REGULATION 2.1 - HAZARD CLASSIFICATION OF EXPLOSIVES

General Overview

1.1 The United Nations (UN) System for classifying dangerous goods for transportation consists of nine classes of which Class 1 comprises explosives. The other classes are: gases, flammable liquids, flammable solids, oxidising substances, poisonous and infectious substances, radioactive material, corrosive substances and finally, miscellaneous dangerous goods. The Class 1 (Explosives) classification system is also used by Defence for storage. A comprehensive description of the UN System is contained in UN publication Recommendations on the Transport of Dangerous Goods—Model Regulations, ST/SG/AC.10/1 (as revised) (Orange Book) and is supplemented by publication ST/SG/AC.10/11—Manual of Tests and Criteria, which gives descriptions of the test methods and procedures for the classification of certain types of dangerous goods (including explosive substances and articles) for transport. As well as classifying dangerous goods in accordance with the major hazard posed, the UN System allocates a four digit UN number and proper shipping name to substances or articles listed in the Orange Book. The UN number provides a quick means of identifying classified dangerous goods and it is used for regulatory correlation purposes with transport mode specific information systems, e.g. International Air Transport Association and Inter-Government Maritime Consultative Organisation.

1.2 AASTP-1 Manual of NATO Safety Principles for the Storage of Military Ammunition and Explosives defines an international system for classification of EO for storage. This system is based upon the UN system but refines the criteria providing for storage sub divisions.

Requirements

1.3 All Commonwealth explosives determined as Defence EO is to be classified prior to all modes of transport and prior to storage in Defence-owned or leased facilities in accordance with the;
   - a. The UN System and AE Code for transport, and
   - b. Principles of AASPT-1, as modified by the Explosives Storage and Transport Committee (ESTC), for storage,

except for Depleted Uranium EO which is not permitted to be transported, stored or handled in Australia. The requirements of the UN System and the AASTP-1 storage sub divisions are detailed at Annex A.

1.4 Procedures will be developed to ensure hazard classification is achieved for;
   - a. New items of EO;
   - b. New Explosive Substances;
   - c. Reclassification of EO.

1.5 Hazard Classifications are to be promulgated at least quarterly via the ESTC pamphlet No 2—Defence Explosive Ordnance Classification Listing (DEOCL).

1.6 The DEOCL is to contain the following information:
   - a. ESTC Identification Serial—the DEOCL Number;
   - b. Classification Status;
   - c. Item Identification;
   - d. HD, Compatibility Group, Hazard Division Sub Division;
   - e. UN Number;
f. NEQ and TEQ; and

g. Package Data and Item quantity per pack.

Responsibilities

1.7 The Procurement Authority is responsible to ensure that appropriate classifications are allocated before the EO reaches an Australian port of entry and/or before the item enters service or is put to use. If a particular item is to be used by more than one element of the Department, the introducing sponsor is to ensure other interested parties are provided with the correct classification data.

1.8 The Department of Infrastructure, Transport, Cities and Regional Development is the Commonwealth Government Department responsible for administering the application of the UN System and provides the forum for Commonwealth intergovernmental and inter-departmental consultation. The department is also the authority responsible for liaison and consultation with the UN Group of Experts that provide advice on the transport of dangerous goods.

1.9 The Defence Science and Technology Group (DSTG) is to advise on explosive substance classification testing. The expertise of DSTG in this respect is available to the ESTC and all other elements of the Department.

1.10 Explosives Storage and Transport (EST) section of the Directorate of Ordnance Safety—Joint Logistics Command (DOS–JLC) is the point of contact with regard to matters relating to the classification of EO. The EST section is the Defence authority for allocating, changing and recording Hazard Classification Codes (HCC) for EO and is responsible for advising elements affected, of classifications allocated.

1.11 The EST section is responsible for confirming temporary classifications, allocating permanent classifications, determining the need for qualification and classification testing to be conducted by introducing sponsors and advising reclassification data.

1.12 The EST section has the following hazard classification specific responsibilities:

a. the provision of advice on temporary classifications upon the request of an introducing sponsor;

b. to confirm a temporary classification nominated by a sponsor;

c. to determine the need for qualification and classification tests required before a permanent classification may be allocated;

d. to provide advice on the conduct of qualification and classification tests and assistance in assessing test results;

e. to allocate permanent dangerous goods Class 1 classifications for Defence EO;

f. to forward, through the Department of Infrastructure, Transport, Cities and Regional Development, submissions to the UN for permanent classification of explosive substances; and

g. to maintain the DEOCL database in the format prescribed in paragraph 1.6.

h. conduct a 5 yearly review of hazard classifications.

Procedures

1.13 Procedures are required for the classification of Department of Defence owned or controlled explosives, recording and amending data as necessary, and disseminating the information within Defence. The following procedures are relevant to hazard classification of Defence EO:
Regulation 2.1


b. Form GI-039 Application for a Defence Explosive Ordnance Classification Listing

Annex:

A. Hazard Classification of Defence Explosives
PROCEDURE 1 - HAZARD CLASSIFICATION OF EXPLOSIVES

Introduction

1.1 In 1981 Defence adopted the United Nations Systems of Classification for Dangerous Goods Class 1 (Explosives) and the NATO Safety Principles for the storage, transport and handling of Defence explosive ordnance (EO).

Purpose

1.2 This procedure provides for Department of Defence Explosives Regulations, Regulation 2.1 – Hazard Classification.

1.3 Hazard Classification of Defence EO being introduced into service is to be undertaken in conjunction with the requirements of DEOP 102 - Technical Integrity of Explosive Ordnance, Part 3, Chapter 4 – Certification for Storage and Transport.

Applicability

1.4 These procedures are applicable to the Commonwealth explosives determined to be Defence EO. Defence EO is classified into Hazard Divisions and Compatibility Groups for transport, storage and handling purposes in accordance with the hazard classification system that is described in Annex A to Regulation 2.1.

1.5 When certain items containing explosives are considered to be non-hazardous they may be excluded from the classification system and also from the list of Defence EO in Topic -025 of the item publication. This occurs when the quantity of explosive present in a device is either so small or so situated that if the explosive functions inadvertently or accidentally the effects external to the device either by projection, fire, smoke, heat or loud noise do not constitute a danger to persons handling the device. Such items are not to be stored within an EO building unless they are components of a weapon or weapon assembly.

1.6 There are a number of items in the Defence inventory that are related by function to explosives and which are used for somewhat similar purposes as certain types of explosives, or are components of weapon systems. These items are classified as ‘Non-explosive Dangerous Goods’ (NEDG). NEDG are by their nature hazardous and are classified as Dangerous Goods within Classes 2 to 9, as appropriate. In the Service environment NEDG may be managed as if they belong to Dangerous Goods Class 1, ie they are allocated a Hazard Classification Code (HCC) for storage and transportation purposes and may be stored and handled in EO storage areas in accordance with the specific instructions for NEDG given in Procedure 1 of Regulation 4.3.

1.7 All Defence EO is listed in item publications which include essential information for packaging, storage, handling, loading and transportation of that item of EO, associated non-explosive components and some radioactive materials. Specific packaging information is found in the Topic -025. The NEDG referred to in paragraph 1.8 are also included in the Topic -025. HCC listed in the Topic -025s are sourced from the Defence Explosive Ordnance Classification Listing (DEOCL).

Nomenclature for Movements

1.8 When EO and NEDG are to be moved by rail, road, air or sea the Proper Shipping Name for items given in Topic -025 of the item publication is to be used on the Shipper’s Declaration for Dangerous Goods to identify the items being transported.

Procedures

1.9 New items of explosive ordnance. It is the responsibility of the Procurement Authority to ensure that appropriate classifications are allocated before the item reaches an Australian port of entry.
and/or before the item enters service or is put to use. If a particular item is to be used by more than one element of the Department, the introducing sponsor is to ensure other interested parties are provided with the correct classification data. The introducing sponsor is to:

a. determine whether the manufacturer or supplier has conducted hazard classification trials in accordance with UN publication Recommendations on the Transport of Dangerous Goods – Manual of Tests and Criteria ST/SG/AC.10/11. If so, the sponsor is to obtain the details of any results obtained and have Form GI-039—Application for a Defence Explosive Ordnance Classification Listing (DEOCL), completed. If results are not available, the sponsor may have to arrange separate trials. Form GI 039 is available on Web Forms;

b. nominate a temporary Hazard Division (HD), compatibility group and UN number and notify the ESTC of this temporary classification using Form GI 039—Application for a Defence Explosive Ordnance Classification Listing (DEOCL). The ESTC will confirm the suitability of any temporary classification pending allocation of a permanent classification. The temporary classification may be used for transport and storage purposes unless advised to the contrary by the ESTC. Note that a temporary classification may be allocated to an experimental or trial item for which there is no intention to apply for a permanent classification. This should be made clear when advising the ESTC of the temporary classification nominated. Temporary classifications are generally valid for a maximum of two years unless re-approved by the ESTC;

c. request the ESTC to determine a permanent classification; and

d. administer and conduct any qualification or classification tests required by the ESTC.

1.10 New explosive substances. Requests for the classification of new explosive substances for transportation are to be referred to the ESTC which may then pass the request directly to DSTO for the recommendation of a temporary classification to the ESTC, pending conduct of appropriate qualification and classification tests. For high explosives type substances a default HD 1.1 classification will normally be allocated unless specific test data is provided for the package proposed. For other types, eg propellants or pyrotechnics, care must be taken to ensure that the proposed packaging does not cause a more severe event on initiation than that normally expected if the material were ignited unconfined. Following its acceptance of the temporary classification, the ESTC is to document the details and any restrictions allocated in the DEOCL. Where necessary, the ESTC is to seek, through the Department of Infrastructure and Transport, permanent classifications for incorporation into the UN system.

1.11 Reclassification. The hazard classification of an item must be reviewed when a modification has been effected as being significant by the ESTC or the sponsoring agency. Sponsors are to request a reclassification review using Form GI-039 - Application for a Defence Explosive Ordnance Classification Listing (DEOCL) in the following circumstances:

a. a new explosive substance or a mixture of explosive substances are introduced which are considered significantly different from other mixtures which are already classified;

b. a new design of article or an existing article containing a new explosive substance or mixture of explosive substances is introduced;

c. a component of a complete article is reclassified which may require a change to the classification of the parent article;

1 Applications for classification of Explosive Ordnance, using Form GI 039, require 30 days notification to allow for any subsequent investigation to be completed.
d. the introduction of a new design of package for an explosive article, including a new type of inner packaging (a relatively minor change in inner or outer packaging can be critical and may convert a single article risk into a mass explosion risk); or

e. the creation of a unit load unless all packages have an identical Hazard Classification Code (HCC). The resultant HCC should be applied to the unit load as a whole, treating it as if it were a package for the purposes of marking and labelling.

Review

1.12 All Hazard Classifications are to be reviewed after five years to ensure that the entry is still required and that circumstances relevant to the classification have not changed. DEOCL items subject to this five yearly review are to be reported back to the next ESTC meeting.

Defence explosive ordnance classification listing database

1.13 The DEOCL database is the primary EO classification listing maintained by Defence and has precedence over all other EO hazard classification listings unless advised to the contrary by Commander Joint Logistics (CJLOG) (after consultation with the ESTC) or the ESTC. Users are to advise the ESTC of suggested additions and changes as they occur.

1.14 The DEOCL database contains the following information:

   a. ESTC Identification Serial—the DEOCL Number;
   b. Classification Status—temporary, permanent or for visiting forces;
   c. Sponsor Identifier which also indicates single Service management;
   d. Item Identification—abbreviated as necessary;
   e. HD, Compatibility Group and UN Number;
   f. Supplementary Fire Symbol (if required);
   g. net explosives quantity and transportation explosives quantity in kg per 1000 items for either a complete item or specified quantity;
   h. Package Data and item quantity per pack;
   i. International Maritime Dangerous Goods Code (if required); and
   j. any other significant factor.

1.15 The DEOCL is an unclassified database and is freely available within Defence on the DOS Intranet site. External agencies requiring copies may request them from the ESTC.

1.16 The DEOCL Supplement is a restricted database that is available from the ESTC by request.

List of Authorised Commonwealth Explosives

1.17 The List of Authorised Commonwealth Explosives (LACE) is a generic listing of Commonwealth explosives. The LACE is available on the DOS Intranet and Internet site. The ETR prohibit the transport of unauthorised Commonwealth explosives.
Foreign Sources

1.18 The classifications of visiting forces ammunition by the respective National Competent Authorities are accepted by the ESTC. Lists of such ammunition should be sent to ESTC before shipment.

1.19 EO Hazard Classification information is available from the following sources by request through the ESTC:

   a. The UK ESTC Classification Database (as amended) for items of UK origin and previously classified by UK authorities and advised therein.

      **Note**
      
      UK Health and Safety Executive classifications are not to be used.

   b. The United States Department of Defense Safety Board (US DDESB) Joint Hazard Classification System—Ammunition and Explosives (as amended) for items of US origin previously classified by US authorities and advised therein.

      **Note**
      
      US Federal Logistics Information System classifications are not to be used.
HAZARD CLASSIFICATION OF DEFENCE EXPLOSIVES

1. In 1981 the Department of Defence adopted the UN System for Classification of Dangerous Goods. Defence explosives safety policy is that all Explosive Ordnance (EO) be classified in accordance with the UN System prior to all modes of transport and prior to storage in Defence-owned or leased facilities.

Purpose

2. This annex describes the essential features of the UN system for the classification of explosives and the subdivision specifically developed for storage and licensing for quantity distance determination.

HAZARD CLASSIFICATION

Hazard divisions—general

3. Once a substance or article is determined to belong to Class 1 (Explosives), the purpose of the hazard classification is to assign a hazard division (HD). Note that articles containing explosives substances in such quantity or of such a character that their inadvertent or accidental ignition or initiation during transport shall not cause any effect external to the device either by projection, fire, smoke or heat or loud noise are not required to be included in Class 1.

4. Class 1 (Explosives) is divided into six divisions. The first four of these indicate the main type of hazard anticipated in the event of an accident: blast (Division 1.1), projection effects (Division 1.2), fire and radiant heat (Division 1.3) and no significant hazard (Division 1.4). The other two divisions (Division 1.5 and Division 1.6) are substance or article specific and are discussed in paragraphs 13 and 14 respectively. It should be noted that ‘no significant hazard’ does not mean no hazard; the hazard is less significant than that associated with other hazard divisions but it still exists and must not be ignored.

5. This manual uses the term ‘Hazard Division’ instead of ‘Division’ to emphasise the hazardous nature of explosives and to avoid the cumbersome alternative ‘Division 1 of class 1’ etc. The purpose of using these hazard divisions is to simplify the task of making regulations for safe storage and transport and to facilitate the observance of such regulations by identifying packages or articles by a simple numerical code.

6. Class 1 is unique in that the type of packaging occasionally has a decisive effect on the hazard and therefore on the assignment of a particular HD

Characteristics of hazard divisions

7. HD 1.1. HD 1.1 comprises explosive substances and articles that have a mass explosion hazard giving rise to blast and both high and low velocity projections. A mass explosion is one which affects almost the entire load virtually instantaneously. Such an explosion will result in severe structural damage, the severity and range being determined by the amount of high explosives involved. There is a risk of heavy debris being propelled from the structure in which the explosion occurs, or from the crater.

8. HD 1.2. HD 1.2 comprises explosive substances and articles which have a projection hazard but not a mass explosion hazard. An explosion will result in items burning and exploding progressively, a few at a time. Furthermore, fragments, firebrands and unexploded items may be projected in considerable numbers; some of these may explode on impact and cause fires or more

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1 An unpackaged Detonator may be classified as HD 1.1B. The same detonator can present hazards consistent with HD 1.4S when packaged in a particular configuration in specified packaging.
explosions. Blast effects are limited to the immediate vicinity. For the purpose of determining storage quantity distance a distinction, depending on the size and range of fragments, is made between those items which give small fragments of moderate range and those which give large fragments with considerable range. A method to determine this distinction is by Net Explosives Quantity (NEQ) of the individual items. The more hazardous items generally contain high explosives and have an individual NEQ of greater than 0.73 kg and the less hazardous items an individual NEQ of 0.73 kg or below\(^2\). Another method to determine the distinction between more and less hazardous items was used previously but is no longer recognised by the North Atlantic Treaty Organisation (NATO). This method was based on projectiles and cartridges less than 60 mm being assigned to the less hazardous, while those above 60 mm to the more hazardous.

9. **Subdivisions for storage.** The HD 1.2 subdivisions 1.2.1 and 1.2.2 are for storage purposes only and it is stressed that it is not a recognised code in the United Nations (UN) system of classification and must not appear on package labelling. If comprehensive data is available for a particular item, then the item may be placed in that category of HD 1.2 supported by the data and allocated the relevant QD. It may be necessary to take into account the vulnerability of items and the buildings in which they are stored at the Exposed Site (ES) under consideration.

   a. **Items classified HD 1.2.1.** The more hazardous part of HD 1.2 ie HD 1.2.1 comprises those munitions that contain a high explosive charge and may also contain a propelling or pyrotechnic charge. These items will have an individual NEQ greater than 0.73kg.

   b. **Items classified HD 1.2.2.** The less hazardous part of HD 1.2 comprises those munitions that contain a high explosive charge and may also contain a propelling or pyrotechnic charge. These munitions will have an individual NEQ equal to or less than 0.73kg. It will also typically include ammunition that does not include high explosive and will include pyrotechnic rounds and articles and rounds with inert projectiles. Tests show that items of HD 1.2.2 produce fragments and lobbed EO with a range significantly greater than that of EO in HD 1.4. but less than those of HD 1.2.1.

   c. **Items classified as HD 1.2.3.** A special storage subdivision with its own unique set of quantity distances which is applicable to EO that exhibit at most an explosion reaction in sympathetic reaction testing per STANAG 4396 and a burning reaction in bullet impact, slow heating, and liquid fuel/external bonfire testing per STANAGs 4241, 4382 and 4240, respectively.

10. **HD 1.3.** HD 1.3 comprises explosive substances and articles which have a fire hazard and either a minor blast hazard or minor projection hazard or both, but not a mass explosion hazard. It includes some items which burn with great violence and intense heat emitting considerable thermal radiation (mass fire hazard) and others which burn sporadically. For the purpose of determining storage quantity distance a distinction is made between those items. Items in this division may explode but do not usually form dangerous fragments. Firebrands and burning containers may be projected. (see Regulation 5.4 Procedure 1, paragraphs 1.16-1.19).

11. It is stressed that HD 1.3.3 and HD 1.3.4 are not recognised codes in the UN system of classification and are to be used only for storage purposes and must not appear on package labelling. A distinction is made between the more hazardous items (HD 1.3.3) and those of lesser hazard (HD 1.3.4).

   a. **Items classified Hazard Division 1.3.3 producing a mass fire effect.** HD 1.3.3 consists of the more hazardous items of HD 1.3 and are more likely to be bulk packed gun propellants which produce a fireball with intense radiant heat, firebrands and some fragments. The firebrands may be only small glowing particles of packaging materials but sometimes there may be massive fiery chunks of burning propellant. The effect of quite normal winds may augment a calculated flame radius by 50 per cent. A

\(^2\) It is important not to exaggerate the significance of the value 0.73 kg. It has been derived from a specific break point in the database supporting the quantity distance relationships and tables, and the NEQ of the items trialled (see Regulation 5.4 Procedure 1, paragraphs 1.13-1.15)
building with marked asymmetry of construction, such as an igloo, or a building with protective roof and walls, but with one relatively weak wall or a door induces very directional effects from the flames and the projection or burning packages. These effects are particularly significant for storehouses and process buildings at the ES facing the directional jetting. If prompt attendance by a fire brigade is impossible, loss of such buildings and contents may occur. Wherever possible, a PES should always vent away from an ES otherwise an increased risk of propagation of fire exists.

b. **Items classified Hazard Division 1.3.4 not producing a mass fire effect.** HD 1.3.4 consists of the less hazardous items of HD 1.3 that produce a moderate fire with moderate projections and firebrands. The projections include fragments that are less hazardous than those which characterise HD 1.2 as described in paragraph 1.8.

12. **HD 1.4.** HD 1.4 comprises explosive substances and articles which present no significant hazard (compared with the HD described above) and which present a small hazard in the event of ignition or initiation during storage or transport. The effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire does not cause the instantaneous explosion of the entire contents of a package of such items. Some but not all substances and articles of this division are assigned to Compatibility Group S. Those items assigned to Compatibility Group S are so packaged or designed that any hazardous effects arising from accidental functioning are confined within the package unless the package has been degraded by fire, in which case all blast or projection effects are limited to the extent that they do not significantly hinder firefighting or other emergency response efforts in the immediate vicinity of the package.

13. **HD 1.5.** HD 1.5 comprises very insensitive substances which have a mass explosion hazard but that are so insensitive that there is very little probably of initiation or of transition from burning to detonation under normal conditions of storage and transport. Note that the probability of transition from burning to detonation is greater when large quantities are carried eg in a ship’s hold. For storage purposes, such substances are treated as HD 1.1 since, if an explosion should occur, the hazard is the same as for items formally assigned to HD 1.1, ie blast.

14. **HD 1.6.** HD 1.6 comprises extremely insensitive articles which do not have a mass explosion hazard. Such articles contain only extremely insensitive detonating substances and demonstrate a negligible probability of accidental initiation or propagation. The risk from articles of HD 1.6 is limited to the explosion of a single article. Therefore, the effects of single item initiation should be used to determine storage requirements. Articles containing only extremely insensitive detonating substances belong to Compatibility Group N (see paragraph 27).

**Classifications for explosive ordnance—special cases**

15. **Inert EO.** EO which does not contain any explosive or other dangerous goods (for instance dummy bombs, cartridges and projectiles) is excluded from the UN system of hazard classification.

16. **Toxic EO.** EO containing an explosive dispersing or propelling charge and a toxic chemical agent is assigned to the appropriate HD on the basis of explosive hazard. Such items are to be assigned to an appropriate HD and Compatibility Group K—see paragraph 27. A subsidiary risk label is to be used on the package—see paragraph 20.

17. **Pyrotechnic EO.** Chemical EO containing tear gas, a corrosive agent, white phosphorus, napalm etc without explosives is assigned to the appropriate dangerous goods class (6, 8 etc) of the UN System for transport. For storage purposes in an explosives depot, such items may be assigned to HD 1.3 or HD 1.4 as appropriate and a compatibility group allocated. Such EO with an explosive dispersing or propelling charge is assigned to the appropriate HD on the basis of the explosive hazard and a compatibility group allocated.

18. **Depleted Uranium (DU) EO.** EO containing DU is not permitted to be stored, transported or handled in Australia. DU would present in the form of a penetrator or projectile and would be assigned to the hazard classification appropriate to the explosives content of the EO only. Due to the slight radioactivity and chemical toxicity of DU, special storage and transport provisions are required.
19. **Dangerous goods Class 9.** Some appliances, eg UN No 2990—Life-saving Appliances, Self-inflating and UN No 3072—Life-saving Appliances, Non Self-inflating, are classified under Class 9 (Miscellaneous Dangerous Substances and Articles). The UN No 2990 appliances present a hazard if the self-inflating device is activated accidentally, however, both UN No 2990 and 3072 appliances may also include one or more of the following dangerous goods as equipment: signal devices (Class 1); non-flammable, non-toxic gases (Division 2.2); small quantities of flammable substances (Classes 3, 4.1 and 5.2); electrical storage batteries (Class 8); lithium batteries (Class 9); and small quantities of corrosive solids. Accordingly, all Class 9 appliances which contain Class 1 (explosive) components should be handled and stored on the basis of the classification of the explosive components in an explosives storage area, but should not be stored with other EO in quantity. The items may be stored outside an explosive storage area as Class 9 as long as the items are stored and handled as complete items and the life rafts are not opened, thereby exposing the EO. Serviceability and lifting of explosive components in Class 9 appliances must be monitored through the normal EO surveillance programs.

20. **Subsidiary risk.** Some items of EO may exhibit characteristics of more than one dangerous goods class eg explosives and poisons. For EO, the primary classification will always be Class 1 with, in this example, a subsidiary risk classification of Class 6.

21. **Classification of unit loads.** Unit loads or transport units which contain EO of mixed Compatibility Groups C, D and E and mixed HD eg 1.1D, 1.2D and 1.3C, must be allocated an overall hazard classification code for the unit load or transport unit. The appropriate HD 1 through 6 and compatibility group is determined by applying the mixing rules contained in Regulation 3.2 Procedure 1 —‘Mixing Rules for Transport’.

**STORAGE AND TRANSPORT COMPATIBILITY**

**General principles**

22. EO is considered to be compatible if it may be stored or transported together without significantly increasing either the probability of an accident or, for a given quantity, the magnitude and effects of such an accident.

23. EO should not to be stored or transported together with other dangerous goods which could add additional hazards: eg highly flammable materials, acids, corrosives.

24. The safety of EO in storage or transport would be more certainly ensured if each hazard classification was kept separate, but this ideal practice is not always practicable. A proper balance of the interests of safety against other factors requires the mixing of various hazard classifications of EO during storage and transport.

**Formulation of compatibility groups**

25. To simplify the activity of mixing EO during transport and in storage EO is assigned to compatibility groups on the basis of the principles in paragraphs 22–24.

26. EO is formally grouped into thirteen compatibility groups: A to H, J, K, L, N and S. Group I is omitted to avoid confusion between the letter ‘I’ and the Roman numeral ‘I’. Group S is distinctive since it is an indicator of unique possibilities for mixing in storage and transport.

**Definitions of the compatibility groups and hazard classification codes**

27. The definitions of the various compatibility groups, together with amplifying notes at paragraphs 27–32, follow:

- **Group A:** primary explosive substance.
- **Group B:** article containing a primary explosive substance and not containing two or more protective features.
c. **Group C**: propellant explosive substance or other deflagrating explosive substance or article containing such explosive substance.

d. **Group D**: secondary detonating explosive substance or black powder or article containing a secondary detonating explosive substance, in each case without its own means of initiation and without a propelling charge, or article containing a primary explosive substance and containing two or more effective protective features.

e. **Group E**: article containing a secondary detonating explosive substance, without its own means of initiation, with a propelling charge (other than one containing a flammable liquid or gel or hypergolic liquids).

f. **Group F**: article containing a secondary detonating explosive substance with its own means of initiation, with a propelling charge (other than one containing a flammable liquid or gel or hypergolic liquid) or without a propelling charge.

g. **Group G**: pyrotechnic substance, or article containing a pyrotechnic substance, or article containing both an explosive substance and an illuminating, incendiary, tear or smoke producing substance (other than a water activated article or one containing white phosphorus, phosphides, a pyrophoric substance, a flammable liquid or gel, or hypergolic liquids).

h. **Group H**: article containing both an explosive substance and white phosphorus.

i. **Group J**: article containing both an explosive substance and a flammable liquid or gel.

j. **Group K**: article containing both an explosive substance and a toxic chemical agent.

k. **Group L**: explosive substance or article containing an explosive substance and presenting a special risk (eg due to water-activation or presence of hypergolic liquids, phosphides or pyrophoric substance) and needing isolation for each type.

l. **Group N**: articles which contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

m. **Group S**: substances or articles so packed or designed that any hazardous effects arising from accidental functioning are confined within the package unless the package has been degraded by fire, in which case all blast or projection effects are limited to the extent that they do not significantly hinder or prohibit firefighting or other emergency response efforts in the immediate vicinity of the package.

**Notes on Compatibility Groups**

28. **Compatibility Group D** applies only when secondary detonating explosive (high explosive) or black powder is properly packed in a dust-tight container. Otherwise, special precautions are essential and Compatibility Group L would apply.

29. **Compatibility Group D or E** may apply to EO which is fuzed or packed together with fuzes, if the fuzes are adequately protected. See the definitions of 'with/without its (own) means of initiation’ in the Department of Defence Explosives Regulations —‘Glossary of Terms’.

30. **Compatibility Group F** does not necessarily apply to EO which is fuzed or packed together with fuzes, if the fuzes are adequately protected. See the definitions of ‘with/without its (own) means of initiation’ in the Department of Defence Explosives Regulations —‘Glossary of Terms’.

31. **Compatibility Group S** corresponds to safety ammunition which constitutes part of HD 1.4.

32. **Compatibility Group N** applies only to HD 1.6. The potential administrative advantage of Compatibility Group N EO will be lost when mixed with other HDs and/or compatibility groups.
Determination of compatibility group

33. The compatibility group of EO is determined on the basis of the definitions given in paragraph 27.

CLASSIFICATION BY HAZARD DIVISION AND COMPATIBILITY GROUP

General

34. The following explains how the Hazard Classification Code (HCC) can be used to simplify:
   a. The labelling of EO,
   b. The entries in storage and transport documents, and
   c. The formulation of safety instructions.

Hazard classification code

35. A HCC is composed of the HD designation (eg ‘1.1’) and the assigned compatibility group letter (eg ‘B’), to give in this example, ‘1.1 B’. The simple alphanumeric code indicates the hazard present and degree of compatibility for storage and transport.

36. Table 1A–1 lists the possible combinations of HDs and compatibility groups, ie HCC for EO.

Number of hazard classification codes

37. Table 1A–1 lists only 35 HCC although at first sight the six HD and 13 compatibility groups should give many more combinations. Some combinations cannot exist because the definitions of the Division and the Group are mutually exclusive, or do not occur in practice because the resultant characteristics are highly improbable or useless for EO.

Classification assessment

38. In practice, the compatibility group is assigned first, and the HD is assigned next, as shown in table 1A–1. This table summarises the relevant characteristics of the whole range of EO in terms of the HCC.

39. Where there is doubt about the interpretation of the definition of the compatibility groups, it may be helpful to consult the list of classifications of existing types of EO. Compatibility Group S is exceptional, in that testing or other assessment of the effect of explosion in the article or package is a prerequisite for assignment to this Group.

40. Table 1A–1 shows that usually an article or package complying with the definition of a particular compatibility group can have alternative HCC dependent upon the hazard assessment. The hazard assessment depends on the nature and quantity of explosive substance, the type of packaging and other factors and thus cannot always be determined by theoretical methods.

41. Although it is helpful to predict the effect of explosion by reference to the entries for similar EO, undue reliance on such an expedient can be dangerously misleading. An apparently minor difference in construction or packaging can be critical and make a significant difference to the effect of explosion, thus necessitating a change in the hazard assessment and HCC. It is for this reason that there is great importance attached to actual tests.

Use of hazard classification codes

42. HCC are very useful because they are so concise and present no language problems. The 35 HCC shown in table 1A–1 summarise the significant characteristics, for safe storage and transport, of the whole range of types of EO. These advantages can be exploited as follows:
a. EO can be marked or labelled with HCC to facilitate identification. Various national systems have been used for many years. The objective is to use one system worldwide for both commercial and military explosives, and for the system to resemble that used for other dangerous goods. The codes of the International System of Classification are well suited to this aim.

b. Documents relating to storage and transport of EO can use HCC to convey the majority, and sometimes the whole, of the technical information needed to ensure safe handling, permitted mixed storage or stowage, required segregation, a suitable building or vehicle and appropriate fire fighting techniques.

c. Safety regulations for storage and transport of EO can be formulated more simply and concisely by framing them in terms of HCC. The codes have been selected so as to harmonise with the requirements of the various nations and individual modes of transport. Although the requirements may differ, the regulations can all use the same codes to promote standardisation of concepts and terminology.

Lists of explosives substances and articles

43. A comprehensive list of generic classifications together with specific classifications for explosives substances and articles in accordance with the UN International System of Classification are given in Explosives Storage and Transport Committee pamphlet No 2—Defence Explosive Ordnance Classification Listing (DEOCL).

44. The generic list of classifications includes the UN (Serial) Number, HCC and authorised short name as allocated by the UN system. The names in capital letters in the list constitute the authorised short name (Proper Shipping Name) of items for use on packages and in transport documents.
## ANNEX A

<table>
<thead>
<tr>
<th>Hazard Division</th>
<th>Compatibility Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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Table 1A-1: Combination of hazard divisions and compatibility groups
REGULATION 2.2 - NET EXPLOSIVE QUANTITY

General Overview

2.1 The determination of the Net Explosive Quantity (NEQ) and Transport Explosive Quantity (TEQ) is a necessary and important part of the assessment of the hazards induced by a single item of Explosive Ordnance (EO) or a set of them as in a unit load or transport or storage unit.

Requirements

2.2 All Defence EO is to have the NEQ and TEQ determined prior to all modes of transport and prior to storage in Defence-owned or leased facilities.

2.3 NEQ and TEQ are to be promulgated at least quarterly via the Defence Explosive Ordnance Classification Listing (DEOCL).

Responsibilities

2.4 The Procurement Authority is responsible to ensure that the NEQ and TEQ are determined before the EO reaches an Australian port of entry and/or before the item enters service or is put to use. If a particular item is to be used by more than one element of the Department, the introducing sponsor is to ensure other interested parties are provided with the correct NEQ.

2.5 The Explosives Storage and Transport Committee is responsible to maintain the DEOCL.

Procedures

2.6 Procedures to implement this regulation are found in Procedure 1 – Determination of Net Explosive Quantity and Transport Explosives Quantity.
PROCEDURE 1 - DETERMINATION OF NET EXPLOSIVE QUANTITY
AND TRANSPORT EXPLOSIVE QUANTITY

Purpose

1.1 This procedure provides the requirements for implementing Department of Defence Explosives Regulations, Regulation 2.2 – Net Explosives Quantity.

Rules for Determining Net Explosive Quantity of a Single Item of EO

1.2 The Net Explosive Quantity (NEQ) of a single item of Explosive Ordnance (EO) is the Transport Explosive Quantity (TEQ) of the EO unless it has been determined, e.g. by testing, that the explosive effects of the EO significantly differ from the explosive effects expected from that quantity.

Rules for Determining Net Explosives Quantity of a Set of EO Items

1.3 Set of identical EO. The NEQ of a set of identical items of EO, e.g. unit load, is obtained by adding together the NEQ of each item of EO, unless it has been determined, e.g. by testing, that the explosive effects of the set significantly differ from the explosive effects expected from that quantity.

1.4 Set of EO of different classifications. The NEQ of a set of items of EO of different classifications, e.g. storage unit, depends on the classification of the EO. The mixing rules for hazard divisions and compatibility groups are given in Regulation 3.2 Procedure 1 – Mixing Rules for Transport and Regulation 4.2 Procedure 1 – Mixing Rules for Storage. Determination of the NEQ is then obtained as explained in paragraph 1.3.

Explosive Quantity for Packaging Purposes

1.5 The NEQ figure to be placed upon an EO package when it is being packed or repacked is the actual NEQ as determined from the Explosives Storage and Transport Committee Pamphlet No. 2 – Defence Explosive Ordnance Classification Listing (DEOCL). The NEQ should be displayed to 3 decimal places. Where the NEQ marked on the EO package is below the published packaged NEQ in the DEOCL, the item is deemed to be serviceable. If the NEQ listed in the DEOCL has fewer than three decimal places, there is no requirement to display the NEQ to three decimal places (e.g. 1.8 kg not 1.800 kg). EO packages that contain less than 0.001 kg NEQ amounts are to be rounded up to three decimal places (e.g. 0.0005 kg rounded up to 0.001 kg).

1.6 Under no circumstances are NEQ calculations to be rounded down.

1.7 Where variation exists between the package and the DEOCL, it must be reported to the Explosive Materiel Branch (EMB) within the Capability, Acquisition and Sustainment Group (CASG) via Form EO 100 in accordance with Regulation 1.5 Procedure 1 Annex D.

Explosive Quantity for Storage Purposes

1.8 For the purpose of storage, it is necessary to determine the amount of explosive substance to use for computing Quantity Distances (QD). Therefore, this amount, referred to as the NEQ, must be expressed in such a way that it is possible to use the QD tables to determine the distances required.

1.9 The QD tables give the minimum distances between a Potential Explosion Site (PES) and an Exposed Site (ES). These are necessary to determine whether an acceptable risk exists in case of an explosion for persons and materiel assets that would be exposed. For instance, they give the minimum distance to inhabited buildings, or to public roads.

1.10 The QD tables have been determined by using data from accidents or tests where the PES was a charge in a certain configuration, called a reference charge e.g. a bare charge of TNT in case of
Hazard Division 1.1. Thus, the amount of explosive substance contained in the EO should be expressed in terms of equivalent charges whenever it is possible.

1.11 The NEQ of an item of EO is the amount ‘Q’ of the reference charge, expressed in kg, which, if replacing the EO, is supposed to have the same effects, in terms of blast, fragment energy or thermal flux. Therefore, the NEQ is the amount of explosive to be used in the QD tables or formulae to determine the safety distances in case of an explosion (detonation, deflagration or combustion).

1.12 Where two or more PES are not separated by the appropriate inter-magazine distances, they are considered as a single site, and the aggregate NEQ is used for determining QD. If two or more hazard divisions are involved, the principles in Regulation 4.2 Procedure 1 — Mixing Rules for Storage apply.

1.13 The NEQ and TEQ do not include such substances as white phosphorus, war gases or smoke, incendiary compositions and fuel, unless these substances contribute significantly to the dominant hazard of the hazard division concerned, e.g. Otto Fuel II in Mk 48 Torpedoes.

**Explosives Quantity for Transport Purposes**

1.14 For the purpose of transport the explosives quantity is regarded to be the total net mass, in kg, of explosive substances or, in the case of explosive articles, the total mass of explosive substances contained in all articles. In this instance the total explosives quantity is referred to as the TEQ. This is the ‘Net Explosives Quantity’ referred to in the AE Code (as revised).
REGULATION 2.3 - PACKAGING AND MARKING

General Overview

3.1 Explosive Ordnance (EO) and associated components are packed for transport, storage and handling in packages designed to minimise danger, damage and deterioration; such packages are normally to be used only for the purpose for which they were designed. However, in order to make effective use of stocks of empty packages many will be re-used to package items for which the package was not originally designed. The hazards arising from failure of packages that are filled with EO are serious. In addition to the danger to life, if a package fails it may necessitate costly inspection, repacking, renovation or destruction of the stores. It is therefore essential that the responsible authority ensures that EO packages meet certain design, construction and testing requirements prior to introduction into service.

3.2 Packaging is essential to maintain the safety, serviceability and reliability of EO by providing protection while in store and during transportation and handling. During most of its service life EO is in storage, protected from shock, vibration, and to some extent climatic conditions. When required by the user, EO may be transported by any available means, stored in exposed positions and subjected to a wide spectrum of environmental hazards. Finally, when required for use, the EO has to be quickly identified and then speedily removed from its package, often at night and in adverse conditions.

3.3 Prior to the introduction of a new package design into service, the approving authority is required to be satisfied that the package will perform satisfactorily during its service life. The standard of the empty package is to virtually guarantee that the contents will be serviceable when required for use after normal service handling.

3.4 Packages may have to be stored, transported and used in widely different conditions yet continue to comply with service operational requirements. To assist the approving authority in introducing a suitable package into service, it is necessary to test the package in appropriate environments and mechanical conditions to ensure that these requirements are achieved.

Requirements

3.5 Marking of Explosive Ordnance. Explosive ordnance will be marked in accordance with the requirements contained within this regulation and its associated procedures to provide ready identification of EO. UK Defence Standard (DEF STAN) 00-810 – Marking of Ammunition and Associated Packages and NATO standard AOP-2 – Identification of Ammunition may be used as a guide.

3.6 Development of Packaging. Prior to development of a new package, the design authority must seek advice from the user on the environment in which the subject EO will be used. This will determine what tests, stipulated in DEF STAN 00-35, the package will be subjected to during acceptance into service trials, eg operational ammunition, with a design life of 15 years, will require a higher standard of packaging than training ammunition, with a design life of eight years.

3.7 Packaging for EO should:

   a. meet the user requirements and suit the operational role envisaged for the EO;
   b. provide adequate protection for the contents against damage and loss of functional efficiency throughout its designed service life;

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1 MODUK DEFSTAN 00-035 superseded DEFSTAN 00-35 and consists of five parts ie:

- Part 2 Environmental Handbook for Defence Materiel Environmental Trials Programme Derivation and Assessment Methodologies
- Part 3 Environmental Handbook for Defence Materiel Environmental Test Methods
- Part 4 Environmental Handbook for Defence Materiel Part 4 – Natural Environments
- Part 5 Environmental Handbook for Defence Materiel Part 5 - Mechanical Environments
c. be suitable for safe and economic transportation, storage and mechanical/manual handling;
d. have dimension, mass and costs which are as small as practicable;
e. have simple secure fastenings, capable of easy opening and re-closing, preferably nails are not to be used; and
f. carry identification markings which are not easily obliterated.

3.8 In addition to the requirements below and unless specific provision to the contrary is made, the packagings used for explosives must comply with at least the requirements for solids or liquids (as appropriate) of Packing Group II (medium danger).


3.10 In accordance with the AE Code, packaging used for explosives must meet the construction and performance requirements of the Australian Dangerous Goods (ADG) Code noting the general requirements of Chapter 4 of the ADG Code, in that:

a. they must be packed in good quality packagings, including Intermediate Bulk Containers (IBCs) and large packagings, which must be strong enough to withstand the shocks and loadings normally encountered during transport, including trans-shipment between cargo transport units, and between cargo transport units and warehouses, as well as any removal from a pallet or overpack for subsequent manual or mechanical handling;
b. packagings, including IBCs and large packagings, must be constructed and closed so as to prevent any loss of contents when prepared for transport, which may be caused under normal conditions of transport, by vibration, or by changes in temperature, humidity or pressure; and
c. packagings, including IBCs and large packagings, must be closed in accordance with the information provided by the manufacturer. No dangerous residue must adhere to the outside of packagings, IBCs and large packagings during transport.

3.11 Refurbishment of Packaging. The minimum standard to which packages are to be refurbished is detailed in NOID Spec 52271 Repair for Explosive Ordnance Packages.

3.12 Paint. All package finishes are to be free of hazardous materials such as Zinc Chromate, Polyurethane (PUP) or Lead based paint and packages are to be free of any foreign materials.

3.13 Plastic Packaging. Plastic packaging is not to be introduced unless:

a. all appropriate tests outlined in the Australian Dangerous Goods (ADG) Code have been successfully completed;
b. the package is not susceptible to Ultra Violet (UV) degradation;
c. the package is not liable to the build-up of electrostatic charge that could initiate Electro-Explosive Device (EED) or exposed high explosive, propellant and pyrotechnic substances;
d. the package’s products of combustion do not present an unacceptable hazard to transport operations; and
e. a formal Safety and Suitability for Service (S3) assessment has been conducted on the package and its contents.

3.14 Packaging Instructions. The Packaging Instructions described in the AE Code must be used for each item of EO, and be listed in the Topic 025 of the item publication. Accordingly, all new packages and any re-packaging proposals must meet the requirements of the AE Code.

3.15 Hazard Classification. Hazard classification is to be sought as soon as the package design is approved. When classification is obtained it takes into account the effect of the package on the EO that it contains. Hence, if the package requires to be changed or modified, a new classification may be required, which may require Hazard Classification Code testing in accordance with the Recommendations on the Transport of Dangerous Goods - Manual of Tests and Criteria (Orange Book Test Manual).

3.16 Packaging Marking. EO manufactured in Australia either to an Australian design or to a design originated in another country is to be marked in accordance with the requirements of the AE Code and the approved marking drawing for the EO developed in accordance with paragraph 3.8 design requirements. Exception to these requirements may be applicable for EO sourced from foreign sources.

3.17 Packaging for EED. Packaging for Electro-Explosive Device (EED) must not include the use of ordinary non-conducting polythene as a packaging material. EEDs when so packaged, are susceptible to initiation by the static charges which could be developed on the packaging material. Conductive polythene, ie that which contains 35 per cent carbon black or is otherwise made conductive by metallisation, may be used but metallised polythene is only to be used where there is no possibility of fracture of the metallic surface eg where constant flexing of the polythene will not occur. Exceptionally, non-conducting polythene may be used to package EED which, as packaged, are sufficiently screened and shielded by their construction or the use of shielding or shorting caps so as to be immune from the effects of any static charge which may develop on the packaging material. The type of polythene, conducting or non-conducting is to be specified in the packaging drawing or other instruction. Specialist advice relating to packages for EED is available from the Explosive Materiel Branch (EMB), Capability Acquisition and Sustainment Group (CASG).

3.18 Packaging materials. The choice of materials for packages for components will depend on the type of EO and the degree of protection required. The materials used are to be compatible with the material from which the EO is made, or with which it is protected, or alternatively, a suitable inner package is to be provided. All packaging materials are to be:

a. Free from any Asbestos containing materials;

b. Compliant with schedule 10 of the Work Health and Safety Regulations (2011) regarding prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals; and

c. Where applicable should be International Standards for Phytosanitary Measures (ISPM) 15 compliant.

3.19 Packing and Unpacking. Procedures must be developed to provide for precautions to be observed for the packing and unpacking of explosive ordnance.

3.20 Closing and Sealing of Packages. Procedures must be developed for the closing and sealing of packing containing explosive ordnance to:

a. Detect tampering;

b. Signify that the contents are correctly described by the data shown on the outside of the packaging/unit load; and

c. Prevent the ingress of water or moisture laden air for applicable EO.
3.21 Monograms. The Explosives Transport Regulations 2002 Statutory Rules No. 92, 2002 (ETR) requires the Department of Defence to have a means of identifying an establishment or organisation responsible for correct packaging of EO. To implement this requirement, the use of seals for sealing of packages in accordance with paragraph 3.16 will bear a station, unit or establishment monogram.

3.22 Packages Emptied of Explosive Ordnance. Procedures will be developed for the inspection, sealing and certification of packages as Free From Explosives (FFE) for the:

a. Transport of packaging which has contained EO, which must be in accordance with the ETR until it has been certified to be FFE material. This requirement is not applicable to the transport of newly manufactured packages that have not been put to use, nor to packages that have been refurbished and are yet to be filled and marked; and

b. Storage of packages that have been certified as FFE which will;

   (1) be stacked separately from those packages which have not been so certified; and

   (2) not be stored in an EO building together with EO without the written authority of the Officer-In-Charge.

3.23 Functioned EO for Salvage or Return. Functioned EO for salvage or return will undergo Inspection, Packaging and Certification to identify that a package contains an item that is FFE or safe for transportation.

3.24 Unit loads and freight containers. Unit load and freight containers are to be prepared and marked in accordance with the AE Code. For shipment by commercial Air or Maritime assets, the relevant Competent Authority document e.g. International Air Transport Association (IATA), International Maritime Dangerous Goods (IMDG) is to be referenced.

Responsibilities

3.25 The EO procurement agency is responsible for ensuring that:

a. empty packages of new manufacture conform to the requirements for design, construction, testing and marking;

b. empty and filled packages are subjected to adequate environmental and mechanical testing during acceptance into service trials;

c. additional evaluation, eg hazard classification, is undertaken as required; and

d. new packaging methods utilising currently-in-use packages are evaluated and formally authorised.

3.26 The following agencies are approved to conduct EO packaging tests in accordance with the requirements of paragraph 3.9-10:

a. a testing laboratory registered by the National Association of Testing Authorities (NATA) for the relevant packaging tests (the results are to be reported on a NATA endorsed test certificate);

b. a testing laboratory located overseas and recognised by the Directorate of Ordnance Safely (DOS); and

c. the following Defence agencies, provided tests are witnessed by the DOS or its delegate:
(1) Weapon and Combat Systems Division, DSTG Edinburgh and Maritime Division, DSTG Fishermans Bend;

(2) Land Engineering Agency; and

(3) Proof and Experimental Establishment, Port Wakefield.

3.27 The Explosives Storage and Transport Committee (ESTC);

   a. May be referred to for additional evaluation of packaging. Acceptance of the ESTC final reports and recommendations rests with the approving authority.

   b. Is responsible for the allocation and registration of monograms for use by Department of Defence establishments, Australian Munitions explosives factories, some Australian explosives manufacturers from whom Defence procures explosives, DSTG and Defence EO Service providers involved in the handling of EO.

Procedures

3.28 Procedures to implement this regulation are contained in:

   a. Procedure 1 – Marking of Explosive Ordnance;

   b. Procedure 2 – Packing and Unpacking of Explosive Ordnance;

   c. Procedure 3 – Closing and Sealing of Packages;

   d. Procedure 4 – Marking and Labelling of Explosive Ordnance Packages;

   e. Procedure 5 – Handling of Packages Emptied of Explosive Ordnance;

   f. Procedure 6 – Handling of Functioned Explosive Ordnance for Salvage and Return;

   g. Procedure 7 – Unit Loads and Freight Containers.
PROCEDURE 1 - MARKING OF EXPLOSIVE ORDNANCE

Introduction

1.1 The marking system for Explosive Ordnance (EO) employs colour codes, lettering and symbols which are intended to provide ready identification of explosive loads and hazards presented by identified items. A colour coding system is employed to indicate the primary use of the EO, the presence of hazardous (explosive, flammable, irritant or toxic) filler and/or the colours of tracers, dye loads and signals. Lettering, sometimes in combination with symbols, is used to identify the nature of the store, the manufacturer, lotting and filling detail and any precautions for safe use.

1.2 The marking of EO is essential to ensure quick, correct and sufficient identification at all times. More specifically, markings are applied for the following reasons:

a. to provide all necessary details to assist inspection, to guard against the supply of faulty or unproved EO to users, to aid investigation into causes of faulty operation or defects and to trace suspect EO;

b. to facilitate the issue of correct nature and type of EO, to enable EO to be clearly and easily identified by the user under all conditions of service and to provide the user with the maximum information possible concerning the nature, type and function of the EO supplied; and

c. to provide sufficient information for storage, transport and other services to ensure that all EO is correctly stored, handled and transported according to the nature of the explosive.

1.3 Requirements for the marking and labelling of EO packages are detailed in Regulation 2.3 Procedure 4.

Purpose

1.4 This procedure prescribes the requirements and methods for marking of EO to facilitate correct identification for inspection, storage and transport purposes, and to meet the requirements of Regulation 2.3.

1.5 Packaging Marking. EO manufactured in Australia either to an Australian design or to a design originated in another country is to be marked in accordance with the requirements of the Australian Explosives Code for the Transport of Explosives by Road and Rail (AE Code) and the approved marking drawing for the EO developed in accordance with packaging design requirements. Exceptions to these requirements may be applicable for:

a. EO sourced from foreign Services is normally accepted bearing the markings applicable in the Service of origin. Similarly, there are occasions when stores of Australian or foreign propriety trade supply are accepted bearing their normal trade identification markings. These markings are normally retained for the life of the store or until such time as refurbishment is necessary. Depending on the nature and extent of the refurbishment, remarking may be undertaken at the same time. In such cases, the Explosive Materiel Branch (EMB) Drawing Office in association with the relevant Item Manager will issue a marking drawing in accordance Ministry of Defence (MOD) UK Defence Standard DEF STAN 00-810 Marking of Ammunition and Associated Packages, as a guide. Marking drawings are prepared by the EMB Drawing Office or authorised EO Services Provider on behalf of the relevant Item Manager, and approved by the delegated design officer for the Item Manager in question.

(1) Note: Since DEF STAN 00-810 is only an advisory document its distribution will be generally limited to staff who have a particular need for it. Due to this limited distribution and because all personnel who handle ammunition must know and be familiar with the DEF STAN 00-810 colour coding to identify the role or roles and hazards of ammunition, a summary of the colour coding is in Annex A.
b. There are, and will be, a number of items of EO for which the guidelines of DEF STAN 00-810 cannot be readily applied. In such circumstances the marking drawing will be prepared by the EMB Drawing Office or authorised EO Services Provider in consultation with the relevant Item Manager, and will employ the general principles of clarity, uniformity and simplicity.

Methods of Marking

1.6 Permanent Markings. Permanent markings are normally stamped, but they may be engraved, etched, embossed, moulded or applied by another approved process. They are normally used for marking manufacturing detail for empty components, but may also be employed for marking filling details and other information on small items such as fuzes and tracers. Embossing is generally used where night identification of a particular item is a service requirement.

1.7 Non-permanent Markings. Painting and stencilling are the processes normally used in the application of body colour, item identification and filling details, and other markings such as narrow bands, stripes and symbols to indicate special features. In certain circumstances, however, some or all of these markings may be applied by transfer, printing or by metal or plastic plates or tags, or stick on labels. In deciding which process is to be used for a particular nature, the durability of the markings and the environment in which the items are to be used are taken into account.

Specific Markings for Detonators

1.8 In accordance with the Australian Code for the Transport of Explosives by Road and Rail, Chapter 3, as from the year 2005, locally procured detonators for Commonwealth use are to be marked as follows:

   a. The casing of every detonator of UN Numbers 0029, 0030, 0255, 0267, 0360, 0361, 0455, 0456 and 0500 is to be marked with the word ‘DETONATOR’.

   b. The casing of every detonator not specified in sub-paragraph a, is to be marked with the words ‘BLASTING CAP’.

   c. The casing of every detonator and every detonating relay is to be marked with the word ‘EXPLOSIVE’, together with the word ‘DANGEROUS’ and/or the word ‘DANGER’.

   d. The words required by sub-paragraphs a, b and c are to be embossed or otherwise indelibly marked on the casing in upper case letters and be clearly legible.

1.9 The requirements of paragraph 1.8 will not apply to detonators procured from overseas for Commonwealth use.

UK/AUS Colour Equivalents for Painting and Marking of EO

1.10 A table of UK and Australian colour equivalents for the painting and marking of EO is given in Annex B.

Annex:

A. Colour Coding to Identify the Role(s) and Hazards of Ammunition
B. UK/AUS Colour Equivalents for the Marking of Explosive Ordnance
COLOUR CODING TO IDENTIFY THE ROLE(S) AND HAZARDS OF AMMUNITION

**Significant Colours**

1. Significant colours are those used to indicate the primary role or roles of ammunition and the associated hazards. All references in these paragraphs to colours and tints are those prescribed in BS 381C.

2. Details of significant colour coding used for marking and identification of ammunition are detailed in Tables 1A-1 and 1A-2.

**Non-Significant Colours**

3. The following colours, although some are significant in relation to paragraph 2, when applied as stated below have no colour coding significance:

   a. Grey, black, green or white on underwater ammunition.
   b. Grey or white on guided missiles, dispensers and rockets.
   c. Black or white used for lettering or numbering or special markings.
   d. Colours specifically applied to identify the colour produced by smoke ammunition or pyrotechnics.
   e. Unpainted or natural colour ammunition.

4. Except in cases of chemical ammunition, non-significant colours may be used as overall body colours to meet special requirements of the Service such as:

   a. Deep bronze green No 224, this is the preferred dark green colour.
   b. Infra-Red Reflective (IRR) NATO Green No 285, only to be used when specified by the relevant Item Manager.
   c. Olive Drab, only to be used when specified by the relevant Item Manager.
   d. Light aircraft grey No 627.
   e. Dark admiralty grey No 632.
### Table 1A–1: Ammunition 20mm and Above

<table>
<thead>
<tr>
<th>NATO Colour</th>
<th>Interpretation</th>
<th>UK Equivalent Colour (to BS 381C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>HE ammunition or indicates the presence of a high explosive</td>
<td>Golden Yellow No 356</td>
</tr>
<tr>
<td>Brown</td>
<td>Low explosive items or components or indicates the presence of a low explosive</td>
<td>Middle Brown No 411</td>
</tr>
<tr>
<td>Grey</td>
<td>Ammunition containing a riot control, toxic chemical or incapacitating agent filler (see paragraph 3 for exceptions)</td>
<td>Light Grey No 631</td>
</tr>
<tr>
<td>Dark Red</td>
<td>Riot control agent filler</td>
<td>Cherry Red No 538</td>
</tr>
<tr>
<td>Dark Green</td>
<td>Toxic chemical agent (see paragraph 3 for exceptions)</td>
<td>Deep Chrome Green No 267 or Light Brunswick Green No 225</td>
</tr>
<tr>
<td>Dark Violet</td>
<td>Incapacitating agent filler</td>
<td>Dark Violet No 796</td>
</tr>
<tr>
<td>Black</td>
<td>Armour defeating ammunition or an armour defeating capability (see paragraph 3 for exceptions)</td>
<td>Black</td>
</tr>
<tr>
<td>Silver/Aluminium</td>
<td>Countermeasure ammunition (radar echo, leaflets, etc)</td>
<td>Silver</td>
</tr>
<tr>
<td>Light Green</td>
<td>Screening or marking smoke ammunition</td>
<td>Eau-de-nil No 216</td>
</tr>
<tr>
<td>Light Red</td>
<td>Incendiary ammunition or indicates the presence of highly inflammable materials (liquids, gels, solids) designed to produce damage by fire</td>
<td>Signal Red No 537</td>
</tr>
<tr>
<td>White</td>
<td>Illuminating ammunition or ammunition producing a coloured light (see paragraph 3 for exceptions)</td>
<td>White</td>
</tr>
<tr>
<td>Light Blue</td>
<td>Practice ammunition used in place of combat equivalents</td>
<td>Deep Saxe Blue No 113</td>
</tr>
<tr>
<td>Dark Blue</td>
<td>Drill ammunition, with the exception of cartridges, charges and certain components</td>
<td>Oxford Blue No 105</td>
</tr>
<tr>
<td>Dark Violet</td>
<td>Experimental ammunition. Normally applied as longitudinal stripes superimposed on existing overall colour</td>
<td>Dark Violet No 796</td>
</tr>
<tr>
<td>Light Orange</td>
<td>Nuclear ammunition or indicates the presence of radioactive material</td>
<td>Light Orange No 557</td>
</tr>
<tr>
<td>Orange</td>
<td>Certain evaluation or training versions of guided missiles when photographic records are required. Normally applied as longitudinal stripes superimposed on existing overall colour</td>
<td>International Orange No 592</td>
</tr>
<tr>
<td>Pink</td>
<td>Certain acquisition training versions of guided missiles</td>
<td>Shell Pink No 453 or Pale Roundel Red No 454</td>
</tr>
</tbody>
</table>

### Table 1A–2: Ammunition Below 20mm

<table>
<thead>
<tr>
<th>NATO Colour</th>
<th>Role</th>
<th>UK Colour to BS 318C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>Armour Piercing</td>
<td>Black</td>
</tr>
<tr>
<td>Silver</td>
<td>Armour Piercing Incendiary</td>
<td>Silver</td>
</tr>
<tr>
<td>Blue</td>
<td>Incendiary</td>
<td>Light French Blue No 175</td>
</tr>
<tr>
<td>Yellow</td>
<td>Observing</td>
<td>Golden Yellow No 356</td>
</tr>
<tr>
<td>Red</td>
<td>Tracer</td>
<td>Cherry Red No 538</td>
</tr>
<tr>
<td>Uncoloured</td>
<td>Ball</td>
<td>Uncoloured</td>
</tr>
</tbody>
</table>
UK/AUS COLOUR EQUIVALENTS FOR THE MARKING OF EXPLOSIVE ORDNANCE

1. The following table lists the commonly used colours by BS\(^1\) 381C colour number and the equivalent AS\(^2\) 2700 colour code. Reference may need to be made to AS 2700 if a more complete list of colour equivalents is required.

<table>
<thead>
<tr>
<th>BS 381C Colour</th>
<th>Number</th>
<th>AS 2700 Colour</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blue</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light French Blue</td>
<td>175</td>
<td>Mountain Blue</td>
<td>Y51</td>
</tr>
<tr>
<td>Deep Saxe Blue</td>
<td>113</td>
<td>Navy Blue</td>
<td>B13</td>
</tr>
<tr>
<td>Oxford Blue</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Brown</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle Brown</td>
<td>411</td>
<td>Brown</td>
<td>X54</td>
</tr>
<tr>
<td>Service Brown</td>
<td>499</td>
<td>Chocolate</td>
<td>X64</td>
</tr>
<tr>
<td><strong>Green</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deep Chrome Green</td>
<td>267</td>
<td>Moss Green</td>
<td>G14</td>
</tr>
<tr>
<td>Light Brunswick Green</td>
<td>225</td>
<td>Palm Green</td>
<td>G44</td>
</tr>
<tr>
<td>Eau-de-nil</td>
<td>216</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grey</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Grey</td>
<td>631</td>
<td>Storm Grey</td>
<td>N42</td>
</tr>
<tr>
<td><strong>Orange</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Orange</td>
<td>557</td>
<td>International Orange</td>
<td>R11</td>
</tr>
<tr>
<td>International Orange</td>
<td>592</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pink</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell Pink</td>
<td>453</td>
<td>Dusty Pink</td>
<td>P31</td>
</tr>
<tr>
<td><strong>Red</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Office Red</td>
<td>538</td>
<td>Crimson</td>
<td>R15</td>
</tr>
<tr>
<td>Signal Red</td>
<td>537</td>
<td>Signal Red</td>
<td>R13</td>
</tr>
<tr>
<td><strong>Yellow</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golden Yellow</td>
<td>356</td>
<td>Golden Yellow</td>
<td>Y14</td>
</tr>
</tbody>
</table>

Table 1B–1: UK/AUS Colour Equivalents for the Painting and Marking of Explosive Ordnance

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\(^1\) British Standard

\(^2\) Australian Standard
PROCEDURE 2 - PACKING AND UNPACKING OF EXPLOSIVE ORDNANCE

Introduction

2.1 This procedure prescribes the requirements for, and the precautions to be observed during, packing and unpacking of Explosive Ordnance (EO).

Packing of Explosive Ordnance

2.2 Unless otherwise stated herein, EO is to be packed in the package and in accordance with the method of packing specified in Item Publication, Topic -25 primarily, or the Defence Explosive Ordnance Classification List (DEOCL). Unless specified in either of these publications, the package and method of packaging are not authorised for use. If the approved package is not available or for any reason a change from the approved package becomes necessary, the proposed package and packaging method are to be approved by the delegated design officer for the Product Line in question. The process for obtaining approval from Explosive Materiel Branch (EMB) is detailed in Annex A. Personnel authorised to prepare proposals for new packaging methods are to base the design of such proposals on the requirements of Regulation 2.3.

Notes

Packages supplied for re-use are to be in a serviceable condition, complete with all furniture for its intended use. Where applicable, package seals are to be fitted and active desiccant provided.

2.3 It is to be normal practice to store EO of the one lot number in a package. The exception to this is when residual small quantities of varying lots are consolidated into a single package. In this case lot numbers and corresponding quantities are to be separately marked on the outer package. Mixed lot packages that result over a period of time are to be re-consolidated into single lot packages at the earliest opportunity.

2.4 For purposes of transportation by commercial means, only the authorised package for the EO in question is to be used, and those stores that are normally packaged are not to be transported in a loose condition. In the event of an urgent shipment when the authorised packages are not available, details of the proposed alternative packaging are to be forwarded to the EMB for consideration. EO is not to be despatched until the proposed packaging method has been approved by the delegated design officer based on the recommendations of the EMB and any change to the hazard classification advised.

2.5 For purposes of temporary storage, EO received other than from normal sources of supply, e.g. that recovered from sunken vessels or surrendered by the public, may, when the use of the original package is not practicable, be placed in any suitable package provided the EO is secured when necessary by packing material, labelled to indicate the actual contents after obliterating all irrelevant markings, and the package is as near as possible to the original package description. The package is to bear the relevant Explosives Class Label. It is essential, to prevent deterioration of contents of the package, that the packing material is clean and dry. EO that is temporarily packaged is to be isolated from all other EO. It is to be re-packed into its authorised package as early as practicable after the EO has been inspected and sentenced safe for further storage.

Unpacking of Explosive Ordnance

2.6 On no account are packages containing EO to be opened for any purpose except as follows:

   a. To use the item as intended
   b. To make authorised issues or inspections
c. To verify the contents when the packages are received with broken or damaged seals; or
d. To carry out authorised repairs, assembly or modifications.

Conditions for Packing and Unpacking Explosive Ordnance

2.7 Packing and unpacking of EO is not to be conducted in an EO storehouse, except as permitted by Regulation 4.4 Procedure 2. Normally, packages are only to be opened in an EO workshop, EO preparation building or other area licensed as a preparation area.

Repacking of Commercially Packaged Explosive Ordnance

2.8 EO procured from a commercial supplier will normally be supplied in the standard retail trade package, the design and construction of which may change from time to time. This standard of packaging may be suitable for service use and consequently the effort and cost of repacking need not be incurred. However, repacking may still be required:

a. For operational stock requirements; or
b. When issues to establishments/units are in quantities less than the commercial pack (fraction pack).

2.9 The commercial package may only be used as a service package if it is authorised in Topic -25. If a commercial package is not so authorised but the receiving Depot, after due assessment in conjunction with the EMB Packaging Team, believes the package would be suitable as a service package, the Depot is to propose its use. Details of the package, packaging method and other relevant details are to be presented to the EMB Packaging Team, in accordance with Annex A.

Prevention of Deterioration of Explosive Ordnance

2.10 When EO is to be kept available for use at short notice, the following precautions are to be observed:

a. Belts, magazines, etc., filled Small Arms Ammunition (SAA) and other types of gun ammunition are to be packed in boxes which are to be made airtight and these are, where possible, to be kept in their appropriate storehouses.

b. Pyrotechnics that were originally packed in airtight packages are, at all times, to be stored under such conditions, except when about to be used for a specific operation. This also applies to those items that are stored in ready-use lockers. When transferring the contents of one airtight package to another, this is to be effected without delay and under the most favourable humidity control and conditions.

c. After removal from an airtight package for an operation that involves exposure to the elements, pyrotechnics are:

(1) To be wiped with a clean dry cloth, repacked into a suitable container, locally red-carded, and segregated for subsequent inspection; or

(2) If it is obvious the stores are non-repairable, they are to be destroyed at the earliest opportunity - such action does not apply to pyrotechnics installed for emergency use in aircraft or vessels which have been allocated a limited ‘operational’ life or otherwise subject to special servicing instructions.

2.11 If for any reason the airtightness of the package or inner liner is destroyed and all the contents of the open package are not expended at once, the airtightness is to be restored as far as possible, using plastic adhesive tape, if the application of the original method is impracticable (see Regulation 2.3 Procedure 3 Annex C).
Identification of Personnel who have conducted EO Packing or Repacking

Note

The following requirement is not necessary when utilising a Defence Transit Seal in accordance with Regulation 2.3 Procedure 3.

2.12 All packages containing EO must have a means of identifying who has packed or repacked the package, when it was packed/repacked and the location of where the packaging task was conducted.

2.13 There are two acceptable methods for meeting the requirement of paragraph 2.12, either stencilled externally to the package or by utilising Form GI 107.

a. **External Stencilling.** Where the person who has conducted the packing or repacking task is authorised to operate with a service issued work-mark and where that work-mark, date and location is easily identifiable from the outside of the package. This requirement is inclusive of those work-marks issued by the EO Services Provider to their staff. The identification details must not distract from the mandatory markings required for the package.

b. **Form GI 107.** Form GI 107 is to be affixed at first filling and subsequently whenever the EO is inspected and/or maintained in any way. Form GI 107 is to bear the name and full signature (or the work-mark stamp) of the person who conducted the packaging task. Form GI 107 is to be affixed to the EO package in the following locations:

1. **Non-Guided EO Packages.** For Non-Guided EO the Form GI 107 is to be affixed to the inside of the lid of the package.

2. **Guided Weapon EO Packages.** For Guided Weapon EO the Form GI 107 is to be affixed internal to the Guided Weapon package on the container base/side, or weapon securing devices, in such a way that the Form GI 107 is readily visible when the container is opened, unless otherwise specified in applicable Guided Weapon DEOP packing instruction.

Marking of Packages Containing Explosive Ordnance and their Components

2.14 Procedures pertaining to the markings to be applied to the exterior of packages containing EO, Non-Explosive Dangerous Goods (NEDG) and their associated non-explosive components are contained in Regulation 2.3 Procedure 4.

Annexes:

A. **Authorisation of New and Alternative Packages and Packaging Methods for Explosive Ordnance**

B. **Packing and Repacking Label for Explosive Ordnance Packages (Form GI 107)**
AUTHORISATION OF NEW AND ALTERNATIVE PACKAGES AND
PACKAGING METHODS FOR EXPLOSIVE ORDNANCE

1. This Annex prescribes the procedure for obtaining approval from the Explosive Materiel Branch (EMB) Packaging Team for the use of new or alternative packages and the associated packaging methods, by way of an Explosive Ordnance Packaging Method (EOPM) submission.

2. EOPM submissions are to be forwarded to the MUNB Packaging Team via the relevant MUNB Item Manager, for development and subsequent approval.

3. EOPM submissions are to be raised to address situations where:
   a. the Method of Packing instructions are not particularly complex and a detailed Method of Packing Drawing is not required,
   b. commercially supplied EO is to be repackaged into service packages,
   c. the use of the approved service package is not compatible with the particular user stowage facilities available,
   d. ratification of a commercial package as a service package is required, or
   e. the approved Service package is not available.

4. EOPM submissions may be raised by EO Services Provider workshop staff under the authority of their Officer-in-Charge. Single Service EO storage, maintenance and distribution staff may also raise EOPM submissions, as required. Submissions are to state the reasons the applications are being made.

5. EOPM submissions are to give details of outer, inner and intermediate containers and the internal packaging arrangements are to be described by way of sketches and/or original photographs, to enable full development of the EOPM by the EMB Packaging Team. When submissions are raised to address the situations at sub-paragraphs 3b or 3d, the submissions are to include a copy of the manufacturer’s authoritative packaging method and/or packaging drawing, if available, otherwise the manufacturer’s packaging arrangements are to be adequately described.

6. On receipt of a submission, the EMB Packaging Team will develop the EOPM, assess it against UN Packaging Method requirements, assign a UN Number, UN Shipping Name, Hazard Classification Code and, if required, arrange for a Method of Packing Drawing to be prepared.

7. Where initial assessment raises concern as to the safety or suitability of the proposed packaging method, the EMB is to arrange for a detailed evaluation to be conducted.

8. Interim approval to use the packaging method may be forwarded to the originator by message or facsimile advising:
   a. UN Number,
   b. UN Shipping Name,
   c. Hazard Classification Code,
   d. Net Explosives Quantity, and
   e. If codification action resulting from the new packaging method, is required.
9. Interim approval of the EOPM gives general authorisation to store and transport the EO in question using the packaging method described in the EOPM, pending formal amendment of Topic - 025 of the item publication.

10. An approved EOPM will be allocated a sequential EOPM number and distributed by the EMB.

11. Topic - 025 will be amended by the EMB to reflect the approved EOPM on advice from the relevant Sustainment Manager.

Appendix:
1. Application for Explosive Ordnance Packaging Method - Flowchart
APPLICATION FOR EXPLOSIVE ORDNANCE PACKAGING METHOD - FLOWCHART

Start

Packaging Team receive EOPM task

Are originator task request details adequate?

Yes: Packaging Team to enter details on tasking database

No: Develop Draft EOPM Proforma

Draft EOPM Proforma to Team Leader for verification

Is the draft EOPM proforma correct?

Yes: Produce Line Engineer/Delegate Officer for Approval

EOPM Approved?

Yes: Packaging Team to retain copy of EOPM and forward original to TDC for distribution

Minute to TDC Team advising of changes to relevant Publications

End

Abbreviations:
EOPM Explosive Ordnance Packaging Method
TDC Technical Data Cell
PACKING AND REPACKING LABEL FOR EXPLOSIVE ORDNANCE PACKAGES (FORM GI 107)
PROCEDURE 3 - CLOSING AND SEALING OF PACKAGES

Purpose

3.1 This procedure describes the type of sealing applicable to Explosive Ordnance (EO), i.e. authenticity and hermetic, and prescribes the actions to be taken when packages have been damaged or opened, or the sealing devices damaged.

Sealing Classifications

3.2 There are two methods of sealing packages of EO, Non-Explosive Dangerous Goods (NEDG) and their associated components. They are authenticity and hermetic sealing and are defined as follows:

a. **Authenticity Sealing.** Authenticity sealing is the application of seals to a package. Authenticity seals serve two purposes:

(1) to detect tampering; and

(2) to externally signify that the contents are correctly described by the data shown on the outside of the package/unit load, are correctly packed and the contents are serviceable unless there is a Condition Status Label on the package to indicate otherwise.

b. **Hermetic Sealing.** Hermetic sealing is the actual sealing of a component within a package, by an approved method, to prevent the ingress of water and moisture laden air. Certain EO has its explosive filling sealed by means of suitable luting, cements and varnishes, e.g. 5"/54 HE Projectiles; Mk 82 HE Bombs - such EO is classified as ‘self-sealed’.

AUTHENTICITY SEALING – GENERAL REQUIREMENTS

3.3 All packages containing EO, NEDG and their associated components are to be authenticity sealed before being offered for transit or storage (see also Regulation 4.4 Procedure 2). Packages held in ready-use storage need not necessarily be sealed, although they are to be correctly closed. This principle also applies to empty packages (see Regulation 2.3 Procedure 5).

3.4 Authenticity sealed packages holding EO and NEDG are to bear a sufficient number of authenticity seals to ensure that the package cannot be opened without the seals being broken. Often this will require only one authenticity seal (this includes filling factory seals). In some cases, however, more than one seal will be required to be effective. EO packages are correctly authenticity sealed, provided the seals or a combination of seals and other markings show the establishment/filler’s station monogram.

Types of Authenticity Seals

3.5 There are two types of authenticity sealing authorised for use. The first consists of linen or wafer seals and either metal, plastic or twister seals that are embossed with a station or manufacturer’s monogram illustrated in Annex A and further described at paragraph 3.7 (this type is known as a Defence Logistic Seal (DLS)). This type of sealing when combined with a work-mark provides a guarantee that the EO has been inspected, packed and sealed by an authorised inspector and that the EO is either serviceable for use or is otherwise marked to indicate condition.

3.6 The second type is a Defence Transit Seal (DTS) illustrated and described at Annex B, which is authorised for use in accordance with the requirements of paragraph 3.10 and Annex B. Seals in use prior to 1 Jun 93, e.g. depot linen seals, Inspector of Naval Ordnance (INO) inspectorate seal and lead seals (also represented in Annex A) will still be seen on packages. Provided these seals bear a recognised station or manufacturer’s monogram the seals are valid. Current seals are to be applied in accordance with paragraph 3.4 and paragraphs 3.10 to 3.16 inclusive.
3.7 The DLS represented in Annex A are typically applied by authorised EO Inspectors who operate within EO Logistic units (EO SD&M Contractor, DEOS, Joint Proof and Evaluation Unit (JPEU) etc.), including authorised Air Force personnel as described in paragraphs 3.26 -3.29 and DSTO personnel as described in paragraphs 3.33 – 3.36. They are applied as follows:

- **Wafer or Linen Seals.** Wafer or linen seals may be used provided they are stamped with the station monogram and appear in conjunction with work-mark details applied in accordance with Regulation 1.5 Procedure 2. See figure 3-2 for a sample of a wafer or linen seal.

- **Crushable Plastic Seals (and Wire).** Crushable plastic and wire seals are to be impressed with the station monogram.

- **Plastic Baglock Seals.** Plastic baglock seals are to be used in conjunction with a wafer or linen seal for traceability purposes or alternatively, work-mark details are to be applied to the package in accordance with Regulation 1.5 Procedure 2.

- **Twister Seals.** Twister seals may be used provided they are stamped with the station monogram and are used in conjunction with wire to seal the package.

3.8 By agreement between organisations conducting the inspection of EO, the following plastic seal colours have been selected to represent each organisation:

- **Blue.** The EO Storage, Distribution and Maintenance Contractor (currently Thales).

- **Red.** Explosive Ordnance Inspectors working in Joint Logistics Command (JLC) and Inspectors working in Guided Weapons Maintenance Agencies (GWMA).

- **Orange.** Explosive Ordnance Inspectors working in Joint Proof and Experimental Unit (JPEU).

- **Green.** Logistics personnel, including authorised Air Force personnel as described in paragraphs 3.26 -3.29, and DSTO personnel as described in paragraphs 3.33 – 3.36, utilising authorised Station Monograms detailed in ESTC Pamphlet 5 - Monograms.

- **Black.** Inspectors and Logistics personnel deployed overseas for operations utilising the authorised ‘DEP’ Station Monogram (refer Note below)

**Note**

Authorised ‘DEP’ EO sealing kits are available on request from Manager Technical Control Office, DEOS, Defence Establishment Orchard Hills, NSW 2748.

3.9 Currently, the plastic seals and crimping pliers used to emboss the station monogram are sourced from a commercial supplier, off the shelf. The preferred supplier is able to provide quantities of seals and crimpers through local state based agents. It should also be noted that the dies used in the crimpers usually take a few weeks to be manufactured to the preferred design. MOSD is able to provide the contact details and typical costing for these items.

3.10 **Defence Transit Seals.** Defence Transit Seals (DTS) are used by personnel who are not authorised EO Inspectors, to seal containers, packages (external or internal) and unit loads of EO that have been opened for use or user inspection and that are required to be offered for transport on public roads or are being transferred to another unit. Annex B details the design, application and use of DTS.

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1 The wire used in conjunction with the crushable plastic authenticity seals has been identified as NSN 5340-66-161-9611, Part Number BAM12160D.
3.11 When Transit Seals are used for intra-establishment movements of stock the individual sealing the container is to annotate the Transit Seal with the unit’s designation, and print and sign his/her name or apply an authorised work-mark instead of the name and signature.

3.12 A Packing/Repacking Label (Form GI 107) (see Regulation 2.3 Procedure 2) is not required to be enclosed in packages that are sealed with DTS.

**Authenticity Seals – Methods of Sealing**

3.13 Unless permitted in accordance with Regulation 4.4 Procedure 2, the resealing of packages is to be conducted in a licensed EO processing area.

3.14 At user establishments only, packages for the ‘self-sealed’ type of EO which have been opened for issue need not be resealed, except as required by paragraph 3.3. Such packages are to be marked ‘opened’ and/or ‘fraction’ as applicable in a suitable manner.

3.15 Before applying a DTS, the person sealing the package is to ensure that the:

   a. Contents of each package are undamaged and correctly packed.

   b. Package is correctly marked and is properly closed and secured (including the application of hermetic sealing devices if required).

   c. Package is properly authenticity sealed with seals shown in Annex A.

3.16 When the condition of the contents is doubted, the matter is to be referred to an authorised Inspector of Explosives for advice and possible inspection.

3.17 **Seals Broken during Handling or Transit.** When a seal has been broken or damaged during handling or transit and interference with the contents or other damage has not occurred, the damaged seal is to be removed and replaced with an DTS marked with the words ‘sealed in transit’ by the supervisor in charge of loading or unloading, as appropriate. The relevant shipping documentation is to be annotated accordingly. If the package or its content is considered unsafe for further transport, the package is to be segregated or arrangements for its removal to a place of safety are to be made and an inspection by JLC EO Services staff or the EO Services Provider, as appropriate, is to be arranged.

3.18 Packages ‘sealed in transit’ are, on arrival at their destination, to be considered as being ‘opened’ and, if the receiving establishment or unit is an EO depot, they are to be submitted for broken seal or return inspection. If such a package is received at a user establishment/unit, the contents are to be examined by an authorised EO Inspector to determine their fitness for storage and use; the stockholder is responsible for ensuring that this examination is conducted before the items are placed in storage or issued for use. At the completion of the inspection, the package is to be resealed by the method prescribed in paragraphs 3.3 to 3.16 inclusive. Where there is doubt that the contents are serviceable, the package is to be segregated and arrangements made for an inspection by JLC EO Services staff or the EO Services Provider, as appropriate.

3.19 Broken authenticity seals are not conclusive evidence that the contents of a package have been exposed or interfered with and an appropriately qualified person is to determine this and act accordingly. When the contents of a package appear to have been interfered with, the package is to be immediately isolated with the minimum of handling and immediate action taken in accordance with Defence Security Manual, 2:67 - Explosive Ordnance Security.

**Authenticity Sealing – Additional Requirements for Guided Weapon Packages**

3.20 All packages containing guided weapons or guided weapon components are to be authenticity sealed for security before being offered for transit or storage. The protective security measures for guided weapons mandate that these packages may only be sealed or opened:

   a. in a GWMA maintenance facility by authorised employees of the Commonwealth
b. at ADF user units or HMA Ships by authorised employees of the Commonwealth

or

c. by an Original Equipment Manufacturer (OEM) or EO Services Provider authorised by the relevant Guided Weapons Branch (GWB) Item Manager.

3.21 For latched packages containing guided missiles or guided missiles components, metal or plastic monogrammed seals used in conjunction with security lock-wire are the only authenticity sealing devices authorised for use. The plastic seal is represented in Annex A. The latched package is to bear a sufficient number of authenticity seals to ensure that it cannot be opened without the seals being broken.

3.22 For other guided weapons and other forms of packaging, monogrammed wafer seals may be used. The wafer seal is represented in Annex A. The package is to bear a sufficient number of authenticity seals to ensure that it cannot be opened without the seals being broken.

3.23 If any authenticity seals are found broken or damaged, inspection personnel are to quarantine the package in an appropriately secured area with controlled access and ensure the relevant GWB Item Manager is immediately notified. The GWB Item Manager will immediately arrange for authorised personnel to inspect the package and guided weapon or component.

3.24 Controlled Cryptographic Item. Certain guided weapons contain a Controlled Cryptographic (CCI) mandating that COMSEC personnel apply serial numbered and traceable tamper proof seals to the guided weapon packages, in addition to the above requirements. COMSEC personnel are to be notified prior to movements of, or opening of, CCI guided weapon packages. If any COMSEC tamper proof seals are found broken or damaged, inspection personnel are to isolate the package in an appropriately secured area, immediately notify COMSEC personnel and deny access to the package until COMSEC personnel arrive.

3.25 Enhanced End Use Monitoring (EEUM). An agreement exists between the Commonwealth of Australia and the United States of America to conduct routine inventory checks of certain guided weapons. As evidence that inventory checks of these guided weapons have been conducted by the Embassy of United States of America an authenticity seal is affixed to each guided weapon container. The authenticity seal affixed will be either plastic monogrammed seals used in conjunction with security lock-wire and monogrammed with the letters ‘ODC’ or alternately ‘Golden Sentry’ seals (sticker or metallic wire rope seal). The EEUM seals are represented in Annex A. No additional reporting requirements are necessary when containers are opened and the EEUM seals are removed; the guided weapons within the container will be subject to inventory check during the next schedule EEUM activity.

Additional Air Force Authorisations for Authentically Sealing EO Containers for Storage and Transport

3.26 Inspect, Repack and Reseal of EO. Air Force members who have completed one of the following courses may be authorised by their unit CO (see Regulation 1.5 Procedure 2) to inspect, repack and reseal with a DLS, in-service ADF EO where an authorised ADF procedure for the inspection and repack of that ordnance exists:

a. Armament Technician Course (PMKeys 212743)

b. Engineering Officer Armament Specialist Course (ENGOFFARMSPEC) (PMKeys 112694)

c. Supplier Explosive Ordnance Basic Course (PMKeys 113696); or

d. Broken Seal Examination Course (PMKeys 202784).
3.27 **Air Force Inspector of Explosives.** Air Force members who have completed one of the following courses may be authorised by their CO (see Regulation 1.5 Procedure 2) as an Air Force Inspector of Explosives:

a. Explosive Ordnance Supervisors Course (PMKeys 112962) and holds the minimum rank of Corporal (CPL)

b. ENGOFFSPEC (PMKeys 112694); or

c. Supply Specialist or Logistics officer who has completed Supplier Explosive Ordnance Advanced Course (PMKeys 212562).

3.28 This authorisation will allow a member to conduct all activities at paragraph 3.26 above as well as to supervise and certify by applying an individual work-mark, the inspection, repack, resealing and sentencing of ADF EO in accordance with the applicable ADF EO publication for that item of EO.

3.29 **Defence Inspector of Explosives.** Air Force ARMTECHs who have completed the Senior Explosive Ordnance Managers (SEOM) Course (PMKeys 112963) and achieve the minimum rank of Sergeant (SGT) and all Armament Officers (ARMOFFs), in addition to the above qualifications listed in paragraphs 3.26 – 3.28, may be authorised by the Senior Inspector Explosives (SIX), DEOS, JLC to inspect, repack, reseal, sentence and certify safe for transport, in accordance with Regulation 1.5, ADF EO in accordance with authorised EO publications.

3.30 The process for the authorisation and issue of individual Air Force work-marks is contained in Regulation 1.5 Procedure 2.

**Air Force Instructions for Sealing EO Packages**

3.31 In addition to the DLS applied by members in paragraph 3.26 above, a label GI 107 – Packing and Repacking of Explosive Ordnance, NSN 7530-66-126-2439 (see figure 3-1), is to be attached, in accordance with the process contained within Regulation 2.3 Procedure 2, and details of the member physically repacking the item are to be recorded on the label. The packing label (GI 107) provides an auditable trail of the member who physically conducted the repack.

![Figure 3-1 – Label GI 107](image)

3.32 The member certifying the package is to use label EO 023, NSN 7690-66-149-1063 (see figure 3-2), attached to the outside of the container or pack and stamp their work-mark in the place provided.

![Figure 3-2 – Label EO 023](image)
Additional DSTO Authorisations for Authentically Sealing EO Containers for Storage and Transport

3.33 **Inspect, Repack and Reseal of EO.** Defence Science and Technology Group (DSTG) members who have completed one of the following courses may be authorised by their Chief of Division (see Regulation 1.5 Procedure 2) to inspect, repack and resell DSTG managed EO, Explosive Materiel (EM) and Energetic Substances (ES), with a Defence Logistics Seal (DLS):

a. Supplier Explosive Ordnance Basic Course (PMKeys 113696).
b. Broken Seal Examination Course (PMKeys 202784).

3.34 DSTG members who are authorised to conduct authentic sealing, via use of the DLS, are limited to:

a. In-service ADF EO where an authorised ADF procedure for the inspection and repack of that ordnance exists.
b. Items of R&D EO with an approved DSTG EO Life Management Plan and authorised DEOCL (Note, information may be derived from DEOP series of publications or the UN transportation guide).

3.35 **DSTO Inspector of Explosives.** DSTG members who have completed one of the following courses and have a minimum of 3 years in identified roles may be authorised by their Chief of Division (see Regulation 1.5 Procedure 2) as a DSTG Inspector of Explosives:

a. EO Management Specialist who has completed Supplier Explosive Ordnance Advanced Course (PMKeys 212562).
b. Explosive Ordnance Supervisors Course (PMKeys 112962).
c. Explosive Ordnance Managers Course (PMKeys 112961).

3.36 This authorisation will allow a member to conduct all activities at paragraphs 3.33 - 3.34 above as well as supervise and certify by applying an individual work-mark, the inspection, repack, resealing with the applicable ADF EO publication for that item of EO and Research and Development (R&D) EO with an approved DSTG EO Life Management Plan and authorised DEOCL.

**HERMETIC SEALING**

3.37 To maintain EO in a serviceable state they are either themselves sealed against any ingress of atmospheric moisture, i.e. self-sealed, or are packed in suitable hermetically sealed packages to give this protection. The type of sealing varies, but whatever form of sealing is employed it is important that it is maintained until the last possible moment before the EO is used.

3.38 The term ‘barrier bag’ is often used to describe the inner package that protects the contents from the atmospheric or radiation hazard environment likely to be encountered in storage. It is not necessarily completely impervious to air or moisture, provided that it affords the contents adequate protection for the likely period of storage and meets the requirements of the relevant packaging drawing or other instruction.

3.39 The life of certain EO, e.g. impulse cartridges, is limited once the hermetic seal is destroyed, i.e. when the user has opened the cylinder and the EO has become ‘exposed’. Other EO similarly exposed, but less vulnerable, still has a useful life subject to satisfactory inspection and proof, and resealing under correct hygrometric conditions, but it is essential that the correct state of the EO and packages is known.

3.40 EO that is packaged for protection from the atmosphere, i.e. hermetically sealed, is exposed when the packages have either been opened for use or have become damaged so as to render the sealing ineffective. EO that is normally unpackaged or is in non-airtight packages, i.e. is self-sealed, is
only to be considered exposed when its visual condition indicates its sealing devices, i.e. luting, adhesives or varnishes, are damaged.

3.41 When the original method of hermetically sealing containers is impracticable the airtightness is to be restored using PVC adhesive tape and the method described in Annex C.

3.42 EO that has been exposed but, after due inspection and proof, has been sentenced serviceable and repacked is to be marked ‘First Issue’ and issued for use at the earliest opportunity. Packages so marked may be stacked with the portion of the same lot, but are not to be mixed within the stack.

3.43 When submitted for inspection, all portions of a lot of EO are to be included on the same inspection form separately shown as ‘sealed’, ‘exposed’, ‘closed’ or ‘resealed’ (see paragraph 3.40), as appropriate. Self-sealed stores considered to be ‘exposed’ are to be dealt with according to the result of the inspection.

3.44 Hermetic Sealing Classifications. The terminology, abbreviations and definitions which are to apply within the classification of hermetic sealing are as follows:

a. Sealed (S). EO and packages are considered ‘sealed’ when:

   (1) EO, by the nature of its construction is air and watertight, e.g. bombs and shells. This includes EO which is considered ‘self-sealed’, held in non-aitertight packages bearing authenticity seals; or

   (2) packages are hermetically sealed and bear authenticity seals.

b. Closed (C). A package is considered ‘closed’ when all the internal packing has been correctly replaced, the lid is replaced, including auxiliary lids, and securing devices and hermetic seals have been applied where applicable, and does not bear authenticity seals.

c. Resealed (RS). EO which has been issued for use, or, packages which have been opened to make issues and have been reclosed by approved means other than the original method of sealing, are to be considered as ‘resealed’.

d. Exposed (E). EO is considered ‘exposed’ when it has been opened to the air. This includes EO:

   (1) Which has faulty or missing hermetic sealing devices.

   (2) Other than ‘self-sealed’ held in open packages.

   (3) Other than ‘self-sealed’ held in racks or packs.

   (4) Which has a ‘restricted’ life after opening of hermetic sealing.

Annexes:

A. Current and Superseded DLS for Explosive Ordnance Packages
B. Application and Use of Defence Transit Seals
C. Resealing of Packages
CURRENT AND SUPERSEDED DEFENCE LOGISTIC SEALS (DLS) FOR EXPLOSIVE ORDNANCE PACKAGES

DEFENCE LOGISTICS SEALS

Establishment’s Station Monogram applied by stamping or labelling

BAGLOCK PLASTIC SEAL

PLASTIC SEAL

WIRE SEAL TAIL

CRUSHABLE PLASTIC SEAL

LINEN OR WAFER SEAL

SEAL ACTUAL SIZE

TWISTER SEAL

17 mm

4 mm

Thales
OHL
000001

4 mm
APPLICATION AND USE OF DEFENCE TRANSIT SEALS

Introduction

1. Any filled Explosive Ordnance (EO) packages offered for transportation in the public domain are to be correctly sealed with authorised authenticity seals. A special authenticity seal, referred to as the Defence Transit Seal (DTS), exists for use by personnel who are not EO Inspectors, to seal packages for transportation purposes.

2. The application and use of DTS is limited to closed packages and unit loads with broken original seals so that such EO may be transported via the public domain. Also, the distinctive features of the DTS allow for easy recognition of EO as not having been packed by an EO Inspector and therefore requiring inspection and re-packing by an EO Inspector at the earliest opportunity.

Purpose

3. This instruction defines the application and use of DTS.

Application

4. DTS are applied to EO packages or unit loads to:
   a. detect tampering during handling and transportation;
   b. signify that the contents are correctly packed, accurately described by the data shown on the outside of the package or unit load; and
   c. signify the EO is safe for handling and transportation.

5. For EO logistic storage depot operations, all packages of EO sealed with DTS are to be afforded priority in processing the EO through an appropriate inspection to ascertain the quantity and serviceability of the EO. The EO is to be segregated pending inspection and sentencing and subsequent sealing with DLS. Although not formally required, closed packages of EO held in unit storage without DLS may be sealed with DTS.

6. An illustration of the DTS is at Appendix 1.

Typical Use of Defence Transit Seals

7. The following scenarios indicate how DTS may be used noting however, that in all instances these seals are to be applied only by authorised personnel who have been appropriately trained and assessed to be competent for the task (see Regulation 1.1):
   a. Serviceable EO at De-ammunitioning. A ship’s Explosives Custodian Officer, or his/her delegated representative holding the rank of Senior Sailor as a minimum, may seal all broken seal packages or unit loads of serviceable EO with sufficient DTS to ensure that opening the package or unit load will break at least one seal. Additionally, such packages are to be labelled as required by ABR 862 Volume 2, Chapter 5. Defective, damaged, malfunctioned or misfired EO is to be dealt with as provided for at sub-paragraph c or d, as appropriate.
   b. Serviceable EO for Range Practices and Exercises. EO for Range Practices, Exercises or other similar activities may be transported to or from such activities provided the EO packages have intact authenticity seals. If the seals are broken and the EO is Serviceable, packed in its authorised package in accordance with authorised packaging arrangements, and the pack is correctly marked (see paragraph 4), the seals may be replaced with DTS, in lieu of the usual DLS.
c. **Defective, Damaged, Malfunctioned or Misfired EO (Except SAA).** Damaged and especially malfunctioned or misfired EO should not normally be handled in any way except when all other methods for disposal have been considered and rejected. When a decision is taken that packages or unit loads of defective, damaged, malfunctioned or misfired EO are required to be returned to a Defence establishment, the EO is examined by an EO Inspector to ensure it is safe to transport and subsequently packed 'workmarked' and sealed with DLS. The requirements of Regulation 2.3 Procedure 6, paragraphs 6.18 to 6.21 also apply. SAA may be dealt with as provided for at sub-paragraph d below.

d. **Defective, Damaged, Malfunctioned or Misfired SAA.** If defective, damaged, malfunctioned or misfired SAA is required to be returned to a Defence establishment, the SAA is to be packed in its authorised package in accordance with authorised packaging arrangements and the pack is to be correctly marked (see paragraph 4). The package is to be sealed with DTS and a Form EO 047/048 Warning – Damaged Store Label attached to the package. The requirements of Regulation 2.3 Procedure 6, paragraphs 6.18 to 6.21 also apply.

**Appendix:**

1. Illustration of Defence Transit Seal
ILLUSTRATION OF DEFENCE TRANSIT SEAL
RESEALING OF PACKAGES

Introduction

1. Often it is necessary during inspection and proof of explosive ordnance to open hermetically sealed packages to inspect the contents or select proof samples. Unpacking/packing of stores that require protection from atmospheric conditions should be conducted in workshops that are environmentally controlled, see Regulation 4.1 Procedure 5.

2. If, for any reason, the airtightness of a package or inner liner is destroyed and the contents of the opened packages are not expended at once, the airtightness is to be restored before the package is returned to storage. If the original method of sealing is impractical, airtightness may be restored by using plastic (PVC) adhesive tape in accordance with paragraphs 3 and 4. If the inner packaging was a polyethylene barrier bag, it is to be resealed, if necessary using a new bag, in accordance with paragraphs 5 and 6.

Material Required

3. Any PVC electrical insulating tape is suitable for resealing.

Method

4. Reseal the packages as follows:

   a. Select the tape, ensuring that the width is suitable with respect to the size of the container and the distance between the surfaces to be sealed.

   b. Ensure that the surfaces are clean and smooth to obtain a good seal.

   c. The tape is to extend at least 12 mm on each side of the gap between the lid and the container. Creasing or bulging, which will permit leakage, is to be avoided.

   d. The length of the mated surfaces is to be covered to ensure a complete seal.

   e. In the case of plastic, foil or treated fabric, and bag type containers or liners, a strip of tape wide enough to enclose both surfaces and provide an airtight seal is to be applied.

   f. After completing the seal, cut the tape and turn back a section of the tape to form a tear-off tab. An effective tab is about 25 mm long.

Barrier Bags

5. Prior to opening items sealed in barrier bags that will require resealing, a sealing machine with a quantity of barrier materials is to be available. If the packaging drawing or instruction requires complete evacuation of air from the bag, a vacuum device is also to be available.

6. Air is to be removed from the bag by hand or the vacuum device, depending on the packaging drawing or instruction, and the bags are to be resealed after the inspections have been completed or samples extracted. Barrier bags are not to be left open overnight. When required, additional bags are to be fabricated. Sufficient borders are to be included in the new bags to allow for subsequent inspections and resealing.
PROCEDURE 4 – MARKING AND LABELLING OF EXPLOSIVE ORDNANCE PACKAGES

Introduction

4.1. This procedure prescribes the requirements for marking and labelling of Explosive Ordnance (EO) packages to facilitate item identification along with requirements for storage and road/rail transport purposes. For the transport of EO by civilian air/sea refer to the relevant Competent Authority document, International Air Transport Association (IATA) Dangerous Goods Regulations (DGR) and International Maritime Dangerous Goods (IMDG) Code respectively. The marking of EO is addressed in Regulation 2.3 Procedure 1.

4.2. Direction on additional markings for containers e.g. ‘Fragile – Handle with Care’, lift and tie down points, cover lift only points, etc, not contained within this procedure can be obtained from the EO Management Agency.

Purpose of Marking and Labelling

4.3. The marking and labelling of EO packages is essential to ensure quick, correct, and sufficient identification of the contents at all times. More specifically, markings and labels are applied for the following reasons:

a. To facilitate the issue of the correct nature and type of EO, to enable EO to be clearly and easily identified by the user under all conditions of service and to provide the user with the maximum information possible concerning the nature, type and function of the EO supplied;

b. To provide all necessary details to assist inspection, to guard against the supply of faulty or unproved/unauthorised EO to users, to aid investigation into causes of faulty operation or defects and to trace suspect EO, as well as to provide information for EO surveillance activities; and

c. To provide sufficient information to storage, transport, accounting and other services to ensure that all EO is correctly stored, handled and transported according to the nature of the EO or other risk for which it is classified in accordance with current regulations.

Applicability

4.4. The basic colours, marking colours and details of package and contents identification markings described in this procedure relate in general to packages for:

a. Items of EO.

b. Non-explosive items managed as items of EO.

Definition of Marking Surfaces

4.5. Rectangular Packages. With the package on its design base, select one of the larger vertical surfaces for the contents identification markings. This surface will thereafter be referred to as the front of the package, and from this can be deduced the lid or top, the ends, and the rear. For packages having hinged lids the rear will normally be the vertical surface to which the hinges are attached.

4.6. Cylindrical Packages. Contents identification markings are to be applied to one vertical half of the cylinder.
Methods of Identification – General

4.7. The following methods of identification are to be used in the marking of packages:

a. Permanent markings;

b. Basic overall colours;

c. Non-permanent markings;

d. Symbols and other special details, where required; and

e. Labels.

Non-Permanent Marking of Filled, Overpacks, Outer, Intermediate and Inner Packages

4.8. General. Markings (including stencilled details, symbols, labels, etc) are intended to provide sufficient information to identify the contents and, where applicable, the nature of their filling, their Hazard Classification Code and other details. Where the available surface is inadequate for full descriptive markings, approved abbreviations are to be used or are otherwise to be sought from the EO Management Agency. Markings are normally applied by stencilling, however, some or all of the markings may be applied by transfer printing or self-adhesive labels. For packages made from plastics, stencilling or similar methods of marking may be found to be impracticable. In such instances identification details may be printed on labels or the details may be printed directly on to adhesive tape affixed to the package.

4.9. Overpacks. Overpacks are becoming common as logistical covers which allow multiple outer packs to be transported together. They allow for easier handling and improve stacking properties whilst also providing protection of the outer pack against banding. Marking of overpacks shall comply with the requirements given in the Australian Explosives Code (AE Code) and the Australian Dangerous Goods Code (ADGC).

Mandatory Markings.

4.10. Outer Packages. Filled EO outer packages (this includes intermediate and inner packages that are authorised to be used as outer packages) are to be sealed in accordance with Regulation 2.3 Procedure 3 and marked in accordance with the AE Code, Chapter 3. Compliance with the AE Code is a statutory requirement.

4.11. Additional Statutory Markings for Certain Packages. Plastic explosives contained, enclosed or packaged in a wrapper are to have the following markings on the wrapper in accordance with the Marplex Convention:

a. The expression ‘PLASTIC EXPLOSIVE’ in upper case lettering;

b. The date of manufacture of the plastic explosive;

c. If the plastic explosive is a prescribed type – that type;

d. If the plastic explosive contains a detection agent, the name of the detection agent; and

e. If the plastic explosive contains a detection agent, the concentration of the detection agent in the plastic explosive at the time of manufacture. This is to be expressed as a percentage by mass.

4.12. Mandatory Technical Markings (if applicable). Any special marking identified in the design acceptance process e.g. Unpacked Life, SOLAS stores and temperature limitations for both storage and use. These markings will be advised by the EO Management Agency.
4.13. **Mandatory Logistic Markings.** Mandatory logistics markings are not statutory markings as required by the AE Code but are considered necessary for logistical management of the EO. These markings are not to obscure the statutory markings and are to be small in size, they include:

   a. Stock Number (NSN).
   
   b. Gross mass of the package to one decimal place (WT).
   
   c. External volume of the package preferably to three decimal places (CU).

4.14. **Exceptions to the mandatory Logistic Markings requirement.** Inventory subject to the following approved conditions may be authorised for issue without the mandatory logistic marking as indicated in paragraph 4.13 as long as the statutory mandatory markings are present in accordance with paragraph 4.10:

   a. Receipted inventory required for immediate operational issue to meet capability.
   
   b. EO that has been identified for Disposal.
   
   c. EO obtained for trial purposes prior to or in support of the Introduction in to Service process.

4.15. Any stock identified under the conditions specified in paragraph 4.14 is to have the necessary means of identification to permit management through logistics systems. It must be acknowledged that these identification features are not physically marked on the package. Such stock must be held segregated, including the accounting record, and placarded for identification from similar stock.

**Notes:**

Markings are normally provided in metric units eg millimetres however stock purchased through Foreign Military Services (FMS) may be marked in imperial units eg inches. Stock marked as such is acceptable to be issued however it is to be converted to metric units when any maintenance/refurbishment in an EO workshop is conducted.

The AE Code accepts the mandatory markings from other Dangerous Goods Codes eg IMDG, UN Model Regulations etc.

4.16. **Additional Logistics Markings.** The following additional logistics markings are logistic markings that are to be applied when the circumstances arise:

   a. **Operational Abbreviations and Symbols.** For new EO introduced into Service, the EO Management Agency is responsible for determining, in liaison with the appropriate Service Capability Manager, whether or not item operational abbreviations and symbols will apply.
   
   b. **First Issue.** FIRST USE’ label (EO102): if applicable. This label identifies EO containers that have been previously opened and are therefore to be issued in the first instance.
   
   c. **Fraction.** Packages containing less than the full quantity of stores in the original equipment manufacturer (OEM) approved package are to have a ‘FRACTION’ label or the word stencilled in white on the package.

**Requirements for Applying Markings**

4.17. **Source of Marking and Labelling Information.** UN Proper Shipping Name, Service Nomenclature, Operational Abbreviations (if applicable), Stock Number, Quantity per package, UN Number, HCC and Subsidiary Risk (if applicable), NEQ, gross weight and
volume details are detailed in approved information provided by the EO Management Agency and in the Explosives Storage and Transport Committee Pamphlet No. 2 – Defence Explosive Ordnance Classification Listing (DEOCL).

4.18. **Methods of Marking.** Stencilling remains the main method of displaying essential non-permanent marking detail, however because stencilling on certain surfaces may be impracticable, pre-printed self-adhesive labels may also be used provided the labels are appropriately durable for their intended purpose.

4.19. **Size of Markings.** Only Latin letters and Arabic figures are to be used for main contents identification markings. They are to be large enough to be clearly legible within the limits imposed by the size and shape of the packages and the space available for markings. Three comparative sizes may be used, where practicable, in the proportions 2:1.5:1 respectively, as follows:

a. **Large.** Limited use only, for certain symbols and any special markings requiring prominence, such as shortened version of usual nomenclature, eg Cartridge 81 mm Smoke WP Fuzed PD524A6 - 81 MOR SMK WP FZD.

b. **Medium.** For item nomenclature, filling and propellant abbreviation codes and certain symbols.

c. **Small.** For all other general markings such as lot details, etc.

4.20. **Use of Abbreviations.** Only abbreviations approved by EO Management Agency are to be used for the item nomenclature where space is restricted, except for the colour effect of smoke, flare or pyrotechnic ammunition when the colour must be spelled out in full. For units of measurement and weight, only the standard abbreviations are to be used, eg mm for millimetre, kg for kilogram, in for inch, lb for pound, g for gram, gr for grain, etc.

4.21. **Position of Markings and Method of Packing.** The controlling documents for marking of EO packages are approved drawings from the EO Management Agency which provide both packing and marking details. These approved drawings are part of the approved configuration package. The approved drawings are found in the EO publications library either in the General Packaging Data and Marking Templates section, as in the case for non-guided items or for guided weapon packages, in the relevant item publication.

4.22. **Colour of Packaging and Markings.** The following colours (to Specifications APAS 0020 or APAS 0024/1 or A-A-208 (MILSPEC)) are preferred to be used for marking packages:

a. White on olive drab lustreless.

b. Black on unpainted or natural finishes.

c. Black on grey.

d. White on signal red.

e. Inspection and other work-marking are to be in golden yellow.

f. Additional colour schemes may be authorised by the EO Management Agency following liaison with relevant Service Capability Managers.

g. All package finishes are to be free of hazardous materials such as Zinc Chromate, Polyurethane (PUP) or Lead based paint.

4.23. **Exceptions.** Packages made from the following materials need not be painted but may have an approved finish as required:
4.24. **Inner and Intermediate Packages.** Inner and intermediate packages that may be used as an authorised alternate to the outer package should have a finish in accordance with paragraph 4.22. Inner and intermediate packages not intended to be used as outer packages are to have a finish acceptable to the EO Management Agency.

**Marking of Unit Loads or Special Crates and Transit Containers**

4.25. Where a number of outer packages, each marked in accordance with the requirements of this procedure are assembled into a unit load or a special crate or similar transit container, the unit load, crate or container is to be marked in accordance with Regulation 4.1 Procedure 10.

4.26. Some unboxed items are authorised to be transported in an unpackaged state. Items so authorised may be stored and transported, including issue to and return from a user unit, using a GI 49 (placard) and GI 50 (Unit Load Content Record) to display mandatory markings. Refer to Regulation 4.8 Procedure 1 for further details on the use of Forms GI 49 and GI 50. Items so authorised do not have outer packaging eg 155 mm Unguided Projectile or Mk 80 Series Bombs.

**Labels**

4.27. Labels are often used to convey contents identification and other information on external surfaces of packages as well as internally. All forms of labels are to be tested by an appropriate testing authority to demonstrate their durability in the expected Service environment. The following labels are in common use although stencilling can be used instead in some instances:

a. **Dangerous Goods Class 1 Label.** This marking, more commonly known as the Explosives Class Label is to be applied to all approved outer packages containing EO which is classified for transport and storage as a military explosive. Explosives Class Labels are to be applied also to intermediate and inner packages if these packages are liable for separate issue. Examples of Explosive Class Label are detailed in Annex A.

b. **Dangerous Goods Subsidiary Risk Label.** A few items of EO in the inventory are required to have attached to their packaging, Subsidiary Risk Labels which convey the secondary hazard associated with the content of that specific item. Because of the limited number of items requiring such markings, no special provision has been made on marking diagrams for their positioning on packages. When Subsidiary Risk Labels are to be applied to packages they are to be positioned next to the Explosives Class Label and the UN number.

4.28. **Packer’s Labels.** When closing or reclosing any package containing EO, the details of the person who conducted the packing are to either stencil their assigned work-mark, location and date on the outside of the package in accordance with approved service procedures or by using form GI 107 - Packing and Repacking label. Further information regarding the packing or repacking of EO is found in Regulation 2.3 Procedure 2.

4.29. **Condition Status Labels.** Condition Status Labels are used to indicate the serviceability status of EO. Annex B defines the use of Condition Status Labels with EO.
4.30. **Contents Labels.** Serial number and lot details may be recorded on Contents Labels. The labels are to be so positioned as to be visible when the packages are stacked and this will usually mean affixing the label to one end of the package. Where possible, the label should be in a recess or in the lee of a handle for protection against damage.

4.31. **Special Identification, Instructional or Warning Labels.** Special identification, instructional or warning labels are sometimes required on packages and, where used, are to be affixed to the exterior of the package in any convenient position which does not obscure stencilling, stamping or other labels. Instructional labels are occasionally required to be positioned under the lid.

4.32. An item of EO that is suspected of being dropped or damaged, outside the acceptability criteria or design limit summary as stated in the item publication, is to have a ‘Warning - Damaged Store’ label (form EO 047/048) completed and attached to the item and the outside of its package, in a readily visible position when the item is packaged for transport or storage. A Certificate of Safety (form SG-131) will be required to be completed in these instances, refer to Regulation 3.1 Procedure 2. A specimen of the ‘Warning – Damaged Store’ label is given in Annex B.

4.33. **Inks for Paper Labels.** Information inserted on paper labels used for packages containing EO is to be provided by printing or by indelible stamp as far as practicable. Where it may be necessary to insert details in manuscript, permanent waterproof black drawing ink or blue black record ink is to be used. Details are normally to be inserted in block capitals and Arabic numerals.

4.34. **Supply of Labels.** Supplies of labels required for Defence EO use are held at ADF Supply Centres and are obtainable on demand.

4.35. **Metal Labels and Tags.** Metal labels or tags for identification, instructional or warning purposes are not normally used on packages owing to the danger of loss in transit.

**Inspection and other Work-marking**

4.36. The requirements for inspection and other work-marking are given in Regulation 1.5 Procedure 2 and relevant Maintenance Instructions. All such markings are to conform to those requirements.

**Sealing of Filled Packages**

4.37. All packages containing EO are to be sealed in such a manner that the package cannot be opened without breaking the seal. The seal must bear the initials or monogram of the establishment, unit or factory last sealing the package (see Regulation 2.3 Procedure 3 for details).

**Annexes**

A. Explosive Class Label for Explosive Ordnance

B. Condition Status Labels for Explosive Ordnance
EXPLOSIVE CLASS LABEL FOR EXPLOSIVE ORDNANCE

Figure 4A-1 – Class 1 (Explosives) Labels for Explosives Substances and Articles.

1. Full details of the Class 1 (Explosives) Labels are available in the Australian Explosives Code.
CONDITION STATUS LABELS FOR EXPLOSIVE ORDNANCE

Introduction

1. The imperative to communicate the results from inspections, sentencing and subsequent accounting activities undertaken on Defence stocks (indicating the condition status of Explosive Ordnance (EO) and associated components), has led to the creation of Condition Codes as a means to assist with the management of stock.

2. A system of labelling has therefore been developed and is used to indicate the serviceability status of EO. The labels are referred to as Condition Status Labels.

Purpose

3. This Annex defines the available Condition Codes plus the configuration and use of Condition Status Labels with EO.

Application

4. Condition Codes and their status labels are used to indicate the serviceability status of EO for each 'unit of issue'. However, not all 'units of issue' of EO will be required to have Condition Status Labels affixed. Examples are when the:
   a. contents of correctly authenticity sealed packages/containers etc, can be assumed to be serviceable (see Regulation 2.3 Procedure 3) and will not require labelling.
   b. condition status of all packages/containers/unpackaged items of EO, comprising a Unit Load can be signified by a single Condition Status Label attached to the Unit Load.

5. When the contents of packages/containers/Unit Loads etc, are other than serviceable, the condition is to be indicated by a Condition Status Label. If doubt exists as to the condition of the EO, the Manager Explosive Ordnance Safety and Reliability in the Explosive Materiel Branch (EMB) or the nearest Joint Logistics Unit Explosive Ordnance Services (JLU EOS), is to be contacted for advice.

6. Condition Codes are typically used in conjunction with Account Codes. Account Codes are applied to EO within logistics IT systems such as the Computer Support for Armaments (COMSARM) and are used by Inventory Managers to segregate stock into discrete groups to facilitate its management. Further information on Account Codes and their use is found in the Electronic Supply Chain Manual (ESCM) Volume 13, Section 9, Chapter 10.

Condition Codes

7. There are nine Condition Codes in service. Occasions for the use of each are as follows:
   a. **Serviceable.** The SERVICEABLE (S) condition code is used to indicate that EO:
      (1) meets the appropriate specifications for manufacture and testing
      (2) is ready for fitment or use without performing any actions on the EO other than preparation for issue and use; or
      (3) if in a used condition, is within acceptable limits of deviation from its original or modified condition.
b. **Serviceable Restricted.** The SERVICEABLE RESTRICTED (SR) condition code is as for a SERVICEABLE code except the EO is subject to some form of restriction in relation to its use, e.g. ammunition is not to be fired over the heads of troops.

c. **Serviceable Not in Service.** The SERVICEABLE NOT IN SERVICE (SX) condition code is as for a SERVICEABLE code except that the EO has not been accepted into Defence service, e.g. EO is undergoing design certification supporting introduction into service or awaiting trials.

d. **Serviceable Contingent.** The SERVICEABLE CONTINGENT (SC) condition code is as for a SERVICEABLE code except that the Capability Manager has specified the end user/s of the item. A time limit of up to 24 months applies and allows the Services to accept the item for operational use under a waiver. A Stock Management Instruction (SMI) has been issued however an EO Design Certificate (EODC) Trials or an EODC Contingency only is issued.

e. **Repairable.** The REPAIRABLE (R) condition code used to indicate that EO is capable of being repaired and that the repair is an acceptable alternative to disposal in prevailing circumstances.

f. **Repairable Restricted.** The REPAIRABLE RESTRICTED (RR) condition code is as for a REPAIRABLE code except the EO is subject to a restriction in relation to its use.

g. **Repairable Not in Service.** The REPAIRABLE NOT IN SERVICE (RX) condition code is as for a REPAIRABLE code except that the EO has not been accepted into Defence service, e.g. EO is undergoing design certification supporting introduction into service or awaiting trials but has failed known inspection criteria.

h. **Pending.** The PENDING (P) condition code is used to indicate EO which has been set aside and on which tests, investigations or further inspections are to be conducted before it can be sentenced, i.e. assigned, any one of the other Condition Codes, as appropriate, depending on the results of those tests, investigations or inspections.

i. **Not Repairable.** The NOT REPAIRABLE (NR) condition code is used to indicate that EO is:

   (1) not capable of being made serviceable through an authorised maintenance activity

   (2) uneconomical to repair; or

   (3) confirmed as not to be repaired.

**Condition Status Labels**

8. The ten Condition Status labels are authorised by this procedure. The labels are based on the internationally accepted colours for equipment status labels as follows:

a. SERVICEABLE - Green label.

b. SERVICEABLE RESTRICTED – modified SERVICEABLE label – see paragraph 9 for details.

c. SERVICEABLE NOT IN SERVICE – modified SERVICEABLE label – see paragraph 9 for details.

d. SERVICEABLE CONTINGENT – modified SERVICEABLE LABEL – see paragraph 9.

e. REPAIRABLE - Yellow label.
f. REPAIRABLE RESTRICTED - modified REPAIRABLE label – see paragraph 9 for details. The label may be over-stamped in bold type ‘PRIORITY’ to indicate that the EO is to be repaired at the earliest opportunity to prevent further deterioration of the EO.

g. REPAIRABLE NOT IN SERVICE – modified REPAIRABLE label – see paragraph 9 for details.

h. PENDING - Black label.

i. NOT REPAIRABLE – Red label.

j. WARNING – DAMAGED STORE – White label with red stripes.

9. Because the requirement for SERVICEABLE RESTRICTED, SERVICEABLE NOT IN SERVICE, SERVICEABLE CONTINGENT, REPAIRABLE RESTRICTED and REPAIRABLE NOT IN SERVICE labels is expected to be limited, separate labels will not be produced. Instead SERVICEABLE or REPAIRABLE labels, as appropriate, are to be modified by printing or stamping the word/phrase RESTRICTED/NOT IN SERVICE/CONTINGENT, as required, in bold red letters across the face of a SERVICEABLE or REPAIRABLE label to obtain the required label.

10. The Condition Status Labels are illustrated in Appendix 1. The labels are produced in configurations and sizes as follows:

a. Large. The large label is a composite tag and label that may be used as a tie-on tag or the coloured section removed and used as a self-adhesive label. The nominal dimensions of the label are as a:

   (1) tag, 143 mm x 80 mm.

   (2) label, 117 mm x 80 mm.

b. Small. The self-adhesive small label is nominally 50 mm x 40 mm and contains similar details to those on the large label.

Authorisation of Labels

11. Once the condition status of EO or component(s) has been established, authorised personnel are responsible for completing the label by inserting all necessary details and attaching it to the EO or component(s). The appropriate Condition Status Label may be affixed with the sentence authority, e.g. Form EO 100 Serial No.

12. When the condition status of EO or components changes, the labels are to be changed or removed to indicate the new status. Condition status labels are only to be removed and destroyed by personnel authorised to do so.

Procedure for the Use of Condition Status Labels

13. The use of Condition Status Labels is to be in accordance with the following procedure:

a. The label is to be authenticated using an authorised inspection work-mark.

b. The labels are to be attached in a manner that will not damage or deface the EO or obliterate identification marks or numbers.

c. The labels are to be attached to each ‘unit of issue’ of EO in such a manner as to be readily visible for inspection purposes when the materiel is placed in storage. The ‘unit of issue’ means a package, container, box, pallet, unit load, banded items or an individual item.
d. Labels are to be attached in such a manner as to prevent loss or damage by placing them where they cannot be pulled or accidentally scraped off, or otherwise mutilated during handling.

e. The labels are to be attached to each 'unit of issue' of EO as soon as possible after reclassification of the stock is reported. At EO Storage Depots only, in the interest of economical stock management for large quantities of stock, placarding of multiple 'units of issue' with a single Condition Status Label is permissible. However, each 'unit of issue' must be labelled when stock is issued to any external unit.

f. When the labels are to be used to designate the condition of assembled rounds of guided weapons or their associated packages, all applicable information is to be recorded on the label by authorised personnel before it is affixed to the item. A permanent black marking pen is to be used to fill in information on the label.

14. When the use of status labelling is not considered practicable, special dispensation of its use, for the particular circumstance, may be given by the relevant Item Manager provided the condition status of the materiel is readily identifiable by other markings on the package.

Appendix:
1. Specimens of Condition Status Labels
SPECIMENS OF CONDITION STATUS LABELS

SERVICABLE CONDITION STATUS LABEL

SERVICABLE

Distinguishing Colour: GREEN
### Repairable Condition Status Label

<table>
<thead>
<tr>
<th>Item Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NATO Stock Number</td>
<td></td>
</tr>
<tr>
<td>ASN</td>
<td></td>
</tr>
<tr>
<td>Serial / Lot Number</td>
<td></td>
</tr>
<tr>
<td>Work Requisition Number</td>
<td></td>
</tr>
<tr>
<td>Inspection Workmark</td>
<td>Date</td>
</tr>
</tbody>
</table>

**Remarks**

---

**Distinguishing Colour:**

_Yellow_
# PENDING CONDITION STATUS LABEL

| EO 049 Department of Defence
| CONDITION STATUS
| PENDING

<table>
<thead>
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<th></th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
<tr>
<td>ASIN</td>
<td></td>
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<tr>
<td>Work Requisition Number</td>
<td></td>
</tr>
<tr>
<td>Inspection Workmark/Date</td>
<td></td>
</tr>
</tbody>
</table>

---

| EO 069 Department of Defence
| CONDITION STATUS
| PENDING

<table>
<thead>
<tr>
<th>Distinguishing Colour</th>
</tr>
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<tbody>
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</table>

<table>
<thead>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NATO Stock Number</td>
<td></td>
</tr>
<tr>
<td>ASIN</td>
<td></td>
</tr>
<tr>
<td>Serial / Lot Number</td>
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<tr>
<td>Work Requisition Number</td>
<td></td>
</tr>
<tr>
<td>Inspection Workmark/Date</td>
<td></td>
</tr>
</tbody>
</table>
NOT-REPAIRABLE CONDITION STATUS LABEL

EO 045  Department of Defence

CONDITION STATUS

NOT-REPAIRABLE

Item Name
NATO Stock Number
ASN
Serial / Lot Number
Work Requisition Number

Inspection Workmark  Date
Remarks

NOT-REPAIRABLE

EO 046  Department of Defence

CONDITION STATUS

NOT-REPAIRABLE

Item Name
NATO Stock Number
ASN
Serial / Lot Number
Work Requisition Number

Inspection Workmark / Date

Distinguishing Colour: RED
**WARNING – DAMAGED STORE LABEL**

### DAMAGED STORE

<table>
<thead>
<tr>
<th>Part number</th>
<th>Type</th>
</tr>
</thead>
</table>

**Requirements (Tick applicable boxes)**

- Storage
  - [ ] Normal
  - [ ] Isolated
- Transport and handling
  - [ ] Normal
  - [ ] Special

**JALD contact**

**Certificate of safety number**

**Remarks**

**Distinguishing Colour:** **RED WITH DIAGONAL STRIPES**
PROCEDURE 5 - HANDLING OF PACKAGES EMPTIED OF EXPLOSIVE ORDNANCE

Introduction

5.1 Explosives Transport Regulations 2002 Statutory Rules No. 92 (ETR) specify that any package which has contained Explosive Ordnance (EO) is to be handled as an explosive item until it has been certified to be free from explosive material. Competent persons (see paragraphs 5.5 and 5.6) are required to examine such packages before certificates of ‘Freedom from Explosives’ may be issued. To give effect to the requirement of the ETR every empty EO package, if it bears labels or stencilled details which signify that it has contained explosives MUST BE SEALED with a label signifying it free from explosives or dangerous material.

Purpose

5.2 This procedure details the policy and procedures for inspection, sealing and certification of packages emptied of their contents of EO. In this procedure the term EO includes explosive articles, explosives substances, Non-Explosive Dangerous Goods (NEDG) and any associated chemical or flammable preparations.

5.3 The requirements of this procedure must not be confused with those of Regulation 2.3 Procedure 6 that deal with the return items of EO which have been functioned.

Applicability

5.4 The requirements of this procedure do not apply to EO packages of new manufacture that have not been put to use nor to packages that have been refurbished by an authorised agency and are ‘clean skins’. These items may be handled as non-explosive items.

Appointments

5.5 Officers-in-Charge and Commanding Officers are to appoint and authorise personnel to examine and certify emptied EO packages Free From Explosives (FFE). The authorisation is to be promulgated in a local register such as unit Routine Orders (RO’s) or the range or firing instruction for a particular activity.

Note

The authorisation to certify EO packages FFE is distinctly separate to that of certifying Functioned EO as being FFE. Registers are to distinguish authorised personnel separately.

5.6 Authorisations are only to be given to persons who are assessed to be competent to examine and certify emptied EO packages as being FFE. The authorising officer is to ensure that all persons so authorised are conversant with this procedure.

‘Certified Empty (Free From Explosives)’ Label (Form EO 052)

5.7 EO packaging and containers are certified empty FFE when they are authenticity sealed with a completed ‘Certified Empty (FFE)’ Label (Form EO 052). The EO Service Provider is authorised to use either Form EO 052 or Thales Form FM-1.3.6-002 that has been approved for use within an Authorised Maintenance Organisation.

5.8 A specimen of the ‘Certified Empty (FFE)’ Label (Form EO 052) is given at Annex A.

Preparation and Affixing of ‘Certified Empty (FFE)’ Labels

5.9 The person who signs a ‘Certified Empty (FFE)’ Label accepts the responsibility for any package to which the completed label is affixed as being FFE. Therefore, only sufficient labels for
Immediate use should be prepared, and these should be properly safeguarded until they are affixed to packages or containers, to prevent their use by unauthorised persons.

5.10 To facilitate preparation rubber stamps may be used in advance for inserting the establishment monogram or designation and the date of examination. Labels must be signed in full - initials are not acceptable. Persons with Inspector Identification Code (IIC) stamps that have been issued and are accounted for in accordance with the requirements of Regulation 1.5 Procedure 2, may apply such IIC stamps in lieu of signing the label since the identification of the certifier can be determined.

5.11 Permanent black ink is to be used for stamped and handwritten markings.

Inspection and Sealing of Empty Packages

5.12 Every package on which it is indicated by an Explosives Class Label and other relevant details that it has contained EO, is to be examined to certify it FFE. If necessary non-permanent partitions, packing etc are to be removed. On completion of the internal examination, the examiner is to ensure all internal packing is replaced unless there are local instructions to the contrary. The package is closed and sealed in the following manner:

a. Legibly complete a ‘Certified Empty (FFE)’ Label by:
   (1) inserting the establishment monogram or designation,
   (2) inserting the name and full signature (or applying the IIC stamp) of the person who undertakes the task,
   (3) inserting the date on which the task is completed, and
   (4) striking out the ‘not applicable’ certification heading, eg

   FREE FROM: EXPLOSIVE ORDNANCE
   CONTAMINATION

b. Attach the ‘Certified Empty (FFE)’ Label across the lip of the package lid in such a manner that it would tear if the lid is opened. If necessary, a second label placed opposite the first should be used to ensure authenticity sealing of the package. Alternatively, a security seal can be used in conjunction with the label to ensure integrity of the sealing.

c. Obliterate package markings and labels that indicate explosives or other dangerous goods content ie Explosives Class Label and UN Number. Other logistical information may remain.

5.13 In order to eliminate needless breakage of ‘Certified Empty (FFE)’ Labels and the extra work involved in resealing the packages, wherever possible loose lids which may move during handling, eg on Boxes Projectile P72, should be secured by two diagonally opposite screws or some other suitable means.

5.14 ‘Certified Empty (FFE)’ Labels must remain on all empty packages until such times as the packages are refilled, refurbished and are ‘clean skins’ or put forward for disposal.

5.15 Packages for Explosive Substances and NEDG. Packages which have been emptied of explosive substances, NEDG and associated chemical or flammable preparations are to be examined for contamination and, where necessary, are to be decontaminated by an approved method before the packages are sealed. A completed ‘Certified Empty (FFE)’ Label indicating that the package is ‘Free from Contamination’ is to be use to seal the package. Packaging material that cannot be decontaminated is to be destroyed, under precautions, by burning if permitted by the appropriate local environmental protection agency. They are then to be certified as per paragraph 5.12.
5.16 **Non-returnable Packages.** Non-returnable packages that have been emptied are to be examined for freedom from explosives and then destroyed.

**Uncertifiable Packages**

5.17 Any package which, because of its construction, cannot be certified as FFE or Free From Contamination, is to be accounted for as an explosive item under its original hazard classification with all Explosives Class Labels intact and sealed in the normal manner.

**Packages Containing Functioned Explosive Ordnance**

5.18 Where a package that has contained EO is utilised for the return of functioned EO, the requirements detailed in Regulation 2.3 Procedure 6 are to be followed.

**Examination of Packages Received from External Sources**

5.19 **Other Defence Establishments.** Any packages received at a Defence EO Depot from other Defence Establishments and sealed with ‘Certified Empty (FFE)’ Labels may be accepted without further examination, provided the labels are intact.

5.20 **Sources Other than Defence Establishments.** All EO packages received at a Defence EO Depot from Government establishments may be accepted without further examination provided the ‘Certified Empty (FFE)’ Labels on the packages are intact.

5.21 Any packages received from any source with missing, broken, damaged or defaced ‘Certified Empty (FFE)’ Labels are to be re-examined and resealed with new labels by a person authorised to do so.

**Examination of Empty Packages Before Issue from Defence Explosive Ordnance Depots**

5.22 **Internal Issues for Re-Use or Repair.** All packages certified FFE before being issued internally for repair or re-use are to be checked before being taken from their place of storage and if found with missing, broken, defaced or damaged ‘Certified Empty (FFE)’ Labels are to be examined and resealed.

5.23 **Issues to another Defence Explosive Ordnance Depot.** Any packages before being issued to another Defence EO Depot are to be checked as required at paragraph 5.22 for internal issues. The instruction at paragraph 5.27 also applies.

5.24 **Issues to the Explosive Ordnance Services Providers.** The following requirements apply to issues of packages to the EO Services Providers:

   a. Packages are to be checked as required at paragraph 5.22 for internal issues.

   b. Explosives Class Labels, UN Numbers or other dangerous goods labels must be removed or defaced before issue.

   c. The instruction at paragraph 5.27 is to apply.

5.25 **Issues for Disposal by Sale.** All packages, packing pieces and any other items which have been in contact with EO, before being issued for disposal by sale must be examined or re-examined, as appropriate, even if the packages have intact ‘Certified Empty (FFE)’ Labels, to ensure that they are FFE or free from other dangerous or flammable material. The packages are to be resealed with ‘Certified Empty (FFE)’ Labels. The instruction at paragraph 5.27 also applies.

5.26 **Disposal in Depot.** Packages for disposal on location in the Depot concerned are to be checked as required at paragraph 5.25 for external sales but the packages need not be resealed with ‘Certified Empty (FFE)’ Labels. The examination may be carried out at the destruction site, but at a safe distance from the destruction point.
Transport of Empty Packages

5.27 Empty EO packages are not to be transported unless they have been certified Free from Explosives (FFE) or Free From Contamination in accordance with this procedure. If there is a need to transport packages that have not been so certified, they are to be transported as if they contained EO under its original hazard classification, with the exception of Regulation 2.3 Procedure 6, paragraph 15.

5.28 When empty packages are to be transported, they are to be correctly stacked and secured so as to prevent unnecessary damage. Prior to loading for transportation, all empty packages for EO are to be re-checked to ensure correct certification.

Annotation of Transport Consignment Documentation

5.29 Whenever empty EO packages that have been certified empty FFE are to be transported, consignment documents are to be annotated to indicate that the packages are empty FFE.

Storage of Certified Empty Packages

5.30 Sealed empty packages are to be segregated from other unsealed packages and care is to be taken that they do not constitute a fire hazard.

5.31 Empty packages are to be stored under the best available conditions to retain them in a serviceable state. Stocks of empty packages are to undergo a routine inspection to determine that the packages are not deteriorating in storage where the packaging has not, within the previous two years:

   a. undergone refurbishment, or
   b. been inspected, or
   c. been utilised for packaging EO.

5.32 Empty packages are not to be stored in an EO building together with EO without the written authority of the Officer-in-Charge. When necessary they may be stored within an EO area in a place set aside for the purpose.

5.33 Packages that have been certified in accordance with this procedure are to be stacked separately from those empty packages which have not been so certified and are awaiting certification.

5.34 Care is to be taken to ensure empty packages in storage do not constitute a fire hazard.

Annex:
A. Sealing Label for Empty Explosive Ordnance Packages Form EO 052 'Certified Empty (Free From Explosives)' Label
### SEALING LABEL FOR EMPTY EXPLOSIVE ORDNANCE PACKAGES

**FORM EO 052 'CERTIFIED EMPTY (FREE FROM EXPLOSIVES)' LABEL**

| Package Free From* | Certified At: ...............................................................  
|--------------------|---------------------------------------------------------------
|                    | (Establishment Monogram / Designation)                       |
|                    | Certified By: ................................................................  
|                    | (Printed Name)                                                |
|                    | (Signature) ................................................................  
|                    | (Date)                                                        |

*Circle Applicable heading, delete remainder

---

**Department of Defence**

**CERTIFIED**

**EMPTY**

**(FREE FROM EXPLOSIVES)**

---

**EO 052**

**Introduced 2002**

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PROCEDURE 6 - HANDLING OF FUNCTIONED EXPLOSIVE ORDNANCE FOR SALVAGE AND RETURN

Introduction

6.1 Metal cases of functioned cartridges are to be salvaged and returned for recycling.

6.2 Environmental considerations require the recovery and return for disposal of some functioned Explosive Ordnance (EO) which present a hazard, e.g. Marker Man-Overboard (MMOB) fitted with lithium batteries. Some functioned EO, e.g. Navy Saluting Cartridges, are required to be returned to Defence EO depots for refurbishment.

6.3 In each of these instances the package in which the functioned EO is returned by users, is to bear a label signifying that it contains an item which is Free From Explosives (FFE), or that the item is certified safe for transportation.

Purpose

6.4 This procedure details the requirements for the return of functioned EO as salvage/produce, for disposal or other actions e.g. refurbishment. In this procedure the term explosive ordnance includes explosive articles, explosive substances, Non-Explosive Dangerous Goods (NEDG) and any associated chemical or flammable preparations.

6.5 The requirements of this procedure must not be confused with those of Regulation 2.3 Procedure 5 that deal with empty EO packages that can be certified EMPTY (Free from Explosives).

Appointments

6.6 Officers-in-Charge (OIC) and Commanding Officers (CO) are to appoint and authorise persons in writing to examine and certify functioned EO as being FFE. A local register, such as Routine Orders (RO) or the range or firing instruction for a particular activity, of such appointments/authorisations is to be retained.

Note

The authorisation to certify Functioned EO is distinctly separate to that of certifying packages FFE. Registers such as RO are to distinguish authorised personnel separately.

6.7 Authorisations are only to be given to persons who are assessed to be competent to examine and certify functioned EO as being FFE. The authorising officer is to ensure that all persons so authorised are conversant with this procedure.

6.8 No person is to certify any functioned EO as FFE when not so authorised in writing.

SALVAGE/RETURN Label (Form EO 051)

6.9 When packages are used to return complete or components of functioned EO as salvage, for disposal or refurbishment, completed SALVAGE/RETURN Labels (Form EO 051) are to be used to seal and/or show the contents of the packages by generic description, as appropriate.

6.10 A specimen of the SALVAGE/RETURN Label (Form EO 051) is given at Annex A.

Preparation and Affixing of SALVAGE/RETURN Label

6.11 The person who signs a SALVAGE/RETURN Label accepts the responsibility for certifying that a package to which the completed label is affixed, contains functioned EO that is FFE. Therefore, only sufficient labels for immediate use should be prepared, and these should be properly safeguarded until they are affixed to packages or containers, to prevent their use by unauthorised persons.
To facilitate preparation rubber stamps may be used in advance for inserting the establishment monogram or designation and the date of examination. Labels must be signed in full initials are not acceptable. Personnel with workmark stamps that have been issued and are accounted for in accordance with the requirements of Regulation 1.5 Procedure 2, may apply such workmarks in lieu of signing the label since the identification of the certifier can be determined.

Permanent black ink is to be used for stamped and handwritten markings.

The following is to apply when functioned EO is returned as salvage:

- When a package that has previously held EO is used, it is to be examined to ensure that it contains no live EO. Obliterate all package markings and labels which indicate explosive content e.g. Explosives Class Label and UN Number. Other logistical information may remain. Each functioned item is to be carefully examined to ensure that no live EO is included. A completed SALVAGE/RETURN Label is to be firmly affixed to the package. The word ‘RETURN’ is to be crossed out. The label is to be used to seal the container and signed by the authorised person responsible for the task.

- When a package is used, other than one that has contained EO, e.g. a sandbag, a completed SALVAGE/RETURN Label is to be affixed to the package. The word ‘RETURN’ is to be crossed out. Where possible the label is to act as a seal. The label is to be signed by the authorised person responsible for the task.

- Unpackaged large and medium calibre cartridge cases, e.g. 105 mm HOW, 5in/54, 76 mm, 30 mm, 25 mm projectiles, 40 mm Low Velocity and High Velocity grenades, and small arms cartridges larger than 12 mm, being returned as salvage, are to be examined to ensure that they have functioned. When being returned in large quantities the cases may be packed into large containers e.g. post pallet, with one completed Salvage/Return label attached to signify that the pallet is FFE and giving the content and quantity of empty cases. The word ‘RETURN’ is to be crossed out. The label is to be signed by the authorised person responsible for the task. Steel strapping or other suitable methods should be used to secure the doors of pallets.

Storage, Transportation and Handling of Small Arms Ammunition Salvage (up to 12 mm Calibre)

Small Arms Ammunition (SAA) salvage/produce resulting from range practices, that has been sorted (from live SAA) at the collection or firing point but has not been certified FFE may be transported and handled as non-explosive. This only applies to SAA up to 12 mm. However, such salvage/produce should not be taken into occupied facilities until certified FFE. When it is necessary to return range produce/salvage and empty ammunition boxes before they are certified FFE, and live or defective rounds of SAA to non-explosives facilities at the unit, they are to be stored as follows:

- Storage of range produce/salvage and empty ammunition boxes is to be in a fenced or secure area which is not normally occupied. If only a portion of the area is to be used for that purpose, the storage area is to be delineated with red painted lines;

- Fire division and supplementary fire signs, as appropriate, are to be displayed at the storage area until the produce/salvage and empty boxes have been certified FFE;

- Items not certified FFE may be stored in the area only for a maximum of 72 hours before they are to be moved to the explosives area; and

- Live or defective rounds of SAA are to be stored in licensed small quantity facilities or where licensed storage is unavailable; they should be passed to the Joint Explosive Ordnance Services (JEOS) of the local Joint Logistics Unit (JLU) for disposal.
Note

SAA of 12.7 mm or 50 CALibre may contain explosive or incendiary components. Such rounds are not included in the SAA category.

Examination, Packaging and Marking of Returns

6.16 When a Functioned item is to be returned for other than salvage purposes e.g. disposal or refurbishment, it is to be visually examined to confirm its status, packed and marked as follows:

a. Where there is no indication the item is continuing to function and it is evident that the explosive content has been fully consumed it is to be treated in accordance with paragraph 6.14a with the word ‘Return’ circled and the word ‘SALVAGE’ crossed out on the SALVAGE/RETURN label.

b. Where there is no indication the item is continuing to function but cannot be inspected to the extent necessary to verify that the explosive content is fully consumed, e.g. MMOB, or the authorised inspector is not familiar with the item, the item is to be treated as suspect EO and a Certificate of Safety raised in accordance with Regulation 3.1 Procedure 2. The item is to be placed in a robust metal box with the appropriate prescribed markings. In addition the box is to be clearly marked to indicate that it contains Functioned EO that cannot be certified. As a safety measure in the event of re-ignition, the store is to be segregated when practicable from other EO during storage and transportation. If the safety of any store during handling or transport is in doubt, the store is to be dealt with by appropriately qualified Explosive Ordnance Disposal (EOD) staff. Contact JEOS for assistance.

Disposal

6.17 When EO is disposed of by burning and the residue is of sufficient quantity, it is to be collected and treated in the same manner as required in sub-paragraph 6.14 a or b.

Functioned Explosive Ordnance required for Instructional Purposes

6.18 Functioned EO may be used for instructional purposes provided the EO is cleaned, inspected, certified, marked and registered as Inert in accordance with the procedures in Regulation 2.4 Procedure 2.

Live Explosive Ordnance Returned with Salvage

Note

This procedure does not apply to Unexploded Ordnances (UXO) which is not normally handled. UXO is to be dealt with in accordance with approved disposal procedures. Contact JEOS for assistance in this circumstance.

6.19 Live EO and Salvage. If for whatever reason live EO, whether Serviceable or not, is returned together with salvage/produce, the live EO of each serviceability status and salvage are each to be packaged separately and returned on separate issue vouchers.

6.20 Serviceable EO. The voucher for the live EO that is Serviceable is to be certified ‘Free from Misfires and in an Unarmed State’ and signed by the authorised and competent individual. Every effort is to be made to ensure that EO is returned in original containers with seals intact.

6.21 Defective, Damaged, Malfunctioned or Misfired EO. If defective, damaged, malfunctioned or misfired EO is required to be returned for defect investigation or the like, the EO is to be kept strictly separate from Serviceable EO and salvage, and returned on a separate issue voucher annotated accordingly. In such cases, to certify the EO safe for handling and transport, the following requirements are to be followed:
a. Regulation 3.1 Procedure 2 – Certificate of Safety,
b. Regulation 2.3 Procedure 2 – Packing and Unpacking of Explosive Ordnance,
c. Regulation 2.3 Procedure 3 – Closing and Sealing of Packages;
d. Regulation 2.3 Procedure 4 – Marking and Labelling of Explosive Ordnance Packages.

6.22 Packaging for Salvage. Sandbags may be used to return salvage, e.g. expended SAA cartridge cases. However, under no circumstances is live EO, in particular live SAA, to be placed into or returned in sandbags. Live SAA must be packed in accordance with authorised packaging arrangements and sealed with authenticity seals in accordance with Regulation 2.3 Procedure 3.

Annex:
A. SALVAGE/RETURN Label for Functioned Explosive Ordnance - Form EO 051
SALVAGE/RETURN LABEL FOR FUNCTIONED EXPLOSIVE ORDNANCE - FORM EO 051

EO 051
Introduced 2012

Department of Defence
SALVAGE/RETURN*

Certification that the package contains functioned Explosive Ordnance and is FREE FROM EXPLOSIVE

Certified At: .................................................................
(Establishment Monogram / Designation)

Certified By: .................................................................
(Printed Name)

.................................................................
(Signature) ...............................................
(Date)

Contents of Package

.................................................................

Qty:

.................................................................

Stock No

* Circle applicable heading, cross out remainder
PROCEDURE 07 - UNIT LOADS AND FREIGHT CONTAINERS

Introduction

7.1 A Unit Load (UL), is defined as a number of packages or loose items (in or out of containers made up into one load. which because of its size and mass must be handled mechanically. A UL may consist of the same item or a compatible group of items.

7.2 ULs are classified as OVERPACKS under UN Model Regulations Recommendations on the Transport of Dangerous Goods—Model Regulations, ST/SG/AC.10/1 (Orange Book). Overpacks are defined as an enclosure used by a single consignor to contain one or more packages and to form one unit for convenience of handling and stowage during transport. Examples of overpacks are a number of packages either:

   a. Placed or stacked on to a load board such as a pallet and secured by strapping, shrink wrapping, stretch wrapping, or other suitable means; or

   b. Placed in a protective outer packaging such as a box or crate.

7.3 A Unit Load Special Purpose (ULSP), is a configuration that exceeds the parameters of a normal UL or requires the use of two pallets fixed together to accommodate the item or required for specialised roles e.g. replenishment by helicopter as underslung loads, loads designed for air dropping etc. For the purposes of this procedure ULSPs will be included as ULs.

7.4 Freight container means an article of transport equipment that is of a permanent character and accordingly strong enough to be suitable for repeated use; specially designed to facilitate the transport of goods, by one or more modes of transport, without intermediate reloading; designed to be secured and/or readily handled, having fittings for these purposes, and approved in accordance with the International Convention for Safe Containers (CSC), 1972, as amended. The term “freight container” includes neither vehicle nor packaging. However, a freight container that is carried on a chassis is included. For the purpose of this Code it also means a re-usable container of the kind mentioned in AS/NZS 3711 that is designed for repeated use for the transport of goods by one or more modes of transport however, such a container will not be accepted for sea transport unless it complies with the CSC.

References

7.5 The references below provide a guide to the construction of ULs. It should be noted that standard pallet sizes and weights may vary from country to country. The following references should be used with the AE Code or the applicable Competent Authority document when developing ULs:

   a. DEF AUST 1000C Part 11. Whilst DEF Aust 1000C is not applicable to EO, it should be consulted for the definitions and preferred dimensions for palletisation within the Australian Defence Organisation (ADO). The standard is available from Capability Acquisition and Sustainment Group (CASG).

   b. STANAG 2828. STANAG 2828 is the standardisation agreement that defines the standard UL used by NATO member countries.

   c. UN Recommendations on the Transport of Dangerous Goods – Model Regulations ST/SG/AC.10/1 (Orange Book).

Purpose

7.6 This procedure provides guidance on the principles and processes for the:

   a. Development, preparation and approval of ULs.

   b. Marking of ULs.
Requirements

7.7 The EO procurement organisation is to establish procedures for approving ULs within their Engineering Management System (EMS) for items entering the Defence supply system from the OEM.

7.8 Individual Services, Agencies and Groups are to establish procedures for approving ULs that may differ from the original configuration or are prepared for specialist roles. This includes mixed ULs for delivery to and from the user, ULs prepared for transfer at sea etc.

7.9 ULs may only be formed with packages that have a valid UN Package Marking Code (UNPMC).

7.10 Items of EO prepared as a UL for air drop. The EO procurement organisation is responsible to determine the expected suitability for an item to be air dropped based on design. Authorisation for UL configurations is the responsibility of Air Mobility Training and Development Unit (AMTDU).

7.11 Individual Services are responsible for notifying the responsible EO procurement agency and the EO service provider of any restrictions that apply to the provision of a standard UL.

7.12 STANAG 2828 may be used as a guide in the preparation and testing of ULs as far as they are compatible with Australian Defence equipment and logistic requirements.

Marking of unit loads

7.13 The marking of ULs is to be IAW the Australian Code for the Transport of Explosives by Road and Rail (AE Code) or the appropriate Competent Authority requirement. Where deemed necessary for a UL, a Unit Load form (The preferred UL form for Defence is at Annex A) is to be used convey the mandatory marking required by the AE Code.

GUIDANCE

General requirements for unit loads

7.14 ULs should be designed, as far as practicable, to be moved without restriction throughout the distribution system and should be compatible with:

a. Existing air, sea, rail, and road transport systems.

b. Handling equipment used throughout the expected logistics flow patterns.

7.15 The choice of pallet will depend partly on the size, shape, weight and number of the packages comprising the unit load. The pattern of packages on the pallet should make the most efficient use of the space and voids should be kept to a minimum. Where voids cannot be eliminated, they should be filled with wooden formers unless the palletising pattern and package sizes are such that the load is stable and will not distort in transit.

7.16 The pattern should also fill the pallet plan dimensions. If there is more than 20 mm underhang on any side, battens or spacers should be used to make the effective size of the load equal to the pallet plan dimensions. This will improve stacking stability and ensure that adjacent unit loads support each other during transport.

7.17 Alternate layers of packages should interlock if possible. For example, if packages are arranged in a spiral or pinwheel pattern, alternate layers should be arranged in opposite directions. The top layer of packages should provide a level and stable surface for stacking purposes. If necessary, packing pieces or a cap may be used to achieve this.

7.18 The maximum stacking height for the UL will be limited by stability considerations and, possibly, the strength of the individual packages on the bottom layer of the bottom pallet. The nature
of the EO in the unit load and the type of pallet may impose additional limitations on the stacking height (see Regulation 4.1 Procedure 8).

7.19 Any Timber materials used in the construction of a UL (including the pallet base) should be ISPM 15 compliant to allow for import and export requirements.

7.20 Steel Strapping that has not been previously used and in a continuous length, to form a secure band should be used. The size of the Steel Strapping is to be IAW STANAG 2828. Preferably no other strapping or wrapping material other than steel is to be used.

7.21 The published references in this procedure should be consulted for details of the various forms of UL furniture and its use in the construction of a UL.

**Partial unit loads**

7.22 A partial UL is one which contains fewer items than specified for the type of store and consists of one or more complete layers of items or packages. Partly filled layers are prohibited. Quantities of items or packages less than one full layer or in excess of one or more full layers are to be stored, transported and handled as individual items or packages.

7.23 Fraction labels/stencilling will be required to be added to the unit load forms for partial ULs.

7.24 Partial ULs are to be assembled as specified for the type of store except for the height (number of layers). Any edge battens or frames filling any voids should be reduced in height to suit the number of layers being assembled.

7.25 Under no circumstances can part or fraction palletised loads have voids filled with empty packages to produce an even top tier or to complete a horizontal layer.

**Annex:**

A. Unit load forms
UNIT LOAD FORMS

Introduction

1. Explosive Ordnance (EO) is, as far as practicable, to be bulk stored in unit loads, consisting of packaged stores assembled in suitable quantities for convenient handling by materials handling equipment such as fork lift trucks. Unit Load Specifications (ULS) define the composition, method of assembly and intended use of unit loads. ULS may cover individual stores or a number of specified similar types of stores. Irrespective of the stores grouped together, the unit load contents require their identification details to be displayed. Unit load forms enable stock verification, stocktaking or other similar functions.

Purpose

2. This procedure prescribes the requirements for, and the use of, the following unit load forms:
   a. Unit Load Contents Record (GI 050); and
   b. Unit Load Placard (Form GI 049).

Unit Load Contents Record (Form GI 050)

3. The Unit Load Contents Record - Form GI 050¹ (see specimen at Figure 1A-1) is to be displayed on individual unit loads of EO to provide essentially, lot and quantity details for the contents of the unit load.

4. When a unit load of EO is assembled, a Unit Load Contents Record is to be prepared by the supervisor responsible for its assembly, and securely attached to the unit load. The record is not to be removed until the unit load is dismantled, at which time it is to be destroyed.

5. At EO Storage Depots only, in the interest of economic management for large quantities of stock, placarding of multiple ‘units of issue’ with unit load contents details is permissible. However, each ‘unit of issue’ must be labelled separately when stock is issued to any external unit.

6. The Unit Load Contents Record is available on Webforms.

Unit Load Placard (Form GI 049)

7. The Unit Load Placard - Form GI 049¹ (see specimen at Figure 1A-2) is to be displayed on individual loads of EO to provide EO transportation and storage information.

8. When a unit load of EO is assembled, Unit Load Placards are to be prepared by the supervisor responsible for its assembly, placed in a plastic envelope and securely attached to opposite sides of the unit load with one of those sides the same side as where the Unit Load Contents Record is attached. If each and every package of the unit load is marked in accordance with Regulation 2.3 Procedure 4 and the markings on the outer packages in the unit load are clearly visible and are not obscured by any wrapping material, then the Unit Load Placard needs only to be attached to the same side as the Unit Load Contents Record. The placard is not to be removed until the load is dismantled.

9. When multiple unit loads comprise one stack, the Unit Load Placard and Unit Load Contents Record for each unit load is to be positioned so that it is readily visible to enable stock verification, stocktaking or other similar functions.

¹ Commercial EO Services Providers may substitute an equivalent internal form.
10. At EO Storage Depots only, in the interest of economic management for large quantities of stock, placarding of multiple ‘units of issue’ is permissible. However, each ‘unit of issue’ must be labelled separately when stock is issued to any external unit.

11. The NATO Stock Number (NSN) used to order Form GI 049 is 7530-66-138-6445.
## Unit Load Contents Record

### Unit load details

<table>
<thead>
<tr>
<th>UL specified reference</th>
<th>Requisition number <em>(If applicable)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assembled at <em>(Establishment monogram)</em></td>
<td>Date Assembled</td>
</tr>
</tbody>
</table>

### Assembled by

<table>
<thead>
<tr>
<th>Signature</th>
<th>Printed name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank or appointment</td>
<td>Telephone number</td>
</tr>
</tbody>
</table>

### Contents details

<table>
<thead>
<tr>
<th>UN shipping name</th>
<th>Stock number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short item name</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Total quantity <em>(comprising list below)</em></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Lot or serial number details</th>
<th>Quantity</th>
<th>Lot or serial number details</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td></td>
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</table>

Stock No 7530-66-138-6406

Figure 1A-1 – Specimen of Unit Load Contents Record *(Form GI 050)*
UNIT LOAD PLACARD

Figure 1A-2 – Specimen of Unit Load Placard (Form GI 049)
REGULATION 2.4 – INERT EXPLOSIVE ORDNANCE SAFETY

Introduction

4.1 Defence establishments and units may hold inert Explosive Ordnance (EO) for the purposes of training, display, and research. Items of inert EO that are presumed to be inert are required to be inspected by competent and authorised personnel to verify their status and determine the process for managing any safety risks and accountability requirements.

Aim

4.2 This regulation details the personal safety risk control framework required at paragraph 4.3 a for the management of inert EO.

Related publications

4.3 The following publications are related with this regulation:

a. DEFLOGMAN Part 2 Volume 9 Defence Explosive Ordnance.

b. DEFLOGMAN Part 2 Volume 8 Chapter 8 - Appropriation and Import of non-Australian Defence related Materiel during Australian Defence Force Operations.

c. Electronic Supply Chain Manual (ESCM) V04S08C01K – Management and Accounting of Inert Explosive Ordnance


Applicability

4.4 This regulation provides authorisation for personnel to inspect and certify items of Low and High Safety Risk uncertified Inert EO.

4.5 This regulation is not applicable to:

a. drill, dummy, inert/instructional EO or ammunition that has been originally manufactured in an inert state for the specific purpose of operations, training or display. Items in these categories, when subject to appropriate introduction into service configuration management requirements are appropriately catalogued, codified and marked inert.

b. EO that requires a certificate of safety for transport in accordance with Regulation 3.1 Procedure 2 – Certificate of Safety.

c. results from range activities and is considered range produce as described in Regulation 2.3 Procedure 6 - Handling of Functioned Explosive Ordnance for Salvage and Return.

d. inert EO that is the property of:

(1) a Defence Employee or Defence member.

or

(2) a member of the public/or organisation ie Returned Service League (RSL) Club.

4.6 Items of In-Service EO are not to be made inert without the approval of the relevant Service Capability Manager and the relevant EO management agency within Capability Acquisition and Sustainment Group (CASG). These items should be managed in accordance with paragraph 4.5 a.
4.7 EO that has been fired, functioned, expended or subject to EOD is not normally to be recovered for use as a training aid or a display item. Such EO may be recovered and retained provided formal approval is granted as provided for in DEFLOGMAN Part 2 Volume 9 Chapter 6—Management of Inert EO, and the EO is rendered inert and inspected in accordance with this regulation.

REQUIREMENTS

Responsibilities

4.8 Defence Science and Technology Group. The Chief of Weapons and Countermeasure Division, Defence Science and Technology Group (DSTG) is responsible to:

a. develop and implement risk control processes and procedures for the DSTG to ensure personal safety risks are managed for inert EO.

b. authorise DSTG personnel to breakdown EO and render EO inert.

c. authorise DSTG personnel to inspect and certify inert EO.

4.9 Joint Proof and Experimental Unit. Commanding Officer (CO) Joint Proof and Experimental Unit (JPEU) is responsible to:

a. authorise JPEU personnel to breakdown EO and render EO inert.

b. authorise JPEU personnel to inspect rendered inert EO.

c. approve tasks for EO to be rendered inert.

4.10 Deputy Director Technical Services. The Deputy Director Technical Services (DDTS) Defence Explosive Ordnance Governance (DEOG) in the Explosive Ordnance Branch is responsible to:

a. authorise suitably qualified personnel to inspect, certify and mark high safety risk inert EO as detailed in paragraph 4.15.

b. maintain the Inert EO Certification Register (IEOCR) as detailed in paragraph 4.19.

c. develop and promulgate a process for authorised EO inspectors to inspect, certify and register of inert EO in the IEOCR.

4.11 Authorised explosive ordnance inspectors. Authorised explosive ordnance inspectors (see paragraphs 4.14 – 4.15) are responsible to:

a. inspect, certify and mark inert EO as required by the level of safety risk posed by the uncertified item.

and

b. For low risk items: register certified items in the unit register.

or

c. For high risk items: register inert EO certificates in the inert EO certification register.

Authorised personnel

4.12 Breakdown activities. Personnel who break down EO must be qualified and authorised as required by Regulation 1 Procedure 1 – Training and Authorisation of Personnel.
4.13 **Rendering activities.** Personnel authorised to render EO inert must hold the unit of competency DEFEO719A – Render Explosive Ordnance Inert.

4.14 **Inspection of low safety risk uncertified inert EO.** This regulation provides authorisation for Unit OC/CO’s to authorise personnel to inspect and certify uncertified low risk inert items. Unit OC/CO’s are to authorise personnel in writing who meet the following criteria:

- a. Hold the minimum rank of non commissioned officer (NCO).
- b. Proficient in the applicable weapons system.
- c. Have completed the Defence ‘Free From Explosive’ training package.

4.15 **Inspection of high safety risk uncertified inert EO.** Personnel authorised to inspect, certify and mark high risk uncertified inert EO must hold one of the following trades:

- a. Weapons Electrical Engineering Officer (WEEO) Navy, who has completed the Armament Officers course.
- b. Electronics Technician (ET) Technical RAN, minimum CPO who has completed the Senior EO Managers course (Course Code 112963).
- c. Ammunition Technical Officer (ATO), Army.
- d. Ammunition Technician (AT) (minimum rank: SGT), Army.
- e. Armament Officer (ARMO), Air Force.
- f. Armament Technician (ARMTECH), Air Force, Minimum FSGT who has completed the Senior EO Managers Course (Course Code 112963).
- g. Or have received equivalent training to an approved standard as approved by CO DEOTS.

4.16 Personnel authorised to inspect high risk EO are also authorised to inspect low risk uncertified EO.

**Areas of operation**

4.17 It may be necessary to render EO inert and/or certify inert foreign EO prior to importation. Safety responsibilities for appropriation and import from areas of operations are detailed in DEFLOGMAN Part 2 Volume 8 Chapter 8. Assistance may be requested from DEOG, or Weapons Systems Division (WSD) of DSTG.

**Marking of inert explosive ordnance**

4.18 Inert EO that was categorised as presenting a high safety risk prior to inspection must be certified and marked to indicate that it no longer contains dangerous goods, and is safe to use for display, training or research purposes.

**Inert explosive ordnance certification register**

4.19 A certification register of inert EO will be maintained by DDTS for high risk inert EO and will contain as a minimum:

- a. the requesting unit;
- b. a description of the item;
- c. the certifying agency;
Regulation 2.4

d. certification number; and
e. the certification date.

4.20 Units are required to raise and maintain an Inert Stores Register which will comprise of the original copies of processed Form EO 039 *Re-Certification of Explosive Ordnance and Non-Explosive Dangerous Goods as Inert* for high risk inert EO and for low risk inert EO a listing of each certified item, including:

a. a description and location of the item;
b. at least one photograph of the item;
   the inspectors qualification, PMKeyS number, rank and name; and
c. reference to the authority to certify as described in paragraph 4.14.

4.21 Certifying agencies are required to hold copies of Form EO 039 that they process.

**Procedures**

4.22 Implementation of this regulation is achieved via Procedure 1 – Render, Inspect and Certify Explosive Ordnance Inert.
PROCEDURE 1 - RENDER EXPLOSIVE ORDNANCE INERT OR INSPECT AND CERTIFY EXPLOSIVE ORDNANCE

Introduction

1.1 Various establishments and units may be holding items of inert Explosive Ordnance (EO) and Non-Explosive Dangerous Goods (NEDG) that may or may not have been, or are assumed to have been rendered inert. Items of inert EO must be submitted for inspection to ensure they are inert and safe to hold. Provided that there is no requirement to remove any hazardous filling, these items may be inspected, certified inert and marked by authorised personnel.

1.2 The safety risk associated with rendering EO inert increases with the complexity of the EO, particularly when insufficient technical data is available. In principle, the level of risk associated with the rendering task suggests that only in-service EO should be rendered inert based on the knowledge that it comes with a manufacturing background and detailed technical data.

Purpose

1.3 This procedure details the requirements at Regulation 2.4 – Inert Explosive Ordnance Safety to control safety risk for EO that is rendered inert and/or inspected and certified inert.

AUTHORISED PERSONNEL

1.4 Personnel authorised to breakdown EO or render EO inert in accordance with Regulation 2.4 are not permitted to inspect and certify EO that they have rendered inert. Independent inspection is necessary.

1.5 Personnel authorised in accordance with Regulation 2.4 to undertake inspections, certification and marking of items of inert EO are not permitted to remove any hazardous filling from such items if they are found to be ‘live’.

1.6 Where the requirement to breakdown EO, render EO inert or inspect and certify inert EO exists in declared Areas of Operations, the Joint Chief of Operations is responsible for authorisation of personnel and the establishment and approval of any attendant procedures in accordance with DEFLOGMAN Part 2 Volume 8 Chapter 8.

Requirement to hold inert explosive ordnance

1.7 The originating unit/establishment must ensure that appropriate approvals to hold inert EO are obtained, from the Service capability manager, prior to requesting EO to be rendered inert.

1.8 The framework of approvals is detailed at DEFLOGMAN Part 2 Volume 9 Chapter 6 - Management of Inert Explosive Ordnance. Where approval is not obtained, any holdings are to be disposed of in accordance with the requirements of ESCM V04S08C011 – Disposal of Explosive Ordnance.

PROCESS TO RENDER AND/OR INSPECT AND CERTIFY EXPLOSIVE ORDNANCE INERT

Request to render explosive ordnance inert and/or inspect inert explosive ordnance

1.9 Subject to the requirements of paragraphs 1.7 to 1.8, all requests to render EO inert and/or inspect presumed inert EO are to be raised by the unit requesting officer. The originating unit is to complete the relevant sections of Form EO 039 – Application to Inspect and Certify or Render Explosive Ordnance Inert and forward it to either:

   a. HQ JPEU for processing requests to render EO inert (see paragraph 1.12).

   b. Joint Logistics Unit, Regional Explosive Ordnance Services (JLU REOS) for requests to inspect and certify inert EO.
Note:

Form EO 039 is found on Webforms.

Acceptance of task to render explosive ordnance inert

1.10 CO JPEU is responsible for approval of tasks to render EO inert. Task approval is only to be granted after a safe breakdown procedure has been established and approved by the HQ JPEU Safety Committee.

Movement of explosive ordnance to render inert

1.11 Movement of in-Service EO is to be achieved in accordance with the requirements of ESCM and Regulation 3.1.

1.12 EO that is not Commonwealth property will be considered on a case by case basis for movement under the provisions of the Defence Assistance to the Civil Community (DACC).

Submission of uncertified inert explosive ordnance for inspection and certification

1.13 Uncertified inert EO with a high safety risk must be inspected, certified, and marked by an authorised person in accordance with Regulation 2.4.

1.14 Uncertified Inert EO with a low safety risk must be inspected by an authorised person in accordance with Regulation 2.4.

1.15 In the circumstance that an item submitted for inspection is found to contain explosives or NEDG, the unit must seek approval to render the item inert or surrender it to the supporting EOD unit for disposal. The item is to be handled as ‘live EO’.

Certification process

1.16 Upon completion of an inspection where an authorised inspector has verified that the item is inert, the inspector must certify the item as follows:

   a. For high risk inert EO, certify the item as inert on Form EO 039.

   b. For low risk inert EO, record the date of the inspection and their PMKeys number in the Unit Inert EO Register (see ESCM).

Identification and marking of inert explosive ordnance

1.17 High Risk Inert EO. High risk inert EO are to be engraved or indelibly stamped (or stencilled only when it is impracticable to engrave or stamp), as appropriate, with the word ‘INERT’ together with the inspector’s work-mark, the monogram of the establishment at which the item was first certified inert, a two digit representation for the year during which the item was rendered inert, and the item registration number for that calendar year beginning at 001 and running consecutively throughout the year. The marking is to take the following form:

   INERT 323/PWF/04/027

1.18 The marking in the form depicted above becomes the new unique identification details for the inert EO.

1.19 If an item is too small to be marked in accordance with the requirements of paragraph 1.27, a metal tag is to be engraved with the required markings and the tag should be securely attached to the item.

1.20 Low Risk Inert EO. Low risk inert EO does not require marking.
**RECORD KEEPING AND VERIFICATION**

1.21 **Authorised Inspector.** For high risk inert EO the completed Form EO 039 is to be registered in the Inert EO Certification Register (IEOCR) by the authorised inspector who certified and marked the EO inert. The authorised inspector is to advise the requesting officer of the inclusion of the certificate in the register.

1.22 **Requesting Officer.** For high risk inert EO the requesting officer is to retain a record of the Form EO 039 until they have been advised by the Authorised Inspector that completed certification has been registered in the IEOCR.

1.23 **Commanding Officers.** COs of units holding historically issued certificates for inert EO must ensure that all certificates relating to inert EO holdings are forwarded to DDTS to be registered in Inert EO Certification Register. This requirement is detailed in the ESCM V04S08C01 – Management, Accounting and Assurance of Inert Explosive Ordnance at Unit Level.

1.24 Where inert EO is held at a unit and is not certified or listed in a register as required above, CO’s are responsible to initiate the process to have holdings inspected and certified as EO inert.

1.25 **Units/Ships/Establishments.** The Officer-in-Charge of a unit/ship/establishment is responsible for maintaining a unit Inert Stores Register of all items of inert EO held in their unit/ship/establishment. This accounting requirement is detailed in the ESCM V04S08C01 – Management, Accounting and Assurance of Inert Explosive Ordnance at Unit Level.

**Existing records for inert explosive ordnance**

1.26 From the date of issue of this procedure, all EO is to be rendered and/or inspected and certified inert in accordance with the requirements of this procedure. Historical EO 039 certifications for low risk inert EO may still be recorded in the EOICR.

1.27 Requirements for the management of inert EO by Defence Units/Establishments are contained in ESCM V04S08C023 – Management, Accounting and Assurance of Inert Explosive Ordnance at Unit Level.

1.28 Security requirements for inert EO are contained in the Defence Security Principles Framework (DSPF) Principle 79, Control 79.1 Annex C

**Flow chart for rendering inert processes**

1.29 A Flow Chart depicting the processes for rendering and/or inspecting and certifying inert EO (and NEDG) is in Annex A.

**Annexes:**

A. Process to Render and/or Inspect and Certify Explosive Ordnance Inert
PROCESS TO RENDER AND/OR INSPECT AND CERTIFY EXPLOSIVE ORDNANCE INERT

18 Mar 16

Requirement to hold inert EO

Requirement to hold inert EO

Service Capacity Manager

Yes

EO is in service

Yes

Dummy purchase is available

Yes

CASG Procure

No

Manage at unit level

Manage at unit level on Inert EO Register

Require includes Render

Request includes Render

Raise EO 039 and forward to HQ JPEU

Raise EO 039 and forward to Regional JLU EOS

Yes

Yes

ANNEX A

PROCESS TO RENDER AND/OR INSPECT AND CERTIFY EXPLOSIVE ORDNANCE INERT

18 Mar 16

Originating Officer (Unit/Establishment/Ship)

Service Capacity Manager

Yes

EO is in service

Yes

Dummy purchase is available

Yes

CASG Procure

No

Manage at unit level

Manage at unit level on Inert EO Register

Request includes Render

Request includes Render

Raise EO 039 and forward to HQ JPEU

Raise EO 039 and forward to Regional JLU EOS

Yes

Yes

ANNEX A

PROCESS TO RENDER AND/OR INSPECT AND CERTIFY EXPLOSIVE ORDNANCE INERT

18 Mar 16

Originating Officer (Unit/Establishment/Ship)

Service Capacity Manager

Yes

EO is in service

Yes

Dummy purchase is available

Yes

CASG Procure

No

Manage at unit level

Manage at unit level on Inert EO Register

Request includes Render

Request includes Render

Raise EO 039 and forward to HQ JPEU

Raise EO 039 and forward to Regional JLU EOS

Yes

Yes

Render/Breakdown Agency (JPEU or DSTG)

Advise Originating Unit

EO can be rendered inert

Yes

High Safety Risk or Uncertainty

No

High Risk Inspection

No

Low Risk Inspection

No

Contains EO

No

Contains EO

No

Certify by completing EO 039

Underwrite marking of Inert EO

Register EO 039 in Inert EO Certification Register

Advise Originating Unit

Yes

There is a breakdown procedure

Yes

Breakdown procedure developed

Yes

Procedure is approved by Safety Committee

Yes

Task Approval by CO JPEU

Yes

Contact Rendering Task

There is no requirement to maintain a separate safety register of what has been rendered inert. This may be done by the unit as a task management process.

The requirement to Certify and Register Inert EO relates to holding high risk inert EO.
REGULATION 2.5 - EXPLOSIVE ORDNANCE LIFE

This regulation is currently under review

General Overview

5.1 Explosive Ordnance (EO), including Non Explosive Dangerous Goods items managed as EO, may degrade with age and exposure to the environment. This degradation may result in the EO becoming unsafe to store, transport and/or operate. The EO may also fail to meet its functional and performance requirements. Accordingly, all EO is assigned a life that is a function of its design and intended use within a defined environment.

Requirements

5.2 The condition of EO must be monitored throughout its life to ensure that it remains safe and suitable for service and that it performs as required.

5.3 EO is to be assigned a life. Lives are to be expressed in time and, if relevant other means such as flying hours and/or number of flights. The assigned life is to be constantly reviewed to ensure functional performance and safety levels are maintained. The following lives are to be assigned to items of EO:

   a. Storage and Transport (S&T) Life;
   b. Service Life; and
   c. Disposal Phase.

See procedure 1 for greater explanation of lives.

5.4 The Disposal phase must not extend beyond the S&T life. Once service/operational life has expired, EO must be disposed of before the expiration of the storage and transport life.

5.5 The life of EO may be extended or reduced both permanently or temporarily as the case requires. A surveillance program may be used to support decisions for an extension or reduction of life but is not the only method of doing so.

5.6 Surveillance activities are to occur on identified EO throughout its life and are considered a routine maintenance activity. The activities required are to be based on the authorised surveillance plan.

5.7 Based on engineering advice from Explosive Ordnance Branch (EMB) within the Capability, Acquisition and Sustainment Group (CAG), operational authorities, such as Deputy Chief of Joint Operations (DCJOPS), may grant temporary life extensions for items that may affect operational readiness of Defence Force units.

5.8 Consumables used in the processing of EO are also to be assigned the following lives:

   a. Shelf Life; and
   b. In-use Life.

The commencement of life is to be considered and defined when establishing the shelf and in-use lives.

Responsibilities

5.9 EMB is responsible for the following:

   a. Promulgating management of life data, including maintenance intervals if applicable;
b. Approving amendments to EO life;

c. Notifying all changes and variations to management of life data;

d. Development of surveillance plans, as appropriate;

e. Surveillance program management, should a surveillance program be applied to a particular item of EO;

f. Arrange for designated single Service units to submit EO firing reports in support of surveillance activities;

g. Ensure that Operational Authorities are made fully aware of, and accepts, the risks and implication of granting temporary life extensions to meet operational readiness objectives; and

h. Management of lifed non explosive consumables associated with the maintenance of a weapon or item of EO.

5.10 Individual stockholders, custodians and users. Individual stockholders, custodians and users of EO are responsible for the following:

a. Routine management of lifed EO, including continuous monitoring of the condition of the EO and maintenance if applicable;

b. Withdrawal of life expired stores from service and subsequent disposal by appropriate means when authorised by the relevant Item Manager at EMB, which may include the return to designated establishments.

c. Submission of requests for temporary life extensions for items of EO including Maintenance Interval Extension Requests (MIER); and

d. Submission of requests for life variation for non-explosive consumables.

Procedures

5.11 Procedures to implement this regulation are found in:

a. Procedure 1 – Management of Life for Explosive Ordnance;

b. Procedure 2 – Maintenance Interval Extensions for Explosive Ordnance;

c. Procedure 3 – Management of Lifed Non-Explosive Consumables used in the Processing of Explosive Ordnance; and

PROCEDURE 01 - MANAGEMENT OF LIFE FOR EXPLOSIVE ORDNANCE

Introduction

1.1 Explosive Ordnance (EO), including Non-Explosive Dangerous Goods (NEDG), can contain various mechanical, electrical/electronic components and chemical substances that may degrade with age and the effects of environmental conditions. This degradation may result in the functional specification requirements not being met, or the EO becoming unsafe to store, handle or use. Accordingly, all EO is assigned a life that is a function of its design.

1.2 The life assigned to all EO must be constantly reviewed to ensure functional performance and safety levels are maintained, while allowing for the most cost-effective use of the EO. This review process includes the establishment of surveillance programs and the examination of surveillance test results.

1.3 Associated Instructions. This procedure is to be read in conjunction with Topic - 024 of the item publication, found in the Explosive Ordnance Technical Publications (EOTP) on-line library managed by the Capability, Acquisition and Sustainment Group (CASG).

Purpose

1.4 This procedure provides an overview of the policy for the life management of EO within Defence. Detailed policy and procedures will be issued in a separate EO Life Management and Surveillance publication.

Definitions and Terminology

1.5 EO life is made up of ‘Service Life’ and ‘Disposal Phases’, which form a subset of the ‘Storage and Transport Life’ of the EO. A diagrammatic explanation of Storage and Transport Life for EO is at Annex A.

1.6 Lives are normally to be expressed as periods of time, normally in months. However, Operational Lives in particular, may need to be expressed in other ways, for example, in flying hours and/or sorties, or the number of times EO may be installed into, and removed from, parent equipment.

1.7 The following terms and definitions are applicable to the management of life for EO (and NEDG) and are the only ones authorised for use in Defence:

a. Storage and Transport Life. The Storage and Transport (S & T) Life is the total period for which an item of EO, under specified conditions, may be expected to remain safe to store and transport. The S & T Life comprises the Service Life and the Disposal Phase.

b. Service Life. Service Life is the maximum period for which an item of EO, whilst stored and when subsequently used in its operational or training role, may be expected to remain safe and continue to meet the requirements of its Functional and Performance Specification (FPS).

(1) Operational Life. The Operational Life may be defined as a subset of the Service Life, for which an item of EO, when used in its specified operational or training role, may be expected to remain safe to operate and meet the requirements of the FPS. An Operational Life is assigned where the operational environment is expected to result in an accelerated rate of aging relative to that experienced in the storage environment. If an item reaches the end of its Operational Life without being expended, the Service Life will automatically expire and it will enter the Disposal Phase. Three types of Operational Life may be used:
Unpacked Life. Unpacked Life is the time, within the Service Life, for which an item of EO, which has had its manufacturer’s hermetically sealed packaging opened, may be expected to remain safe to operate and will meet the requirements of the FPS. Note that this Life normally only applies to items whose critical failure mode is subject to increased degradation when removed from the parent packaging. The countdown of Unpacked Life cannot normally be halted once the packaging has been opened. Specific circumstances may be exempt from this, such as the opening and inspection of a hermetically sealed item conducted in a controlled atmosphere where the packaging is appropriately resealed.

Installed Life. The Installed Life is the time, within the Service Life, for which an item of EO may be expected to remain safe to operate and will meet the requirements of its FPS while installed or fitted to another assembly. Installed Life is used where the critical failure mode is a function of the installed environment: for example, the exposure to vibration. Hence, Installed Life can be started and stopped, but cannot exceed the Service Life. Items that may require an Installed Life include EO fitted to an aircraft, such as ejection seat components, or fire bottle cartridges mounted in armoured vehicles or aircraft.

Deployed Life. All EO is issued and Explosive Ordnance Design Certificate (EODC) based on an agreed Manufacture to Target and Disposal Sequence (MTDS). Deviations from the MTDS may occur during the life of the item of EO. A Deployed Life is defined as required, when an operational scenario arises that is not described by the MTDS. The Deployed Life is the period of time, within the Service Life, during which the item of EO may be expected to remain safe to store, transport and operate when exposed to a service environment not described by the relevant MTDS. This life would be approved by the Explosive Materiel Branch within the Capability Acquisition and Sustainment Group (CASSG) based on a Design Assessment of the item in respect of these new conditions.

d. Disposal Phase. The Disposal Phase is the time, outside the Service Life, for which an item of EO will remain safe only to store, transport and dispose of. The Disposal Phase is the period following the expiration of the Service Life and by when disposal must be completed. Should the item have an Operational Life, which is initiated (as explained above), the resulting accelerated ageing will bring forward the Disposal Phase.

e. Life Expired. EO becomes life expired when the Service Life is exceeded. Once life expired the EO is to be disposed of as soon as practicable within the Storage and Transport Life and in accordance with Defence policy. Life expired EO cannot be held for training purposes without written authority and date to be used by, from EMB.

f. Life Change. The term Life Change refers to the permanent increase or decrease in the life of EO of a particular design, lot or batch beyond its previously assigned life. Such a change may be made to exploit the maximum useful life where there is sufficient positive evidence that a design, lot or batch has a significantly different life from the current promulgated life.

Temporary Life Extension. A Temporary Life Extension is a one-time deviation from the approved promulgated Storage and Transport, Service and/or Operational Life. This deviation may apply to a single item, group of items, a specific lot or lots, batches, or to a design. Such extensions may only be approved through the relevant engineering authority at EMB. Such extensions are generally required for reasons of operational necessity.

1.8 Where management of life terms different to those authorised in paragraph 1.7 are used on computer support systems action should be taken, whenever possible, to alter the terms to those
authorised, otherwise local instructions are to interface the authorised terms with those of the computer system.

**Engineering Authority for Management of Life for Explosive Ordnance**

1.9 When EO is introduced into Service, an assessment is carried out in accordance with **DEOP 102** Technical Integrity of Explosive Ordnance. Part of that assessment involves the determination of an initial life for the EO. Once in service any amendment to that life must be approved by the EMB engineering authority.

**Promulgation of EO Life Data**

1.10 The primary document for the promulgation of EO life data for all in-Service EO is the Topic -24 – Life Data. When necessary this information may be re-promulgated in single Service publications such as the RAAF Technical Maintenance Plan (TMP). Further information on EO life can sought from the relevant item manager or the Explosive Ordnance Safety and Reliability cell within the Explosive Materiel Branch of CASG.

1.11 Procedures for rapid notification of variations to the life data promulgated are also included in the Topic -024.

1.12 The EMB is responsible for:

- promulgating management of life data where necessary; and
- notifying all users of changes and variations to life data.

**Application of Management of Life Data**

1.13 The following paragraphs are included to clarify and/or qualify the application and implementation of management of life data for EO:

- The ‘S&T Life’ phase for EO includes storage by the manufacturer prior to delivery, transport to major depots, all storage at major depots and EO storage areas and onboard ships and includes the disposal phase.

- EO is assumed to be in the S&T Life phase until a specific event initiates the Operational Life, eg Cartridge Actuated Device (CAD) installed into aircraft equipment.

- Unpacked Life commences from the date the hermetically sealed container is opened\(^1\). When an Unpacked Life starts the expiry date details are to be marked on each item in the format EXP day/month/year eg EXP 15/3/01. The Unpacked Life is never to exceed or extend beyond the Service Life.

- Countdown of Unpacked Life cannot be halted once the Unpacked Life has commenced.

- The Installed Life starts when either the EO is installed in its intended operational position or, in situations authorised by the Topic - 024, such as when the platform becomes serviceable after installation of the lifed explosive component(s). For example during an F/A-18 Hornet SMDC Kit change, the Installed Life of egress components begins when the aircraft becomes serviceable. When specified by the Topic - 024, Installed Life can be temporarily halted when the item is removed for maintenance or similar activities. This is because the failure mode is a function of the installed environment, such as exposure to platform vibration. Clearly, once the EO is removed from that environment, further degradation may not occur. Importantly, this assessment can only be made once there is a clear understanding of the failure mode.

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\(^1\) This does not include periodic inspections where the container is resealed.
of each configuration. Installed time intervals are cumulative. The accumulated Installed Life of an item is never to exceed or extend beyond the Service Life.

f. The life of EO is deemed to have commenced at 0001 hrs on the date of manufacture. If the exact day of manufacture is not known, it will start from the first day of the month of manufacture. The life will expire at 2359 hrs of the appropriate day. For example, a store with a 5-year Storage Life and manufactured on 20 May 1994 would life expire at 2359 hrs on 19 May 1999. If the exact day and month of manufacture is not known, the Storage Life would commence at 0001 hrs on 01 Jan 1994 and expire at 2359 hrs on 31 Dec 1998.

g. Part ‘Operational’ Life Expired EO. When user establishments decide not to use part ‘operational’ life expired EO, for instance because of short remaining life, such EO is to be treated as life expired.

h. Variation in Life Due to Differing Roles. Some natures of EO may be assigned different lives when used in different roles. This can occur when the roles do not require the same level of reliability. When life of stocks is varied under these circumstances, a Life Variation Notice, in accordance with the Topic - 024, will be issued for the variations. Examples that illustrate the application of this policy are provided in Annex B.

Responsibilities for the Application of Management of Life Data

1.14 Individual stockholders, custodians and users of EO are responsible for routine management of life EO, including continuous monitoring of the condition of the EO, withdrawal of life expired stores from service and subsequent disposal by appropriate means when authorised by the relevant Item Managers at EMB, which may include the return of EO to designated establishments for surveillance purposes.

Surveillance Programs

1.15 Modern EO is costly to both procure and logistically manage. Consequently, it is essential to realise the maximum safe and useful life of EO. As part of an item’s introduction into Service, consideration of the need for a surveillance program must be made and the decision recorded in the introduction into Service certification package. The surveillance program is then to be managed by the relevant Item Managers at EMB through the item’s life of type. The data generated by the surveillance program will then be used to support decisions to vary the life of the EO.

Changes to Promulgated Life

1.16 The life of EO may be extended or reduced. Whilst extensions are more common, reductions may be required when there is evidence that EO will fall below the minimum performance standard during its life.

1.17 Changes to life can be applied to:

a. a particular design, ie mark or model, of EO;

b. a particular batch/lot of EO; or

c. a limited number of one particular type of EO, eg one item installed in a particular aircraft.

Temporary Life Extensions

1.18 The relevant engineering authority at EMB may grant a temporary life extension for items of EO. The extension will apply only to the specified items and for the specified reasons.
When a temporary life extension to the S&T, Service or Operational Life of EO is requested, the request is to be forwarded to the relevant Item Manager at EMB for action. The format for EO temporary life extension requests is given at Annex C.

Temporary life extension assessments are to be conducted in accordance with the appropriate EMB procedures and be based on the likelihood and consequence of unacceptable performance. Approvals for temporary life extensions will include, for the specified EO:

a. a finite period of extension to S&T Life, Service Life, Operational Life or all three;

b. the expiry date in each case; and

c. any special conditions considered necessary for the storage and/or use of the subject EO and/or parent equipment.

Temporary Life Extensions for EO which Fails to Meet Design Performance Criteria. When the relevant EMB engineering authority considers safety and performance criteria for EO cannot be guaranteed, but operational requirements are such that failure to grant a life extension will affect operational readiness of Defence Force units, temporary life extensions may be granted only by the appropriate Operational Authority, eg DCJOPS, as appropriate. In such circumstances the relevant EMB engineering authority is to ensure that the Operational Authority is made fully aware of, and accepts, the risk and implications of granting a temporary life extension.

Maintenance Interval Extensions

Applications for maintenance interval extensions are to be submitted in accordance with Procedure 2.

Annexes:
A. Diagrammatic Explanation of Explosive Ordnance Lifing Terminology
B. Variation in Lives due to Differing Roles
C. Temporary Life Extension Request for Explosive Ordnance
DIAGRAMMATIC EXPLANATION OF EXPLOSIVE ORDNANCE LIFING TERMINOLOGY

1. The diagram below in figure 1A-1 represents the Storage and Transport Life Envelope for an item of explosive ordnance. As can be seen, the confidence in the safety and performance of an item may reduce over time with the Storage and Transport (S & T) Life being a combination of the Service Life and Disposal Phase. The Operational Life is a subset of the Service Life. After the Operational Life for an item has begun and has been expended it then enters the disposal phase.

Figure 1A–1: EO Lifing Diagram
VARIATION IN LIVES DUE TO DIFFERING ROLES

1. An item of explosive ordnance may have different lives assigned when there are differences in its roles, reliability requirements or its operating and storage environments. Some examples are:
   
a. A missile which is fired from both fixed-wing and rotary-wing aircraft may be assigned different maximum flying hours (Operational Lives). That would be because the vibration spectra of the respective aircraft differ.

b. A smoke grenade used for screening in battle might have a 5 years Service Life. In-Service proof might show that after the 5 years life, the reliability falls just below the minimum required for operational use. It would be reasonable to increase the Service Life of the life expired stocks so that they may be used for training.

2. In the example given in paragraph 1b, it would be essential that the life-extended grenades are not issued for operations. That can be achieved by issuing appropriate Life Change Authority in the Topic -024 of the item publication, for the lots that have been granted a varied Service Life.
TEMPORARY LIFE EXTENSION REQUEST FOR EXPLOSIVE ORDNANCE

1. Temporary Life Extension to a limited number of items of Explosive Ordnance (EO) may be granted in accordance with Procedure 1, paragraph 1.18 to 1.20.

2. Applications for a Temporary Life Extension are to address the following:
   a. Justification for Temporary Life Extension including the effect on operational readiness if the extension is not approved.
   b. Period of extension required.
   c. EO details:
      (1) NSN.
      (2) ASN, if applicable.
      (3) DODIC Code for Stores of United States origin, if applicable.
      (4) Service Name.
      (5) Lot/Serial No details.
      (6) Part No, if applicable.
      (7) Quantity of items held.

3. Narrative History Details for subject EO, including but not limited to:
   a. Storage Condition – Is the EO hermetically sealed or has it been unpacked or installed in its intended position?
   b. Usage Condition – Is the item held in or has it been subjected to extreme environmental conditions such as tropical or freezing conditions?

4. Any other data that may support the request for Temporary Life Extension.

5. Any information that may have a negative bearing on the request for Temporary Life Extension.
PROCEDURE 2 - MAINTENANCE INTERVAL EXTENSIONS FOR EXPLOSIVE ORDNANCE

Introduction

2.1 Adherence to promulgated maintenance policy, such as maintenance intervals, is essential to ensure ongoing Safety and Suitability for Service (S3) for Explosive Ordnance (EO). A number of EO lines, such as guided weapons and torpedoes, have promulgated maintenance policies requiring maintenance activities to be conducted at regular intervals. However, operational or maintenance activities may require an extension to the maintenance intervals promulgated in single-Service publications. These are termed as follows:
   a. For RAN units – Torpedo or Guided Missile Certification Period Extensions;
   b. For RAAF units – Technical Maintenance Plan Extensions; or
   c. For Army units – Technical Maintenance Plan Extensions.

2.2 Importantly, these extensions are usually one-time deviations from the maintenance interval specified in the maintenance publication. The circumstances where a unit may seek an extension to a maintenance interval are:
   a. to facilitate alignment of minor level to deeper level servicing for the sake of maintenance resource efficiencies or to ease workload scheduling,
   b. to meet essential operational availability requirements, and/or
   c. to reduce down time due to the lack of available spares.

2.3 Where a unit is unable to comply with the maintenance policy specified in a maintenance document due to either the lack of, or long term unavailability of resources, a non-compliance report is to be submitted to the relevant Item Manager at the Explosive Materiel Branch (EMB) within the Capability Acquisition and Sustainment Group (CASG). At all other times units are to comply with maintenance policy promulgated in maintenance publications.

Purpose

2.4 The purpose of this instruction is to detail the policy for authorising maintenance interval extensions for EO and the procedure for gaining approval for such extensions.

2.5 These requirements should not be confused with policy and procedures in Regulation 2.5 Procedure 1 for authorisation of temporary life extensions to approved promulgated Storage and/or Operational Life for EO.

Authority

2.6 EMB. The relevant branches at EMB are responsible for determining and promulgating maintenance policy for all EO. All requests for extensions to maintenance intervals must be approved by the relevant engineering authority at EMB. The Maintenance Interval Extension Request (MIER) to be forwarded to EMB is to be in either minute or signal/message format. The content of a MIER, in minute format, is at Annex A. MIER submitted in message or signal format are to have the same content as that detailed in Annex A. MIER are to be annotated with the appropriate security classification.

2.7 Approval of MIER. Approval of an interval extension request must not be assumed. An extension is granted solely as a temporary measure for the circumstances identified in paragraph 2.2. The extension, if granted, applies only to the (serial numbered) items specified in the approval and does not normally result in an amendment of the maintenance interval. Importantly, the approval of an extension request may be conditional on the performance of alternative maintenance or inspections. If the application for an extension is refused either the maintenance that was the subject of the MIER...
must occur or the higher assembly be classified unserviceable and, if required for operations, entered as such in appropriate single Service documentation. In this circumstance the senior operating officer at or on the unit is to be made fully aware of the possible impact on operations due to the delay in maintenance. If the decision by the senior operating officer is to not use the system, single Service availability reporting may be required to be submitted.

2.8 **Distribution.** The action addressee for all MIER is the relevant Item Manager at EMB. A ‘For Information’ copy is to be sent to the unit’s parent headquarters in accordance with single Service requirements.

2.9 **EMB.** The relevant Item Manager at EMB is to only grant approval of the MIER once the appropriate engineering approvals are obtained from the relevant EMB engineering authority. Approval, or otherwise, is to be provided by signal/message or minute as appropriate. The approval may include caveats such as the requirement to conduct alternative maintenance or inspections. On receipt of the approval to extend the maintenance interval, all associated single Service maintenance documentation is to be annotated as required.

**Annex:**

A. Content of Maintenance Interval Extension Request
CONTENT OF MAINTENANCE INTERVAL EXTENSION REQUEST

DEPARTMENT OF DEFENCE
[UNIT NAME]
MINUTE

File Reference

Insert Action Addressee

For Information:
[Insert relevant Headquarters]

REQUEST FOR MAINTENANCE INTERVAL EXTENSION – [Insert local registration number if appropriate]

1. Item Description:
   a. Name
   b. Maintenance Number (e.g. TMC or LCN)
   c. Part Number
   d. Serial Number
   e. Maintenance documentation Amendment List status and issue date
   f. Quantity

2. Installation or higher assembly (if appropriate)

3. Expired Life details:
   a. Life since new/last overhaul/as appropriate
   b. Date and type of most recent maintenance activity
   c. Unit assessment of condition of item and its capability to continue satisfactory operation if maintenance is deferred. Consideration is to be given to the item’s recent serviceability record and possible effects on other components where the maintenance requirements of those items are dependant on the item being extended.

4. Details of Maintenance to be deferred:
   a. Servicing or process to be deferred.
   b. Previous extensions already granted.
   c. Date/hours when maintenance is due or item is to be replaced.

5. Extension required: Specify in terms of the current maintenance interval and include any extensions required for other items with maintenance requirements that are dependant on the item being extended.

6. Reasons for extension.
### ANNEX A

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<tbody>
<tr>
<td>7.</td>
<td>Notification of whether EO is to be fired.</td>
</tr>
<tr>
<td>8.</td>
<td>Proposed date or hours when maintenance/item change will be preformed if extension is granted.</td>
</tr>
<tr>
<td>9.</td>
<td>Unit contact and phone number (if appropriate).</td>
</tr>
<tr>
<td>10.</td>
<td>Notification of approval/refusal required by (date).</td>
</tr>
<tr>
<td>11.</td>
<td>Other remarks.</td>
</tr>
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**NAME**

<table>
<thead>
<tr>
<th>Rank/Position</th>
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<tbody>
<tr>
<td>Appointment</td>
<td></td>
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<tr>
<td>Tel: (0X) XXXX XXXX</td>
<td></td>
</tr>
<tr>
<td>Fax: (0X) XXXX XXXX</td>
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</tbody>
</table>

Date
Introduction

3.1 There are numerous consumable materials and items used during the assembly and maintenance, i.e. processing, of Explosive Ordnance (EO) including non-explosive dangerous goods. Many of these consumables, such as paints, rubber items (o-rings and seals), lubricants, sealants, adhesives and batteries, have a limited useful life. The period of this life is governed by factors such as the chemical composition of the materials and the conditions under which they are held. The specific lives of consumables can vary considerably depending on whether the end use has application with explosives or non-explosives. This aspect demands special management if economical use of consumables is to be achieved.

Purpose

3.2 This procedure prescribes the policy and procedures for the management of lifed non-explosive consumables (hereafter referred to as consumables) used in the processing of EO.

Applicability

3.3 The life variation procedures in this procedure only apply to approved consumables and approved alternative consumables. These procedures do not allow for the approval of alternative items.

Lifing Terms and Definitions

3.4 The following lifing terms and definitions apply to consumables only. These definitions are not to be confused with those detailed in Procedure 1 which apply to EO only.

a. Shelf Life. Shelf Life is the period from the date of manufacture or cure date, as stipulated by the manufacturer, up to the date at which a consumable is not to be applied or fitted for its intended purpose. Once the consumable has been incorporated into the EO the ‘shelf life’ restriction no longer applies.

b. In-Use Life. In-Use Life is the period of time a consumable may remain fitted to a higher assembly.

c. Life Expired. A consumable becomes life expired when the particular life in question i.e Shelf or In-Use Life, is exceeded.

d. Life Variation. Life Variation is a formally authorised variation to the Shelf or In-Use Life of a consumable.

e. Commencement of Life. Generally, the Shelf Life of a consumable will commence from the date of manufacture or cure date. Where the life is governed by other factors such as, removal from sealed containers, mixing, installation etc this will be specified in the material or item technical manual or specification.

Management Authority

3.5 The Explosive Materiel Branch within the Capability Acquisition and Sustainment Group (CASG) is responsible for the management of lifed non-explosives consumables used in the processing of EO. EMB are to approve life variations to consumables and to advise the necessary personnel on the unavoidable use of life expired consumables. Appropriate EMB procedures are to be implemented to maintain a suitable history record for the discharge of this function.
NOTE

O-rings that are used in the maintenance of Guided Weapons, for example, may be multi fit items that may be used in other non-explosive ordnance related higher assemblies. Therefore, the O-ring could be subject to another life entirely in another application. EMB is responsible only for the management of life relating to items of EO, Guided Weapons and associated equipment.

Policy for Assigning Life

3.6 The shelf life of consumables is specified in numerous documents often with conflicting results. In such instances, the following order of precedence is to apply in determining the applicable life data:

a. If a consumable is of American manufacture the life specified in the Federal Logistics data, known as FEDLOG, is to apply.

b. When a consumable is identified on the Central Catalogue (CENCAT) accessed through Military Integrated Logistics Information System (MILIS), and is not listed in FEDLOG, the life specified on CENCAT is to apply.

c. For items managed under the Australian Paint Approval Scheme (APAS) administered by the CSIRO, the ‘keeping-qualities-life’ specified in GPC-D-124 is to apply if the life is not specified on FEDLOG or CENCAT.

d. When life details cannot be ascertained from any of the above documents the life recommended in the relevant technical manual, product specification or by the manufacturer, is to apply. If life data ascertained from these sources conflicts then the shorter life is to apply until the life information is clarified.

e. When the specific life of a consumable cannot be determined from any of the above documents and another item made to the same specification has been identified, then this life may be applied with the concurrence of the relevant EMB Item Manager.

f. When a consumable is received with a shorter life than that specified in any of the above documents then the shorter life is to apply to the particular lot/batch.

g. When a shorter life is specified in a specific end use document eg maintenance manual, in this instance the shorter life is to apply. Where this is done the authority for the shorter life is to be annotated in the Computer System Armament (COMSARM) Catalogue Maintenance CA01 screen. End use users are responsible for advising the COMSARM Item Manager of details of the shorter life.

3.7 In all cases where consumables are COMSARM managed, the life is to be entered in the Life Field of COMSARM (CA01 Screen 2), and the document reference for the life, is to be annotated in the Full Description Field. This action is the responsibility of the Item Manager.

3.8 All consumables are to be clearly marked with life control information such as, lot/batch number, date of manufacture etc in accordance with the relevant drawing/specification. These markings are to be verified at receipt inspection into store.

3.9 Where a dispute arises on the particular life to be applied to a consumable then full details are to be provided to the relevant EMB Item Manager for resolution. In the interim, the shorter life is to apply.

3.10 Paints used on EO packages are not subject to the life constraints of this instruction and may continue to be used provided they appear visually serviceable and the drying time and application is satisfactory. The restrictions on the use of the paint is to be annotated on the item Condition Status Label. If bulk stocks are affected, local stock control procedures are to be developed to control this stock if a decision is made to retain these items.
Requests for Life Variation

3.11 Life variation requests are to be submitted to the relevant EMB Item Manager on a copy of the Application for Life Variation to Lifed Non-Explosive Consumables Used in the Processing of Explosive Ordnance, at Annex A. This form has been specifically designed to gather all relevant information which will allow a technical assessment to be made on the feasibility or otherwise of a life variation. The relevant EMB Item Manager is to make a decision on the life variation request and return the application to the originator. The originator is responsible for taking appropriate stock control action. The form is to be retained for future audit purposes.

3.12 Some consumables may need to be used in more than one application and the granting of a Life Variation may have effect across several items within a Product Line or across more than one Product Line. EMB personnel investigating an application for Life Variation must ensure that all possible conditions of use are considered. Where the granting of a Life Variation may have adverse or unwanted effects on a different usage the Life Variation should be made conditional and the limitations clearly marked on the product. Where the likelihood exists for misuse of the life varied product, consideration should be given to rejecting the Life Variation and advising that a Form SG 002 Application for Deviation, for specific use be submitted in accordance with paragraph 3.13.

Use of Life Expired Consumables

3.13 In some cases it will not be appropriate to grant a Life Variation to a total Lot or Batch of non-explosive consumables. In the event that a general Life Variation is not approved the use of life expired consumables may be permitted for specific applications by use of a Deviation. Where the requirement is identified by a customer external to EMB, Form SG 2 Application for Deviation, is to be used. For EMB internal requirements the locally produced Request for Deviation is to be used. Where it is necessary to submit a Deviation the applicant is to:

   a. complete Part 1 of Form SG 2 or the EMB Request for Deviation, as appropriate;
   b. obtain written advice from the relevant EMB Item Manager with respect to the permitted use of the consumable in question;
   c. attach the EMB Item Manager advice to the Deviation application; and
   d. submit the Deviation application to the approving authority.

The approving authority for the Deviation application is to be cognisant of the EMB advice in reaching a decision.

Management of Life Expired Consumables

3.14 Some consumables sourced through the Defence National Stores Distribution Centre (DNSDC) Moorebank are multi end-use items. If practicable when such items become life-expired and are capable of being used in other than EO applications, remaining stock is to be returned to DNSDC Moorebank. The items are to be returned Quarantine, under cover of a Notification of Sentence. DNSDC Moorebank quality staff is responsible for upgrading the items to reflect their non-EO end-use life.

3.15 When the return of life expired consumables to DNSDC Moorebank is considered impracticable or uneconomical, they may be downgraded and disposed of locally. Officers-in-Charge are responsible for ensuring that local disposal does not occur as a matter of course and that continued use is made of consumables wherever possible.

3.16 Life-expired consumables obtained from sources other than DNSDC Moorebank should be disposed of locally.

Annex:
A. Application for Life Variation to Lifed Non-Explosive Consumables used in the Processing of Explosive Ordnance
**APPLICATION FOR LIFE VARIATION TO LIFED NON-EXPLOSIVE CONSUMABLES USED IN THE PROCESSING OF EXPLOSIVE ORDNANCE**

**PART 1. LIFE VARIATION DETAILS** *(To be completed by Originator)*

<table>
<thead>
<tr>
<th>A. ORIGINATOR DETAILS</th>
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<td>Originator’s Ref:</td>
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<tr>
<th>B. ITEM DETAILS (Complete as much detail as possible)</th>
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<tr>
<td>Short Item Name:</td>
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<td>NSN/DSN:</td>
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<td>Part/Dwg No:</td>
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<tr>
<td>Specification Ref:</td>
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<tr>
<td>Lot/Batch:</td>
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<tr>
<td>Date of Manufacture:</td>
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<td>Quantity:</td>
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<tr>
<td>Location of Stock:</td>
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<td>Lifting Document Ref:</td>
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……………………………………………………………………………………………………… Signature:

**PART 2. LIFE VARIATION DECISION** *(To be completed by Approving Authority)*

<table>
<thead>
<tr>
<th>APPROV. AUTH. REF:</th>
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<tr>
<td>Sample Quantity:</td>
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<tr>
<td>Test Report Ref:</td>
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<tr>
<td>Period of Variation:</td>
<td></td>
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<tr>
<td>Conditions of Variation (if any):</td>
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<td>Remarks:</td>
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</tbody>
</table>

Life Variation is **GRANTED / NOT GRANTED**

……………………………………………………………………………………………………… Signature:

**Printed Name** | **Appointment** | **Phone No** | **Date**
## PART 3 (To be completed by Originator)

Details of Stock Control Action

<table>
<thead>
<tr>
<th>Signature</th>
<th>Printed Name</th>
<th>Appointment</th>
<th>Phone No</th>
<th>Date</th>
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PROCEDURE 4 - SURVEILLANCE OF EXPLOSIVE ORDNANCE

Introduction

4.1 The condition of Explosive Ordnance (EO) must be monitored throughout its Life of Type (LOT) to ensure it remains safe and suitable for service and that it performs as required. Surveillance is the risk mitigation activity that monitors the condition of that EO. All EO in Defence is subject to surveillance, albeit at various levels.

Purpose

4.2 This procedure provides an overview of the policy for conducting surveillance on EO in Defence, and establishes the requirement for designated Defence units to provide EO firing reports in support of surveillance activities.

Surveillance

4.3 Definition. Surveillance is the activity or series of activities established to determine whether EO, once introduced into Defence service:
   a. remains safe to store and transport,
   b. remains safe to operate, and
   c. will perform within acceptable performance limits.

4.4 Surveillance occurs on identified EO through LOT and is considered a routine maintenance activity.

Surveillance to Support Technical Integrity of EO

4.5 Surveillance consists of various types of inspection, non-destructive and destructive testing, at specified frequencies throughout an item’s Life of Type. Such activities may occur on All Up Rounds (AUR), AUR sub-components, explosive fills or propellants. The inspection and/or testing may be of a particular method or combination of methods designed to ensure sufficient parameters are measured, or other data collected, to enable confident assessment of the condition, and therefore the life, of the item. Note that this data may be supplemented by the results of fleet/field firings of EO. To this end, for specified natures of EO, certain Defence units will be designated to submit firing reports following the expenditure of such natures of EO.

4.6 The data generated by surveillance activities may support:
   a. maintenance of the existing life;
   b. a design change to vary the life of a design;
   c. a deviation that grants a temporary life extension, either to some or all items of a design with, in some cases, specific conditions applying;
   d. the decision to withdraw the items from service before they become unreliable or unsafe; or
   e. the decision to retain the items in-Service with certain limitations on their use.

Explosive Ordnance Firing Reports

4.7 The Explosive Materiel Branch (EMB) within the Capability Acquisition and Sustainment Group (CASG) is to arrange for designated single Service units to submit EO firing reports in support of surveillance activities. The requirements are to be based on the authorised surveillance plans prepared by EMB.
EMB is to be cognisant of single Services systems already in place for the monitoring of performance of weapons and weapon systems, and endeavour to utilise the data collected by the existing systems without modification.

When the requirement to provide firing reports has been agreed, the requirement is to be formalised in the Range Standing Orders for the Field Firing/Weapons Ranges concerned.

EO firing reports are to contain the following information, as a minimum:

a. The designation of the unit conducting the firing.

b. All details deemed necessary to identify the configuration of the EO fired including Type, Stock No, Lot No and fuzing details, if required.

c. Date(s) when firing was conducted.

d. The location where firing was conducted.

e. Details of firing environment, eg average ambient temperature, weather - wet or dry, and wind conditions.

f. The quantity of EO fired.

g. Results of specified performance parameters.

For most natures, firing reports are to be forwarded to EMB for processing within 30 days of firing or as otherwise agreed. When large quantities of a specific nature are fired on a regular basis, eg Grenade Hand Fragmentation F1, results may be forwarded quarterly.

After a sufficient trial period, EMB is to develop E-forms suitable for the collection of firing data specific to the particular nature of EO in question, or amend existing single Service forms used for this purpose to ensure all elements of interest are captured.

Until suitable E-forms are developed for electronic compilation and transmission, reports may be forwarded by facsimile or message (subject to their security classification), for action by EMB.