



LEAFLET 10

WORK IN CONFINED SPACES

AMENDMENT RECORD

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REVISION NOTE

Revised following revision of the HSE Safe Working in Confined Spaces Approved Code of Practice L101.

This leaflet follows a similar format to the Health and Safety Executive (HSE) Approved Code of Practice (ACoP) with guidance contained in boxes separating it from policy.

HISTORICAL RECORD

Original Leaflet was introduced in October 2001
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LEAFLET 10

WORK IN CONFINED SPACES

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FOREWORD

This leaflet is published under the authority of the Defence Occupational Health, Safety and Environment Board (OHSEB). This leaflet is for application across all areas of MOD and the Armed Forces and reflects recent changes in legislation and or MOD practises.

1. SCOPE

1.1 This leaflet provides policy and guidance to all MOD staff (Service and civilian) who manage or undertake activities which are not covered by JSP 375, Volume 3, Chapter 6 - Confined Spaces (which takes primacy and covers significant risk activities conducted on the Defence Estate infrastructure) but involve confined spaces on vessels, equipment and MOD controlled activities/sites.

1.2 JSP 375, Volume 3, Chapter 6 does not apply to military training conducted on the Defence Estate that involves confined spaces , however cooperation and coordination will be required between those organizing the training and those with responsibility for the control of the confined spaces.

2. INTRODUCTION

2.1 A confined space can be any space which is substantially but not always entirely enclosed where there is a risk of death or serious injury from hazardous substances or dangerous conditions e.g. a lack of oxygen. A significant number of people are killed or seriously injured in confined spaces each year in the UK. Those killed include not only people working in the confined space but those who try to rescue them without proper training and or equipment.

2.2 Some confined spaces are fairly easy to identify e.g. enclosures with limited openings:

- storage tanks;
- sewers, tunnels and pipes;.
- some machinery spaces;
- trenches and pits.
- ships compactors and ballast tanks

2.3 Other confined spaces may be less obvious, but can be equally dangerous e.g. unventilated or poorly ventilated work spaces. Some places may become confined spaces when work is carried out, or during their construction, fabrication or subsequent modification.

2.4 The risks to health and safety are exacerbated when staff work in a confined space and there is:

- a lack of oxygen;
- a build up of poisonous gas, fume or vapour;
- potential for fire and or explosion;
- a build up of dust in high concentrations;
- hot/cold conditions leading to a dangerous increase/decrease in body temperature;
- difficulties in effecting rescues which in normal circumstances would be routine;
- flooding (liquid or liquefaction of solids).

2.5 Some of the above conditions may already be present; however, some may arise through the work being carried out or due to nearby activities.

3. ROLES AND RESPONSIBILITIES

3.1 Commanding Officers/Heads of Establishment (CO/HoE)

3.1.1 The CO/HoE shall ensure that all confined spaces within their area of responsibility are indentified, recorded in a register, risk assessed and access controlled; this may include the use of a permit to work system see JSP 375, Volume 2, Leaflet 18 (Permit to Work) or Volume 3, Chapter 6 (Work in Confined Spaces). All procedures are to be audited regularly to ensure compliance and action taken immediately to correct any failures.

3.2 Line Managers

3.2.1 Line managers, both Service and civilian, shall ensure that all tasks/activities carried out in confined spaces under their control are risk assessed (JSP 375, Volume 2, Leaflet 39), safe systems of work are implemented and that relevant Permits to Work are raised (JSP 375, Volume 2, Leaflet 18). Suitable and sufficient assessments of risk to persons, either directly or indirectly employed and to others who may become involved in the treatment or safe evacuation of staff within the confined space. Control measures identified in the assessment shall be implemented, communicated to, and understood by all staff involved in the task/activity, and monitored for effectiveness.

3.3 Staff

3.3.1 Staff shall co-operate with LM and comply with all control measures put in place for the safe access and undertaking tasks/activities within confined spaces. Staff shall inform line management if they identify changes or if they consider the risk assessment fails to identify appropriate control measures for a task/activity which requires access to a confined space.

4. ASSESSING AND MANAGING THE RISK

4.1 Avoiding confined space working

4.1.1 Entry or work in confined spaces is to be avoided unless it has been determined that there is no reasonably practical alternative.

4.1.2 If the intended work is unavoidable the following shall be considered:

- modification of the confined space so that entry is not necessary;
- have the work done from outside e.g. inspection; sampling and cleaning operations can sometimes be done from outside the space using appropriate intrinsically safe equipment and tools;

- intrinsically safe Remote cameras may be used for internal inspection of confined spaces.

4.2 Risk Assessment

4.2.1 If confined space working can not be avoided line managers shall carry out a suitable and sufficient risk assessment of the activity (JSP 375 Vol 2 Leaflet 39). For work in confined spaces this means identifying the hazards present, who will be exposed to the hazards, assessing the risks and determining what precautions to take. The assessment shall include consideration of:

- the normal hazards associated with the task/activity;
- the working environment (lighting levels, cramped conditions, etc);
- does access need to be controlled with standing instructions or a Permit-to-work (PTW).
- working materials and intrinsically safe tools;
- the suitability/competence of those carrying out the task/activity;
- communications;
- arrangements for emergency rescue.

4.2.2 When assessing and planning work involving confined spaces the following shall be considered prior to the start of work. The following guidance is not exhaustive and line managers are to ensure they are satisfied that, so far as is reasonably practicable, all hazards are identified and adequately controlled. The flow diagram at Annex A may be of assistance in following the management process.

4.3 Safe systems of work

4.3.1 If confined space working is unavoidable the line manager shall ensure a safe system of work is established and implemented. The following elements of a safe system of work shall be adopted:

- the appointment of a Person in Charge (PIC);
- use the results of the risk assessment to help identify the necessary precautions and control measures to reduce the risk of injury;
- make sure that the safe system of work, including all the control measures identified, is developed and put into practice;
- ensure everyone involved is appropriately trained and instructed to make sure they know what to do and how to do it safely;
- additional emergency procedures and recovery techniques.

4.4 Permit-to-work (PTW)

4.4.1 Where the risk assessment requires the use of a permit to work, this shall be implemented in accordance with JSP 375, Volume 2, Leaflet 18 or by adoption of the PTW system in JSP 375 Volume 3 Chapter 6.

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A PTW allows a formal check to be undertaken to ensure all the elements of a safe system of work are in place before people are allowed to enter or work in the confined space. It is also a means of communication between line management and those carrying out the hazardous work.

4.5 Suitability of persons to do the work

4.5.1 Persons conducting the work shall be competent, this will include suitable and sufficient experience of the type of work to be carried out and a suitable and sufficient level of training. Where risk assessment highlights constraints as a result of the physical layout, the suitability of the individuals build and or fitness may need to be considered. The PIC shall consider other factors e.g. concerning claustrophobia or fitness to wear breathing apparatus, and medical advice on an individual's suitability may be needed.

4.6 Personal Protective Equipment (PPE)

4.6.1 PPE shall be used where risks cannot otherwise be adequately controlled and shall be suitable and sufficient to provide the required levels of protection (JSP 375, Volume 2, Leaflet 13). When working in confined spaces, the selection of suitable PPE shall need to take into consideration the environment in which it is to be worn to ensure that it does not introduce new risks e.g. bulky clothing used to protect workers from extremes of temperature may restrict movement and limit effective rescue.

4.7 Provision of special tools and lighting

4.7.1 Non-sparking tools and specially protected lighting (intrinsically safe) shall be used where flammable or potentially explosive atmospheres are likely. In certain confined spaces (e.g. inside metal tanks) suitable precautions to prevent electric shock shall need to be assessed; suitable control measures may include use of extra low voltage equipment and or residual current devices.

4.8 Communications

4.8.1 Effective communications shall be established between people inside and outside the confined space and to summon help in an emergency; this may be simple verbal contact or require the use of intrinsically safe communication

equipment depending on the nature of the task/activity and the environment in which it takes place.

4.8.2 Effective communications shall be maintained by the PIC to ensure all persons who may be affected by the work or whose actions may affect the work, are informed and all necessary control measures are identified, put in place and their effectiveness monitored.

4.9 **Accessibility**

4.9.1 An assessment shall be made to ensure entrances and exits are big enough to allow workers wearing all the necessary equipment and PPE and provide ready access and egress in an emergency, e.g. the size of the opening may mean choosing air-line breathing apparatus in place of self contained equipment which is more bulky and therefore likely to restrict ready passage. The assessment shall consider the types of equipment used by emergency teams, especially local Fire and Rescue Services as it may impact on the minimum sizes of entrances and exits that they can operate in.

4.10 **Testing the air**

4.10.1 Where the requirement to test the air is identified in the risk assessment, confined spaces shall be checked by a competent person, before entry, to ensure that they are free from flammable/toxic gases or vapours, and that the atmosphere is fit to breathe. Testing shall be carried out by a competent person using a suitable gas detector which is correctly calibrated. Records of the tests shall be formally recorded and the results passed to the PIC. Where the risk assessment indicates that conditions may change, or as a further precaution, continuous monitoring of the air shall be necessary.

4.10.2 Testing for toxic or flammable atmospheres will not indicate oxygen deficient atmospheres, therefore testing regimes shall include checking for suitable levels of oxygen. Levels of toxic, flammable or oxygen deficient atmospheres may vary at different levels within the confined space, therefore the testing regime adopted shall take this into consideration and additional readings may be necessary.

4.11 **Provision of ventilation**

4.11.1 When assessing the levels of ventilation required, consideration shall be given to the work activity to be performed and the equipment used as they will have an impact on the rate of oxygen usage and possible build up of a toxic atmosphere. If it is not possible to increase the number of openings and therefore improve ventilation, mechanical ventilation may be necessary to ensure an adequate supply of fresh air. This is essential where portable gas cylinders and diesel fuelled equipment are used inside the space because of the dangers from

build up of engine exhaust. Carbon monoxide in the exhaust from petrol-fuelled engines is so dangerous that use of such equipment in confined spaces should never be allowed.

4.12 Provision of breathing apparatus

4.12.1 If the air inside the confined space cannot be made fit to breathe because of gas, fume or vapour present, or lack of oxygen, positive pressure air fed masks shall be used (see JSP 375 Vol 2 Leaflet 49 – Respiratory Protective Equipment).

4.13 Isolation of equipment and services

4.13.1 If gas, fume, liquid or vapour etc could be released into the confined space, physical isolation of services etc shall be made. In all cases a check shall be made to ensure isolation is effective and does not compromise any safety critical systems.

4.14 Cleaning confined spaces before entry

4.14.1 If the risk assessment identifies that there is a risk of flammable/toxic gases or vapours etc being released in a confined space by the disturbance of residues etc while a task/activity is being undertaken, the confined space shall, where practicable, be cleaned prior to staff entering into it.

4.15 Provision of rescue harnesses

4.15.1 Where the requirement to wear safety harnesses is identified in the risk assessment, all persons working within the confined space shall be attached to an appropriate lifeline. Lifelines attached to harnesses shall run back to a point outside the confined space.

4.16 Additional emergency arrangements

4.16.1 When things go wrong people trying to help may unwittingly expose themselves to serious and immediate danger if they are not aware of the risks and the safe system for extracting casualties; therefore effective additional arrangements for raising the alarm and carrying out rescue operations in an emergency shall be developed, promulgated and implemented. These plans shall be specific for each task/activity depending on the nature of the confined space, the risks identified and consequently the likely nature of an emergency rescue. The following factors shall be considered in the emergency planning and effectively managed throughout the duration of the task/activity:

- how can an emergency be effectively communicated from inside the confined space to people outside so that rescue procedures can start;

- provision of suitable rescue and resuscitation equipment will depend on the likely emergencies identified;
- where such equipment is provided for use by rescuers training in correct operation is essential;
- the need for properly trained competent people, sufficiently fit to carry out their task, ready at hand and capable of using any equipment provided for rescue e.g. breathing apparatus, lifelines, fire fighting equipment etc. Rescuers also need to be protected against the cause of the emergency.

4.16.2 If it is intended as part of the emergency arrangements to involve the use of external agencies such as local Fire and Rescue Services and or specialist rescue groups to affect a rescue, they shall be involved in the planning and provided with a copy of the plan. Where there is to be an involvement of outside agencies, the following issues shall be included in the risk assessment:

- the time delay between contacting the emergency service and attendance at site;
- the effectiveness of contact arrangements;
- the ability of the emergency services to affect a rescue e.g. they may only have access to self contained breathing apparatus which may limit accessibility;
- levels of support and assistance required by the emergency services.

4.16.3 Confined space working shall never be conducted alone. Whilst staff are in a confined space, there shall be a competent person stationed outside to take appropriate action in the event of an emergency (e.g raising the alarm, liaison with emergency services), they shall not enter the confined space. The competent person shall remain outside the confined space until relieved or otherwise instructed by the emergency services.

5. RECORDS

5.1 All safety related records shall be retained in accordance with JSP 375, Volume 2, Leaflet 55 – Retention of Records.

6. RELATED DOCUMENTS

JSP 375 Vol 2:

- a. Leaflet 13 Management of Personal Protective Equipment
- b. Leaflet 18 Permit to Work.
- c. Leaflet 34 4C System: The Management Visiting Workers and Contractors.
- d. Leaflet 39 Health and Safety Risk Assessment.
- e. Leaflet 42 Protection of Persons Using Compressed Air - RPE.
- f. Leaflet 49 Respiratory Protective Equipment (RPE).
- g. Leaflet 55 Retention of Records.
- h. Leaflet 56 Dangerous Substances and Explosive Atmospheres (DSEAR).

JSP 375 Vol 3:

- a. Chapter 6 Confined Spaces.

Other MOD Publications:

- a. BR 875 (For use by the Royal Fleet Auxiliary) - Vol 5 Part 1 Chap 4.

Legislation:

- b. Health and Safety at Work etc Act
- c. Confined Spaces Regulations
- d. Management of Health and Safety at Work Regulations
- e. Dangerous Substances and Explosive Atmospheres Regulations.
- f. The Merchant Shipping (Entry into Dangerous Spaces) Regulations

Guidance:

- a. Safe Working in Confined Spaces (INDG 258).
- b. Safe Working in Confined Spaces Approved Code of practice (L101).

Flow Diagram for Work Involving Confined Spaces Outside of the Scope of JSP 375 Volume 3, Chapter 6.

