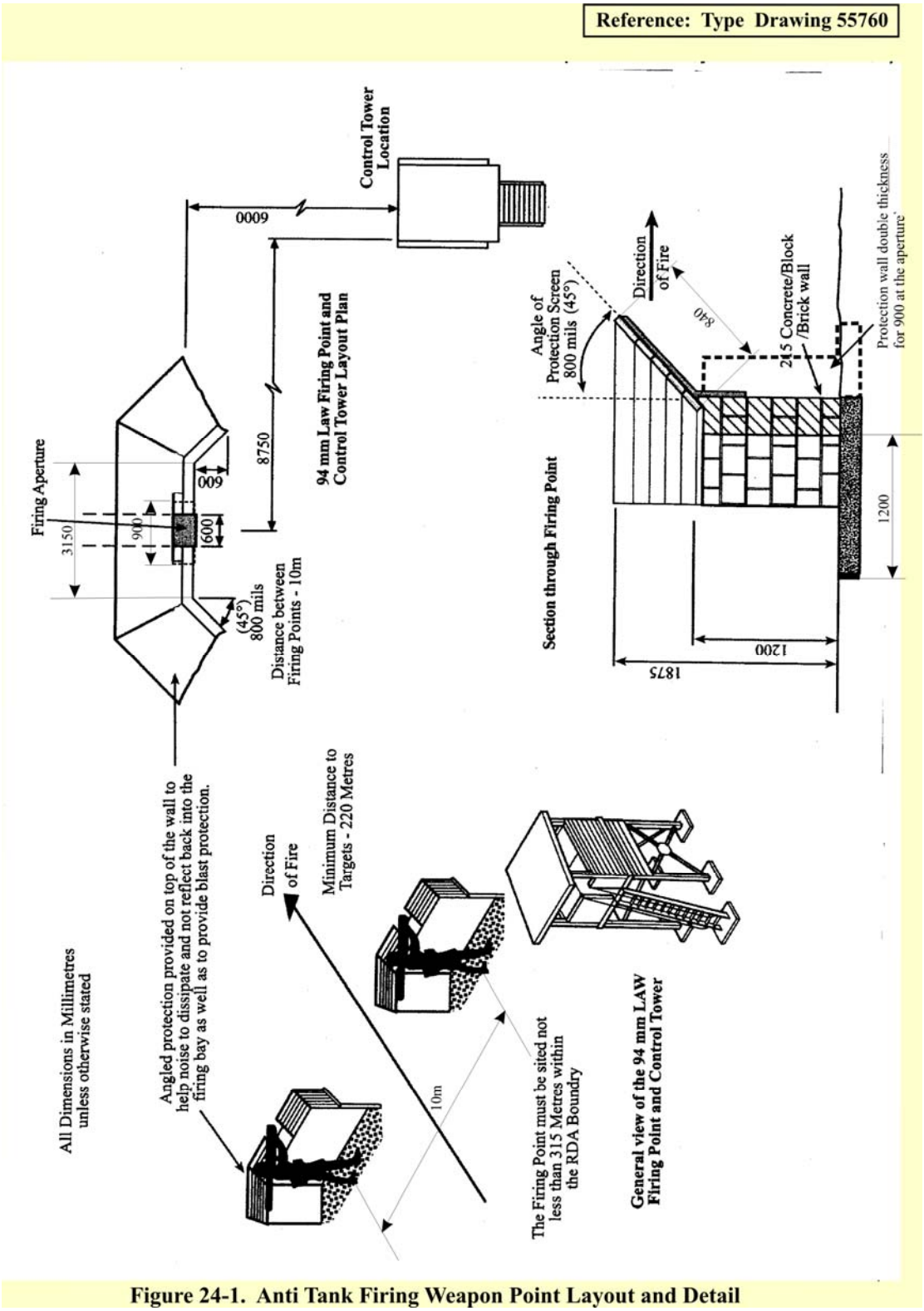

Figure 24-1. Anti Tank Firing Weapon Point Layout and Detail

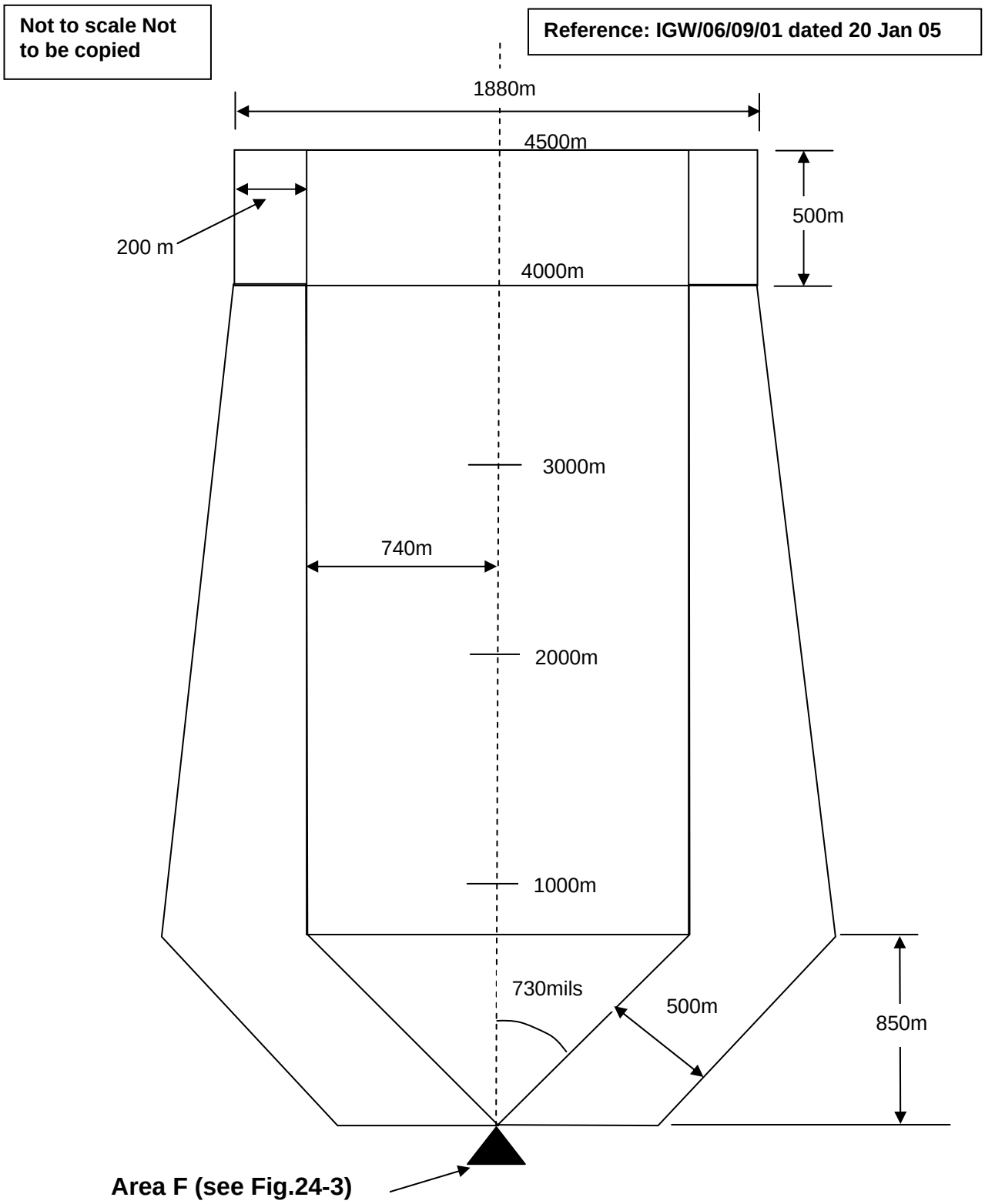

Figure 24-2 Weapon Danger Area (WDA) for JAVELIN ATGW Using Missile Software v 8.06

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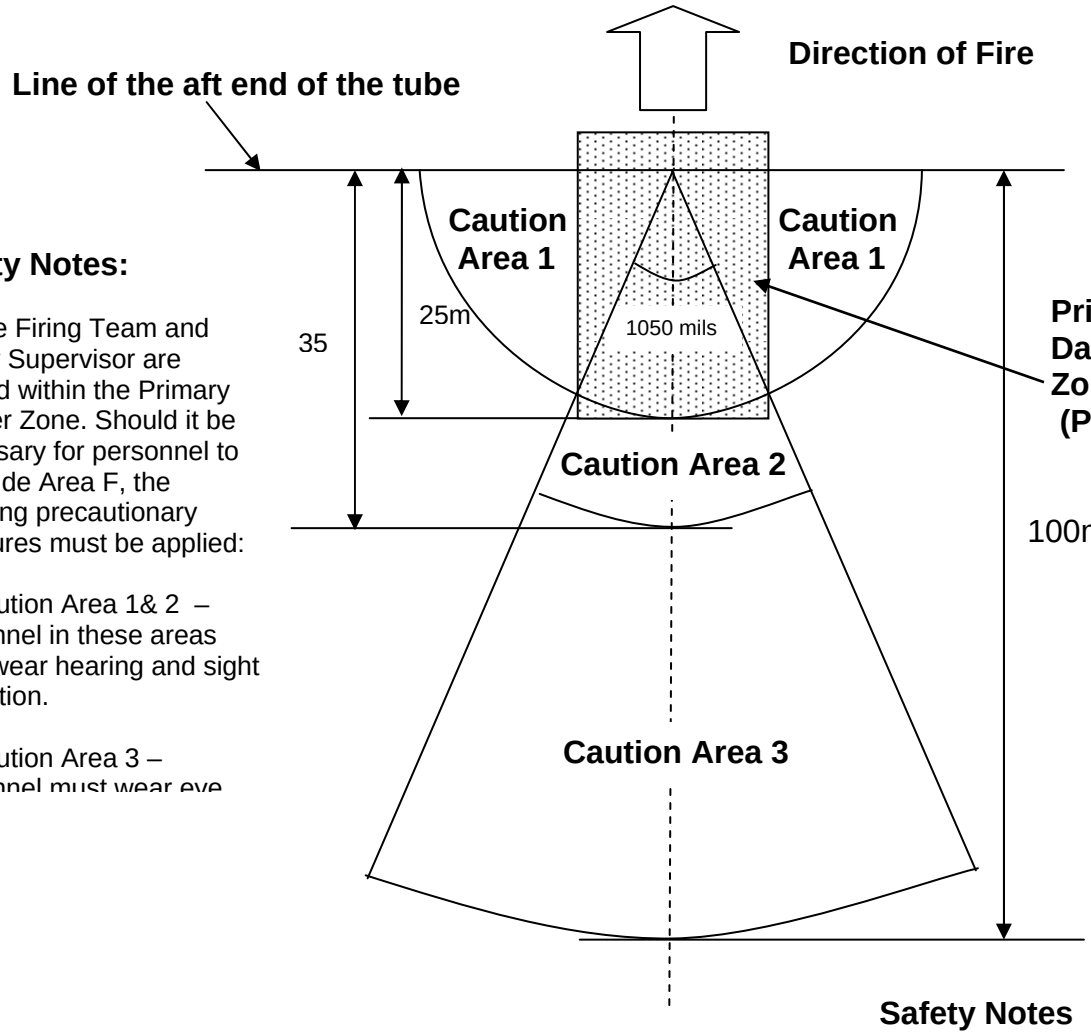
Reference: IGW/06/09/01 dated 20 Jan 05

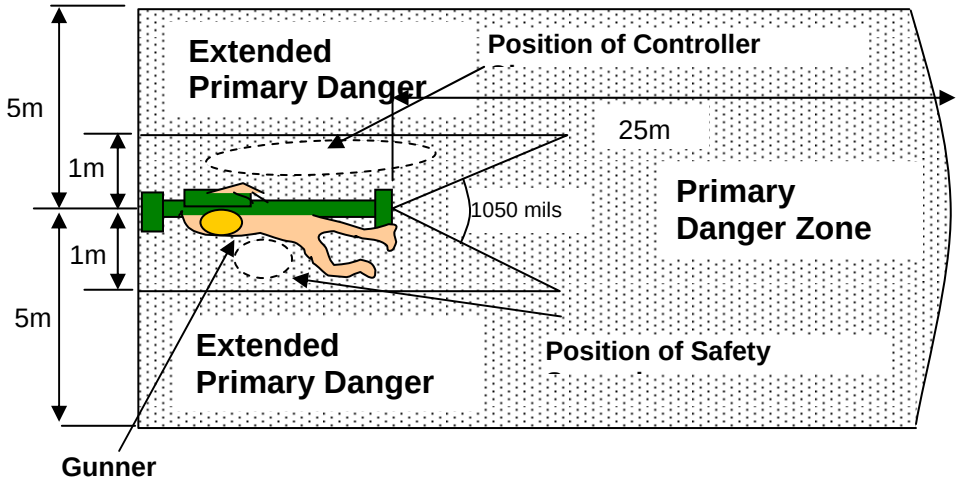


Safety Notes:

1. The Firing Team and Safety Supervisor are located within the Primary Danger Zone. Should it be necessary for personnel to be inside Area F, the following precautionary measures must be applied:

a. Caution Area 1& 2 – personnel in these areas must wear hearing and sight protection.

b. Caution Area 3 – personnel must wear eye



Safety Notes continued:

2. No personnel are allowed in the Primary Danger Zone, other than the Firing Team and the Safety Supervisor as there is a risk of injury from the activation of the flight motor pressure relief system.

3. The Range Conducting Officer is to be outside the PDZ.

Figure 24-3 JAVELIN ATGW - AREA F

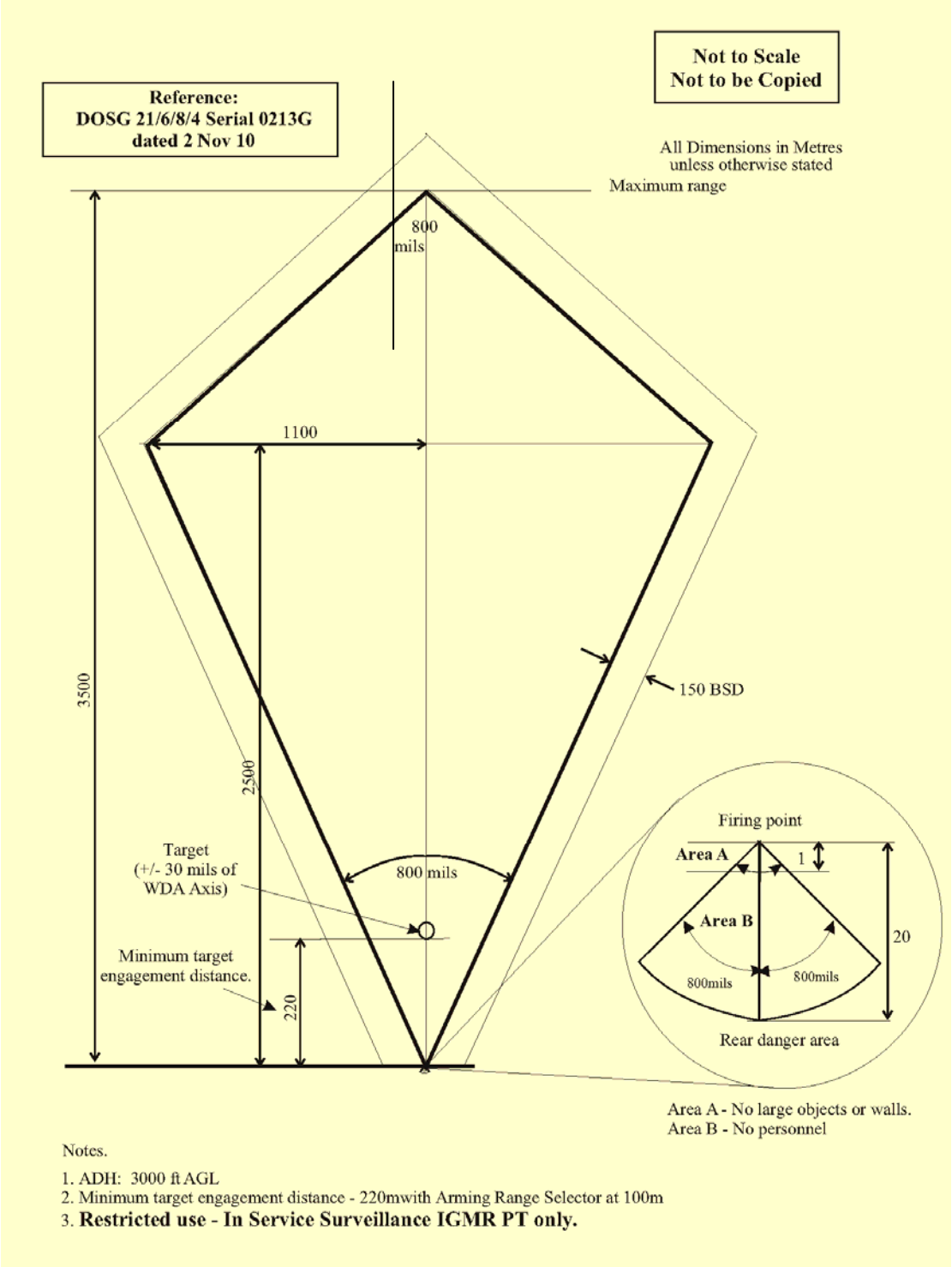


Figure 24-4. WDA Template, NLAW HEAT K170A2