



# Ministry of Defence

## JSP 482

### MINISTRY OF DEFENCE EXPLOSIVES REGULATIONS

#### Edition 4

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Part of the Defence Safety and Environment Authority  
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**RECORD OF CHANGES**

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|                       |                     |                          |                  |
|                       |                     |                          |                  |

## Foreword

The Secretary of State for Defence (SofS) through his Safety & Environmental Protection (S&EP) Policy Statement requires Top Level Budget Holders and Trading Fund Chief Executives to conduct defence activities with high standards of S&EP. They are expected to achieve this by implementing robust, comprehensive Safety & Environmental Management Systems.

As Director of the Defence Safety and Environment Authority (DSEA), I am responsible for providing MOD regulatory regimes for S&EP in the Land, Maritime, Nuclear and OME domains. The regulations set out in this JSP are mandatory and full compliance is required, except as set out in JSP 815. It is the responsibility of commanders and line managers at all levels to ensure that personnel, including contractors, involved in the management, supervision and conduct of defence activities are fully aware of their responsibilities.

DSEA regulators are empowered to enforce these regulations.

*D Applegate*

D Applegate  
Director  
Defence Safety and Environment Authority

## Preface

Joint Service Publication (JSP) 482 – Ministry of Defence Explosives Regulations lays down the framework and regulations, standards and guidance for the safe storage and processing of OME within defence. JSP 482 is to be used by members of the Armed Forces, civilian employees and others, including contractors where appropriate. It does not replace legislative obligations and full reference is to be made to national and international regulation and legislation and where applicable Host Nation requirements. Deliberately written in plain English, the publication avoids the use of 'legal jargon' and provides full references where applicable.

It is the Defence Safety and Environment Authority requirement that the highest standards of safety and environmental management shall be delivered. This is achieved through the development of its regulations and policies into a robust and comprehensive Safety and Environmental Management System for OME, articulated in a series of Joint Service Publications (JSPs) endorsed by the DSEA. There are clearly hazards and risks whenever explosives are commanded to function and the inadvertent functioning of explosives can have catastrophic consequences for personnel, the environment and for Defence capability. The majority of modern weapon systems continue to rely on the power of explosives, propellants and pyrotechnics (collectively termed explosives) to achieve the desired military effect. Thus the control of explosives is essential if the MOD is to fulfil its common-law duty of care obligations, and fulfil its statutory obligations while maintaining Defence capability.

JSP 482 specifies the DSEA's regulations for the safe storage and processing of explosives. It defines the approach that shall be taken to ensure that safe storage and processing of explosives remains MODs primary objective; this is achieved by reducing risks to levels As Low As Reasonably Practicable (ALARP). It also defines the responsibilities of the key stakeholders and specifies the required methodology for assuring the Secretary of State for Defence that the arrangements for explosives storage and processing are consistent with his safety policy statement.

*J Henderson*

J Henderson  
Defence OME Safety Regulator (DOSR)  
DSEA-DOSR Team Leader

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Check List for Internal Inspection of Cadet Unit SAA Only  
Ammunition Sites - Example

**FORMS**

All the MOD Forms used in JSP 482 are detailed below. It should be noted that some of the forms are only applicable to one or other of the volumes.

JSP 482 Change Proposal Form.

|                     |   |
|---------------------|---|
| MOD Form 1655       | Application for Classification of Military Explosives.  |
| MOD Form 1656       | ESTC Provisional Classification of Military Explosives.   |
| MOD Form 1657       | United Kingdom Competent Authority Document for the Classification of Military Explosives (ESTC F12A).  |
| MOD Form 1658       | MOD Explosives Licence.   |
| MOD Form 1659       | Authorised Quantity Explosives Licence.   |
| MOD Form 1660       | Articles in Use List.   |
| MOD Form 1661       | Unexploded Ordnance Disposal Storage Safety Certificate / Disposal Classification Form                  |
| MOD Form 1662       | Not Taken Up  |
| MOD Form 1663       | Ammunition Inspection Report Form   |
| MOD Form 1664       | Negligent Discharge Monthly Report  |
| MOD Form 1665       | Explosives Performance Failure Report   |
| MOD Form 1665(S)    | Simplified Explosives Munitions Ordnance Performance Failure Report                                     |
| MOD Form 1666       | Inspector's Aide-Memoire  |
| MOD Form 1667       | Special/Routine Inspection Report – Unit Ammunition Storage   |
| MOD Form 1668       | Initial Explosives Accident, Fault and Performance Failure Report                                       |
| MOD Form 1669       | Explosives Fault Report   |
| MOD Form 1670       | Ordnance Munitions Explosives Accident / Near Miss Report   |
| MOD Form 1671       | Report of Finding an FFE Violation  |
| MOD Form 1672       | Ammunition and Explosives Disposal, Proof and Demonstration Site Licence                                |
| MOD Form 1673       | MOD UK Competent Authority Approval for Packing under ADR Packing Methods P101 or LP99 (Large Packages) |
| MOD Form 1674       | MOD Exposed Site Access Control Document  |
| MOD Form 1675       | Application for Approved Variation - Non Electrical   |
| MOD Form 1924       | Proceedings of Explosives Facilities' Siting/Handover Board of Officers                                 |
| MOD Form 1925       | MOD UK Competent Authority Approval For Explosives Samples  |
| MOD Form 2256       | Electrical Equipment Approval Request Form  |
| MOD Form 2257       | CFFE Certificate  |
| MOD Form 2258       | FFE Certificate for Display Items   |
| MOD Form 2259       | FFE Certificate for Buildings and Land  |
| MOD Form 2261       | Empty Packages Awaiting FFE Certification   |
| MOD Forms 1926-1933 | – Not Yet Taken Up  |
| MOD Forms 2200-2211 | – used in ESTC Standard 6 Part 1  |

## PREFACE

1 Defence Council Instructions promulgated subsequent to the date of issue of this publication may affect the subject matters; in such instances the instruction is to be taken as the overriding authority.

2 These regulations have been written on the assumption that the reader who may apply the regulations and the advice contained herein has been trained to the MOD standards of skill and knowledge appropriate to his rank/status and trade.

3 This information may be subject to privately owned rights.

4 JSP 482 has replaced the publications listed below. The contents of the publications listed will not be subsumed into JSP 482 in their entirety since there are sections that cannot form part of JSP 482, and will therefore be published in other publications.

- a. Ammunition and Explosives Regulations Volumes 1 and 2
- b. BR 1029 (6)
- c. IE (DLO) Explosives Licensing Handbook
- d. AP 110A
- e. DPA Explosives regulations
- f. BR 862 Volume 3
- g. ESTC Leaflets

**POINTS OF CONTACT**

Enquiries or further guidance on MOD Explosives Regulations may be sought from the principal points of contact listed below:

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## **CHANGE PROPOSAL FORM**

- 1 Comments, recommendations etc relating to this publication can be made using the JSP 482 Change Proposal Form.
- 2 After completion the form must be forwarded to the address shown on the form.

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The Secretary, ESTC  
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MoD Abbey Wood South  
Bristol, BS34 8JH.

Serial Number <sup>1</sup> .....

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**JSP 482 CHANGE PROPOSAL FORM**

**PART 1: (to be completed by the originator)**

**Originator Details:**

Name: ..... Rank/Grade/Post: .....

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**JSP Details:**

|          |        |          |               |
|----------|--------|----------|---------------|
| Chapter: | Annex: | Section: | Paragraph(s): |
| Chapter: | Annex: | Section: | Paragraph(s): |

**Observation:**

**Proposed Text:**

**Other Comments/Recommendations:**

**Supporting Evidence, (Reports, Trials, etc):**

**PART 2: (for completion by JSP 482 Technical Author)**

Approved? Yes/No WG Reference/ Meeting minutes .....

Reason for Non-approval: .....  
.....

Signature: ..... Name: .....

Post: ..... Date: .....

<sup>1</sup> To be entered by JSP 482 Technical Author

## ASSOCIATED PUBLICATIONS/REFERENCES

1 It is not the intention of this JSP to bring together all orders and procedures pertaining to explosives. To do so would necessitate repeating instructions from other publications, with the inevitable consequence of failing to maintain the currency of this publication against the source documents. Where appropriate, cross-references to source documents are made instead.

2 The purpose of this list is to identify other publications that may need to be referred to in the course of managing and advising on explosives regulatory matters. Consideration should therefore be given to acquiring relevant titles for establishment/unit/section use. It should be noted that the list is not comprehensive.

### Transportation

|  |  |
|--|--|
| JSP 800 Volume 4a  | Defence Movements & Transport Regulations -<br>Dangerous Air Cargo Regulations   |
| JSP 800 Volume 4b  | Defence Movements & Transport Regulations -<br>Transport of Dangerous Goods by Road, Rail and Sea                                      |
| JSP 800 Volume 5   | Defence Movements & Transport Regulations –<br>Management & Operations of Road Transport in the<br>MOD                                 |
| ‘The UN Orange Book’                                     | UN Recommendations on the Transport of Dangerous<br>Goods – Model Regulations  |
| Statutory Instrument 1987/37                             | Dangerous Substances in Harbour Regulations 1987   |
| Statutory Instruments 2004/568,<br>2005/1732 & 2007/1537 | The Carriage of Dangerous Goods and Use of<br>Transportable Pressure Equipment Regulations<br>2004 (CDG 2004), (CDG 2005) & (CDG 2007) |
| BR 22206/2   | Conditions of Acceptance and Carriage by Rail of<br>Military Explosives  |
| IMDG Code  | International Maritime Dangerous Goods Code  |
| ADR  | European Agreement Concerning International Carriage<br>of Dangerous Goods by Road   |

### Security

|         |                            |
|---------|----------------------------|
| JSP 440 | Defence Manual of Security |
|---------|----------------------------|

**Airfields**

|   |   |
|---|---|
| AP 3384   | RAF Layout Specifications for Permanent Airfields and Safeguarding Criteria |
| SHAPE Recommended Criteria and Standards for Tactical and Transport Airfields | 6 <sup>th</sup> Edition   |

**Packaging and Labelling**

|                                |   |
|--------------------------------|---|
| Def Stan 00-810                | Marking of Ammunition and Associated Packages   |
| Def Stan 00-88                 | Packaging of Ammunition and Explosives  |
| Statutory Instrument 1984/1244 | Classification, Packaging and Labelling of Dangerous Substances Regulations 1984                      |
| Statutory Instrument 1983/1140 | The Classification and Labelling of Explosives Regulations (CLER) 1983                                |
| Def Stan 00-814                | Unit Loads for Military Use   |
| JSP 422                        | Tri-Service Ammunition Packaging, Configuration & Statistical Data (Historical document)              |
| MHTU/52CM01/93                 | Defence Statistics Pamphlet – Unit Load Specifications for Ammunition and Explosives for Military Use |

**Surveillance and Proof of Explosive Stores**

|             |  |
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| A&ERs Vol 3 | Technical Information, Surveillance and Repair |
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**Supply**

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| JSP 886 | Defence Logistics Support Chain Manual |
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**Health, Safety & Environment**

|                                |  |
|--------------------------------|--|
| JSP 375                        | MOD Health and Safety Handbook   |
| JSP 815                        | Defence Environment & Safety Management                                |
| 12974                          | Casualty Procedure (Army)  |
| AP 1922                        | Casualty Procedure (RAF)   |
| AP 400A-0004                   | RAF Manual of Health and Safety  |
| JSP 392                        | Instructions For Radiation Protection                                  |
| JSP 412                        | Radio Frequency Hazards (RADHAZ) Associated with EEDs                  |
| JSP 418                        | Sustainable Development & Environment Manual                           |
| JSP 426                        | MOD Fire Services Policy   |
| JSP 498                        | MOD Major Accident Control Regulations                                 |
| JSP 403                        | Handbook of Defence Land Ranges Safety                                 |
| Def Stan 13-98                 | Requirements for the Provision of Ammunition Technical Data            |
| Def Stan 13-129                | Requirements for Explosives Hazard Data Sheets                         |
| Statutory Instrument 1988/1657 | The Control of Substances Hazardous to Health Regulations (COSHH) 1988 |
| Statutory Instrument 1991/1531 | The Control of Explosives Regulations 1991                             |

**General Information**

|  |   |
|--|---|
| AC 60242   | Def Stan 00-814, Unit Load Specifications   |
| AP 110A-0104-1A                                      | General Regulations and Instructions for the Disposal of Explosives                 |
| JSP 333  | Joint Service Textbook of Explosives  |
| JSP 313  | Combined Cadet Force Regulations  |
| 14015, 14146   | Manual of Army Ordnance Services  |
| AP 100B-01   | RAF Engineering – Orders and Procedures.  |
| Defence Estates Functional Standard No 10 (DE FS 10) | Guide to the Inspection, Testing and Maintenance of Works for Explosives Facilities |
| JSP 364  | Joint Service EOD Manual  |
| JSP 862 Volume 1                                     | MOD Maritime Explosives Regulations – Surface Ships                                 |
| JSP 862 Volume 2                                     | MOD Maritime Explosives Regulations – Submarines                                    |

JSP 862 Addendum

MOD Maritime Explosives Regulations  
Part 1 – Authorised List of Explosives Stores (ALES)  
Part 2 – Ship Explosives Store Safety Instructions  
(SEXSSI)  
STO(N)s Afloat

STO(N) Handbook

**NATO Regulations**

AASTP-1

Manual of NATO Safety Principles for the Storage of  
Military Ammunition and Explosives

AASTP-2

Manual of NATO Safety Principles for the Transport of  
Military Ammunition and Explosives

AASTP-3

Manual of NATO Principles for the Hazard Classification  
of Military Ammunition and Explosives

AASTP-4

Manual of NATO Principles for the Transport of Military  
Ammunition and Explosives

AASTP-5

Manual of NATO Safety Principles for the Operational  
Storage of Military Ammunition and Explosives

## DEFINITIONS

1 To avoid misunderstanding or misinterpretation where the precise meaning of a word or phrase is important, the following definitions are to be used in so far as this publication is concerned:

Above Ground Storage. Storage in explosives storehouses, with or without earth cover, or in open stacks, at surface level. An accidental event at such a site may result in blast, fire and projections.

Acquisition Missile/Witness Missile. A training missile containing sufficient functioning parts to enable it to acquire a target. It is not intended to be launched and has inert or dummy explosive components.

Accident Involving Explosives. Any unintentional event, which causes, or has the potential to cause death or injury to people, loss or damage to, equipment, plant or premises.

ACTO. Attractive to Criminal and Terrorist Organisation materiel are those items considered to be of immediate value to a terrorist or criminal. They are defined fully in JSP 440

Adit. The entrance passage or tunnel to an underground storage building.

Air Termination Network. The part of a lightning protection system that is intended to intercept lightning discharges.

As Low As Reasonably Practicable (ALARP) (See also SFAIRP) is used to describe the process of weighing risk against the sacrifice needed to further reduce that risk. The process is not one of balancing the costs and benefits of measures but, rather, of adopting measures except where they are ruled out because they involve grossly disproportionate sacrifices. Comprehensive guidance on the principles of ALARP may be found on the HSE website<sup>1</sup>

Aluminised Propellant. A solid propellant incorporating aluminium powder in order to improve the specific impulse and or stability of burning, e.g. an anti-resonance additive.

Ammunition. (See Munition) The Firearms Act 1968 defines Ammunition as "Ammunition for any firearm and includes grenades, bombs and other like missiles, whether capable of use with a firearm or not, and also includes prohibited ammunition. Does not include cartridges containing five or more shot, none of which exceeds .36 in dia; ammunition for an airgun, air rifle, air pistol; and blank cartridges not more than one inch in diameter measured immediately in front of the rim or cannelure of the base of the cartridge.

Ammunition Container. An approved box, cylinder, tin plate liner or receptacle that is designed to contain explosives articles or explosives substances. It normally forms part of an ammunition container assembly.

Ammunition Container Assembly. A complete package designed to contain either explosives articles or explosive substances, including any inner packaging and furniture material.

Ammunition Depot. An installation devoted primarily to the receipt, storage, issue and maintenance of ammunition. The term includes:

- a. An explosives area/site, with, usually, explosives storehouses, process buildings, ancillary buildings and possibly demolition areas.

- b. The administrative offices and other essential offices outside the explosives area.

Ammunition Store (Unit). An authorised building containing ammunition on unit account.

Ammunition Technician (AT). The term AT is deemed to include all RLC Ammunition Qualified NCOs who have successfully completed the AT course at the Army School of Ammunition and are filling ammunition appointments.

Ammunition Technical Officer (ATO). The term ATO is deemed to include all RLC Ammunition Technical Officers who have successfully completed the ATO course at the Army School of Ammunition and are filling ammunition appointments.

Ammunition Park. A unit, normally sited in a forward area, at which explosives are stored and maintained. It contains, in a lesser degree, the same facilities as an ammunition depot.

Ammunition Qualified. Ammunition Qualified is defined as those officers who, prior to commissioning, held the rank of Warrant Officer Class 1, (WO1), in the Ammunition Technical Career Employment Group and who have successfully completed the AT course at the Army School of Ammunition. In the case of other ex-ATs that did not reach the rank of WO1, Ammunition Qualified may be formally authorised by PATO LAND if he is satisfied that an appropriate technical standard and expertise has been achieved. Ammunition Qualified does not imply an ATO qualification, but does authorise the wearing of the AT badge and does entitle the holder to be termed "ATO" in an ammunition appointment. This is subject to confirmation by a standard testing board usually held by the Army School of Ammunition.

Ancillary Ground Equipment. That part of the ground support equipment provided to ensure the serviceability of a missile and its launching, control and directing system.

Anti-Static Floor. A floor, having a resistance to earth of not less than  $5 \times 10^4$  ohms and not more than  $2 \times 10^6$  ohms, which is sufficiently electrically conductive to disperse accumulated static electrical charge.

Anti-Static Footwear. Footwear complying with the anti-static requirement of BS 5451/1977, for use in explosives buildings to assist in the safe discharge of accumulated electrostatic charge and to reduce the chance of injury caused by accidental electric shock from equipment.

Arm. To make a fuze system ready for functioning by removal of all the safety constraints, thus permitting the munition to function on receipt of a specified firing stimulus.

Armour Piercing SAA. High velocity ammunition for use against light armour and other targets usually unaffected by small arms ball ammunition.

Assembly Place. A place or building where it is customary for members of the public to assemble, e.g. church, school, sports stadium.

Attendant. In these regulations, the term 'attendant' is used in relation to the road movement of ammunition (see JSP 800 Vol 4(b)).

Authorised Representative and Authorised Explosives Representative. A person duly trained and authorised by the responsible authority to supervise the conveyance, loading and offloading of explosives (see JSP 800 Vol 4(b)).

Aviation Fuel and Ammunition Park. A forward unit responsible for the receipt, storage, servicing, repair and issue of packed POL, explosives and compressed



gases for RAF formations in the field. Such units are completely mobile except for their stocks, which, when necessary, are moved by rail or supply and transport columns.

Axial Burning. Where the burning surface progresses in a longitudinal direction.

Ball SAA. Ammunition for use against personnel and light material targets. The projected part of the round (the bullet) contains no explosives.

Ballistic Modifier. A substance incorporated into a propellant in order to modify the burning rate.

Ballistic Missile. Any unguided missile whose flight path follows a ballistic trajectory.

BAN. A moratorium placed on the issue and use of ammunition, usually pending technical investigation.

Bandwidth:

a. Of a Device or Circuit. The difference between the highest and lowest frequencies in a band of frequencies within which the performance of a device or circuit with respect to one of its characteristics does not vary by more than a specified amount.

b. Of a Radio Transmission. The difference between the highest and lowest frequencies in a band of frequencies comprising those which, together, carry some specified proportion of the total radiated power of the transmission.

Barricade. A natural ground feature, artificial mound, traverse or wall which, for storage purposes, is capable of preventing direct communication of explosion from one quantity of explosives to another although it may be destroyed in the process.

Batch/Lot. A definite quantity of some ammunition or explosive substance manufactured or produced under conditions that are presumed uniform.

Binders. Materials which are employed in composite propellant formulations for the purpose of obtaining required mechanical properties.

Bi-Propellant/Bi-Fuel. A liquid propellant in the form of two substances, a fuel and an oxidizer; they are stored separately and brought together when their mutual chemical reaction is required to produce thrust.

Black List. A record of unsafe and inefficient explosives and dangerous goods, and the authority for their disposal. This term is used by the RAF.

Blanking Plate. A plate fitted to an item to blank-off an aperture in that item.

Blank SAA. Ammunition used at training to simulate the sound of Small Arms fire and for firing salutes. Some blank ammunition may be fitted with a frangible plastic bullet head, designed to break up at short distances.

Blast. A destructive wave of gases or air produced in the surrounding atmosphere by an explosion. The blast includes a shock front, high pressure behind the shock front and a rarefaction following the high pressure.

BL. Originally 'Breech Loading', now the symbol for a system of rear obturation in which the sealing is achieved by means of a pad in the breech mechanism which presses against the surface in the rear of the chamber of the gun.

Blind. A prepared explosive store which, though initiated, has failed to arm as intended or which has failed to explode after being armed (see Misfire). Alternately, an explosives item that fails to function correctly after initiation.

**Body Structure.** The structural framework of a guided missile forebody, centrebody, or aftbody tube. It may include fixed fittings for the attachment of internal and or external items associated therewith.

**Body Tube.** An item forming the guided missile body which contains all the fixed fittings for the attachment of, but does not include, the major internal and or external items associated therewith. It may consist of one or more parts, e.g. nose, forebody tube, etc, and includes integral pipes and interconnections.

**Bond.** A conductor connected between two points to ensure a common electrical potential; not normally intended to carry current.

**Bonding.** The process of connecting together metal parts so that they provide low electrical resistance contact for DC and AC current frequencies.

**Boost Motor.** A rocket motor that provides the initial acceleration for a guided missile.

**Break-up.** The intentional premature termination of the flight of a missile without detonation of its warhead, even if fitted.

**Break-up Charge.** An explosive charge used to cause the break-up of a missile in flight.

**Break-up System.** A system consisting of a break-up unit and a firing mechanism. When operated it causes the missile to break-up.

**Break-up Unit.** A unit containing the appropriate break-up charge and or electrical and mechanical parts necessary to cause the break-up of a missile.

**Breech Explosion.** The uncontrolled initiation of a round in the breech of a weapon when fired. The round may not have been chambered or only partially chambered.

**Bulk Explosives.** Service charges of explosives which are generally removed from their containers before use, such as Charges Demolition PE4.

**Bulkhead.** A dividing wall or partition between two parts of a structure. This term usually applies to ships.

**Buried Storage.** See Underground Storage.

**Burning Failure.** The phenomenon of unintended extinction of burning in rocket motors subsequent to ignition.

**Burning Ground.** See Destruction Ground.

**Burning Time.** The time from the beginning of the pressure/thrust rise in a rocket motor to the beginning of pressure/thrust decay. This is measured by the intersection of two tangents drawn to the pressure/thrust time curve at the turnover point.

**Calendar Life.** OME stock life through the initial input of the Designed Shelf Life (DSL). That date will remain extant unless modified through the process of In-Service Surveillance (ISS), Life Extension Trials, Non-Destructive Testing (NDT) and or the Grouping process and is then called the Assessed Shelf Life (ASL). The 'Grouping' algorithm operating on the ASTRID/AMANDA systems will alter the ASL and automatically decrease it for stock that has experienced climatic zones more severe than temperate (N. European). Stock that reaches the DSL or imposed ASL, and not 'Life' extended by the Munitions Capability Manager, will be made unavailable for issue or use.

Calibre. The calibre of the weapon is the distance between opposing lands of the barrel.

Calorimetric Value. The quantity of heat evolved per gramme from the reaction of a propellant in a closed vessel (a Bomb Calorimeter) in the absence of air or oxygen gas. The results are quoted using the convention that the water formed during combustion is in the liquid state (WL), which is not the actual situation during the normal conditions of use of propellant.

Candle Burning. The languid flame that frequently appears at the nozzle of a rocket motor after the thrust has fallen to zero.

Cartridge. A cased quantity of explosives (excluding rocket motors) complete with its own means of ignition.

Case Bonded Charge. Solid propellant rocket charges cast or pressed directly into motor tubes enabling burning to be confined to the control perforation.

Cast Double Base Propellant. A colloidal propellant, manufactured by the heating and gelatinising of small grains of nitro-cellulose and a liquid nitrate ester, which is used to fill the voids between the granules.

Casting Liquid. The liquid, usually with a nitrate ester base, used in conjunction with Casting Powder during the manufacture of Cast Double Base Propellant charges to give a coherent mass on curing.

Casting Powder. A gelatinised nitrocellulose, or nitrocellulose/nitroglycerine composition, containing such stabilising compounds and other ingredients as may be necessary. In a granulated form, it is suitable for use in making cast double base propellant.

Casualty Weapons. Any munition that has suffered damage or otherwise exhibits warning signs that would give concerns as to its safety. Defective/Misfired items are not classified as Casualty Weapons unless there is a reason to suspect that their reliability problem also has safety implications. 1.4S munitions are excluded.

Categories of Buildings and Areas. Buildings and areas containing, or likely to contain, military explosives, are divided into categories according to the nature of the explosives therein:

- a. Category A. Buildings containing, or liable to contain, explosives which produce flammable vapours, but not explosives dust.
- b. Category A, Zone 0. An area in a Category A building in which a flammable gas or vapour and air mixture is continuously present, or is present for long periods.
- c. Category A, Zone 1. An area in a Category A building in which a flammable gas or vapour and air mixture is likely to occur during normal working.
- d. Category A, Zone 2. An area in a Category A building in which a flammable gas or vapour and air mixture is not likely to occur in normal operation and if it occurs it will exist for only a short time.
- e. Category B. Buildings containing or likely to contain exposed explosives or explosives which may give rise to an atmosphere of explosives dust, but not flammable vapour.
- f. Category C. Buildings containing or likely to contain explosives which do not give rise to flammable vapours or explosives dust.

g. Category D. These are buildings, usually small Unit Stores, containing or likely to contain packaged explosives that do not give rise to flammable vapours or explosives dust but limited to certain natures and quantities of ammunition.

For buildings/areas to qualify for use within these categories, electrical equipment and installations and MHE must strictly comply with prescribed specifications.

Charge. A bagged, wrapped or cased quantity of explosives without its own integral means of ignition. Secondary means of ignition may or may not be incorporated.

Charge Configuration. The shape of a propellant charge, normally cylindrical, either solid or with one or more perforations which may be circular, star or cross-shaped in section or a combination of these shapes.

Charge Hold Back. A means of restraining a solid rocket charge from longitudinal movement under high acceleration.

Charge/Weight Ratio. The ratio, expressed as a percentage, of the weight of explosive filling to the gross weight of the packaged or unpackaged munition.

Checkout. A sequence of functional, operational and calibration tests to determine the condition and status of a weapon system or element thereof.

Chemical Stability of Propellants. Resistance to deterioration by chemical reaction.

Chief Inspector of Explosives (MOD). The person appointed by 2<sup>nd</sup> PUS as being responsible for all explosives safety and licensing matters within the MOD.

Choke. A rocket motor discharge orifice consisting of a convergent section and throat.

Chuffing. The characteristics of some rocket motors and rocket engines to burn intermittently with an irregular puffing noise under certain conditions.

Cigarette Burning/Cigar Burning/End-Burning. The axial burning of a solid propellant rocket charge.

Circuit Breaker. A mechanical device for breaking and re-making an electrical circuit under normal and abnormal conditions. The breaking of the circuit is usually automatic and the remaking is hand controlled, unless otherwise specified.

Classification. The allocation of a UN Hazard Division, Compatibility Group and Serial Number to an explosive, according to its general properties and characteristics and to those of its packaging, during storage and transport. Military explosives are classified by the MOD Explosives Storage and Transport Committee (ESTC), and commercial explosives by HM Chief Inspector of Explosives, Health and Safety Executive.

Clean Area. That portion of an Explosives Building from which it is essential to exclude extraneous grit or dust, ie inside the barrier of the shifting lobby.

Clean Conditions. The conditions necessary to minimise the special risks associated with the storage and maintenance (including inspection) of certain natures of explosives.

Colloidal Propellant. A homogeneous dispersion of a polymer (usually nitrocellulose) in a liquid nitrate ester (usually nitroglycerine) containing a small amount of stabilizer.

Commercial Explosive. An explosive which does not fall within the definition of 'Military Explosive'.

Compartment. Compartments help to reduce the chances of propagation when used correctly and provide CG separation to allow mixed CG storage in one building.

Compatibility Group. A grouping identified by a letter which, when referenced to a compatibility table, shows those explosives which may be stored or transported together without significantly increasing the probability of an accident or, for a given quantity, the magnitude of the effects of such an accident.

Competent Ammunition Person. This person is competent by virtue of the successful completion of a MOD accredited ammunition course and/or the award of an appropriate Trade Qualification. The Competent Ammunition Person can only exercise this competency whilst employed in a post/appointment where such a competency is required.

Competent Display Operator. A military person or MOD employee who has attended the appropriate course run by a manufacturer or an equivalent commercial training organisation, and is deemed to be Competent to Conduct Fireworks Displays within the meaning given in the HSE Guide: Working Together on Fireworks Displays, A guide to Safety for Fireworks Display organisers and operators, HSE Books, 1995, HS(G) 123, (ISBN 0 7176 0835 2).

Competent Person. A competent person is someone with the practical and theoretical knowledge and the actual experience of the type of plant, item, substance, equipment or system which he/she has to examine as will enable him/her to discover defects or weaknesses which it is the purpose of the examination to detect.

Composite Propellant. A type of propellant comprising of an inorganic oxidizing ingredient and an organic fuel.

Conducting Floor. A floor having a resistance to earth of not more than  $5 \times 10^4$  ohms.

Conducting Footwear. Footwear complying with the requirement of BS 5145 or BS EN 345 and BS 7193 for electrically conducting footwear, which is used in buildings to give protection from electrostatic effects.

Constraint. The imposition of a limitation or restriction in the use, transportation, carriage, issue, storage or inspection of a munition.

Contraband. The term used to describe articles that cannot be taken into an explosives area, store or vehicle carrying explosives without appropriate approval. Items included are matches, lighters, smoking material and articles, tobacco in any form, alcoholic beverages etc. Additional items as so defined in local orders.

Control The term is used to describe things that are done or put in place to control activities and processes safely to prevent a fire, explosion, or similar event from happening. Controls should be considered before considering mitigation.

Controlled Articles. The term used to describe "Contraband" (see above) that has been given appropriate approval to be taken into an explosives area, store or vehicle carrying explosives. Formerly also known as 'Prohibited Articles'.

Cook-off. The uncontrolled functioning of ammunition caused by excessive heat.

Cordite. Extruded double base solid propellant.

Cradle-Stacking. The method of horizontal stacking whereby cylindrical shaped stores or packages in an upper tier rest in the 'V' shaped grooves formed by adjacent stores or packages in a lower tier.

Cruciform. A configuration in the form of a cross.

Curtain Wall Construction. A building that incorporates substantial areas of cladding in its external panels which are not load-bearing and which weigh less than 100 kgm<sup>2</sup>. The cladding can consist of such materials as glass, plastic or sheet metal.

Dangerous Goods. Items classified under the United Nations (UN) system within classes 1 to 9 in accordance with the UN Transport of Dangerous Goods Regulations (Orange Book).

Debris. Any portion of the natural ground, or of a structure or material (not part of the functioning explosive), that is propelled from the site of an explosion. Also known as projections.

Deflagrating Explosive. An explosive that reacts by deflagration rather than by explosion when used in its normal manner.

Deflagration. A rapid chemical reaction in which the output of heat is sufficient to enable the reaction to proceed and be accelerated without input of heat from another source. Deflagration is a surface phenomenon with the reaction products flowing away from the unreacted material normal to the surface at subsonic velocity. The effect of a deflagration under confinement is an explosion. Confinement of the reaction increases pressure rate of reaction and temperature and may cause transition into a detonation.

Delay Composition. A pyrotechnic composition whose controlled burning provides a delay.

Desiccant. A moisture absorbing agent.

Desiccator. A device containing a moisture absorbing agent. See also 'Humidity Indicator'.

Design Study. An appreciation of the manner in which a specific requirement should be met, and of the research, development and production effort likely to be expended in meeting it.

Destruction/Disposal Ground or Site. An area where explosives are disposed of by burning or detonation.

Detonating Explosive. An explosive that reacts by detonation rather than deflagration when used in its normal manner.

Detonation. An exothermic reaction wave which follows, and also maintains, a supersonic shock front in an explosive.

Detonator. A device containing a sensitive explosive intended to produce a detonation wave.

Direct and Indirect Support Facilities:

- a. Direct Support Facilities. At Military Airfields, Exposed Sites may be considered as 'Direct Support' (DSF) facilities if they contain only those personnel and assets whose immediate access to the Potential Explosion Site is essential to the proper and timely execution of the tasks detailed in the Statement of Unit Policy (SUP) for the unit for which the explosives are held. Examples of DSF are airfield flight line buildings such as offices used for first line documentation or administration, or crew-rooms/rest rooms used by personnel whose employment is directly associated with first line aircraft activities.

b. Indirect Support Facilities. At Military Airfields, Exposed Sites may be considered as 'Indirect Support Facilities' (ISF) if they contain only those personnel and assets whose peace-time function is in support of the Statement of Unit Policy task of the flying unit for which the explosives are held. These sites whilst not justifying the hazards inherent with categorization as Direct Support, require better access to or closer proximity to the Potential Explosion Sites than could otherwise be achieved by siting at the full Inhabited Building Distance (IBD). Examples of ISF are aircraft hangars, workshops, fuel bowser holding areas and fire stations.

Dirty Area. That part of a magazine or laboratory outside the barrier (see also Clean Area).

Disposal Life. This safety information is the prescribed time an item of OME can be held in a condition in which it is safe to store, transport and dispose but which is beyond its safe to use calendar lifing or operational lifing criteria. This data is required to ensure that OME beyond its normal service life can be held in store and is safe to transport for its ultimate disposal.

Double Base Propellant. Propellant compositions containing both nitrocellulose and nitroglycerine.

Down Conductor. A conductor that connects the air termination network with the earth termination network in a lightning protection system.

Drill Ammunition. An inert replica of ammunition specifically manufactured for drill and instructional purposes.

Drill Missile. A training missile with non-functioning parts, ballasted to give the weight and centre of gravity of the operational missile. Used for handling, loading and launching drills and trials, or for ballasting aircraft in flight, it is not intended to be launched and has inert explosive parts.

Drill SAA. Inert ammunition used for drill purposes in the loading and unloading of small arms weapons.

Dual-Thrust Rocket Motor. A rocket motor, capable of delivering thrust at one level for a period, followed by thrust at a different level for a further period.

Earth Electrode. That part of the earth termination network in a lightning protection system which makes direct electrical contact with the general mass of earth.

Earth Leakage Circuit Breaker. A mechanical switching device which automatically interrupts an electrical supply when the leakage current to earth exceeds a predetermined value.

Earthing Rod. An electrically conductive rod for embedding in the ground to provide a means of earthing equipment.

Earth Termination Network. That part of the lightning protection system which is intended to discharge lightning currents into the general mass of earth. All parts below the lowest test point in a down conductor are included in this term.

Effective NEQ. The effective NEQ is the sum of the NEQ that will contribute significantly to the dominant hazard for the Hazard Division concerned.

Electrical Category. The standard of electrical installations and equipment required in an explosive building. The electrical category is the same as the category allocated to the building or area. See also Categories of Buildings and Areas.

Electrical Conduit. A trough or pipe containing electric wires or cables in order to protect them against damage from external causes.

Electrical Filter. A filter which selects currents of frequencies within one or more frequency bands and attenuates currents of other frequencies.

Electro-Explosive Device (EED). A one-shot explosive or pyrotechnic device used as the initiating element in an explosive or mechanical train and which is activated by the application of electrical energy.

Emergency Conditions In the context of this publication the term Emergency conditions covers a situation which compels the holding of ammunition in other than approved permanent accommodation.

End-of-Life The point in time when a munition is no longer suitable or no longer required for military use.

Equi-potential Bonding. Electrical connection putting various exposed conductive parts at a substantially equal potential.

Equivalence. When explosives having a significantly more or less powerful effect than TNT are being considered, a TNT equivalent may be used to determine the appropriate QDs. See JSP 333.

Erosive Burning. Burning of solid propellants under conditions of high-speed gas flow over the burning surface such that unreacted material is eroded from the surface.

Error of Drill. An Error of Drill is an incident where the authorised and/or laid down drills have not been followed correctly.

Error in Drill. An Error in Drill is an incident where the authorised and/or laid down drills are found to be at fault and require to be revised.

Essential Building. A building whose destruction or severe damage would impair the operational efficiency of a unit.

Experimental Ammunition. Any ammunition which, as issued for trial or experiment, is not of approved Service design or use.

Explosion. A nuclear, chemical or physical process leading to the sudden release of energy (and usually gases and heat) giving rise to external pressure waves.

Explosives. Any explosive article or explosive substance which would:

a. if packaged for transport, be classified in accordance with the United Nations Recommendations as falling within Class 1; or

b. be classified in accordance with the United Nations Recommendations as being unduly sensitive or so reactive as to be subject to spontaneous reaction and accordingly too dangerous to transport, and falling within Class 1; or

c. a desensitised explosive,

it does not include an explosive substance produced as part of a manufacturing process which thereafter reprocesses it in order to produce a substance or preparation which is not an explosive substance.

The term is used in JSP 482 to encompass all the following definitions:

- a. Munition
- b. Ammunition
- c. Explosive Article



## d. Explosive Substance

Explosives Article. An article containing one or more explosive substances.

Explosives Area. An area used for the storage, handling and processing of explosives that is usually enclosed by a security fence.

Explosive Bolt. A bolt, containing an explosive charge, which is broken when the charge is initiated. It is used to separate, at a selected time, parts secured together by the bolt.

Explosives Certificate. Takes one of two forms iaw COER Regulation 4 – An explosives certificate is a certificate certifying that the person (a person may be a body corporate) to whom it is issued is a fit person –

- a. to acquire explosives (Acquire Only); or
- b. to acquire and keep explosives (acquire and Keep)

An explosives certificate is not required for Articles listed in Schedule One to COER; or smokeless powder; or ammunition the acquisition of which is regulated or prohibited by virtue of the Firearms Acts 1968 to 1988.

Explosives Classification. A division of explosives according to the risk they present when initiated in storage and transport. See also Hazard Division, Compatibility Group and Classification.

Explosives Facilities. A generic term, to include Explosives Storehouses, Processing Rooms, Test Houses, etc.

Explosives Licence. A proforma that details the Explosive Limits of a PES

Explosives Limit. The permitted amount of explosives at a PES. Also known as Explosives Licence Limit.

Explosive Ordnance. All munitions containing explosives.

Explosives Ordnance Disposal. The detection, identification, field evaluation, rendering-safe, recovery and final disposal of unexploded explosive ordnance. It may also include the rendering-safe and/or disposal of explosive ordnance that has become hazardous by damage or deterioration when the disposal of such explosive ordnance is beyond the capabilities of personnel normally assigned the responsibility for routine disposal.

Explosives Preparation Room. A room in a building authorised for the storage, maintenance, assembly, testing and preparation for issue of electro-explosive devices.

Explosive Safeguarding Map. A map produced by MOD Establishments to define areas into which inhabited buildings should not be allowed to encroach.

Explosives Safety Representative. A Competent Person authorised in writing by the Commanding officer or HOE to ensure compliance with the requirements of JSP 482.

Explosives Storage Area (ESA). An area on units used for the storage of explosives and within which authorised missile preparation, inspection and rectification operations may also be carried out.

Explosives Storehouse (ESH). A building designed and erected for the sole purpose of storing explosives or a building modified, adopted or appropriated for that purpose and approved by a competent authority. Explosives storehouses are described according to their method of construction and use:

- a. Above ground: A building at natural ground level, the roof and at least one side of which are exposed to the open air.
- b. Bunker: A building at natural ground level, the roof and sides of which are covered by earth, access being provided in one side.
- c. Igloo: A storehouse normally built at ground level, earth covered and constructed in corrugated steel or reinforced concrete, provided with a strong headwall and door(s). Earth covers the roof, the sides and the rear. The storehouse and its earth cover are designed to stringent criteria for resistance to external blast loading and attack by high velocity projections. The cross-section of the igloo may be semicircular, elliptical, rectangular etc.
- d. Underground: A natural or excavated space underground with a ceiling not less than 600mm below the natural ground level, specially adapted for the storage of explosives. Access is by tunnel or lift-shaft.
- e. Semi-underground: A building constructed into a hillside with the front face exposed to the open air.

Explosive Substance:

- a. An energetic solid or liquid substance,
- or,
- b. A mixture of solid or liquid substances or both,

Both a and b above are capable by a chemical reaction in itself of producing gas at such a temperature and pressure and at such speed as to cause damage to surroundings or which is designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as a result of non-detonating self-sustaining exothermic chemical reactions.

Explosive Train. The initiation train (transfer mechanism) beginning with the first explosive element (e.g. primer, detonator) and terminating in the main charge (e.g. munition functioning mechanism, HE, pyrotechnic substance, etc).

Explosives Workshop. See Process Building.

Exposed Site (ES). A storehouse, cell, stack, truck or trailer loaded with explosives, process building, transit shed, inhabited building, assembly place or public traffic route which is exposed to the effects of an explosion (or fire) at a Potential Explosion Site (PES).

External Burning Charge. A solid propellant charge which burns on its outer surface.

Extruded Propellant. Any solid propellant formed to the desired shape by a method of extrusion.

Fail-Safe. A provision built into an equipment to prevent disastrous consequences should it fail to perform its design function.

Fault. An Explosives fault is any error in the make-up and or marking and or deterioration in the physical state of the explosives, ammunition packages, Unit Load Containers (ULC) or Unit Load Specifications (ULS).

Filling. The explosive contents of a cartridge, charge, shell, bomb, complete round, component or separate part of a round.

Fireproof Partition Wall. Wall of brick, stone, reinforced concrete or other non-flammable material at least 230 mm thick, extending from floor to roof without a gap.

If there is combustible material in the roof either internally or externally, the partition is to extend through the roof to a height of at least 960 mm above the combustible material and the roof is to be bedded into the walls. As a guide, a 230 mm brick wall of good quality has proved effective against propagation of fire for about 4 hours.

Firing Circuit. An electrical circuit which, directly or indirectly, causes the ignition of explosives or propellants.

Firing Temperature Limits. The temperature limits within which an explosive store should function correctly.

Firing Line/Firing Lead. The electrical connector forming all or part of a firing circuit between the firing switch and the igniter, or safety and arming mechanisms.

Flameproof Enclosure. A type of protection for electrical equipment in which the parts that can ignite a flammable atmosphere are placed in an enclosure which can withstand the pressure developed during an internal explosion and which prevents the transmission of the explosion effect to the flammable atmosphere surrounding the enclosure.

Flashless Propellant. The title must not be taken literally but rather in the sense that it produces less flash than other propellants.

Forward Weapon Store. That explosives storage or processing facility, which is sited on an airfield external to an RAF Explosives Storage Area, and is provided for, and contains, only those explosives required to directly support unit or squadron activities as detailed in their Statement of Unit Policy.

Fraction Container/Pack. An ammunition package containing less than the quantity of ammunition which it is designed to hold that has been packed and sealed by a competent ammunition person so that it is acceptable for storage and movement in all circumstances. See Part Filled Package.

Fragment. Any solid material in contact with explosive or surrounding it closely that is propelled from the site of an explosion. It is mainly applied to the metal casing and packaging.

Frequency Band Letters. Single letter designations in general use to indicate regions of operational frequencies rather than specific frequencies.

Fuse. A device for protecting a circuit against damage from an excess current by the melting of a fuse element to break the circuit.

Fuze. A device designed to control the initiation of a main charge.

Fuzing System. That part of the initiating system that controls the initiation of the payload.

Gelatinizer. A substance added to propellants to form a gel and so impart plastic properties.

Grenade Discharger SAA. Ammunition used for projecting grenades from rifles fitted with a discharger device.

Grid. A device used to support certain solid propellant charges and prevent them blocking the outlet nozzle.

Grommet (or Grummet). A device used to protect the driving bands on shell and projectiles.

Guided Missile. A missile whose flight path can be controlled during flight.

Hang Fire. An unintended delay in the functioning of a firing system.

Hard-Standing. A prepared base, usually of hardcore or concrete, on which explosives are stacked.

Hazard Class. The UN recommended system of nine classes for identifying Dangerous Goods. Class 1 identifies Explosives.

Hazard Classification Code (HCC). An alpha-numeric symbol which denotes the complete HCC for a particular nature. The code consists of two or three digits indicating the Hazard Division followed by a letter corresponding to the Compatibility Group, e.g. 1.3G.

Hazard Division. A division of the UN Dangerous Goods Class 1 (explosives) indicating the main type of hazard to be expected in the event of an accident. There are six HDs: 1.1, 1.2, 1.3, 1.4, 1.5 and 1.6.

Head End/Closed End. The forward end of a rocket motor.

Head of Establishment. The individual who has the day-to-day responsibility for the running and Duty of Care of the establishment at which he/she is permanently based. This includes the Officer Commanding, Station Commander, Naval Base Commander or Site Director.

Heavy Walled Building. A building of non-combustible construction used for explosives storage with walls of at least 450 mm RC, or 700 mm brick, or equivalent penetration resistance of other materials, with or without a protective roof. The door is normally strengthened if it faces another PES.

High Explosive. A substance or mixture of substances which, in their application as primary, booster or main charge in ammunition is required to detonate.

High Order Detonation. Detonation at a velocity approaching the maximum stable velocity of detonation of the system.

High Pass Filter. An electrical filter which permits the transmission of all frequencies above a specified frequency.

High Velocity Projections. Debris or fragments at high velocity as the result of a detonation/explosion and that may have sufficient remaining energy to propagate a detonation/explosion to another stack.

Holding Yard. A specified area used for the storage of explosives loaded to road vehicles or rail wagons before or during movement. In terms of risk and hazard, a holding yard equates to a PES and must be sited with full QD and IBD protection.

Humidity Indicator. A device used to show, by change of colour spots or markings, that moisture has invaded a store or container.

Hypergolic. Capable of spontaneous ignition on contact with another specific substance.

Hypergolic Propellant. A self-igniting bi-propellant in which fuel and oxidizer ignite on contact with each other.

Iqloo. See Explosives Storehouse.

Ignition. The initial heating of a deflagrating explosive or pyrotechnic composition, by flame or other source of heat, up to its point of inflammation. Means of ignition may include propellant, primers, igniters, squibs, fuze lighters, etc.

Ignition Delay. For a rocket motor, the time interval between the instant of application of the firing voltage and the appearance of pressure and or thrust.

Ignition Failure. Failure to ignite the main propellant charge usually of a rocket motor, even though the igniter has functioned correctly.

Improvised Explosive Device (IED). A device placed or fabricated in an improvised manner incorporating explosive material, destructive, lethal, noxious, incendiary, pyrotechnic or chemicals designed to destroy, disfigure, distract or harass. They may incorporate military stores, but are normally devised from non-military components.

Incendiary SAA. Small Arms Ammunition containing an incendiary composition for use against flammable targets.

Incident Involving Explosives. A generic term that includes all accidents, faults and performance failures involving explosives, or where explosives are present.

Inert Filling. A non-explosive filling used to replace explosives and enable operational items to be simulated for training and or test purposes.

Inhabited Building. A building or structure occupied in whole or in part by people. Used synonymously with Occupied Building.

Inhibitor/Inhibiting Coating/Restrictive Coating/Coating. A non-explosive material cemented or bonded to the surface of a propellant charge to prevent burning from taking place on the surface when the charge is ignited.

Initiation. The action of a device used as the first element of an explosive train which, upon receipt of the proper impulse, causes the detonation or burning of an explosive substance or article. Means of initiation may include fuzes, primers and detonators.

Initiator. A device intended to cause detonation or ignition.

Inner Room. A room in an explosives laboratory wherein explosives are filled, repaired, broken down or inspected.

Inside Quantity Distance (IQD). See Quantity Distance.

Inspector of Explosives. The Inspectors of Explosives are generally embedded in the chain of command. They issue licences under personal delegated authority from, and to standards set by, the Chief Inspector of Explosives (MOD). They also carry out inspections to assist the Chief Inspector in providing assurance to the Secretary of State and the Defence Council that MOD explosives facilities and movements of explosives under MOD control are managed in accordance with MOD and other statutory standards and with any licence conditions.

Inspector, Explosives. Individuals personally appointed by Inspectors of Explosives to conduct inspections on their behalf to provide assurance that MOD explosives facilities are managed in accordance with MOD and statutory standards and with any licence conditions

Instructional Ammunition. Inert replicas of ammunition (which may be sectioned) used for classroom instruction only.

Instrumented Missile/Telemetry Missile. A missile fitted with a telemetry transmitter, usually in place of the warhead, to meet the requirements of trials, proof or training by recording missile functions in flight.

Integrated Weapon Complex (IWC). A special purpose process building comprising four weapon assembly and check rooms (WACRs), serviced by four equipment/plant rooms and with a single central test equipment house.

Interchange Yard. An area set aside where the public carrier delivers or collects vehicles or rail cars from a military unit.

Internal Burning Charge. A charge in which burning is confined to the internal perforation resulting either from external inhibition or case bonding.

Interrupted Burning. The process of stopping the burning of a solid propellant motor by suddenly dropping the pressure by opening a large port or by other means.

Intrinsically Safe Circuit. When referred to:

- a. Flammable Gas or Vapour: Is a circuit in which no spark or thermal effect, produced in the test conditions prescribed in BS 5501, Part 7, 1977 (or BASEEFA Certification Standard SFA 3012) is capable of causing ignition of a given flammable atmosphere.
- b. Explosives: Is an electrical circuit which, when connected into and operated in conjunction with an explosive train or system, normally operated by an Electro Explosive Device (EED), is incapable of causing the device to function.

Intrinsically Safe Electrical Apparatus. When referred to:

- a. Flammable Gas or Vapour: Is electrical apparatus consisting of an assembly of electrical components, circuits or parts of circuits usually within a single enclosure in which all circuits are intrinsically safe.
- b. Explosives: Is electrical equipment which, when connected into and operated in conjunction with an explosive train or system, normally operated by an Electro Explosive Device (EED), is incapable of causing the device to function.

Isolated Storage. The storage of explosives in an unsafe or possibly unsafe condition in separate licensed accommodation away from all other explosives.

Lachrymatory. Causing irritation to the tear ducts.

Land Service Ammunition. An item of ammunition is deemed to be in the Land Service only after it has been accepted for service use within the Land environment and brought to account in an ammunition depot. In exceptional cases when approved ammunition is issued direct to a unit, it is 'in the Land Service' from the time it is taken on unit charge.

Letter of Authority. A temporary licensing approval addressing a change of circumstances for which a re-issue of an Explosives Licenses (or group of licences) is not reasonably practicable in terms of time/effort. It may also be used in circumstances where the issue of a new licence cannot be completed in time to meet a pressing operational commitment, or to extend the life of an existing licence to maintain continuity of licensing cover, where the preparation of its successor has been unavoidably delayed.

Life of Propellant/Service Life. The maximum period of time following manufacture when a propellant or filled rocket motor's performance should be satisfactory. This can be extended as a result of inspection, testing or proof.

Lightning Protection System. A system designed to protect against the effects of lightning discharges by providing a conductive path between the atmosphere above a structure and the general mass of earth so that the discharge can pass to earth with the minimum risk to the structure, its contents and occupants.

Limited Humidity Conditions. The conditions of atmospheric humidity required to minimise the absorption of moisture by hygroscopic substances.

Liquid Propellant. Any liquid that can be used for the chemical generation of gas at controlled rates and used for propulsion purposes.

Lobbed Munition. Unexploded munitions projected from an exploding building or stack. It may explode on impact.

Loose Rounds. This expression may refer to one of the following:

- a. Ammunition which has been removed from its service container and has not been repackaged.
- b. QF fixed rounds in which the projectile has become loose in the cartridge case.

Low Order Detonation. An incomplete and relatively slow detonation, being more nearly a combustion than an explosion.

Main Road. A road in the United Kingdom defined by the DETR as Class 'A' or Class 'B', or a comparable road outside the United Kingdom.

Major Proof Centre (MPC). The MPC is a building of a standard design, at least comparable in specification to that of an APB, to facilitate test, proof firings and breakdown of explosives.

Marshalling Yard. A group of railway sidings in which freight trains are formed and reformed, or an area used for receiving, dispatching and switching of trucks. The freight wagons are sealed, no explosives handling activities occur and the wagons stay in the area for only a short time. The activity is one of the least hazardous in nature and is of extremely short duration. Such PES may be sited without QD.

Mass Explosion. An explosion which affects, practically instantaneously, virtually the entire quantity of explosives under consideration. The term usually relates to detonation but also applies to deflagration when the practical effects are similar (e.g. the mass deflagration of propellant under strong confinement so as to produce a bursting effect and a serious hazard from debris).

Mass Fire. A deflagration of the entire quantity of explosives under consideration under circumstances that avoid a bursting effect and a serious hazard from debris. A typical mass fire occurs in a few seconds at most, and produces extensive flame, intense radiant heat and minor projection effects.

Maximum Credible Event/Effective Risk. In a given situation the greatest quantity of explosives which can function virtually at once to provide an explosion effect.

Military Explosives. Legal term for explosives as defined in Classification and Labelling of Explosives Regulations (CLER) 1983 (SI 1983 No 1140) which are:

- a. Under the control of the Secretary of State, or otherwise held for the service of the Crown, for the purposes of the MOD;

or,

- b. Under the control of a Headquarters or organisation designated for the purposes of the International Headquarters and Defence Organisation Act 1964, or of the service authorities of a Visiting Force within the meaning of any of the provisions of Part of the Visiting Forces Act 1952, or otherwise held for the service of such a headquarters, organisation or visiting force;

or,

- b. Certified by the Secretary of State to be conveyed in connection with the execution of a contract with HM Government or a Headquarters or the Service Authorities of a Visiting Force.

Misfire. Failure to fire or launch as intended.

Missile. An armament store designed to be released from an aircraft or discharged from a gun or launcher towards a selected point usually to cause damage at that point. See also Guided Missile.

Mitigation This term is used to describe what steps are taken to minimise the consequences during and after the occurrence of a fire, explosion or similar event.

MOD Duty Holder. The MOD person who has been issued the explosives licence(s) and therefore has the responsibility of managing the explosives activities in accordance with statutory and MOD standards.

Moderant. A non-explosive (usually organic) substance used to coat some nitrocellulose powders to retard the burning rate in the initial stages of deflagration in the gun in order to give better ballistic performance.

Moderate Fire. A fire, comparable with that involving an ordinary commercial warehouse, which burns comparatively slowly and with a moderate flame radius. Some items may be projected from the fire a short distance.

Mono-propellant. A liquid propellant in the form of a single substance requiring no additional chemical component (including oxygen from the air) for the production of thrust.

Multi Activity Contract/Contractors. Companies who have successfully bid to take over the Service role in support of Defence operations. Wholly private (i.e. they are not a part of the MOD), because of their role, in explosives facilities they are deemed to be MOD explosives workers and are bound by MOD Explosives Regulations, but NOT by JSP 445.

Munition. A complete device, (e.g. missile, shell, mine, demolition store etc.) charged with explosives, propellants, pyrotechnics, initiating compositions or nuclear, biological or chemical material, for use in connection with offence, or defence, or training, or non-operational purposes, including those parts of weapon systems containing explosives. Synonymous with Ammunition.

Munition Manager. Representative of the Integrated Project Team (IPT) with specific responsibility for a relevant munition.

Nature. A division of ammunition in accordance with the general properties of the filling, e.g. HE, incendiary, smoke. In RN use, may be used for a specific item of ammunition.

Near Miss. An occurrence, or potential occurrence, involving an explosive, or an occurrence potentially involving an explosive, which could have caused; Damage to the explosives. Damage to, or contamination of, military or civilian equipment, property or the environment. Injury to, or illness of, military personnel, MoD civilian personnel or members of the public. Threat to the structural integrity of, or to cause damage to, military or civilian equipment, property or the environment.

Negligent Discharge. A term that is only used with Small Arms Ammunition (SAA) up to and including 9 mm in calibre. A ND is deemed to have occurred when the initiation of the SAA is unauthorised and unintentional or inadvertent. No death, injury or damage to equipment or property is to have occurred, and the weapon and ammunition performed to the designed specification.

Net Explosive Quantity (NEQ). The total explosives content of present in a container, ammunition, building etc, unless it has been determined that the effective quantity is significantly different from the actual quantity. It does not include such substances as white phosphorous, war gas, or smoke and incendiary compositions unless these substances contribute significantly to the dominant hazard of the



Hazard Division concerned. Also known in some applications as Net Explosive Mass or Net Explosive Weight.

Net Mass. The weight of the complete explosives article excluding any packaging.

Non-Combustible Construction. A stone, brick, concrete or metallic structure free from fixtures and fittings which could ignite under intense heat produced by a propellant fire or by a mass explosion in adjacent PES.

Non-Hazardous Area. For the purposes of these regulations, an area that is not designated Category A, B, C or D.

Non-Propulsive Device/Thrust Spoiler. A device rigidly fixed to the mouth of the nozzle of a rocket motor to prevent it moving should it ignite during storage or in transit.

Non-Self-Propelled/Non-Self-Propulsive. Small or medium size rocket motors which, although fitted with a complete ignition system (self-propulsive):

- a. Are effectively mechanically restrained from significant flight by strapping or by means embodied in the packaging design.
- b. Fitted with aerodynamic 'spoilers' or, better still, flight spoilers of an approved design.
- c. Embody one or more of the following safeguards:
  - (1) EED incorporated in the ignition system must be effectively protected against stray currents from any source and the venturi nozzle throat must be effectively protected to prevent accidental ignition.
  - (2) In the case of percussion ignition systems, the percussion device must be effectively protected.
  - (3) The firing route from igniter to propellant charge is interrupted by a mechanical shutter or displacement of part of the explosives train and the venturi effectively capped to prevent accidental ignition.

Obsolescent. Becoming out of practice or out of date.

Obsolete. Out of use, date, practice, or not current.

Obturation The sealing process which prevents propellant gases from escaping through the breech mechanism when a gun is fired.

Occupied Building See Inhabited Building

Ohmmeter. An instrument calibrated in ohms and used to measure electrical resistance.

Operational Life. This safety information is often presented in addition to 'Calendar Lifting' for OME. An example of this is Air Carriage hours, transport limits or limitations on OME exposure to certain climatic conditions. This system is required to manage and control stock when in the hands of the service user. This information is nearly always required to be logged by the user and is often exceeded before the 'Calendar Life' ends.

Outside Quantity Distance (OQD). See Quantity Distance.

Overall Missile Test Set. A test set for examining the overall operational performance of a missile to indicate its probable response in flight.

Overpressure. The pressure resulting from the blast wave of an explosion. It is referred to as 'positive' when it exceeds atmospheric pressure and 'negative' when

during the passage of the wave the resulting pressures are less than the atmospheric pressure.

Oxidant/Oxidizer/Oxidising Agent. A substance that is combined with a fuel to produce an energetic material.

Pallet. A portable item of equipment affording a platform upon which goods may be placed to form a unit load for lifting by means of rigid forks or blades.

Part filled Package. An ammunition container containing less than the quantity of ammunition which it is designed to hold which does not meet the standard of a fraction pack. See Fraction Container / Pack.

Particle Velocity. The local velocity imparted by the transmission of a shock or reflected wave.

Partition. A dividing wall in an explosives storehouse, process building, or unit ammunition store, constructed from floor to roof without gap and from wall to wall without openings.

Passenger A traveller in a public or Service conveyance by land, water or air, a member of a working party travelling in Service or hired transport who does, or can do, no effective work while the vehicle is moving. The term passenger does not include escorts or security guards.

Performance Failure. A Performance Failure is the failure of the ammunition or any of its constituent parts, including the explosives, to function as designed.

Plastic Propellant. A putty-like propellant made from crystalline salts with a minimum quantity of viscous liquid binder. It can be readily extruded or moulded.

Plasticizer. An ingredient of a substance that facilitates moulding or working and confers satisfactory physical properties upon it.

Platonization. The process of making the rate of burning of a propellant constant over a range of pressure, such as by the addition of metallic salts.

POL (Petroleum Oils and Lubricants). A term covering all petroleum and associated products.

Potential Explosion Site (PES). Any Explosives Storehouse, Process Building, compartment, open bay, stack, locker or lockup, designated area or underground chamber, cavern or cell, or ship, lighter or stabled vehicle, governed by a single licence, that contains, or is intended to contain, explosives.

Practice Missile/Range Warhead Missile. A missile fitted with a practice head in place of the warhead. This head may be inert, smoke, flash, flare, HE etc, and may have limited telemetry facilities.

Pre-formed Packing. A moulded composition of a desired shape and size used in packaging.

Primary Explosive. An explosive that is extremely sensitive to stimuli such as heat, friction and/or shock and requires special care in handling. Generally, primary explosives are synonymous with initiating explosives.

Primary Firing Circuit. That part of the firing circuit in which a direct electrical connection can be made between the source of initiating electrical energy and explosive initiating devices.

Process Building. A building or area that contains or is intended to contain one or more of the following activities: maintenance, preparation, inspection, breakdown, renovation, test or repair of explosives.

Processing. The activities undertaken in a process facility that involves building, repair, refurbishment, breakdown, test and inspection of explosives articles and their components.

Prohibited Ammunition. As defined in The Firearms Act 1968 Section Five. Can include component parts.

Prohibited Articles. See Controlled Articles.

Prohibited Person. There are two contexts that apply to Prohibited Person;

a. For the purposes of explosives a Prohibited Person shall have the same meaning as the Control of Explosives Regulations, Regulation 2 Interpretation "Prohibited Person"

b. For the purposes of weapons and ammunition regulated or prohibited by the Firearms Act 1968 a Prohibited Person is defined in Section 21 of the Firearms Act 1968.

Projectile. A missile projected from a gun, howitzer, mortar or launcher, e.g. shot, shell, rocket or bomb.

Projection. See 'debris'.

Proof. The functional testing and assessment of an explosive to ascertain its performance.

Propellant. A substance on its own or in a mixture with other substances that can be used for the chemical generation of gases at the controlled rates required for propulsive purposes.

Propellant Stabilizer. A substance added to single or double base propellants to retard decomposition.

Propellant Surveillance. The periodical testing of propellants, e.g. by determination of stabiliser content, in order to monitor deterioration. This is mainly applicable to double and single base propellants which contain nitrate esters.

Protected. As applied to electrical vehicles, lifting appliances etc, means that the internal rotating parts and the 'live' parts are protected mechanically from accidental contact while ventilation is not materially obstructed.

Protective Roof. A roof of a nominal minimum of 150 mm Reinforced Concrete, or its equivalent, designed to protect the contents of a storehouse from projections and lobbed items. The roof should not collapse if the walls are damaged.

Proper Shipping Name. The authorised short name to be used on packages in place of commercial and military names during the transportation of explosives.

Public Rights of Way. Public Rights of Way are those indicated as such on the appropriate current 1:50 000 scale OS Landranger map and may be held by the local authorities on a larger scale.

Public Traffic Routes. Roads used for general public traffic on or off the unit. Railways outside the explosives area which are used for public passenger traffic. Waterways, such as rivers having tidal waters and canals, used by passenger vessels. Public rights of way (footpaths/bridleways, etc).

Purple Line. A continuous line drawn on a map or plan of an explosives storage location which encompasses the explosives area and defines the minimum permissible distance between a Potential Explosion Site and inhabited buildings which are by definition of vulnerable construction. It is usually at twice the yellow line or normal Inhabited Building Distance determined by blast considerations.

Additionally, the construction of new inhabited buildings of curtain-wall construction or high rise buildings is restricted. The area within the Purple Line is known as the Purple Zone.

Pyrotechnic. A substance or mixture of substances which, when ignited, undergo an energetic chemical reaction at a controlled rate intended to produce effects such as light, smoke, sound or flame.

Quantity Distances (QD). There are two types, Inside and Outside:

a. Inside QD:

- (1) Inter-Magazine Distance (IMD). The distance between a building or stack containing explosives to other such buildings or stacks which will prevent the direct propagation of explosives or fire from one to the other by missile, flame or blast.
- (2) Process Building Distance (PBD). The distance from a building or stack containing explosives to a Process Building, or from a Process Building to another Process Building, which will provide a reasonable degree of immunity for the operatives within the Process Building(s), and a high degree of protection against immediate or subsequent propagation of explosions.

b. Outside QD:

- (1) Inhabited Building Distance (IBD). The minimum permissible distance between a PES and inhabited buildings, caravan sites, places of assembly, etc, which is such that the ignition or explosion of explosives at a PES will not cause severe structural damage to those buildings or unduly hazard their occupants, be they Service or civilian.
- (2) Public Traffic Route Distance (PTRD). The minimum permissible distance between a PES and public traffic routes which is such that the ignition or explosion of explosives at the PES will not cause intolerable danger to the occupants of vehicles at an Exposed Site (ES).

QF. Originally 'Quick-Firing', now the symbol for a system of rear obturation in which sealing is achieved by a cartridge case which expands against the chamber of a gun. Ignition of the propellant is by means of a primer in the base of the cartridge case. With QF 'fixed' ammunition, the cartridge case is firmly attached to the projectile. With QF 'separate' ammunition, the cartridge case is separate from the projectile, whilst with QF semi-fixed the shell is a free fit in the cartridge case.

Quantitative Risk Assessment. A method of estimating and compounding the approximate probability of an accidental explosion with that of fatalities and other losses. This enables CIE(MOD) or Inspectors of Explosives to apply professional judgement as to whether or not the risk meets ALARP principals.

Radial Burning. Where the burning surface recedes in an approximately radial direction.

RADHAZ (Radio Frequency Hazard). The potential danger of accidental initiation of an electro-explosive device (EED) by radio frequency energy.

Ready Use Igloo. An igloo, on an airfield forward of an RAF ESA, containing a maximum NEQ of 10 000 kg with a loading density of up to 20 kg/m<sup>3</sup>.

Ready Use Storehouse. An explosives storage building, authorised to hold explosive items, stores and ammunition, which may be required for immediate issue or use.

Resonant Burning/Unstable Burning/Resonance. A form of unstable burning that frequently gives rise to unpredictable high-pressure peaks in solid propellant charges. Its name derives from the fact that the phenomenon is believed to be associated with pressure oscillations in the combustion chamber.

Rocket. A missile whose motion is due to reaction propulsion and whose flight path cannot be controlled during flight.

Round. A complete assembly of a projectile (with or without fuze), the propelling charge in a cartridge case, and the means of igniting the propelling charge. The word is also used in the expression 'supply by complete rounds' meaning that all the components necessary for the ammunition to be fired are issued together. For instance, with BL ammunition, the complete round consists of a shell, charge, fuze and primer.

Safeguarding. A consultative procedure derived from the Town and Country Planning Development Order 1988 (SI 1988, No 1813) for which the Office of the Deputy Prime Minister (ODPM) via the Department of Transport, Local Government and the Regions (DTLR) in England, the Scottish Executive in Scotland, and the Welsh Assembly in Wales is the authority whereby safeguarded areas outside boundary fences are established for each MOD explosives establishment in the UK. Explosives Safeguarding maps for each establishment are produced depicting a Yellow Line based on inhabited building distance (IBD) and a Purple Line, usually but not always the case, based on 2 x IBD and copies are provided to the Local Planning Authority via Defence Estates. It is the aim of the MOD to restrict the construction of any inhabited building, caravan site, or public traffic routes within the yellow line and the construction of curtain-wall building and high rise buildings with large glazed areas, between the yellow and purple lines. All new applications for development within safeguarded areas are required to be notified to the MOD by the Local Planning Authority in order that any necessary objections may be lodged.

Safeguarding Direction Orders. Produced by DE, based on the Explosives Safeguarding Map, and sent to the Local Planning Authority to advise them of the need to consult with the MOD before allowing development within highlighted areas adjoining MOD land.

Safety and Arming Mechanism (or Initiator). A device incorporating that part of the explosive train from the first sensitive element initiated by the firing signal, to the magazine capable of detonating the explosive charge.

Safety and Arming System. That part of the arming system that contains the safety interlocks and controls their operation.

Safety Cartridges. Those defined as such by the HSE under the Explosives Act 1875, viz cartridges for small arms of which the case can be extracted from the small arm after firing and which are so closed as to prevent any explosion in one cartridge being communicated to other cartridges. The term is now obsolescent.

Safety Ohmmeter. An ohmmeter of high sensitivity designed iaw Def Stan 07-85 to test the continuity of a circuit without damage to that circuit or activating the explosives controlled by it.

Screening. The reduction of electromagnetic effects and the exclusion of electrostatic induction effects by means of a metallic barrier.

Segregated Storage. Segregated Storage is the storage of explosives whose compatibility groups, whilst not requiring separate storage, do not permit mixed storage. The requirement for segregated storage may be met by any means which is effective in the prevention of propagation between the different groups, e.g. a separate compartment, or an internal traverse or barrier, or by physical distance.

Separated Storage. Storing apart in separate accommodation ammunition requiring special storage conditions e.g. CG L.

Self-Propelled/Self-Propulsive. An explosive item incorporating its own means of sustaining flight and unable to comply with the non-self-propulsive requirements.

Senior Armament Officer. The unit Senior Armament Officer (SAO) is the commissioned officer or Warrant Officer responsible for armament matters at a unit or detachment. The unit SAO may delegate reporting action required by this Order, but only to engineering personnel of the rank of WO or above.

Sensitiveness. A measure of the relative probability of an explosive being ignited or initiated by a prescribed stimulus. It is used in the context of accidental ignition or initiation.

Sensitivity. A measure of the stimulus required to cause reliable design mode function of an explosive.

Service Life. The time for which an explosive item in specified storage conditions and when subsequently used in its operational and/or training condition may be expected to remain safe and serviceable.

Service/Department Ammunition Management Code. The numerical code used by each Service/Department to manage and account for all ammunition types in service. This includes both the ADAC and NSN systems.

Shockwave. A compression wave generated by a body moving at supersonic speed through a medium.

Shifting Lobby. An entrance room in an explosive building divided by a barrier into a 'Clean Area' and a 'Dirty Area', in which personnel exchange their outer clothing for magazine clothing (and vice versa).

Shutter. A means of mechanically interrupting the explosive train. The shutter is constrained in the offset safe position to interrupt the explosive train and is moved by some stimulus into the armed position to complete the explosive train.

Single Base Propellant. Propellant composition containing nitrocellulose as the sole explosive ingredient.

Site Safety Plan. A map or drawing of an explosives area which graphically demonstrates compliance with the Inside Quantity Distance (IQD) and Outside Quantity Distance (OQD) requirements. The plan is approved by safety authorities of both NATO Forces and the HN prior to construction of new facilities or planned increase of the explosives licenses in an extant explosives area.

Small Arms Ammunition. Ammunition fired from weapons not above 19.1 mm in calibre.

So Far As Is Reasonably Practicable (SFAIRP) See ALARP.

Spalling. Spalling occurs by the transmission of a shock wave through material that creates high-speed particles from the opposite face of that material without breaching it.

Spark Arrestor. A device fitted to a diesel engine to prevent emission of hot particles or sparks from the exhaust system. This device will not prevent emission of flames.

Spotter, Tracer and Observing SAA. Ammunition used for ranging purposes in connection with a larger calibre weapon. It leaves a trace and gives a smoke or flash indication on impact.

Staging Facility. A specified area used to accommodate explosives loaded onto vehicles, railway wagons, etc, before and during movement. In terms of risk and hazard, a staging facility equates to a PES and may, dependent upon usage, require siting with full IBD protection.

Storage Life. The time for which an explosive item in specified storage may be expected to remain safe and serviceable within the envelope of Service Life.

Storage Temperature Limits. The temperature limits to which the store is restricted if it is not to suffer permanent damage or shorten the service life of the store affecting its performance and serviceability.

Storage sub-Division. A sub-group of HD 1.2 and 1.3 based on the level of hazard from different types of explosives in these HD. More hazardous items and less hazardous items are placed into different sub groups, i.e. 1.2.2 and 1.2.2.

Stray Any item of ammunition, whatever its origin, found in such places as parks, farmlands, disused training locations or built up areas, which is reported by military or civilian authorities to RLC technical ammunition staff for disposal.

Sublime. To change state from a solid to a vapour without first melting.

Surveillance. The constant review of accumulating test results to ensure that the overall quality remains acceptable. The term is also applied to the continuing examination of the stores themselves.

Sustainer Rocket Motor. The motor that continues to provide the thrust after the boost motors are all burned.

Sympathetic Detonation. The detonation of an explosive as a consequence of another detonation.

Technical Assessment. A method of demonstrating by simple consequence analysis or other means whether ESTC Protection Level criteria is met, or could be met through changes in working practices or mitigating works, in those licensing situations where the normal Quantity Distance criteria cannot be achieved.

Technical Explosives Authority. A generic term used to identify competent explosives experts formerly identified as AT/ATO/(RN, RAF or Civilian Equivalent). Contact details are given in Chapter 12 Annex A.

Test Joint. A joint designed and situated to enable resistance or continuity measurements of a lightning protection system to be made.

Temperature Cycling. The subjection of rocket motors and or charges to a cyclic variation of temperature, usually between the upper and lower firing temperature limits, in such a way that the entire charge or motor is brought to the temperature limits involved.

Time of Burning. The time interval between the beginning of the rise of pressure/thrust and its fall to zero.

Top-up Licence. An Explosives Licence authorised to allow small quantities of explosives to be taken on board a military vessel for ready-use purposes (see Chapter 9).

Tracer Ammunition. Ammunition which leaves a visible trace when fired, showing its trajectory.

Transit/Transfer Shed. A shed in an explosives area where consignments of explosives in the course of conveyance are assembled for trans-shipment between vehicles which operate within an explosives area and those which operate outside that area.

Traverse. A natural ground feature, artificial mound, barricade or wall which is capable of intercepting high velocity low angle projections from a PES and preventing initiation of explosives stocks stored nearby. It may be destroyed in the process.

Tubular Charge. A propellant charge in the form of a tube that burns simultaneously on external and internal surfaces.

Type. A division of ammunition in accordance with its general design, e.g. AP, SAP, Nose Ejection.

Umbilical Connector. A connection through which control signal, supplies and services are conveyed to a missile before it is launched.

Underground Storage. Storage in chambers that are below surface level. In the case of an accidental explosion at such a site, the hazard of low angle, high velocity projections is reduced significantly. The other hazardous effects are similar to those in above ground storage, but are gradually reduced as the cover is increased.

Unit Load. The unit formed when packages or unpackaged articles are assembled on or in a device that enables them to be mechanically handled as one unit, but which is not a freight container.

Unit Load Container. A specially designed container for ammunition which incorporates pallet criteria as an integral part of its design to enable the load to be handled by Mechanical Handling Equipment (MHE) through the logistic chain.

Unit Load Specification. An approved specification for securing a given number of previously evaluated and approved ammunition container assemblies (ACA), or a large calibre shell, onto a standard MOD pallet to enable the load to be handled by Mechanical Handling Equipment (MHE) through the logistic chain.

Unit of Space. For planning purposes, storage space for palletized stores is calculated in Units of Space (UoS). Each UoS equates to a standard Unit Load of a maximum size of 1080 x 1300 x 1372 mm (i.e. 1.93m<sup>3</sup>), subject to a maximum floor loading of 16,000 lbs. (7257 kg) for a single stack pallet base area.

Unit Returns. Explosives and associated non-explosive stores returned from a user unit to an ammunition depot or park.

Vulnerable Building. Exposed site deemed to be vulnerable by nature of its construction or function and therefore sited at greater than normal OQD.

Visiting Worker. A person who would not normally work in the area where they are to undertake a task. This includes MOD employees not normally employed at the location concerned.

Warhead. That portion of a missile intended to be lethal or incapacitating.

Weapon Assembly and Check Room. A WACR is a Process Building used for break-down, assembly, maintenance and test of sophisticated weapons. Four (normally) of these buildings are sited in a crucifix form with the weapon test equipment located within a separate building, known as a Test Equipment House (THE), located at the centre. With plant rooms adjacent to each WACR, the whole group forms an Integrated Weapons Complex (IWC).

With its Own Means of Initiation. This ammunition has its normal initiating device assembled to it or packed with it and the device is considered to present a significant increase in the risk during handling, storage and transport.

Without its Own Means of Initiation. This term includes the following types and conditions of ammunition:

- a. Ammunition not packaged with its own means of initiation.



- b. Ammunition that does not contain its own means of initiation.
- c. Ammunition packaged with its means of initiation provided the packaging is such as to prevent the initiation of the ammunition in the event of accidental functioning of the initiating device.
- d. Ammunition with the means of initiation assembled provided the initiating device contains features to prevent the initiation of the main charge of the ammunition in the case of accidental functioning of the device during normal handling, storage and transport.

Yaw. The angle between the longitudinal axis of a projectile at any moment and the tangent to the trajectory in the corresponding point of flight of the projectile.

Yellow Line. A continuous line drawn on the map or plan of an ammunition storage location which encompasses the explosives area and defines the minimum permissible distance between a Potential Explosion Site and inhabited buildings, caravan sites or assembly places. A line at IBD within which the construction of new inhabited buildings, caravan sights and public traffic routes are restricted. The area within the Yellow Line is known as the Yellow Zone.

## ABBREVIATIONS

The abbreviations used in these regulations are defined as follows:

|          |  |
|----------|--|
|          | <b>A</b>   |
| AAC      | Army Air Corps   |
| AASTP    | Allied Ammunition Storage and Transport Publication                            |
| AAES     | Aircraft Assisted Escape System  |
| Ac or ac | Aircraft   |
| A&ER     | Ammunition and Explosives Regulations  |
| AC       | Alternating Current or Ammunition Container                                    |
| ACA      | Ammunition Container Assembly  |
| ACTO     | Attractive to Criminals and Terrorist Organisations                            |
| ADAC     | Ammunition Descriptive Asset Code  |
| ADR      | European Agreement Concerning the International Carriage of Explosives by Road |
| AER      | Authorised Explosives Representative   |
| AES      | Arms and Explosives Search   |
| AESP     | Army Equipment Support Publication   |
| AF       | Army Form  |
| AFAP     | Aviation Fuel and Ammunition Park  |
| AFL      | Army Form Label  |
| AFV      | Armoured Fighting Vehicle  |
| AGSE     | Armament Ground Support Equipment  |
| AL       | Amendment List   |
| ALM      | Air Launched Munitions   |
| AMD      | Ammunition Marking Drawing   |
| AMPS     | Ammunition Management Policy Statements  |
| AN-M     | American, all Service - M series   |
| AP       | Armour Piercing or Air Publication   |
| APB      | Ammunition Process Building  |
| APDS     | AP Discarding Sabot  |
| APFSDS   | AP Fin Stabilised Discarding Sabot   |
| APSE     | AP Special Effect  |
| AR       | Authorised Representative  |
| ARI      | Airborne Radio Installation  |
| AS       | Anti-Submarine   |
| AS of A  | Army School of Ammunition  |
| ASD      | Ammunition Supply Depot  |
| ASHE     | Approval to Store and Handle Explosives  |
| AT       | Alongside Testing or Ammunition Technician                                     |
| ATC      | Air Traffic Control  |
| ATGM     | Anti-Tank Guided Missile   |
| ATGW     | Anti-Tank Guided Weapon  |
| Atk      | Anti-Tank  |
| ATO      | Ammunition Technical Officer   |
| ATSR     | Air Transportable Storage Racking  |
| AU       | Aiming Unit  |
| AUR      | All-Up-Round   |
| AURC     | All-Up-Round-Container   |
|          | <b>B</b>   |
| BA       | Breathing Apparatus  |
| BCU      | Bird Control Unit  |
| BD       | Bomb Disposal  |
| BDR      | Bandolier  |
| BE       | Base Ejection  |

|     |                              |
|-----|------------------------------|
| BFI | Bulk Fuel Installation       |
| BKI | Batch Key Identity           |
| BL  | Black List or Breech Loading |
| BS  | British Standard             |
| BW  | Bridge Wire                  |
| BWX | Beeswax                      |

**C**

|           |  |
|-----------|--|
| C         | Centigrade   |
| CAFA      | Cable Assembly Fuzing and Arming                           |
| CAP       | Competent Ammunition Person                                |
| CATO      | Chief Ammunition Technical Officer                         |
| CBA       | Cost Benefit Analysis                                      |
| CBLR      | Consolidated Black List Register                           |
| CBU       | Cluster Bomb Unit or Command Break Up                      |
| CC        | Conducting Cap   |
| CCG       | Computer Control Group                                     |
| CDO       | Competent Display Operator                                 |
| CE        | Composition Exploding (Tetryl) or Chief Engineer           |
| CEOFE     | Cartridge Electrically Operated Fire Extinguisher          |
| CER       | Carriage of Explosives Regulations                         |
| CESO(MOD) | Chief Environment and Safety Officer (Ministry of Defence) |
| CFFE      | Certify (or Certified) Free From Explosives                |
| CG        | Compatibility Group  |
| CGRM      | Commandant General Royal Marines                           |
| CHEPS     | Cargo Handling and Explosives Palletization Site           |
| CIE(MOD)  | Chief Inspector of Explosives (MOD)                        |
| CLA       | Command Licensing Authority                                |
| CLC       | Charge Linear Cutting                                      |
| CLER      | Classification and Labelling of Explosives Regulations     |
| CMD       | Conventional Munitions Disposal                            |
| C of G    | Centre of Gravity  |
| COMAHR    | Control of Major Accident Hazard Regulations               |
| COSA      | Catalogue of Ordnance Stores and Ammunition                |
| COSHH     | Control of Substances Hazardous to Health                  |
| COTL      | Container Or The Like                                      |
| COTS      | Commercial Off The Shelf                                   |
| CPS       | Cardinal Point Specification                               |
| CRN       | Constraint Registered Number                               |
| CSA       | Customer/Supplier Agreement                                |
| CSTP      | Conditioned Storage and Transportation Pallet              |
| CTN       | Carton   |
| CTO       | Chief Technical Officer                                    |
| CVR(T)    | Combat Vehicle Reconnaissance (Tracked)                    |
| CW        | Chemical Warfare   |

**D**

|          |                                     |
|----------|-------------------------------------|
| DA       | Direct Action or Design Authority   |
| DAC      | Dangerous Air Cargo                 |
| DACC     | Dangerous Air Cargo Committee       |
| DAP      | Decontamination Apparatus Portable  |
| DCI      | Defence Council Instruction         |
| DDA      | Device Delayed Arming               |
| Def Stan | Defence Standard                    |
| DE       | Defence Estates                     |
| DELS     | Defence Explosives Licensing System |
| DESB     | Defence Environmental Safety Board  |
| DG       | Dangerous Goods                     |

|           |  |
|-----------|--|
| DGHR      | Dangerous Goods in Harbour Regulations             |
| DGSA      | Dangerous Goods Safety Adviser                     |
| DLO       | Defence Logistics Organisation                     |
| DLSA      | Director/Directorate of Land Service Ammunition    |
| DM        | Defence Munitions                                  |
| DOSG      | Defence Ordnance Safety Group                      |
| DOSR      | Defence OME Safety Regulator                       |
| DPA       | Defence Procurement Agency (formerly MOD PE)       |
| DpkgA     | Defence Packaging Agency                           |
| DS        | Direct Support or Discarding Sabot                 |
| DSA       | Designated Smoking Area or Divisional Supply Area  |
| DSEA      | Defence Safety and Environment Authority           |
| DSTL      | Defence Science and Technology Laboratory          |
| D SEF Pol | Directorate of Safety, Environment and Fire Policy |
| DSHAR     | Dangerous Substances in Harbours Regulations       |
| DU        | Depleted Uranium                                   |

**E**

|        |   |
|--------|---|
| EA     | Explosives Act (1875 (Amended 1923)) or Engineering Authority |
| ECR    | Explosives Control Register                                   |
| EDK    | Emergency Destruction Kit                                     |
| EED    | Electro-Explosive Device                                      |
| EEl    | Electrical Engineering Instruction                            |
| EES    | Electrical Engine Starting                                    |
| EESA   | Emergency ESA   |
| ELCB   | Electrical Leakage Circuit Breaker                            |
| ELL    | Explosives Licence Limit                                      |
| EMC    | Electromagnetic Compatibility                                 |
| Eman   | Equipment Management  |
| EM     | Electro-Magnetic  |
| EMP    | Electromagnetic Pulse   |
| EMPS   | Equipment Management Policy Statement                         |
| EMPL   | Equipment Management Policy Letter                            |
| ENEQ   | Effective Net Explosives Quantity                             |
| E of A | Extract of Approval   |
| EOD    | Explosives Ordnance Disposal                                  |
| EODO   | Explosives Ordnance Disposal Officer                          |
| EOFE   | Electrically Operated Fire Extinguisher                       |
| ERU    | Ejector Release Unit  |
| ES     | Exposed Site  |
| ESA    | Explosives Storage Area                                       |
| ESD    | Electrostatic Discharge                                       |
| ESH    | Explosives Storehouse   |
| ESI    | Engineering Staff Instruction                                 |
| ESLO   | Explosives Safety Liaison Officer                             |
| ESM    | Explosives Safeguarding Map                                   |
| ESTC   | Explosives Storage and Transport Committee                    |
| EWS    | Emergency Water Supply  |

**F**

|       |                                     |
|-------|-------------------------------------|
| F     | Fragmentation or Fahrenheit or Form |
| FAFFA | First Aid Fire Fighting Appliance   |
| FAX   | Fuel Air Explosive                  |
| FCS   | Flight Critical System(s)           |
| FFE   | Free From Explosives                |
| FFP   | Fire Focal Point                    |
| FG    | Fine Grain                          |
| FGIY  | Flare Ground Indicating Yellow      |

|       |  |
|-------|--|
| FITOW | Further Improved Tube launched Optically tracked Wire guided |
| FLQ   | Functional Limiting Quality                                  |
| FM    | Titanium Tetrachloride (Fuming Mixture)                      |
| FP    | Firing Post/Point  |
| FRAM  | Fire Risk Assessment Methodology                             |
| FRNA  | Fuming Red Nitric Acid                                       |
| FS    | Functional Standard  |
| FSMP  | Fire Services Management Plan                                |
| FSSP  | Full Service Standard Package                                |
| FWS   | Forward Weapon Store   |
| FZD   | Fuzed  |

**G**

|        |   |
|--------|---|
| GAI    | General Administrative Instruction              |
| GC     | Guncotton                                       |
| GCU    | Guidance and Control Unit                       |
| GHz    | Giga-Hertz                                      |
| GM     | Guided Missile                                  |
| GP     | General Purpose or Gunpowder                    |
| GPTIRF | General Purpose Thermal Imaging Repair Facility |
| GRP    | Glass Reinforced Plastic                        |
| GR     | Ground Recognition                              |
| GSE    | Ground Support Equipment                        |
| GW     | Guided Weapon                                   |

**H**

|        |  |
|--------|--|
| HAPTM  | Hazardous Area Personal Test Meter     |
| HAS    | Hardened Aircraft Shelter              |
| HC     | High Capacity                          |
| HCC    | Hazard Classification Code             |
| HD     | Hazard Division                        |
| HE     | High Explosive or High Energy          |
| HEAT   | High Explosive Anti-Tank               |
| HEI    | High Explosive and Incendiary          |
| HES    | High Explosives Substitute             |
| HESH   | High Explosive Squash Head             |
| H of E | Head of Establishment                  |
| HN     | Host Nation                            |
| HoE    | Head of Establishment                  |
| HSCT   | Hot Solventless Cordite, Tubular       |
| HSE    | Health and Safety Executive            |
| HSWA   | Health and Safety at Work etc Act 1974 |
| HTP    | High Test Peroxide                     |
| HV     | High Velocity                          |

**I**

|      |   |
|------|---|
| IBD  | Inhabited Building Distance                   |
| ICAO | International Civil Aviation Organisation     |
| IDS  | Intruder Detection System                     |
| IE   | Inspector of Explosives                       |
| IED  | Improvised Explosive Device                   |
| IEDD | Improvised Explosive Device Disposal          |
| IFP  | Igniter Frangible Pillar                      |
| IM   | Insensitive Munition(s)                       |
| IMD  | Inter Magazine Distance                       |
| IMDG | International Maritime Dangerous Goods (Code) |
| IP   | Index of Protection                           |
| IPN  | Isopropyl Nitrate (AVPIN)                     |

|         |  |
|---------|--|
| IPT     | Integrated Project Team  |
| IQD     | Inside Quantity Distance                                       |
| IR      | Infra-Red  |
| I&RI    | Inspection and Repair Instruction                              |
| IRR     | Infra-Red Reflective   |
| ISD     | In-Service Date  |
| ISFE    | Igniter Safety Fuze Electric                                   |
| ISO     | International Standards Organisation                           |
| ITOW    | Improved Tube launched Optically tracked Wire guided           |
| IWC     | Integrated Weapon Complex                                      |
| <br>    |  |
|         | <b><u>J</u></b>  |
| JSEODOC | Joint Service EOD Operations Centre                            |
| JSP     | Joint Services Publication                                     |
| <br>    |  |
|         | <b><u>K</u></b>  |
| KE      | Kinetic Energy   |
| kPa     | Kilo-Pascal  |
| <br>    |  |
|         | <b><u>L</u></b>  |
| LAFB    | Local Authority Fire Brigade                                   |
| LAW     | Light Anti-tank Weapon   |
| LC      | Light Case (CW Weapons)  |
| LCC     | Linear Cutting Cord  |
| LCJ     | Load Carrying Jerkin   |
| LEFA    | Lead Electrical Fuzing and Arming                              |
| LML     | Lightweight Multiple Launcher                                  |
| LoD     | Letter of Delegation   |
| LOX     | Liquid Oxygen  |
| LPA     | Local Planning Authority                                       |
| LPG     | Liquid Petroleum Gas   |
| LPO     | Local Purchase Order   |
| LPS     | Lightning Protection System                                    |
| LSA     | Land Service Ammunition  |
| LSC     | Logistic Support Committee                                     |
| LSD     | Logistic Support Date  |
| LSJ     | Life Saving Jacket or Jerkin                                   |
| LSOR    | Land Service Operational Requirements                          |
| LUMAT   | Limitations in the Use of Missiles and Ammunition for Training |
| <br>    |  |
|         | <b><u>M</u></b>  |
| m       | Metre  |
| mm      | Millimetre   |
| MAC     | Multi-Activity Contract  |
| MACR    | Major Accident Control Regulations                             |
| MAMS    | Mobile Air Movements Squadron                                  |
| MAR     | Military Aircraft Release                                      |
| MATO    | Military Air Traffic Organisation                              |
| MBT     | Main Battle Tank   |
| MC      | Medium Capacity  |
| MCBU    | Munitions Corporate Business Unit                              |
| MCCL    | Multi-Channel Command Link                                     |
| MCT(S)  | Milan Compact Turret (Spartan)                                 |
| MDC     | Miniature (or Mild) Detonating Cord                            |
| MET     | Mobile Explosives Team   |
| MF      | Multiplication Factor  |
| MHz     | Mega-Hertz   |
| MHE     | Mechanical Handling Equipment                                  |

|      |   |
|------|---|
| MIRA | Milan Infra-Red Adaptor                           |
| MLRS | Multiple Launch Rocket System                     |
| MMA  | Missile Main Assemblage                           |
| MPC  | Major Proof Centre                                |
| MOD  | Ministry of Defence                               |
| Mod  | Modification                                      |
| MSER | Manufacture and Storage of Explosives Regulations |
| MSPD | Maximum Safe Power Density                        |

**N**

|       |  |
|-------|--|
| NAURC | Near All-Up Round Container                                      |
| NATO  | North Atlantic Treaty Organization                               |
| NBC   | Naval Base Commander   |
| NC    | Nitro-Cellulose  |
| NEC   | Net Explosive Content  |
| NEM   | Net Explosive Mass   |
| NEQ   | Net Explosive Quantity   |
| NFT   | No-Fire Threshold  |
| NG    | Nitro-glycerine  |
| NMSC  | Naval Magazine Safety Committee or NATO Milan Steering Committee |
| NMCWG | NATO Milan Configuration Working Group                           |
| NMER  | Naval Magazine and Explosives Regulations                        |
| NSN   | NATO Stock Number  |
| NW    | Nuclear Weapon   |

**O**

|         |  |
|---------|--|
| OB Proc | Ordnance Board Proceeding                            |
| OEL     | Occupational Exposure Limit                          |
| OLQ     | Operational Limiting Quality                         |
| OME     | Ordnance Munitions Explosives                        |
| OOA     | Out of Area  |
| OOQ     | Officer of the Quarter                               |
| OPCW    | Organisation for the Prohibition of Chemical Weapons |
| OPTAG   | Operational Training and Advisory Group              |
| OQD     | Outside Quantity Distance                            |

**P**

|      |  |
|------|--|
| Pam  | Pamphlet   |
| PATO | Principal Ammunition Technical Officer                   |
| PB   | Process Building   |
| PBD  | Process Building Distance                                |
| PC   | Protective Clothing                                      |
| PE   | Plastic Explosive or Procurement Executive (but see DPA) |
| PEC  | Packaging of Explosives for Carriage Regulations         |
| PES  | Potential Explosion Site                                 |
| PETN | Penta-Erythritol Tetranitrate                            |
| PIRA | Packaging Industry Research Agency                       |
| PLB  | PES Log Book   |
| PM   | Project Manager  |
| PMT  | Project Management Team                                  |
| POL  | Petrol, Oil and Lubricants                               |
| PPE  | Personal Protective Equipment                            |
| PSP  | Pressed Steel Plate or Personal Survival Pack            |
| PTR  | Public Traffic Route                                     |
| PTRD | Public Traffic Route Distance                            |
| PSM  | Portable Steel Magazine                                  |
| PTW  | Permit to Work   |
| PVC  | Poly-Vinyl Chloride                                      |

|               |  |
|---------------|--|
|               | <b><u>Q</u></b>                                      |
| QA            | Quality Assurance                                    |
| QD            | Quantity Distance                                    |
| QF            | Quick Firing   |
| QRA           | Quick Reaction Alert or Quantitative Risk Assessment |
| QRD           | 'Q' Readiness Date                                   |
|               | <b><u>R</u></b>                                      |
| R             | Repairable   |
| R&I           | Receipts and Issues                                  |
| RADHAZ        | Radio Frequency Hazard or Radiation Hazard.          |
| RAG           | Returned Ammunition Group                            |
| RC            | Red Card or Re-inforced Concrete                     |
| RCD           | Residual Current Detector                            |
| RCK           | Rapid Cratering Kit                                  |
| RCU           | Range Control Unit                                   |
| RDN           | Cordite, Research Department 'N' Formula             |
| RDX           | Research Department Explosive (Cyclonite)            |
| RF            | Radio Frequency or Rim Fire                          |
| RH            | Relative Humidity                                    |
| RID           | International Carriage of Dangerous Goods by Rail    |
| RLC           | Royal Logistics Corps                                |
| RNAD          | Royal Naval Armament Depot                           |
| RO            | Royal Ordnance                                       |
| RP            | Rocket Projectile                                    |
| RU            | Ready Use  |
| RX            | Receiver (as in RX/TX)                               |
|               | <b><u>S</u></b>                                      |
| S             | Serviceable  |
| SA            | Support Authority or Semi-active                     |
| SAA           | Small Arms Ammunition                                |
| SACLOS        | Semi-Automatic Command Line Of Sight                 |
| SAESS         | Support Authority Explosives Support Service         |
| SAD           | Safety and Arming Device                             |
| SAGM          | Surface to Air Guided Missile                        |
| SAGW          | Surface to Air Guided Weapon                         |
| SAM           | Surface to Air Missile                               |
| SAO           | Senior Armament Officer                              |
| SAP           | Semi-Armour Piercing                                 |
| SAPI          | Semi-Armour Piercing and Incendiary                  |
| SATO          | Senior Ammunition Technical Officer                  |
| SAU           | Safety and Arming Unit                               |
| SB            | Sequence Belted                                      |
| SC            | Solventless Cordite                                  |
| SCABA or SCBA | Self Contained Breathing Apparatus                   |
| SD            | Ship Distance  |
| SDO           | Safeguarding Direction Order                         |
| Sect          | Section  |
| SEM           | Service Engineered Modification                      |
| SEXSSI        | Ship Explosive Store Safety Instruction              |
| SFO           | Senior Fire Officer                                  |
| SH            | Squash Head or Support Helicopter                    |
| SHEF          | Safety, Health, Environment and Fire                 |
| SI            | Statutory Instrument                                 |
| SIBD          | Safeguarding Inhabited Building Distance             |
| SIMMO         | Simulated Ammunition                                 |



|          |  |
|----------|--|
| SLA      | Service Level Agreement  |
| Smk      | Smoke  |
| SP       | Self-Propelled   |
| SPS      | Splinter-proof Shelter   |
| SPU      | Splinter Protection Unit   |
| SQR      | Service Quality Requirements   |
| SR       | Staff Requirement  |
| SSA      | Supplementary Storage Area   |
| SSD      | Supplementary Safety Device  |
| SsD      | Storage sub-Division   |
| SSGM     | Surface to Surface Guided Missile  |
| SSGW     | Surface to Surface Guided Weapon   |
| SSO(DPA) | Safety Services Organisation (Def Procurement Agency)                      |
| STF      | Special Trial Fit  |
| STTC     | Special To Type Container  |
| STUFT    | Ships Taken Up From Trade  |
| SU       | Solvent Cordite Unrotated (Rocket Motor) or Support Unit or Surface (Ship) |
| SUO      | Specialist User Officer  |
| SUP      | Statement of Unit Policy   |
| SWG      | Standard Wire Gauge  |
| SWR      | Segregated War Reserve   |
| SX       | Sheet Explosive  |

**T**

|      |   |
|------|---|
| t    | Tonnes  |
| T    | Tracer  |
| TAB  | Technical Ammunition Bulletin                   |
| TEB  | Temporary Explosive Bulletin                    |
| THE  | Test Equipment House                            |
| TI   | Target Identification or Thermal Imager/Imaging |
| TLBH | Top Level Budget Holder                         |
| TNT  | Trinitrotoluene                                 |
| TOW  | Tube launched Optically tracked Wire guided     |
| TRS  | Tough Rubber Sheathed                           |
| TTW  | Transition to War                               |
| TX   | Transmitter (as in RX/TX [RADHAZ])              |

**U**

|      |                               |
|------|-------------------------------|
| UC   | Unclassified                  |
| UHF  | Ultra High Frequency          |
| UK   | United Kingdom                |
| ULC  | Unit Load Container           |
| ULS  | Unit Load Specification       |
| UN   | United Nations                |
| UOS  | Unit of Space                 |
| URC  | Universal Red Card            |
| USVF | United States Visiting Forces |
| UXO  | Unexploded Ordnance           |

**V**

|     |                             |
|-----|-----------------------------|
| VF  | Visiting Forces             |
| VHF | Very High Frequency         |
| VRI | Vulcanized Rubber Insulated |

**W**

|      |                                |
|------|--------------------------------|
| WACR | Weapon Assembly and Check Room |
| WO   | Warrant Officer                |

|     |                                      |
|-----|--------------------------------------|
| WP  | White Phosphorous                    |
| WMR | War Maintenance Reserve              |
| WSV | Weapon Storage Vault                 |
| WT  | Watertight                           |
|     | <b><u>X</u></b>                      |
| X   | Explosives (Qualification)           |
| XF  | Explosives and Fuels (Qualification) |