Any copies made of this document, either paper or electronic, are uncontrolled

CHAPTER 3

USE OF DEMOLITION, DISPOSAL AND EOD TRAINING RANGES

INTRODUCTION

0301. The safe and effective use of Demolition, Disposal and EOD Training Ranges is largely dependent on the following factors, which will be expanded within this chapter:

a. Correct qualification and authorisation of all personnel conducting demolitions/EOD tasks, training and trials.

b. Application of the correct planning and preparation guidance for such operations, training or tasks.

c. Production of a comprehensive and informative Range Standing Order (Range SO) and User Demolition Instruction (UDI).

d. Execution of UDI in accordance with single service procedures to complete the range programme/firing order.

QUALIFICATIONS AND AUTHORISATION

0302. General. The use and destruction of explosives by detonation and burning and Explosive Ordnance Disposal (EOD) are inherently dangerous operations. Both the Range Administering Unit (RAU) and the User Units have responsibilities for safe operation of the range. Personnel undertaking these operations must be properly qualified. A list of single service qualifications can be found at Annex A. Authorisation to participate in tasks listed in this table is subject to limitations and restrictions imposed by single service qualifications and regulations. Individuals are responsible for ensuring that they do not operate outside the limitations of their qualification and/or authorisation and that these are current. RCOs are responsible for ensuring limitations are observed. On no account may a Commanding Officer authorise non-qualified personnel to plan, conduct or supervise any practice or training involving the use of live explosives, simulators or accessories.

0303. Range Administering Units (RAU). The responsibilities of the RAU are listed in Reference D.

0304. User Responsibilities. The user unit/organisation is responsible for:

a. The safe conduct of all range activities.

b. Using the range in accordance with the Range SO and the rules laid down in authorised training and other relevant publications.

c. Production of the UDI.

305. User Range Appointments. The UDI will nominate specific personnel for the conduct of demolition and EOD tasks, trials and training, who meet the appropriate single service regulations for qualification, requalification and licensing. The following appointments are defined in Reference G. Additional responsibilities are expanded in subsequent paragraphs:

a. Exercise Director. This will normally be the CO of the exercising unit.

Any copies made of this document, either paper or electronic, are uncontrolled

b. Planning Officer. This will normally be the Range Conducting Officer (RCO).

c. Range Conducting Officer. For certain activities the RCO may fulfil the duties of the Safety Supervisor.

d. Safety Supervisor (SS). The number of SS required will depend on the exercise being conducted. The RCO identifies the requirement in the UDI.

e. First Aid Personnel.

f. Sentries.

0306. Range Conducting Officer (RCO)[1]. At every practice, demonstration, trial or operational task, a suitably qualified and authorised RCO is to be nominated. The RCO has the following specific responsibilities:

a. Enforcement of appropriate regulations and Range SO.

b. Production of the UDI.

c. Organisation and control of the range.

d. Preparation of range before use.

e. Conduct on the range.

f. Control of all explosive/non-explosive stores.

g. Control of the possession of all authorised exploder/firing devices at all times.

h. Nomination of an individual to give the executive order to fire any explosive charge(s).

i. Notification of all relevant authorities and any other personnel who may be affected by the operation or task.

j. Determination of danger areas/safety distances and selection of the Firing Point (FP).

k. Control and briefing of all personnel, particularly sentries. The brief is to ensure that all personnel are conversant with the content of the User demolition instruction.

l. Control of the investigation and, where necessary, the destruction of blinds and misfires.

m. Inspection of sites after each explosive serial.

n. Checking/clearing the site on completion of the task.

o. Taking declarations from all relevant personnel.

0307. Safety Supervisor (SS). Where required a suitably qualified SS is to be nominated and authorised with specific responsibility for ensuring safe conduct of range practices.

[1] Some single service publications refer to a Demolitions Conducting Officer (DCO). The responsibilities are those defined for the RCO.

Any copies made of this document, either paper or electronic, are uncontrolled

0308. Medical Cover**.** Due to the potentially dangerous situations that can arise during the use of any explosives and the remoteness of ranges/training areas it is necessary to have medical cover. At every practice, demonstration, trial or operational task, individuals providing medical cover are to be nominated in the UDI. Individuals providing medical cover must not be allocated other tasks and must remain protected/under cover at all times. The level of medical cover required for each range will be dictated in Range SO's and UDI's..

0309. Sentries. The Demolitions/EOD party must include sufficient sentries to secure the danger area from unauthorised access. They must be briefed on the actions to be taken in the event of unauthorised access during the range practice. The RCO is to ensure that he has 2 way contact with all the sentries for the duration of the demolition activity.

0310. Trainees and Spectators. Under the direction of the RCO, Trainees are to be supervised by qualified personnel at all times whilst on the range/training area. Spectators, other than trainees, require the same supervision. They are not permitted within the danger area and are restricted to the approved observation areas in accordance with the UDI.

PLANNING AND PREPARATION GUIDANCE

0311. Range Standing Orders. Requirements for Range SO are detailed in Reference D. They are to be read and signed as having been understood by the RCO before using the range.

0312. Contents of UDI. In order to standardise the format and content of demolition, burning and EOD (training) orders, suggested contents are detailed at Annex B. This template can be modified to meet Demolitions or EOD tasks in an operational or training environment.

0313. Safety Distance Tables. The safety distance for a particular explosive store is to be calculated as detailed in Annex C to Chapter 3. The maximum NEQ that can be detonated on the range must be contained within the RDA and stated in the Range SO.

RECORDING OF RANGE ACTIVITY.

0314. General. The UDI is to include a plan for the use of explosives and stores to be expended/destroyed, by individual serials. A Land Range Log (MOD F906) is to be controlled by the RAU and completed by the RCO before leaving the range. A unit maintained document, sometimes known as a Demolition Diary, may be kept to record the actual conduct of serials in order to assist in the completion of MOD F906.

0315. Land Range Log MOD F906. An accurate record of the usage of explosives and stores expended/destroyed must be maintained by the RAU. It is to be available to the RCO whenever the range is in use and must be completed before and after use by the RCO. The record is to be in the form of a Range Log (MOD F906) which, in addition to its value as a record of explosives and demolition/training stores destroyed, is a record of range management. It is very useful in establishing accuracy of claims in the event complaints of damage received from local inhabitants. The retention of MOD F 906 and associated range file is dictated by the document retention policy directed in Reference C.

Annex:

A. Guide to Single Service Demolition and EOD Range Qualifications.
B. User Demolition Instructions.
C. Explosive Safety Distances.

Any Copies made of this document, either paper or electronic, are uncontrolled

ANNEX A TO CHAPTER 3

GUIDE TO SINGLE SERVICE DEMOLITION AND EOD RANGE QUALIFICATIONS

Authorisation to participate in tasks listed in this table is subject to limitations and restrictions imposed by single service qualifications and regulations. Individuals are responsible for ensuring that they do not operate outside the limitations of their qualification and/or authorisation and that these are current. RCOs are responsible for ensuring limitations are observed. In the event of queries individuals should gain clarification from the relevant school. Defence Explosive Munitions Search School (DEMSS) for EOD and Royal School of Military Engineering, Battle Engineering Wing (RSME, BEW) for Demolition.

Ser	Course	Course No	RCO[1]	SS	EOD team	Dems	Batsims	Remarks
COURSES HELD AT DEODS								
1.	DEODS Course.	No 0801	✓	✓	✓	✓		
2.	DEODS RN Course.	0813			✓			RN equivalent of Cse 0804
3.	DEODS RE/RAF Course	0804			✓	✓		
4.	DEODS RN Elementary EOD Course	0807			✓			RN equivalent of Cse 0805
5.	DEODS Course RE/RAF Elementary EOD.	0805			✓	✓		
COURSES HELD AT RSME								
6.	RE Troop Commanders Course.	5102	✓	✓		✓	✓	
7.	RE Troop Commanders Course (V)	1214	✓					
8.	RE Field Sergeants Course.	1306	✓	✓		✓	✓	
9.	All Arms Demolitions Safety Officer Course (RSME).	1802	✓	✓		✓	✓	
10.	All Arms Battle Noise Simulation Safety Supervisor Course (BSS)	1803	✓				✓	Total weight of charges on a single firing cable not to exceed 2.5 kg. Not qualified to attach explosive to targets.
11.	Combat Engineer Class 1	2303				✓	✓	
12.	Combat Engineer Class 2	nil				✓	✓	In- unit upgrading
13.	Combat Engineer Class 3	2301				✓	✓	

[1] Some single service publications refer to a Demolitions Conducting Officer (DCO). The responsibilities are those defined for the RCO.

Any copies made of this document, either paper or electronic, are uncontrolled

Ser	Course	Course No	RCO[1]	SS	EOD team	Dems	Batsims	Remarks
14.	All Arms Assault Pioneer Platoon Commander	1506	✓	✓		✓	✓	
15.	All Arms Assault Pioneer Platoon Sergeant	Tbc				✓	✓	
16.	All Arms Assault Pioneer Section Commander	1507				✓	✓	
17.	Infantry Assault Pioneer Basic	2508				✓	✓	
18.	RAC Support Trooper Basic	2509				✓	✓	
19.	Infantry Assault Pioneer Advanced (V)	Tbc				✓	✓	
20.	Infantry Assault Pioneer Basic (V)	2219				✓	✓	
COURSE HELD AT DEMOLITIONS CELL 22 SAS								
21.	SAS Patrol Demolitions Course		✓			✓	✓	
22.	SAS (V) Patrol Demolitions Course		✓			✓	✓	
COURSES HELD AT ASA								
23.	Ammunition Technical Officers (ATO) Class 1.		✓	✓	✓	✓	✓*	*TAB AER/3039 Empowers ATO / AT Class 1 and AS(V) Class 1, SSgt and above to carry out Batsims
24.	Ammunition Technical Officers (ATO) Class 2.		✓	✓	✓	✓	✓*	
25.	Ammunition Technicians (AT) T1 SNCO		✓	✓	✓	✓	✓*	
26.	Ammunition Technicians (AT) T1				✓	✓	✓*	
27.	Ammunition Technicians (AT) T2				✓	✓		*AT Class 2 are not trained or empowered under TAB AER/3039 to carry out UXO / CMD other than logistic disposal tasks.
28.	Ammunition Specialist RLC TA Class 1				✓	✓	✓*	
COURSES HELD AT CTC RM								
29.	RM Platoon Weapons Instructor Class I					✓		Non-electrical initiated charges only. Limited to expl digging and blinds only

Any copies made of this document, either paper or electronic, are uncontrolled

Ser	Course	Course No	RCO[1]	SS	EOD team	Dems	Batsims	Remarks
30.	RM Heavy Weapons Class 1 Course					✓		Non-electrical initiated charges only. Limited to expl digging and blinds only
31.	RM SBS Swimmer Canoeist Class I (SC1) Course		✓	✓	✓	✓	✓	Non-electrical initiated charges only (unless passed cse at serial 34)
32.	RM Assault Engineer Class I Course		✓	✓	✓	✓	✓	
33.	RM Assault Engineer Class 2 Course.					✓	✓	
34.	Inoculation/Noise Simulation (Electrical Initiation) Safety Supervisors Course					✓	✓	

NOTES:

1. RCO = Range Conducting Officer
2. SS = Safety Supervisor
3. EOD Team = Participant in activities on an EOD Range, in accordance with Single Service regulations, under supervision where necessary
4. Dems = Participant in activities on an Dems Range, in accordance with Single Service regulations, under supervision where necessary
5. Batsims = Participant in activities during Batsims, in accordance with Single Service regulations, under supervision where necessary

CONTACT DETAILS:

SCHOOL	POC	TEL	FAX	REMARKS
DEFENCE EXPLOSIVE ORDNANCE SCHOOL	TRAINING OFFICER			
RSME - HQ COMBAT ENGINEERING WING	G3 TRG CELL			
ARMY SCHOOL OF AMMUNITION	DLSTG ASA -HQ CO			
COMMANDO TRAINING CENTRE ROYAL MARINES	ASSAULT ENGINEER WING			

Any copies made of this document, either paper or electronic, are uncontrolled

MARITIME WARFARE SCHOOL- DEFENCE DIVING SCHOOL	DIVING TRAINING OFFICER			

Any copies made of this document, either paper or electronic, are uncontrolled

ANNEX B TO CHAPTER 3

USER DEMOLITION INSTRUCTIONS

1. The User demolition instructions are to be produced by the user unit and signed by the RCO. It gives a detailed forecast of events and may highlight detail covered in Range SO. It may include information on the following subject areas:

- References giving authority for the conduct of range activity. (e.g. JSP 403, 364, single service publications)
- General Situation. Unit/sub-units involved, visitors (military and civilian), dates and timings.
- Aim.
- Conduct. Additional restrictions to regulations.
- Ground. Grid/Map Ref, name of site, range layout, location of demolitions areas and pits, firing points, sentries and sentry posts, Splinter Proof Shelter (SPS).
- Personnel. Nominal roll showing appointments (ensure appropriate qualifications), range party/groupings, visitors.
- Limitations. NEQ (by detonation + burning), man limits, pits to be used, timings
- Explosives. List of serviceable explosive stores, items for disposal, Ammunition Holding Area, Ammunition preparation point, Safeguarding/Security arrangements, Control of explosive stores
- Targets and non-explosive stores. Non explosive stores and equipment lists, targets/items for demolition
- Maintenance of the range. Special environmental considerations/actions, fire precautions, handover procedure, inspections
- Emergency procedures. First Aid/medical arrangements, emergency orders, assembly areas, appointments/qualifications, location of fire fighting equipment, safety vehicle/route, and emergency telephone numbers.
- Meteorological conditions. Outlook/forecast, action in adverse weather, restrictions depending on prevailing conditions, tidal state
- Briefing. For all personnel, to cover details in User demolition instruction/Range SO, timings
- MT discipline.
- Orders for sentry/boundary patrol.
- Radiation Hazards. Precautions for Electro Explosive Devices (EEDs), personnel safety distances, use of radios/mobile phones see Reference P. The RF safety distance tables for BOWMAN radios can be found at Reference M, Section 10.3. No mobile phone or other personal electrical equipment is to be switched on within 5m of an EED.
- Prohibited Articles. Prohibited/Hazardous items, smoking restrictions.

Any copies made of this document, either paper or electronic, are uncontrolled

- Dress. No man made fibres, (including items incorporating Gortex and other in-service waterproof clothing), PPE.

- Items requiring special safety precautions (such as White Phosphorus (WP)).

- Communications arrangements. Safety flags, signs, symbols, radios, frequencies, landline, emergency numbers, and use of mobile phones/pagers.

- Demolition/Disposal Orders. By serial, timings. Actions on Misfire, UXO

- End of task drills. Free From Explosives (FFE) procedure, UXO, range declaration.

- Administration. Overnight arrangements where applicable, security/storage.

- Records and Reports. Range documentation, Completion of MOD F906, Unit demolition diary.

- *Exercise Director/RCO Signature Block*

2. Completion of the User demolition instruction may require the use of annexes/enclosures. The following subjects may best be included as Annexes/Enclosures:

- Allocation of Duties and Nominal Roll.
- Vehicle Nominal List and Route Cards.
- Programme of events.
- Firing Order and list of serials.
- Serviceable Explosive Stores List.
- Non-Explosive Stores and Equipment List.
- Ammunition for disposal.
- Orders for All EOD personnel.
- Orders for Sentries.
- Orders for Visitors.
- Accident Procedures.
- First Aid Precautions.
- Safety Precautions
- Range Map.
- Training Order.

Any Copies made of this document, either paper or electronic, are uncontrolled

ANNEX C TO CHAPTER 3

TABLE 403/3/1 – EXPLOSIVE SAFETY DISTANCES FOR AMMUNITION FIRED DURING TATTOOS, DISPLAYS AND DEMONSTRATIONS

Item	Designation	Quantity	Safety distances (metres)	Width from line of fire[1]	Remarks
(a)	(b)	(c)	(d)	(e)	(f)
1	Chge GP No 8	1	10m	10m	1. Must be in a combustible bag with a small hole cut to allow insertion of ISFE. 2. Must be on a metal tray. 3. Must be wetted.
2	Cartridge Blank 13 pr Mk 3, L1A1, L2A1 and L3A1	1	60m	25m	
3	Cartridge Blank 25 pr Mks 1, 2 and L1A1	1	60m	25m	
4	Charge Blank 155 mm How 3 lb Mk 1	1	200m	50m	No unprotected personnel are to be positioned in the arc 15˚/267 mils either side of the line of fire.
5	Cartridge Blank 105 mm Fd L38A1	1	200m	50m	
6	Cartridge Blank 105 mm Fd L40A1	1	60m	25m	
7	Cartridge Blank 105 mm How L33A1	1	200m	50m	
8	Cartridge Blank 105 mm How L39A1	1	60m	25m	Angle of projection is not to exceed 350 mils.
9	Cartridge Blank 105mm How L33A1 or L39A1 with primer only (Charge removed)	1	15m	5m	1. Fired without milboard cup. 2. Not to be fired in an enclosed building in which there may be volatile fumes or near inflammable material.
10	Reserved				
11	Charge Blank 120 mm Tk L7A1	1	60m	25m	The distance in column (d) is to be measured from gun trunnions.
12	Blank Small Arms Ammunition for Rifle and Machine Gun	1	30m	-	Does not include bulleted blank ammunition.
13	Mine A/Tk Practice L2A1 fitted with Smoke Unit A/Tk Mine Practice L1A2	1	-	50m	Troops on foot are to keep 5 metres clear of vehicles likely to encounter practice mines.
14	Safety Fuze	600mm	5m	-	
15	Fuze Instantaneous	5m	25m	-	Must be suspended at least 600mm above ground between but not directly in contact with two wooden stakes.
16	Theatrical Maroon	1	30m		Must be suspended at least 600mm above ground between but not directly in contact with two wooden stakes.

Any copies made of this document, either paper or electronic, are uncontrolled

Item	Designation	Quantity	Safety distances (metres)	Width from line of fire[1]	Remarks
(a)	(b)	(c)	(d)	(e)	(f)
17	Detonator Electric L2A1	1	20m	-	1. Ground on which laid is to be free from surface stones or any other form of potential missiles. 2. Not to be covered or tamped in any way. 3. See Note 8. 4. Rarely will non-electric detonators be used for demonstrations (but see Item 19)
18	Detonator Electric L2A1 with Cord Det loop (not exceeding 200mm length)	1 + Max 200mm	20m	-	
19	Detonator Electric L2A1 (When contained in a metal box) or Detonator Non Electric L1A1 (When contained in a metal box)	1	100m	-	1. The detonator is to be taped to the side of the box that is facing away from the audience. 2. Distance may be reduced to 25m if the metal box is surrounded by a sandbag wall in all directions to a height of 300mm above the top of the box. 3. See Note 8
20	PE 4 (cartridge or slab) uncased charge surface laid NOTE. Battle innoculation charges should not exceed 1kg of PE4 (4 sticks) during normal training. Members Letter (ML) 44/98, Ref D/OB/2206/5 dated Jul 98 applies.	Up to 1kg	235m		When charges on ground, areas to be free of loose stones and debris. Can be reduced to 25m where charge is placed on sand-filled sandbag. 25m based on blast hazard. ML 44/98 applies. Can be reduced where charge is suspended, see serial 22 and 23.
21	PE 4 (suspended)	170g	135m	-	1. Must be suspended at least 100mm above ground between but not directly in contact with two wooden stakes. 2. May be reduced to 25m where stand-off (distance above ground) is in excess of 400mm 3. The use of non-fibrous materials for the stake for the stake (eg cardboard) should be considered.
22	SX 2 (suspended)	113g	135m	-	
23	PE 4 and Petrol	57g + 2 litres	100m	-	Must be suspended at least 600mm above ground between but not directly in contact with two wooden stakes.
24	Battle Noise Simulator L29A1	1	100m	-	Only to be used in accordance with A&ER Vol 2 Annex S. L28A1 no longer in service
25	Simulators Gun and Mortar Fire L11, L13 and L18	1	400m	-	

Any copies made of this document, either paper or electronic, are uncontrolled

Item	Designation	Quantity	Safety distances (metres)	Width from line of fire[1]	Remarks
(a)	(b)	(c)	(d)	(e)	(f)
26	Simulator LMG/GPMG	Max 200mm Det cord	25m	-	1. Simulators constructed in accordance with Reference N (*Military Engineering Volume II – Field Engineering Pamphlet No 4A (Army Code No 71685) Chapter 3 para 0325-6.)* 2. Ground on which laid is to be free from surface stones or any other form of potential missiles. 3. Not to be covered or tamped in any way.
27	Simulator LMG Short Burst	Max 200mm Det cord	25m	-	
28	Simulator Rifle Fire infantry section	Max 200mm Det cord	25m	-	*1.* Simulators constructed in accordance with Reference N (*Military Engineering Volume II – Field Engineering Pamphlet No 4A (Army Code No 71685) Chapter 3 para 0324.)* 2. Ground on which laid is to be free from surface stones or any other potential missiles. 3. Not to be covered or tamped in any way.
29	Puffs Powder No 8 or No 9	1	60m	-	If the ground is free from stones and other potential missiles then the distance may be reduced to 50 metres.
30	Sound Unit EOD Elec L1A1	1	5m	-	1. The safety distance is 5 metres without ear defenders. Personnel who are required, for any reason, to be closer than 5 metres must wear eye protection and ear defenders. 2. Ground on which laid is to be free from surface stones or any other potential missiles.
31	Sound Unit EOD Elec L2A1	1	10m	-	1. The safety distance is 10 metres without ear defenders. Personnel who are required, for any reason, to be closer than 10 metres must wear eye protection and ear defenders. 2. Must not be used when the simulator and personnel together are in any enclosed area such as a passage or alleyway. 3. Must not be used indoors. 4. Ground on which laid is to be free from surface stones or any other potential missiles.
32	Smoke Unit EOD Elec L3A1	1	2m	-	Ground on which laid is to be free from surface stones or any other potential missiles.
33	Grenade Hand Practice L56A1 Fuzed L134A1 or L159A1	1	5m	-	Safety radius for personnel taking part in grenade training.
34	Grenade Hand Practice L56A1 Fuzed	1	15m	-	Safety radius for all other personnel and members of the

Any copies made of this document, either paper or electronic, are uncontrolled

Item	Designation	Quantity	Safety distances (metres)	Width from line of fire[1]	Remarks
(a)	(b)	(c)	(d)	(e)	(f)
	L134A1 or L159A1				public.
35	Simulator SA Fire L19	1	2m	-	1. The safety distance is 2 metres without ear defenders. Personnel who are required, for any reason, to be closer than 2 metres must wear eye protection and ear defenders. 2. Ground on which laid is to be free from surface stones or any other potential missiles. Only to be used in accordance with master range instructions.
36	Simulator Explosion L20	1	1m	-	1. The safety distance is 1 metre without ear defenders. Personnel who are required, for any reason, to be closer than 1 metre must wear eye protection and ear defenders. 2. Ground on which laid is to be free from surface stones or any other potential missiles. Only to be used in accordance with master range instructions.
37	Simulator SA Strike L21	1	2m	-	1. The safety distance is 2 metres without ear defenders. Personnel who are required, for any reason, to be closer than 2 metres must wear eye protection and ear defenders. 2. Ground on which laid is to be free from surface stones or any other potential missiles. Only to be used in accordance with master range instructions.
38	Simulator SA Ricochet L22	1	2m		1. The safety distance is 2 metres without ear defenders. Personnel who are required, for any reason, to be closer than 2 metres must wear eye protection and ear defenders. 2. Ground on which laid is to be free from surface stones or any other potential missiles. Only to be used in accordance with master range instructions.
39	Simulators not listed in this Table	1	200m		

Any copies made of this document, either paper or electronic, are uncontrolled

NOTES

1. The distances given column (d) are for directional weapons and are linear safety distances measured from the muzzle. Spectators are to be protected at the rear of the gun by a minimum safety distance of 15 metres other than in those cases where a greater distance is specified in the table.

2. When weapons are not involved the distances quoted in column (d) are radial safety distance for the explosives.

3. There is the possibility that, in a built up area, slight superficial damage to buildings eg. minor window damage or flaking of plaster, might occur under certain circumstances (affected by local ground contours, wind direction etc) at considerably greater distances than those given in this table.

4. Within the context of the table the term, unprotected personnel is to indicate those not wearing ear defenders.

5. The safety distances given in this table are subject to any limitations that may be imposed by local regulations.

6. The safety distances prescribed in this table are the minimum distances to be observed. These minimum distances are the smallest practicable distances to be used. Whenever possible greater distances are to be implemented.

7. In all instances care is to be taken to ensure that missiles such as stones or empty canisters are not produced as a result of the functioning of any explosive store.

8. The RF safety distance for BOWMAN radios is contained in Reference M, Section 10.3

Any copies made of this document, either paper or electronic, are uncontrolled

TABLE 403/3/2 EXPLOSIVE SAFETY DISTANCES FOR EXPLOSIVE BATTLE NOISE SIMULATION

Ser	Type of Charge	Size of Charge	Danger Area Radius	Air Danger Height[2]	Remarks
(a)	(b)	(c)		(d)	(e)
1	All detonators and detonating cord in open		20m	60ft	a. For service personnel under supervision. b. Detonating cord clips not to be used in battle noise simulation charges. c. If radio frequency hazard suspected, see Reference M , Section 10.3
2	Multiple detonator circuits (small arms fire) with up to 200mm detonating cord in open		25m	80ft	As Ser 1
3	Confidence training or battle noise simulation charges in open for participating serving personnel	a. Charge on ground, Max 1kg b. Charge on sand-filled sandbag, Max 1kg	165m 25m	500 ft 160ft	When charge placed on ground, areas to be free of loose stones and debris.
4	Practice charges in open used in battle noise simulation for military personnel wearing CBA, helmet and aural protection	c. Charge on ground, Max 1kg Charge on sand-filled sandbag, Max 1kg	165m 25m	330ft 80ft	Charge on ground, areas to be free of loose stones and debris.
5	Practice charges in open used in battle noise simulation for military personnel wearing CBA, helmet and aural protection	d. Charge on ground, Max 2.5kg	500m	1600ft	Charge on ground, areas to be free of loose stones and debris.
6	Blast incendiary	0.115kg	150m	490ft	20m radius clearance of flammable material
7	Large nuclear simulator	a. Bangalore Torpedo. b. 2.75kg PE4 taped to timber	1000m 500m	2000ft 1600ft	100m radius clearance of flammable material for both simulators.
8	Small nuclear simulator	0.46kg	300m	980ft	20m clearance of flammable material

NOTES

1. Where civilians are present Battle Noise Simluations are to be considered as Demonstrations and Table 403/3/1 applies. Personnel such as ACF and CCF to be classed as civilians when planning safety distances.

Any copies made of this document, either paper or electronic, are uncontrolled

2. Air Danger Height (ADH) determined in feet above ground level (AGL). ADH is not a direct conversion of Danger Area Radius.

3. Charges made up from PE4 (cartridge or slab removed from its plastic case) as detailed in Reference N. Metal detonating cord clips should not be used with Battle Inoculation charges.

Any copies made of this document, either paper or electronic, are uncontrolled

TABLE 403/3/3 EXPLOSIVE SAFETY DISTANCES FOR EXPLOSIVE CHARGES IN TRAINING

Ser	Type of Charge	Target	Size of Charge	Danger Area – Radius	Air Danger Height	Remarks
(a)	(b)	(c)	(d)	(e)	(f)	(g)
1	Cutting	a. Timber. b. Concrete. c. Metal (eg girders, guns and vehs)	See local Range Standing Orders	a. 300m b. 500m c. 1000m	a. 980ft. b. 1600ft c. 2000ft	Metal fragments may fly up to 1000m from small charges. For AFV's see Note 2 and for troops dug-in see Note 3.
2	Concussion	Buildings and AFVs	See local Range Standing Orders	1000m	2000 ft	Considerable blast effect to be taken into account when selecting buildings as shelters
3	Cratering	Road, etc Explosive digging	a. Up to 2kg. b. 2 to 30kg. c. Over 30kg.	a. 100m b. 300m c. 500m.	a. 330ft b. 980ft c. 1600ft	
4	Mined	Piers, abutments and retaining walls	See local Range Standing Orders	500m.	1600ft	
5	Borehole	Rock, concrete, masonry, brick	See local Range Standing Orders	300m	980ft.	
6	Breaching, footing, pressure	RC beams and slabs, mass concrete walls and obstacles	See local Range Standing Orders	1000m.	2000ft	
7	Shaped charges	Concrete and steel	a. CD No 14. b. CD No 11. c. RCK Shaped Charge	1000m.	2000ft	
8	Rapid Bridge Demolition Charges (RBDs)	Masonry or concrete bridges	RBDs – L7A1. L11A1 & L12A1	1000m.	2000ft	
9	Bangalore Torpedo	Wire obstacles	-	a. At right angles to axis of Torpedo 1000m b. In line of axis: (1) Personnel standing 200m. (2) Personnel lying 100m.	2000ft	When firing in line of axis full body armour protection and helmet to be worn.

NOTES

1. Air Danger Height (ADH) determined in feet above ground level (AGL). ADH not direct conversion of Danger Area Radius.

Any copies made of this document, either paper or electronic, are uncontrolled

2. AFV's. Safety distance for troops fully closed down, under armour and wearing crewman's helmet or ear protection:
   a. Challenger, Cheftain and Warrior: 170m
   b. FV432, Saxon, AS90 and CVR(T): 250m

   Optic covers should be closed.

3. TRENCHES. Safety distances for troops fully dug-in, under cover and wearing combat helmet: 450m.

   Trenches are to be of approved design with a minimum depth of 1.5m, maximum width 0.6m and minimum overhead protection of 0.46m.

Any copies made of this document, either paper or electronic, are uncontrolled

TABLE 403/3/4 EXPLOSIVE SAFETY DISTANCES FOR DEMOLITION/DISPOSAL OF AMMUNITION

Item	Type of Ammunition	Danger area- Radius in Metres				Remarks
		Surface unprotected	Buried unprotected	Surface protected[1]	Buried protected[2]	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
SINGLE ITEMS						
1	Shell HE below 3in (81mm) Calibre	500		95	95	
2	Shell HE between 3in (81mm) and 5in (120mm) Calibre	900		230	230	
3	Shell HE above 5in (120mm) Calibre	1300		460	370	
4	Bombs 2in (51mm) and 3in (81mm) Mortar HE	550		95	95	
5	Bombs 4.2in Mortar HE Bombs Spigot Mortar HE	600		275	185	
6	Rockets 3.5in HEAT Bombs PIAT HE	400		230	185	
7	Grenades Hand HE	250		95	95	
8	Mines Anti-Personnel HE			70	70	
9	Mines Anti-Tank HE			275	275	
10	HE in bulk up to 2.5kg			50	50	
11	HE in bulk from 2.5kg to 5kg			70	70	
12	Pyrotechnic natures			40	40	
MULTIPLE ITEMS (BASED ON WEIGHT)						
13	Cased EO with weight up to 10 Kg	800	100	50	20	
14	Cased EO with weight up to 50 Kg	1800	140	70	40	
15	Cased EO with weight up to 250 Kg	2200	370	185	120	
16	Cased EO with weight up to 500 Kg	2500	400	200	140	
17	Cased EO with weight up to 1000 Kg	2700	550	275	185	
18	Cased EO with weight up to 3000 Kg	3500	900	450	300	
19	Cased EO with weight up to 5000 Kg	3700	1050	575	400	

NOTES:

1. If RAF munitions not identified in this table require disposal HQ STC ES & EOD must be consulted for specific disposal instructions.

[1] Adequate sandbagging is 40 Sandbags per 1kg of explosive or where protective works have been constructed in accordance with Reference B.
[2] Adequate sandbagging is 20 Sandbags per 1kg of explosive or where protective works have been constructed in accordance with Reference B.

Any copies made of this document, either paper or electronic, are uncontrolled

TABLE 403/3/5 SAFETY DEPTHS AND DISTANCES FOR UNDER WATER EXPLOSIVE CHARGES

1. The following Table is a guide to safety distances when using explosives underwater. Before anyone engages in this type of activity they must be fully conversant with the criteria in BR 5063 Annex B to Chapter 4 which is a Naval publication.

2. The tables listed below are a guide to EOD Operators and have been developed from several EOD publications and many years of RN EOD operational experience. When using these tables the EOD operator must assess each situation individually, taking into account operational priorities, secondary hazards and environmental/geographical conditions.

3. Application of Underwater Distance Safety Tables:

All UXO with an NEQ of 3kg TNT or less must be at a depth of 5 metres or deeper.

All UXO with an NEQ greater than 3kg TNT must be at a depth of 10 metres or deeper.

Item	Subject	CHARGE WEIGHT (Kg of TNT)	MINIMUM SAFE DISTANCES (Metres)	UXO MINIMUM DEPTH (Metres)	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)
1	**TOWING DISTANCES**	1 -3	25	5	BR 5063 Annex B to Chapter 4,Table- 4 refers
2		3 - 10	50	10	
3		10 - 50	75	10	
4		50 - 100	100	10	
5		100 - 1000	200	10	
6		1000 - 2000	250	10	

Any copies made of this document, either paper or electronic, are uncontrolled

Item	Subject	CHARGE WEIGHT (Kg of TNT)	MINIMUM SAFE DISTANCES (Metres)	UXO MINIMUM DEPTH (Metres)	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)
7	**DEMOLITION OPERATIONS from a RIB or INFLATABLE CRAFT (Only)**	1 - 3	100	5	BR 5063 Annex B to Chapter 4, Table- 5 refers
8		3 - 10	150	10	
9		10 - 50	200	10	
10		50 - 100	250	10	
11		100 - 500	300	10	
12		500 - 1000	350	10	
13		1000 - 2000	400	10	
14	**MINIMUM SAFE DISTANCES FOR DIVERS & SWIMMERS**	1	400		BR 5063 Annex B to Chapter 4, Table- 3 refers
15		3	500		
16		10	700		
17		10 - 50	1000		
18		50 - 100	1200		
19		100 - 500	1500		
20		500 - 1000	2000		
21		1000 - 2000	2500		

Any copies made of this document, either paper or electronic, are uncontrolled

Item	Subject	CHARGE WEIGHT (Kg of TNT)	MINIMUM SAFE DISTANCES (Metres)	UXO MINIMUM DEPTH (Metres)	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)
22	**MINIMUM SAFE DISTANCES FOR COMMERCIAL SURFACE VESSELS**	1	50		BR 5063 Annex B to Chapter 4, Table- 2 refers
23		3	90		
24		10	150		
25		20	220		
26		30	300		
27		50	350		
28		100	500		
29		200	700		
30		300	900		
31		400	1000		
32		500	1100		
33		600	1200		
34		700	1300		
35		800	1400		
36		900	1500		
37		1000	1600		
38		1500	2000		
39		2000	2200		

NOTES

1. **Safe Distance for Divers and Underwater Swimmers:**

Any copies made of this document, either paper or electronic, are uncontrolled

If an explosive charge is to be detonated underwater, all diving and surface-swimming operations should be suspended. If suspension of diving operations is not possible, the distances in table No 3 should be considered as a minimum safe distance.

2. **Diving Craft Safety Distances:**

Table 4 applies to RIBs and Inflatable Craft only. For diving tenders, parent or support vessels Table 2 is to be used

3. **Demolitions Operations:**

Table 5 is to be used when conducting underwater demolitions and countermining procedures from a RIB or Inflatable Craft Only. If operating from a diving tender, support vessel refer to Table 2 for minimum safe distances.

The distances in table 5 are considered the absolute minimum.

Consideration must be given to potential fallout from an underwater explosion i.e. fragmentation, noxious gases, seabed debris and water vapour.

The Diving Craft (MIB or RIB) should be positioned to avoid down wind fallout and wind or Tidal drift into the danger area in the event of engine failure

4. **FURTHER INFORMATION:**

Further guidance can be found in **BR 5063 Annex B to Chapter 4,** which contains information on a variety of subjects including; UXO Explosive Content / Factor of Effect, Pipelines, Cables, Tunnels and Mining**.**