

1. SCOPE

This document now includes provision for safe access to cable tunnels and culverts previously covered in PSSI 37 which is now withdrawn.

The term *Confined Space* is defined in the Confined Spaces Regulations 1997 and conventionally embraces enclosed spaces such as vessels, tanks, tunnels, culverts, manholes and underground chambers which frequently have restricted access and poor ventilation, sometimes with limited facility for movement within the space.

In general the term *Confined Space* also applies to open topped tanks or pits where heavier than air gases may be present or other spaces where dangerous accumulation of gases can build up because of poor ventilation. This can include spaces where, due to lack of natural ventilation, a dangerous accumulation of undesirable gases can be present.

This Safety Instruction applies the principles established by the ScottishPower Safety Rules (Electrical and Mechanical) required to achieve **Safety from the System** for personnel requiring access to *Confined Spaces* that do or have contained *Specified Risks*.

It does not address the requirements of setting persons to work under the Confined Spaces Regulations 1997 which is considered **General Safety** and the responsibilities rest with the appropriate supervisor and **Authorised Person**.

2. ISSUE RECORD

This is a [Reference](#) document. The current version is held on the EN Document Library.

It is your responsibility to ensure you work to the current version.

Issue Date	Issue No.	Author	Amendment Details
October 1998	1		Initial Issue.
September 2015	2	Phil Currie	Updated to accommodate Confined Spaces Regulations 1997 and HSE guidance. Now incorporates contents of old PSSI 37. Dangers updated. Guidance simplified – now refers to appropriate documented procedures. Occupational Exposure Standard replaced by <i>Workplace Exposure Limit</i> . New section on enclosed spaces which are not true <i>Confined Spaces</i> . Guidance on the use of breathing apparatus removed.

3. ISSUE AUTHORITY

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4. REVIEW

This is a **Reference** document which has a 5 year retention period after which a reminder will be issued to review and extend retention or archive.

5. DISTRIBUTION

This Energy Networks' Safety Instruction is maintained by EN Document Control and is part of the ScottishPower Safety Rules which is published to the SP Energy Networks Internet site.

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7. DEFINITIONS

For the purpose of this document the following definitions apply:

- (a) A *Confined Space* has two defining features:
- (i) Firstly, it is a place which is substantially (though not always entirely) enclosed; and
 - (ii) Secondly, there will be a reasonably foreseeable risk of serious injury from hazardous substances or conditions within the space or nearby.

Therefore a *Confined Space* means any place, including any chamber, tank, vat, silo, pit, trench, pipe, sewer, culvert, flue, well or similar space in which, by virtue of its enclosed nature, there is a reasonably foreseeable *Specified Risk*.

- (b) A *Specified Risk* means risk of:
- (i) Serious injury to any person at work arising from a fire or explosion;
 - (ii) The loss of consciousness of any person at work arising from an increase in body temperature;
 - (iii) The loss of consciousness or asphyxiation of a person at work arising from gas, fumes, vapour or the lack of oxygen;
 - (iv) The drowning of any person at work arising from an increase in the level of liquid; or
 - (v) The asphyxiation of any person at work arising from a free flowing solid or the inability to reach a respirable environment due to the entrapment by a free flowing solid.
- (c) *Workplace Exposure Limit (WEL)*: A long-term or short-term limit of exposure to airborne substances hazardous to health as stated in the Health and Safety Executive Guidance Note EH 40.
- (d) *Lower Flammable Limit (LFL)*: The concentration in air at or below which a flammable substance will not burn when exposed to a source of ignition.

It should be noted that limit values are subject to change. Care should be taken that the most recently published values are used.

Terms printed in bold type are as defined in the ScottishPower Safety Rules (Electrical and Mechanical).

8. PLANT AND APPARATUS IDENTIFICATION

Plant and **Apparatus** on which work or testing is to be carried out shall be readily identifiable or have fixed to it a means of identification which will remain effective throughout the course of the work or testing.

9. TRAINING

All persons who enter and remain in *Confined Spaces* to carry out work or testing may only do so if they have been trained in *Confined Space* working – for Energy Networks staff in line with Energy Networks documentation, currently SMS-11-020 'Confined Space Working'.

10. DANGERS

10.1 The main specified **Dangers** to personnel in *Confined Spaces* are:

- (i) Oxygen deficiency;
- (ii) Toxic gases, fumes or vapour;
- (iii) Flammable substances and oxygen enrichment;
- (iv) The ingress or presence of liquids;
- (v) The presence of excessive heat;
- (vi) Solid materials which can flow.

10.2 Special notice should be taken of the possibility of **Danger** due to the work on the external surfaces of *Confined Spaces*, particularly if this includes the application of heat which may cause ignition of the contents, or residue of the contents, of a *Confined Space*.

10.3 **Danger** can be present due to 10.1 (i), (ii) and (iii) in the case of an open topped space containing chemicals such as liquefied petroleum gases, chlorine and solvents which are heavier than air or those such as nitrogen and carbon monoxide which are of a similar weight to air.

10.4 **Danger** can also be present in an inverted (open bottomed) space containing a gas such as hydrogen, which is lighter than air, or those gases such as nitrogen and carbon monoxide which are of a similar weight to air.

10.5 The **Dangers** due to 10.1 (i), (ii) and (iii) cannot occur if a sufficient volume of forced ventilation is provided such that:

- (i) Exposure to toxic substances does not exceed the *WEL* and the concentration of the flammable gases in the *Confined Space* atmosphere is not above the *LFL*;
- (ii) There cannot be a significant decrease or increase in the amount of oxygen in the atmosphere.

10.6 At normal temperature and pressure the percentage of oxygen in air by volume is approximately 21%. A lowering of this value by a small amount may result in the loss of consciousness by persons in such oxygen deficient atmospheres.

10.7 The 'sweetening' of any *Confined Space* atmosphere with oxygen is strictly forbidden.

11. WORK OR TESTING IN ENCLOSED SPACES WHICH DO NOT OR NEVER HAVE CONTAINED A SPECIFIED RISK

11.1 Where no *Specified Risk* is present or foreseeable, it is not a *Confined Space* as defined in the Confined Spaces Regulations 1997. Such spaces may include cable tunnels, cableways, switchrooms, substations and similar enclosed spaces.

11.2 A safe system of work should therefore be established by the appropriate supervisor of the work inclusive of the necessary risk assessments and/or method statements.

11.3 Should the status change i.e. the introduction of a substance or process that in itself produces a *Specified Risk* then the **Working Party** shall comply with the requirements of section 12 of this Safety Instruction.

11.4 Even if a completely enclosed space has not contained any substance but air and has been left completely closed for some time, the oxygen in the air can be depleted by the formation of oxidation products on the inside surface of the space. In these circumstances refer to section 12 for *Confined Spaces* that have contained a *Specified Risk*.

11.5 Where doubt exists about the condition of a *Confined Space*, a **Selected Person** shall be consulted.

12. WORK OR TESTING IN *CONFINED SPACES* WHICH HAVE OR HAVE THE POTENTIAL TO CONTAIN A *SPECIFIED RISK*

Before access to such *Confined Spaces* is permitted, the precautions given below shall be observed where appropriate.

12.1 It should not be assumed following any operations carried out as part of the achievement of **Safety from the System** that *Confined Spaces* are free from noxious substances. For Energy Networks staff, guidance shall be followed as defined in Energy Networks documentation, currently SMS-11-020 'Confined Space Working'.

12.2 The *Confined Space* shall be isolated from all sources of **Danger**.

12.3 The *Confined Space* shall be **Purged** of its contents and air samples taken as necessary.

12.4 Where **Danger** could arise from pressurisation the **Plant** shall be **Vented** and where vents could give rise to **Danger** they shall, where practicable, be **Locked** in the appropriate position.

12.5 Where doubt exists about the condition of a *Confined Space*, a **Selected Person** shall be consulted.

12.6 Persons who enter any *Confined Space* to carry out work or testing shall have been trained in *Confined Space* working. For Energy Networks staff, in accordance with Energy Networks documentation, currently SMS-11-020 'Confined Space Working'.

12.7 In the case of **HV** oil circuit breaker tanks the **Senior Authorised Person** preparing the **Safety Document** shall satisfy himself that **Danger** from *Specified Risks* will be excluded during the course of the work. During the course of work the recipient of the **Safety Document** shall satisfy himself that such **Dangers** continue to be excluded. If a hazard is suspected he shall withdraw all members of the **Working Party** and report the matter to the **Senior Authorised Person**.

12.8 If difficulties are experienced in loosening a manhole cover or other access plates, a naked flame shall not be used to assist in the removal of the cover.

12.9 Immediately after opening the manhole or other access plates and prior to entering, tests for the presence of gas shall be made using an **Approved** gas detector.

12.10 The **Person** in charge of work or testing shall ensure that the work or testing is fully planned and managed in accordance with *Confined Space* working requirements (for Energy Networks staff this is currently in SMS-11-020 'Confined Space Working') and that the necessary control measures are in place including a suitable and sufficient Emergency Plan established with all necessary equipment available at points of entry/exit.

12.11 All persons engaged in *Confined Space* working shall be briefed on the plan, scope of work, and emergency arrangements.

12.12 Consideration shall be given to the following control measures:

- (a) The provision of forced ventilation;
- (b) The number of air changes required to prevent oxygen depletion;
- (c) Communications between persons outside and those within the *Confined Space* and the maintenance thereof.

12.13 Any substances taken into the *Confined Space* i.e. gases, solvents etc shall be assessed for *Confined Space* suitability and the control measures amended accordingly. For Energy Networks staff, guidance shall be sought in the Health, Safety and Environmental Handbook instructions on hazardous substances (COSHH).

12.14 With respect to gas cylinders, the quantity taken into the *Confined Space* shall be restricted to the minimum amount necessary. All associated equipment shall be checked prior to entry. Whilst in the *Confined Space* gas cylinders shall be secured and when not in use, the cylinder valves secured shut. If work is suspended, or at the end of the day or shift, all cylinders and associated equipment shall be removed from the *Confined Space*.

12.15 Appropriate fire extinguishers shall be provided where necessary.

13. REQUIREMENTS ON COMPLETION OF WORK IN A *CONFINED SPACE*

In order to avoid entombing persons within the *Confined Space*, at the completion of work, the following safeguards shall be taken:

- (i) The **Person** in charge of the work shall ensure that, when persons under their charge are withdrawn, they are personally warned not to re-enter the *Confined Space*;
- (ii) The **Person** in charge of boxing up a *Confined Space* shall ensure, so far as reasonably practicable, that nobody is entombed. If, owing to the design of the *Confined Space*, the **Person** considers it necessary to make a final check, all access points shall be guarded to ensure that no person re-enters the *Confined Space* whilst the check is being made;
- (iii) The **Person** who enters a *Confined Space* to carry out a final inspection may only do so if he has been trained in *Confined Space* working and all necessary control measures shall remain in place.