



Defence  
Safety Authority

# DSA 03.OME Part 4 (JSP 498)- Defence Code of Practice (DCOP) and Guidance Notes – Defence Major Accident Control Regulations (MACR)

Defence OME Safety Regulator

*DOSR*



## **DSA VISION**

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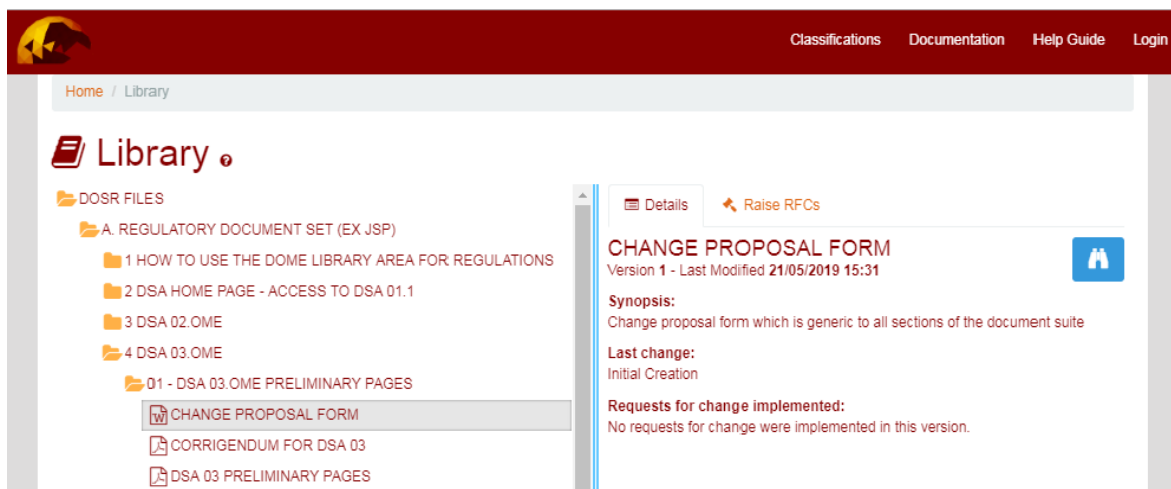


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# CHAPTER 1

## MAJOR ACCIDENT CONTROL REGULATIONS

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#### INTRODUCTION

1. This document sets out the Major Accident Control Regulations (MACR) for the MOD. MACR implements arrangements to achieve results at least as good as those achieved by non-MOD controlled sites which fall within scope of the Control of Major Accident Hazard Regulations 2015 (COMAH) as amended.
2. COMAH is UK legislation made under the Health and Safety at Work etc. Act (HSWA) 1974. It has been developed in response to a European Union (EU) Directive (96/82/EC) as amended by EU Directive (2012/18/EU) under the terms of the European Communities Act 1972 and for technical legal reasons cannot be applied to the Military Forces or Defence Establishments of Member States.
3. However, the established policy of the Secretary of State (S of S) where legislation does not apply and where appropriate, measures will be introduced in MOD to achieve as good as or better results than those demanded by statute.

4. MACR discharges that policy in the context of prevention of a Major Accident (MA) and the mitigation of consequences to human health and or the environment should one occur. The MACR Competent Authority (CA) is empowered by Permanent Under Secretary (PUS) via Director Defence Safety & Environment Authority to maintain and regulate MACR.

## MAJOR ACCIDENT DEFINITION AND CRITERIA

5. MACR defines an MA as an occurrence (in particular, a major emission, fire or explosion) resulting from uncontrolled developments during the operation of any MACR qualified establishment, that leads to serious danger to human health and or the environment, whether immediate or delayed, inside or outside of the establishment and involving one or more dangerous substances.

6. An accident meeting any one of the following criteria is classified as an MA and must be notified to the MACR CA:

6.1 Any fire, explosion or accidental discharge of a dangerous substance involving a quantity of at least 5% of the qualifying quantity for the establishment (see paragraph 7).

6.2 Any fire, explosion or accidental discharge involving more than 50 Tonnes of a petroleum product (see serial 34 of Appendix 1A1).

6.3 Injury to persons and damage to property caused by an accident directly involving a dangerous substance that results in one of the following events:

- a. A death.
- b. Six persons injured within an establishment and kept in hospital for at least 24 hours.
- c. One person outside the establishment kept in hospital for a period of 24 hours.
- d. Dwellings outside the establishment damaged and unusable as a result of the accident.
- e. The evacuation or confinement of persons for more than two hours. Calculated by Persons x Hours with a value of at least 500.
- f. The interruption of off-site drinking water, electricity, gas or telephone services for more than two hours. Calculated by Persons x Hours with a value of at least 1000.

6.4 Immediate damage to the environment as follows:

- a. Permanent or long-term damage to terrestrial habitats within the following levels:  
0.5 hectare (ha) or more of a habitat of environmental or conservation importance protected by legislation.  
Ten or more ha of more widespread habitat, including agricultural land.
- b. Significant or long-term damage to fresh water or marine habitats within the following levels:  
10 km or more of river or canal.  
1 ha or more of a lake or pond.

- 2 ha or more of delta.
- 2 ha or more of coastline or open sea.
- c. Significant damage to an aquifer or underground water of 1 ha or more.
- d. Damage to property within the following levels:  
Damage within the establishment of at least 2 million euro.  
Damage outside of the establishment of at least 500,000 euro.

6.5 Accidents and near misses which are regarded as being of particular technical interest for preventing MAs and limiting their consequences, but which do not meet the criteria above, should be notified to the MACR CA.

## SCOPE

7. The Regulations cover establishments that hold or anticipate holding any individual or aggregated quantities of named or generic categories of dangerous substances above qualifying thresholds (see Annex 1A).

8. There are two qualifying threshold quantities for each of the named and generic categories of dangerous substances that delineate classification of individual establishments that fall within scope of MACR. These are Lower Tier Establishment (LTE) or Upper Tier Establishment (UTE).

9. Establishments may also fall within the scope of MACR (even though the threshold quantities of substances are not exceeded) if qualifying threshold quantities of specified dangerous substances could be produced as a result of loss of control of a process.

10. Dangerous substances classed as In Transit and held in Intermediate Temporary Storage are not to be taken into account when calculating maximum anticipated quantities if held for up to a maximum period of four days, whether moving by road, rail, sea or air.

11. Determination of qualification under MACR is illustrated in the flowchart at Annex 1B. It should be noted that MACR applies to the establishment as a whole, rather than individual activities within the establishment.

## EXISTING MACR ESTABLISHMENT

12. If during an establishment's life it's holdings of dangerous substances are reclassified, reduced or increased, thus altering the status from LTE to UTE or vice versa, the Head of Establishment (HOE) is to update the MACR MAPP/SR and notify the MACR CA. Where the change means the establishment will move from LTE to UTE the MACR CA SG will undertake a re-assessment in accordance with the timescales shown below. If the change is from UTE to LTE status any immediate re-assessment would be an unnecessary burden as the establishment would already be meeting the more stringent requirements and the re-assessment may be left until the 5 yearly assessment is due. The MACR



CA SG will formally confirm the change of status to the HOE. Changes will fall into the following two categories:

12.1 Anticipated Change (LTE to UTE). Where a change in holdings of dangerous substances is anticipated and the timescale permits forward planning, the updated Major Accident Prevention Plan (MAPP) (see Chapter 2), Safety Report (SR) (see Chapter 3), On-Site Emergency Plan (see Chapter 4) and Off-Site Emergency Plan (see Chapter 7 ) should ideally be in place on the day the change is implemented. These establishments will be formally reassessed within six to nine months of the change. If the timescale does not permit the above documents to be put in place by the day the change is implemented, then the timescale for an unforeseen change (see paragraph 12.2) may be utilised. The MACR CA is to be notified of such intentions at the earliest opportunity.

12.2 Unforeseen Change (LTE to UTE). Circumstances may suddenly force change onto an establishment with very little notice or no notice at all, in which case forward planning by the HOE will be prevented. This may be due to the reclassification of a dangerous substance resulting in the lowering of threshold levels or simply to meet an operational imperative. In such circumstance the HOE is to inform the MACR CA and put in place the updated MAPP, SR, On-Site Emergency Plan and Off-Site Emergency Plan (provision of information to the Local Authority to enable a plan to be produced) within six months of the change occurring, during which time an advisory visit may be requested. These establishments will be formally reassessed within twelve months of the change.

### **MACR ESTABLISHMENTS MOVING FROM UTE TO LTE**

13. Where an establishment moves from UTE status to LTE status there will no longer be a requirement under DSA03.OME (JSP 498) to pro-actively inform people within the PIZ of the hazards and actions to be taken. Neither will there be a requirement to have an Off-Site Emergency Plan. Establishments should consult with the Local Authority Emergency Planning Officers on the actions to be taken to withdraw these documents. The Local Authority Emergency Planning Officers may wish to continue with the provision of an Off-Site Emergency Plan to assist them in meeting their emergency planning objectives under the Civil Contingencies Act. Establishments should co-operate in maintaining the base information available to the Emergency Planners if this is the case.

### **NEW MACR ESTABLISHMENTS**

14. New MACR establishments are those where a new build is planned or a change to role has been agreed and it is anticipated that dangerous substances will be held above MACR qualifying threshold levels. In these instances, the MACR CA must be informed as soon as possible and in accordance with the requirements of paragraph 18.1. A liaison visit to the establishment will be arranged three months prior to operations commencing to advise on MACR requirements. The HOE is required to put in place the MAPP, SR (UTE only), On-Site Emergency Plan and Off-Site Emergency Plan (UTE only) before

dangerous substances are received into the facility. Formal assessment by the MACR CA will take place within six to twelve months thereafter. This in-built delay is to allow time for any new and therefore immature procedures to be fully embedded.

15. The timeframes for formal assessment or reassessment may be varied at the discretion of the MACR CA.

## **INTERPRETATION**

16. In these regulations, unless the context otherwise requires, the interpretation of wording and terminology given in Annex 1C applies.

## **DUTIES OF HEAD OF ESTABLISHMENT**

17. The HOE of a qualifying establishment is charged under MACR with the prevention of MAs and with mitigating the consequences to human health and or the environment of any that occur. This imposes the following specific duties which may be discharged through a competent MACR Co-ordinator:

17.1 Notifying the MACR CA of the existence and qualification of the establishment according to the LTE or UTE threshold criteria. This is achieved by completing the Notification Proforma given in Annex 1E and forwarding it to the MACR CA. (See also the interpretation of Establishment in Annex 1C).

17.2 Providing to the MACR CA details of the HOE, the type and maximum anticipated quantity of dangerous substance held, the operation concerned, the establishment MAPP, the On-Site Emergency Plan and the assessment of the risks to human health and or the environment of establishment activities.

17.3 Notifying the MACR CA of the programme of the mandatory exercises (see Chapter 4).

17.4 Providing to the MACR CA a Conformance Certificate signed by the HOE, two weeks prior to the formal visit by the MACR CA Assessment Team. Examples of Conformance Certificates are given in Annex 1F (for LTE) and Annex 1G (for TTE).

17.5 Advising the MACR CASG of the details any major accidents or near misses which do occur and making suitable arrangements to allow the MACR CASG to attend any Inquiry into such accidents.

17.6 Additionally, UTEs are required to:

- a. Demonstrate in an SR that adequate measures have been taken to prevent or mitigate the consequences of an MA.
- b. Provide relevant information to the Local Authorities (LA) (see Chapter 7) in whose area they are located, sufficient to enable them to prepare an Off-Site Emergency Plan.
- c. Provide information to people within the Public Information Zone (PIZ) (see Chapter 3).

## **APPLICATION TO DETACHED UNITS AND OUTSTATIONS**

18. The main factors to consider when deciding if a detached unit or outstation should be included within the MAPP or SR of the parent establishment are given in Annex 1H.

## **DISCOUNTING HAZARDOUS INSTALLATIONS**

19. MACR establishments can discount individual Hazardous Installations if it can be shown that the installation will not generate a Major Accident (MA) in its own right and will not significantly contribute to an MA if one should occur on or off-site. The establishment should provide the justification and rationale for wishing to discount an installation. The degree of detail should be proportionate to the potential risk. Acceptance of the justification case is at the discretion of the MACR CA and will be exercised by the Assessment Manager.

## **APPLICATION OVERSEAS**

20. MACR does not apply to short term deployments overseas i.e. deployments lasting less than 12 months. Where a deployment lasts more than 12 months and it is considered impracticable or inappropriate to implement MACR because of the operational situation, a case is to be submitted to the MACR CA through the Chain of Command. The MACR CA will assess each case on its merits and has the authority to defer implementation. All such decisions will be subject to periodic review in conjunction with the Top Level Budget Holder (TLBH).

21. Permanent overseas bases come within scope of MACR if the provisions of paragraphs 7 to 11 apply. All requirements of the MAPP apply, however, elements of the SR may be difficult to implement in full depending on the individual circumstances. There may be local sensitivities or areas of concern that are quite different to those in the United Kingdom (UK). This could mean that some of the MACR requirements, in respect to the provision of information to the general public about the hazards posed and arrangements with local emergency services, are not readily applicable.

22. The HOE should consult the MACR CASG on any aspect of the SR or emergency plans where it is considered that strict adherence to the MACR requirements will cause unacceptable difficulty or be contrary to the formal agreements that exist with the host country. Any agreement to vary the MACR requirements for a particular establishment will be formally authorised by the MACR Assessment Manager.

## **APPLICATION TO VISITING FORCES**

23. In accordance with the Visiting Forces Act 1957 the Armed Services of other countries are required to comply with host nation Legislation and MOD Regulations. Detailed arrangements for each establishment are subject to

formal agreements that cover the requirements of SHEF. Establishments under the control of the United States Air Force Europe (USAFE) are not covered by the MACR arrangements as agreed by the MOD, HSE and USAFE Liaison Committee who have deemed that the USAFE's own procedures provide a suitable alternative.

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## ANNEX 1A

### CLASSIFICATION OF DANGEROUS SUBSTANCES

General  
Substances and Thresholds  
The 2 % Rule  
Aggregation Rule  
Conversion Formulae

#### GENERAL

For the purposes of the Major Accident Control Regulations (MACR) dangerous substances are classified in accordance with the Classification, Labelling and Packaging (CLP) Regulation.

Guidance can be found:

<http://www.hse.gov.uk/chemical-classification/legal/clp-regulation.htm>

Alternatively, the classification can be found on Safety Data Sheets issued by the supplier. For explosives the classification is undertaken in accordance with the definitions of class 1 of the European Agreement concerning International Carriage of Dangerous Goods by Road (UN/ADR), concluded on 30 September 1957 as amended.

#### SUBSTANCES AND THRESHOLDS

For the purposes of notification, dangerous substances are grouped into the following two categories:

**Named Substances.** A comprehensive list of Named Substances is given in Appendix 1A1 along with thresholds for Lower Tier Establishments (LTE) and Upper Tier Establishments (UTE).

**Generic Substances.** A comprehensive list of Generic Substances is given in Appendix 1A1 along with thresholds for LTE and UTE. Where a dangerous substance or group of dangerous substances listed qualifying thresholds set out in Appendix 1A1 must be used.

#### THE 2% RULE

The quantities considered for the application of the regulations are the **maximum anticipated holdings** present at any time. Dangerous substances held at an establishment in small quantities should be ignored **for notification purposes** if they fulfil both the following criteria:

The amount held is less than 2% of the dangerous substance qualifying threshold.

Its location means that it cannot initiate a Major Accident elsewhere, on or off-site.

### **AGGREGATION RULE**

The aggregation rule is used to decide if an establishment qualifies as an LTE or UTE when the maximum anticipated quantity of a single dangerous substance (or category of dangerous substance) does not exceed the qualifying threshold. The quantities of all dangerous substances present at an establishment are added together as partial fractions of their threshold quantities.

The following equation should therefore be used;

$$q_1/Q + q_2/Q + q_3/Q + \dots > 1$$

Where,  $q_x$  is the quantity of dangerous substance  $x$  falling within Appendix 1A1 and  $Q$  is the relevant threshold quantity. The equation needs to be applied for both lower tier and upper tier threshold quantities. As an example, if an establishment holds 30 tonnes of explosives HD 1.1 and 15,000 tonnes of petroleum products the equation would read (using the upper tier threshold levels);

$$30/50 + 15,000/25,000 = 1.2$$

As 1.2 is greater than 1 the establishment would qualify as an Upper Tier MACR establishment even though neither individual holding is in excess of the Upper Tier threshold quantity.

If in any doubt about application of the aggregation rule the establishment should contact the MACR Competent Authority who will assist in applying the aggregation rule to determine if the establishment is subject to MACR.

### **CONVERSION FORMULAE**

The maximum anticipated quantities have to be expressed in Tonnes. This can be achieved by using the following formulae:

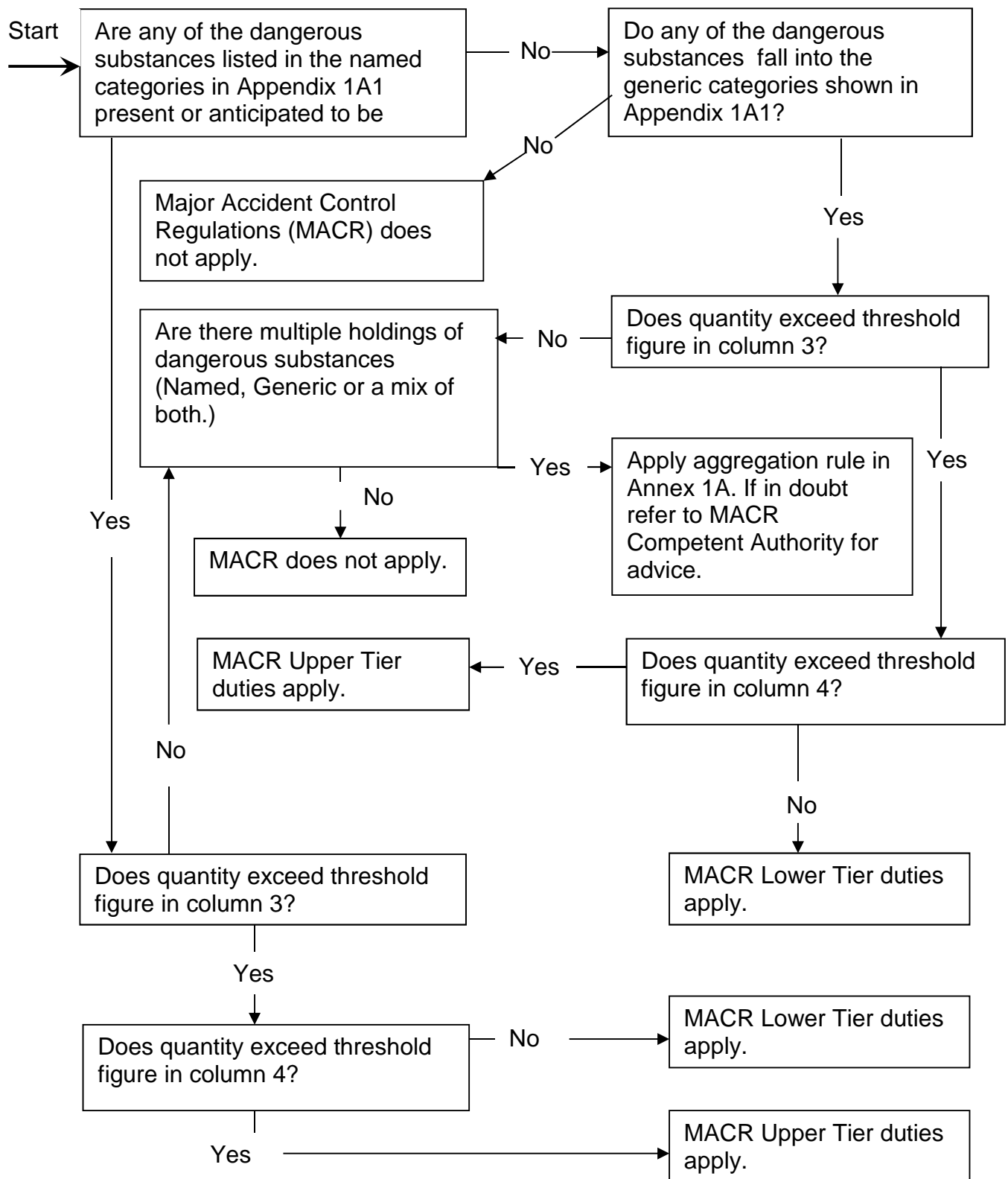
- Bulk LPG. For holdings in Litres, multiply by 0.575 (Butane) or 0.512 (Propane) and divide by 1000. For holdings expressed in cubic metres, multiply by 0.575 (Butane) or 0.512 (Propane).
- Liquid Oxygen (LOX). For holdings in Litres, multiply by 1.140 and divide by 1000. For holdings expressed in cubic metres, multiply by 1.140.
- Bulk Fuel. For holdings in Litres, multiply by 0.807 (Aviation Kerosene F34, F35 and F44), 0.850 (all Diesel Fuels) or 0.950 (Petrol) and divide by 1000. For holdings expressed in cubic metres, multiply by 0.807 (Aviation Kerosene F34, F35 and F44), 0.850 (all Diesel Fuels) or 0.950 (Petrol).

Packed Stock. For all other flammable line items eg, lubricants, paints, glues, solvents etc. held in Litres, multiply by 0.850 and divide by 1000.



### ANNEX 1B

### QUALIFICATION FLOWCHART



Note 1: In order to simplify the flow diagram a number of potential outcomes are not shown. These outcomes are ones which the MACR CA SG has already determined are not feasible within the MOD. Any difficulty in applying the flow diagram should be referred to the MACR CA SG.

**ANNEX 1C  
MAJOR ACCIDENT CONTROL REGULATIONS  
NOTIFICATION PROFORMA**

Title of Establishment:

Head of Establishment:

Full Postal Address:

Nominated MACR Co-ordinator:

Telephone Number:

Email Address:

Dangerous Substances:

Name or Category of Substance	Maximum Anticipated Holding	Remarks

Establishment Role and Activities:

Signature:                      Name:                      Appointment:                      Date:

See completion notes 1-6.

Return completed proforma to:

MACR Competent Authority  
Defence Safety Authority  
#5004 Juniper Level 0,  
Wing 1,  
MOD Abbey Wood,  
Bristol,  
BS34 8QW  
Email: [DSA-DOSR-Assurance-ATL@mod.gov.uk](mailto:DSA-DOSR-Assurance-ATL@mod.gov.uk)

## Completion Notes

1. Title of Establishment. Full title.
2. Head of Establishment. Name and appointment of the Head of Establishment.
3. Full Postal Address. To include Post Code.
4. Nominated MACR Co-ordinator. Name, appointment and contact details of the person formally nominated as the MACR Co-ordinator.
5. Dangerous Substances. Sufficient information to identify the dangerous substances and quantities held. This should be based on the maximum anticipated holdings (**not** the amount actually held, the maximum amount possible or the maximum amount permissible).
6. Establishment Role and Activities. Give the establishment role and a short description of the establishment activities (this should be a brief overview only eg, storage, issue, receipt, inspection and repair of explosives or bulk storage and issue of fuel etc.). A description of individual hazardous installations within the establishment is not required.

**ANNEX 1D****DECLARATION OF CONFORMITY FOR SAFETY REPORT/  
MAJOR ACCIDENT PREVENTION POLICY (MAPP)**

The following is an example of a Conformance Certificate(s) required by a Upper Tier Establishment:

To:  
MACR Competent Authority  
Defence Safety Authority  
#5004 Juniper Level 0,  
Wing 1,  
MOD Abbey Wood,  
Bristol,  
BS34 8QW  
Email: [DSA-DOSR-Assurance-ATL@mod.gov.uk](mailto:DSA-DOSR-Assurance-ATL@mod.gov.uk)

**MAJOR ACCIDENT CONTROL REGULATIONS (MACR)****SAFETY REPORT FOR (*insert establishment name*)**

or

**MAJOR ACCIDENT PREVENTION POLICY (MAPP) FOR (*insert establishment name*)**

Reference:

A. Major Accident Control Regulations – DSA03.OME (JSP 498).

1. It is confirmed that the Safety Report for (*insert establishment name*) has been compiled in accordance with Reference A and that I am personally satisfied that my arrangements for preventing Major Accidents and mitigating the consequences of any that do occur are adequate.

2. Any known issues over the arrangements are shown below.

Signed:  
Head of Establishment

Dated: DD/MM/YYYY

**ANNEX 1E****APPLICATION TO DETACHED UNITS AND OUTSTATIONS**

<b>TOPIC</b>	<b>GUIDANCE</b>
<b>1. Detached Unit or Outstation holds sufficient quantity of dangerous substances to qualify in its own right</b>	If the detached unit or outstation holds sufficient quantities of dangerous substances to qualify as a MACR establishment it will normally be considered as a separate MACR establishment and a Major Accident Prevention Policy (MAPP) or Safety Report (SR) will be required.
<b>2. Detached Unit or Outstation does not hold sufficient quantities of dangerous substances to qualify in its own right.</b>	If the detached unit or outstation does not qualify as a MACR establishment it is discounted. Discounted detached units or outstations do not need to be considered in the parent establishments MAPP or SR. These Establishments do not fall within the scope of DSA03.OME (JSP 498).
<b>3. Hazardous footprint from parent establishment and detached unit or outstation overlap</b>	If the detached unit or outstation is a MACR establishment the two establishments should be recognised as domino establishments and recorded as such with the MACR Competent Authority (CA).
<b>4. Extended establishments and MOD controlled areas.</b>	A MACR establishment in a large MOD controlled area that includes facilities/hazardous installations that could be considered as detached units, outstations or separate MACR establishments may, at the discretion of the MACR CA as exercised by the Assessment Manager, be deemed to be one MACR establishment. The Assessment Manger will consider the authority over the area, command and control of the facilities, purpose of the facilities, operating and emergency procedures and any other information they deem relevant.

## **APPENDIX 1A1**

### **MACR DANGEROUS SUBSTANCES AND THRESHOLDS**

SEE COMAH GUIDANCE

<http://www.hse.gov.uk/pubns/books/l111.htm>

GENERIC CATEGORIES of Dangerous Substances - see Schedule 1 Part 1

NAMED Dangerous Substances - see Schedule 1 Part 2