



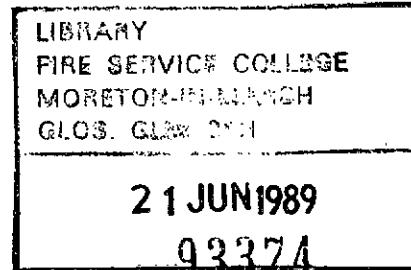
HOME OFFICE

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Direct line: 01-273 2531
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Our reference: FEP/88 64/108/3
Your reference: FEP/88 66/135/3

25 May 1989

To All Chief Officers



Dear Chief Officer

DEAR CHIEF OFFICER LETTER 4/1989

CONTENTS

- A. THE ROAD TRAFFIC (CARRIAGE OF EXPLOSIVES) REGULATIONS 1989.
- B. PERIODIC INSPECTION AND TEST OF BREATHING APPARATUS CYLINDERS.

Yours faithfully

SIR REGINALD DOYLE
HM CHIEF INSPECTOR OF
FIRE SERVICES

The Fire Service
College



00128466



Dear Chief Officer

THE ROAD TRAFFIC (CARRIAGE OF EXPLOSIVES) REGULATIONS 1989

You will know of the incident at Peterborough on 22 March in which a firefighter was killed and others injured following the explosion of a lorry carrying explosives which caught fire. At the time the Road Traffic (Carriage of Explosives) Regulations were under consideration. The regulations come into force on 3 July 1989. Regulation 8 requires that vehicles carrying explosives should be marked front and rear with an orange rectangle and on the sides with an orange diamond with sides of at least 250 mm carrying in black the classification division and the compatibility group (in the form 1.4 X or similar) and in some cases the explosives symbol. Following the incident at Peterborough, the Health and Safety Commission (HSC) obtained the agreement of consignors of explosives to implement the vehicle marking requirements before the regulations formally come into effect. Brigades may therefore encounter marked vehicles in the near future possibly as early as this month. The HSC will issue an approved code of practice and guidance notes on the regulations later in the year which will cover such matters as the selection and construction of the vehicle.

2. The following guidance is issued as an interim measure only and will be superseded in due course by fuller guidance dealing in greater detail with the Regulations as a whole.

3. Explosives are classified in accordance with the Classification and Labelling of Explosives Regulations 1983. Annex 1 reproduces Schedule 1 to these regulations with annotations which brigades should find helpful. It will be seen that while no vehicle carrying explosives can be regarded as non-hazardous in the event of a fire or accident, major risk to firefighters will arise when dealing with vehicles carrying Division 1.1 explosives. Placarded vehicles may carry up to 16

tonnes of explosives.

4. As a general rule the Explosives Inspectorate suggest that firefighters should not be committed to a fire involving a vehicle carrying explosives unless their presence is essential, and that brigade vehicles should remain as far as possible from the vehicle. The primary consideration in all incidents involving Division 1.1 explosives must be to evacuate members of the public, particularly where sensitive areas such as schools or hospitals are involved. The extent to which firefighting operations or rescue might be attempted in addition will be a matter for the judgement of the officer in charge. The Inspectorate suggest that fires confined to the engine compartment or to tyres might reasonably be tackled by small numbers of personnel but that if the freight compartment is involved firefighters should not be committed unless they can be protected - eg by an earth bank or a similar substantial structure at some distance from the vehicle. The incident at Peterborough strongly suggests that an unbuttressed double brick wall may not afford adequate protection.

Brigades will wish to examine their procedures for dealing with incidents at vehicles carrying Division 1.1 explosives and may wish to arrange for control to send on a senior officer to take control and for additional ground monitors etc when Division 1.1 materials are reported.

5. Annex 2 gives examples of the warning signs required by the regulations. In each case the body colour is orange.

6. The Armed Forces are not subject to requirement for placarding but the Ministry of Defence through its Explosives Storage and Transport Committee have voluntarily adopted a similar placarding system.

7. There are a number of exemptions from the vehicle marking requirements, most of them for small quantities of low risk material. Although explosives being carried in connection with sea transport in accordance with the International Maritime

Dangerous Goods Code are exempt they should, if correctly labelled, be displaying similar placards to that required by these Regulations.

8. The Regulations also require the driver of a vehicle to carry certain information about the load in writing including action to be taken in emergency. If this information can be obtained with due regard to safety it may assist the judgements referred to in para 4.

9. Regulation 12, which deals with the procedure in the event of an accident, and the guidance given on it is reproduced at Annex 3.

Contact point: 01-273 2735
File reference: FEP/88 64/108/3

SCHEDULE 1

Regulation 2(1)

THE DIVISIONS

1 Division	2 Division number
Substances and articles which have a mass explosion hazard.	1.1
Substances and articles which have a projection hazard but not a mass explosion hazard.	1.2
Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.	1.3
Substances and articles which present no significant hazard.	1.4
Very insensitive substances which have a mass explosion hazard.	1.5

Notes on Annex 1

Once fire reaches explosives:

- if Division 1.1 the entire load could detonate at any time without warning. The vehicle and anything else close by will be shattered, pieces flying in all directions like bullets. The blast will severely damage buildings in the surrounding area, causing further injuries. The flash and lobbed firebrands may start other fires.
- if Division 1.2 the load is more likely to burn and explode bit by bit with increasing intensity. The main problem will be flying fragments, possibly of different sizes, some fast, some lobbed and including firebrands, unexploded articles, self-propelled munitions. Some may explode or become armed on impact. There could be secondary fires.
- if Division 1.3 the entire load could burst into flames, often violently, at any time, without warning. The main danger is the intense radiant heat but there could be some explosion effects, flying firebrands as well as flame jetting.
- if Division 1.4 the effects would be much more limited though possibly still creating some hazard at closer distances.
- if Division 1.5 could behave like Division 1.1. Initiation is less likely but it may be a delayed effect.

LIBRARY.



HOME OFFICE

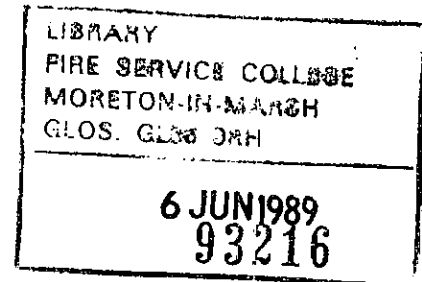
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Yours faithfully

SIR REGINALD DOYLE
HM CHIEF INSPECTOR OF
FIRE SERVICES

T49537.
DCC

PERIODIC INSPECTION AND TEST OF BREATHING APPARATUS CYLINDERS

1. I am aware of difficulties some brigades have experienced when breathing apparatus cylinders manufactured according to British Standard 5045 Part 1 have been sent for their five yearly periodic inspection and test according to British Standard 5430 Part 1. These difficulties, which involve an unusually high rejection rate, relate only to BS5045 specification BA cylinders, ie those of 1200/1240 and 1800 litre capacity and not the 2250 litre capacity ultra-lightweight cylinders manufactured to Home Office Specification LASS1 or LASW1.

2. As a result of these problems, discussions have taken place between the Home Office, the Health and Safety Executive, a major manufacturer of BS5045 cylinders and cylinder testing agencies. This advice has been produced in conjunction with the Health and Safety Executive and in consultation with the cylinder manufacturer.

3. The issue stems from an unusually high number of BA cylinders being rejected by a particular testing agency as being unsuitable for further service. The reason was given as defects being detected in the neck/shoulder region of those particular cylinders, although a number of these 'rejected' cylinders had in fact passed previous periodic inspections conducted by a different test house when the same apparent defects must have been present.

4. As a result of this high failure rate of cylinders considerable investigative work has ensued in order to establish the validity of the test house's decision not to pass the cylinders for further service. There is now a consensus among those parties involved in examining the problem including the test house that the majority of the apparent defects discovered in the neck/shoulder region of the rejected cylinders were only imperfections which had been discovered as a result of the improved inspection equipment recently brought into service by the test house. These imperfections were not cracks as was at first thought but "folds" which had been present in the cylinders from the time of their manufacture and which are caused when the neck of the cylinder is formed. There was no evidence that these "folds" in the cylinder material were anything

other than stable. They had not propagated at all during the life of the cylinder and would not be expected to do so during the remaining lifetime of the cylinder.

5. The criteria for assessing folds which may be formed in the neck/shoulder of cylinders during manufacture are contained in BS5045: Part 1 where folds which constitute defects and those which do not are defined. The majority of cases identified in the present difficulties were of cylinders where the folds identified by the test house were, after consultation with the cylinder manufacturer, confirmed as not constituting defects. The assessment of any neck folds present in a cylinder is by its very nature a subjective one requiring personnel with some experience to make this judgement with, if necessary as in the latest case, recourse to the cylinder manufacturer for a second opinion.

6. I understand that the recent problems with brigades concerning this aspect of cylinder testing have now been largely resolved without the need to machine folds from large numbers of cylinders or to permanently remove significant numbers of BA cylinders from service. However, brigades will wish to be aware of the situation so that they can ensure that any similar problems which they may encounter in future with their own cylinder testing arrangements are simply and speedily resolved.

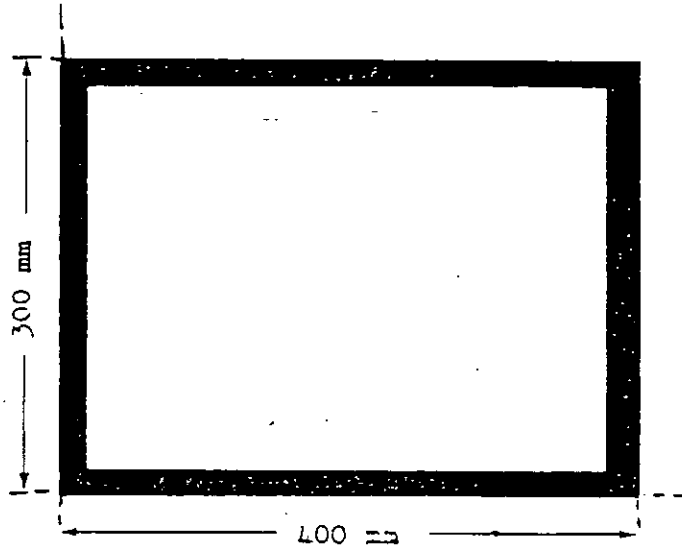
7. In addition to their role in providing a second opinion in cases of dispute, Chesterfield Cylinders Ltd have also indicated that they are now willing to undertake the routine periodic inspection and testing of BA cylinders and brigades may expect to receive Chesterfield's communication about this shortly.

File reference number: FEP/88 66/135/3

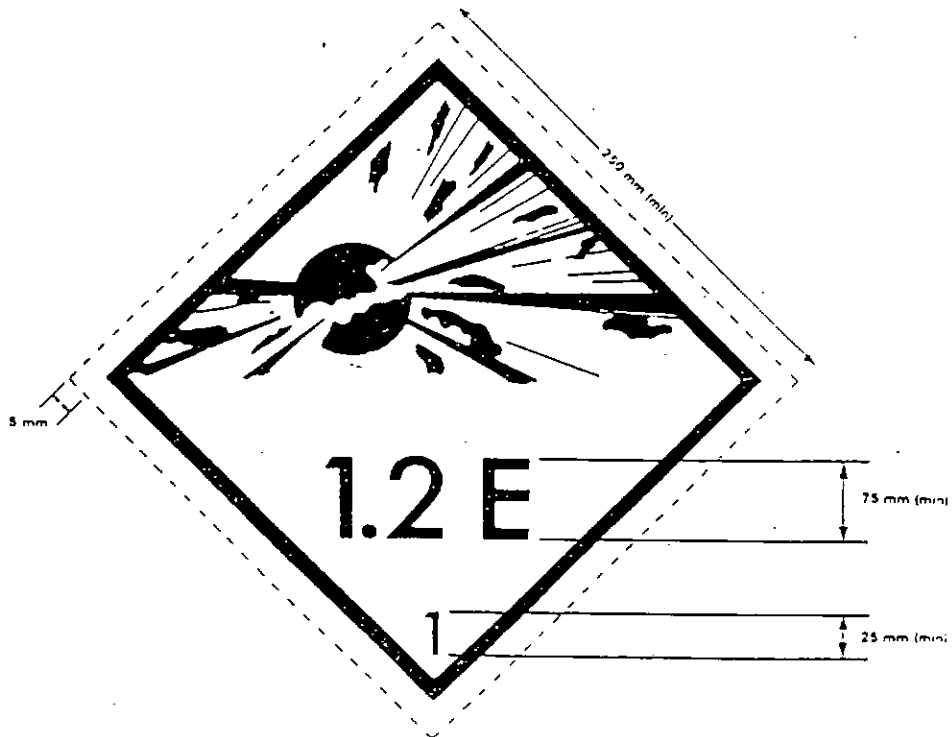
Telephone number of contact: 01-273 3114

VEHICLE MARKINGS

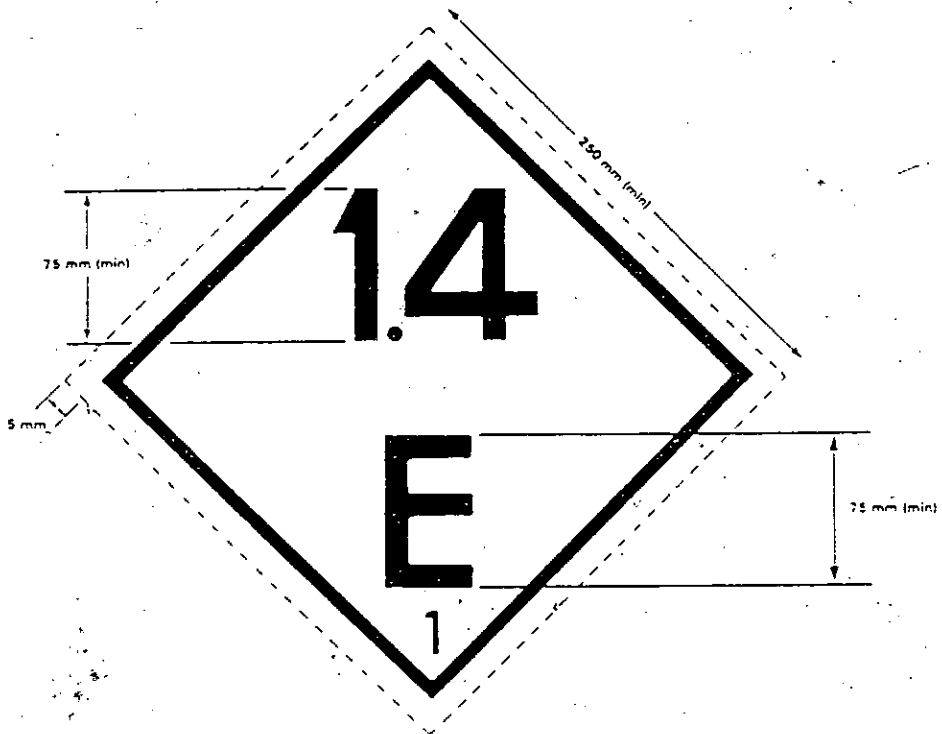
1. FRONT AND REAR OF VEHICLES - All cases.



2. SIDES OF VEHICLES - Divisions 1.1, 1.2, 1.3.



3. SIDES OF VEHICLE - Divisions 1.4 or 1.5



4. SIDES OF VEHICLE - Unclassified Materials en route for classification (treat as 1.1).



Regulation 12

Procedure in the event of accident.

12.-(1) The driver of a vehicle used for the carriage of explosives, or if he is not present, the person in attendance having custody or control of the explosives, shall in the event of -

- (a) spillage of the explosives such as to constitute a risk to safety;
- (b) damage to the explosives or their packaging such as to constitute a risk to safety;
- (c) the vehicle overturning; or
- (d) a fire or explosion on the vehicle,

ensure that the police, fire brigade and operator of the vehicle are informed by the quickest practicable means.

(2) On being informed of the occurrence of any event referred to in sub-paragraphs (a) to (d) of paragraph (1), the operator of the vehicle shall inform the Health and Safety Executive by the quickest practicable means of the occurrence of that event.

(3) On the occurrence of any event referred to in sub-paragraphs (a) to (d) of paragraph (1), the operator and the driver (or if the driver is not present the person in attendance having custody or control of the explosives) shall ensure that all proper precautions are taken for the security of the explosives and the safety of persons likely to be affected by ignition or initiation of the explosives.

GUIDANCE.

- 1 It is vitally important that persons involved in the carriage of explosives know what action must be taken in an emergency. To ensure that vehicle crews and others attending vehicles take swift and appropriate action, they must be fully trained and practised in emergency procedures. Such training is clearly part of the overall training required by Regulation 14 (see Paragraph 10, Page 72).
- 2 In an emergency, crews must be able to appraise the situation quickly and then follow a predetermined emergency procedure that is appropriate in the circumstances. Errors will be avoided if the information in the cab of the vehicle, as required by Regulation 10 (1) (e), sets out under clear headings the steps to be taken. The driver should take this information with him when he leaves the vehicle in an emergency, together with the other information on the load, etc., required by Regulation 10, so that he can hand it to the emergency services.
- 3 The training for emergencies should be sufficiently detailed so that the crew not only know how to contact the emergency services, but know precisely what to say about the type of emergency, the nature of the hazard and the vehicle location. It must be emphasised that it is essential for the emergency services to receive accurate information.
- 4 It is the responsibility of the operator to devise emergency procedures for the range of possible events and accidents and train their crews to make a judgement on the precise nature of the emergency and then follow these pre-determined courses of action.
- 5 The driver will have to use his judgement based on his experience and the training he has been given. Summoning help is a high-priority task, but circumstances may require that other even more urgent tasks be done first.
- 6 Where the driver is involved in an emergency that constitutes a risk to safety,

or under other circumstances covered by Regulation 12 (1), then he must inform the emergency services: ie, the Fire Brigade and the Police, and the vehicle operator by the quickest practicable means. In most instances, this means by radio-telephone, which should be carried on the vehicle.

7 Once a proper message has been sent to summon the emergency services, both the driver and attendant will be free to concentrate on the subsequent measures necessary to deal with the situation; such as first-aid, fire-fighting, evacuation, stopping traffic or whatever else is appropriate. On occasions, where the driver is not accompanied, then the operator must take particular care in pre-planning the journey, so that emergency action is not jeopardised by the driver having to act alone. It will be necessary to consider the need to seek the help of a passer-by, if, for example, a radio-telephone, or other means of contacting the emergency services, is not immediately available. The driver should stay as close to his vehicle as the situation allows, as his presence is essential to take remedial action, to warn the public to keep away, to be on hand when the emergency services arrive, or, for example, to maintain the security of the vehicle.

8 The precise action to be taken in an emergency will vary: but there are a number of distinct types of foreseeable incidents where the following practical advice will be useful.

ACTION IN EVENT OF FIRE.

9 Vehicle crews must be able to make a clear distinction between a fire, or the risk of a fire developing, on or near their vehicle that does not involve the load and an established fire that involves the load or threatens to spread ^{quickly} to the load. Whilst, in both cases, the emergency services should be immediately summoned, subsequent action will be different.

10 In the first case, when the fire has not yet spread to the load, it is essential that every effort be made to extinguish the fire as quickly as possible using all

available means; the extinguishers carried, any others that can be obtained from nearby. The crew will have to withdraw with everyone else if means to fight the fire become exhausted.

- 11 In the second instance, when the load is on fire or is likely to be, every possible effort must be put into clearing people away to safer distances. No attempt should be made by the crew to put the fire out. People that the crew are moving away from the scene should be asked to pass the message on to others they encounter, so that the information is cascaded over the whole of the affected population.
- 12 When evacuation is appropriate, crews should try to move people away from the vehicle to a distance of at least 40m, when up to 5 tonnes of explosives are involved, and to ^{at least} 600m for ^{larger} loads. These may not necessarily be safe distances and so persons must also be instructed to take cover behind protective structures, such as buildings, embankments, etc.; as there is risk of injury from debris and projected fragments.
- 13 It is important for the crews to brief the emergency services when they arrive and pass on to them the essential details quickly and explicitly. The crew should co-operate with the emergency services in helping to evacuate the danger area.
- 14 Two accidents illustrate the importance of correct action by the vehicle crew. In 1959, in the USA, a vehicle carrying 6 tonnes of explosives of Division 1.1 was parked on a city street, unmarked and unattended; fire spread from an adjacent warehouse and, in less than ten minutes, a mass explosion killed 13 persons, injuring 125 others and destroyed buildings over 12 blocks. By contrast, in 1986, in France, a vehicle carrying 19 tonnes of explosives of Division 1.1 caught fire, possibly from deflated tyres, and exploded before the Fire Brigade arrived. As a result of correct action by the driver and co-driver, (the vehicle was driven to a remote place and everyone was evacuated), nobody was killed or injured and property damage was relatively minor.

ACCIDENT ON THE ROAD NOT INVOLVING FIRE.

15 If a vehicle carrying explosives is involved in any road accident and there is no sign of fire, the driver of the vehicle should drive the vehicle away from the stream of traffic, where practicable, unless this would endanger the explosives. The driver should switch off the engine and switch-on the hazard warning lights if they appear to be undamaged. The crew should then examine the load, as far as it is practicable to do so. If any explosives or packages of explosives are found to be damaged or split, or if, where it is not practicable to examine the whole of the load, there is reason to suspect that such damage or spillage may have occurred, the vehicle should not continue its journey. The crew should communicate with a competent person, using the radio-telephone, and should deal with the explosives in such a manner as the competent person may specify.

16 There is a risk that sparks could be produced from the use of the hazard warning device if it is damaged. However, if there is no damage to the device, it should be used while awaiting the arrival of the emergency services:-

(a) when the vehicle is stationary on a road, having broken down or been involved in an accident; or

(b) if the stationary vehicle causes a temporary obstruction because its load is exposed in such a way as to present a hazard to the general public.

Advanced warning triangles may be used with cones or pyramids as an optional supplement to the hazard warning signal device.

17 The crew should ensure that smoking, naked flames or unauthorised persons are

kept as far away as possible from the vehicle and at least to 20m. If the Police arrive at the scene, they should be informed that the vehicle is carrying explosives and told what action has already been taken.

ACCIDENT DURING LOADING AND UNLOADING.

18 If a damaged package is discovered, but no explosive is exposed or spilt and there is no reason to suppose that the explosive may have been damaged or contaminated, a competent person should be informed and the damaged package dealt with as he may direct. Pending his decision, the damaged package (if it can be moved without spillage or exposure of explosive) may, if necessary, be moved sufficiently to enable the loading or unloading of undamaged packages to continue.

19 If any explosives appear to be exposed or spilt, or there is reason to suppose that it may have been damaged or contaminated:-

(a) if there appears to be a risk to the public, the Police and Fire Service should be informed immediately;

(b) otherwise a competent person should be informed at first and immediate action then taken as he may direct;

(c) no further loading, unloading or handling of explosives should take place in or near the vehicle, nor should the vehicle be moved, until the competent person has indicated that it is safe to do so;

(d) any battery isolating switch on the vehicle should be turned off.