	Work Instruction	Peaking Operating Unit
---	-------------------------	-------------------------------

Title: **Working in Confined Spaces**

Document Identifier: **167A/16147**

Alternative Reference
Number:

Area of Applicability: **Peaking Operating Unit**

Functional Area: **Risk and Assurance**

Revision: **1**

Total Pages: **15**

Next Review Date: **November 2028**

Disclosure
Classification: **Controlled Disclosure**

Compiled by

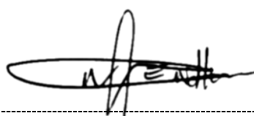


Thato Lekgau

**Snr Advisor Occupational
Hygiene**

Date: 2025-11-20

Functional Responsibility



Nathi Ndlovu

**Middle Manager
Risk & Assurance**

Date: 2025-11-20

Authorized by



Avi Singh

General Manager

Date: 2025-11-21

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Limited, Reg No 2002/015527/30.

Content

	Page
1. Introduction.....	3
2. Supporting Clauses	3
2.1 Scope.....	3
2.1.1 Purpose.....	3
2.1.2 Applicability	3
2.2 Normative/Informative References	3
2.2.1 Normative.....	3
2.2.2 Informative.....	3
2.3 Definitions	3
2.4 Abbreviations	5
2.5 Roles and Responsibilities	5
2.5.1 Before entry into a Confined Space	5
2.5.2 Duties of authorised entrants (Person's signed on the "workers register")	5
2.5.3 Duties of safety watch	6
2.5.4 Duties of the entry supervisor or responsible person (Permit Holder)	6
2.6 Process for Monitoring.....	7
2.7 Related/Supporting Documents	7
3. Procedure/Document Content	7
3.1 Risk Assessment.....	7
3.2 Working in a Confined Space	8
3.3 Confined space warning signs.....	8
3.4 Environmental Conditions and Testing	8
4. Work Permit before the work commences	9
5. Control measures	9
6. Personal protective equipment	9
7. Prohibitions.....	10
8. Emergency Preparedness and response.....	10
9. Acceptance.....	11
10. Revisions.....	11
11. Development Team	11
Appendix A – Acceptable Gas Levels	12
Appendix B – Peaking Confined Spaces.....	13
Appendix C Gas Test Certificate	14
Appendix D Environmental Certificate.....	15

CONTROLLED DISCLOSURE

1. Introduction

This document outlines the approach in which Peaking Power Station will manage its Confined space activities.

2. Supporting Clauses

2.1 Scope

For all Permit required and Non-Permit Required Confined Spaces entry at Peaking Power Station.

2.1.1 Purpose

For the Safe Entry, Work and Exit of Permit Required Confined Space

2.1.2 Applicability

This work instruction shall apply to all Peaking employees, contractors, and visitors who are required to enter or and work in a confined space.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

[1] Occupational Health and Safety Act 85 of 1993.

[2] ISO 9001 Quality Management Systems.

[3] Plant Safety Regulations.

2.2.2 Informative

[4] Occupational Health and Safety Act, Act 85 of 1993.

2.3 Definitions

Definition	Explanation
Confined Space	a. is an enclosed or partially enclosed space that is not primarily designed or intended for human occupancy; b. has a restricted entrance or exit by way of location, size or means; c. can represent a risk for the health and safety of anyone who enters (e.g. tanks, vessels, storage bins, terrace bins, hoppers etc.).

CONTROLLED DISCLOSURE

Definition	Explanation
Permit	<ul style="list-style-type: none"> a. Contains or has potential to contain a hazardous atmosphere. b. Contains a material that has the potential for engulfing an entrant. c. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly d. converging walls or by a floor which slopes downwards and tapers to a smaller cross section or, e. Contains any other recognized serious safety or health hazard.
Non-Permit Required Confined Space	Means a confined space that does not contain atmospheric hazards nor has the potential to contain any hazards capable of causing death or serious physical harm.
Permanent Confined Space	A permanent work space where entry is only possible provided a permit has been issued.
Non-Permanent confined space	A space that may not be entered into during normal operating conditions or whilst on standby. The space will then be classified as a PERMANENT CONFINED SPACE during maintenance, inspection, cleaning, or any other activity that requires entry.
Engulfment	The surrounding and effective capture of a person by a liquid or finely divided "flow able" solid substance that can be aspirated to cause death by plugging or filling the respiratory system or that can exert enough force on the body to cause death by strangulation, restriction or crushing.
Written Safe Work Procedure	An agreed/approved/written procedure that has been drawn up beforehand and agreed to by all relevant parties, stating an acceptable and safe method in which defined and specific tasks may be carried out safely.
Safety Watcher	Any person who remains at the entrance of a confined space.
Entry Supervisor	Permit Holder or Responsible Person (RP) as per PSR
Authorized Gas Test and Heat stress Certificate Issuer	For gas test purposes: person appointed to perform gas and heat stress tests. For purpose of declaring a confined space safe to enter,
Authorized Entrants	Persons signed on the workers register
Atmospheric Hazards	<ul style="list-style-type: none"> a. Oxygen limits b. Flammable atmospheres c. Toxic gases
Engulfment Hazard	The Appointed Person/Responsible Person (Permit Holder) who analyses the risk of entry must conduct a Risk Analysis before entry is permitted. All possible steps must be taken to eliminate all possible/potential risks identified before entry is permitted.
Mechanical Hazards	The activation of Electrical or Mechanical equipment, the operating of valves or any other type of stored energy while in a confined space is not permitted, unless the necessary safety precautions are in place/have been taken.
Chemical Hazards	Any confined space that contains a chemical must first be cleaned and certified clean by an Authorised Chemist as safe to enter.
Environmental Certificate	A certificate issued prior to work being performed in a hot confined space.
Gas test certificate	A certificate issued prior to a confined space entry. Declares a work environment free from flammable, toxic and oxygen deficient gases.

CONTROLLED DISCLOSURE

Definition	Explanation
Safe Entry Certificate	A certificate that is issued by the plant owner after the gas and environmental tests has been issued.

2.4 Abbreviations

Abbreviation	Explanation
LFL	Lower flammable limit
UFL	Upper flammable limit
LEL	Lower explosive limit
UEL	Upper explosive limit
IDL	Immediately dangerous to life or health
HP	High pressure
LP	Low pressure
BFPT	Boiler feed pump turbine
RP	Responsible person
CW	Cooling water
WBGT	Wet Bulb Globe Temperature

2.5 Roles and Responsibilities

2.5.1 Before entry into a Confined Space

- Responsible manager must ensure that the testing instruments are calibrated, and the tester is trained and appointed.
- Possible hazards in respect of the following must be identified, and all necessary precautions are to be taken to eliminate these threats as far as possible.
- An authorised person must do a gas test and the confined space must be certified safe to enter.
- Temperature index has to be conducted by a certified person to issue an Environmental Certificate for a hot confined space.
- The RP/Permit office will then issue a safe entry certificate after receiving confirmation (Gas and Environmental certificate) of the confined space.
- RP has to make sure doors are locked in an outside position, confined space signs as well temporary lighting is in place and working, especially on large, confined spaces.

2.5.2 Duties of authorised entrants (Person's signed on the "workers register")

- Know the hazards that may be faced during entry, including information on the mode of absorption, signs, symptoms, and the consequences of exposure.
- Properly use the equipment necessary to ensure safe entry and completion of assigned work.
- Communicate with the attendant and inform the attendant of potential hazardous and prohibited conditions or situations and evacuate as quickly as possible whenever:
 - An order to evacuate is given to the authorised entrant supervisor.

CONTROLLED DISCLOSURE

- ii. The entrant recognises any warning sign or symptom of exposure to a dangerous situation or detects a prohibited condition.
- iii. Where/when necessary (as determined by the permit holder) personal gas monitors must be worn by at least one entrant, and all entrants must be aware of the following conditions: Oxygen level, Flammable gas levels and Toxic gases levels

2.5.3 Duties of safety watch

- a) Know the hazards of the Confined Space, including information on the mode of absorption, signs, symptoms and the consequence of exposure.
- b) Be aware of possible behaviour effects of hazard exposure to entrants.
- c) Maintain an accurate account of all authorised entrants (Separate from Workers Register).
- d) Communicate with authorised entrants.
- e) Monitor activities inside and outside permit space to determine if it is safe for entrants to remain in the space.
- f) Contact the Control room as soon as the safety watch determines that the authorised entrants may need assistance to escape from the confined space. The attendant must not enter the confined space under any circumstances.
- g) Perform no duties that might interfere with the attendants' primary duty to monitor and protect the authorised entrants.
- h) Stay on duty at the entrance until the last entrant has left the confined space.

2.5.4 Duties of the entry supervisor or responsible person (Permit Holder)

- a) Know the hazards that may be faced during entry, information on the mode of absorption, signs, symptoms and consequences of exposure.
- b) Verify that all entrants are on the permit (workers register), that tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before accepting the permit and allowing entrance.
- c) Terminates (withdrawing the workers register) and clears the permit when entry operation covered by the permit is completed, and when conditions that are not allowed under the entry permit arise in or near the space.
- d) Verify that rescue services are available and that he or she knows the contingency plan for a rescue prior to entry.
- e) Prevent all unauthorised personnel from attempting to enter the permit space.
- f) Determine that entry operations remain consistent with the terms of the entry permit whenever responsibility for the entry operation is transferred.

CONTROLLED DISCLOSURE

- g) Ensures that the intervals of monitoring as dictated by the hazards and operations being performed within the space are being followed.

2.6 Process for Monitoring

All Departments to make sure this work instruction is adhered to by every employee in their departments including contractors under them.

2.7 Related/Supporting Documents

N/A

3. Procedure/Document Content

Peaking shall take steps to ensure that a confined space is entered by an employee or any other person only after the air or the environment has been tested and evaluated by a person who is competent to pronounce on the safety thereof.

3.1 Risk Assessment

The risk assessment process for a confined space shall consider the following hazards amongst others:

- a) A flammable gas, vapors, or mist more than 10% of its Lower Flammable Limit (LFL) or 10% of its Lower Explosive Limit (LEL).
- b) The concentration of any hazardous chemical agent.
- c) Any atmospheric condition recognized as immediately dangerous to life or health.
- d) Build up or inflow of material in transfer chutes, bins, and silos.
- e) Any inflow of water or potential for water/ slurry.
- f) Electrical or mechanical hazards.
- g) Biological and radiation hazards.
- h) Possible asphyxiation by engulfment of material or liquid.
- i) The presence of flammable gas, an oxygen-deficient atmosphere or hazardous substance.
- j) The type of work that is performed.
- k) The time and number of employees required to work in the Confined Space
- l) Falling tools or materials.
- m) Tripping over pipes, hoses or tools, or stepping into tank drain sump.
- n) Knocking heads against obstructions.
- o) Slipping on wet or oily surfaces.
- p) Discharge of steam, high-pressure air, water or oil into the tank or surrounding work area.
- q) Use of improper or poorly maintained tools or equipment, especially electrical equipment.

CONTROLLED DISCLOSURE

- r) Failure to isolate electrical power, process and service lines from the tank.
- s) Inadequate lighting.
- t) Electrocution from faulty electrical equipment; and
- u) Exposure to high temperatures (heat stress).

3.2 Working in a Confined Space

- a) The environmental and gas test shall be issued by a competent person who will in writing certify that the confined space is safe and will remain safe while any person is in the confined space.
- b) Permission to work in a confined space shall be granted following a test confirming the environmental conditions in the area.
- c) The test shall detect if there are any hazardous gasses, vapours, high temperatures and fumes harmful to health.
- d) An RP shall ensure that any confined space in which gas, vapour, dust or fumes is likely to exist, with an oxygen content of less than 20 per cent by volume, be entered by an employee or other person only when:
 - i. The confined space is purged and ventilated to provide a safe atmosphere.
 - ii. Measures necessary to maintain a safe atmosphere therein have been taken.
 - iii. The confined space has been isolated.
- e) At least one other person trained in first aid shall remain in attendance outside the entrance of the confined space in order to assist or remove any or persons from the confined space, should a need arise.
- f) A supervisor responsible for the area shall ensure that all persons vacate a confined space on completion of any work.
- g) During confined space work, an employee shall carry an additional multi-gas monitor to ensure continuous monitoring of the atmosphere.

3.3 Confined space warning signs

The RP doing the isolations must post confined space warning signs at all entrances of the confined space. The confined space supervisor (permit holder) must ensure that these signs are in place and conspicuous before accepting the permit.

3.4 Environmental Conditions and Testing

Peaking through its RP shall ensure that:

- a) The atmosphere inside a confined space is tested before entering for relevant harmful, flammable substance and oxygen content.

CONTROLLED DISCLOSURE

- b) The atmosphere inside a confined space is tested before entering for relevant harmful, flammable substance and oxygen content.
- c) A competent person with a certificate in measurement of gases and heat stress monitoring in confined spaces course must conduct an atmospheric test for a confined space.
- d) Gas test and heat monitoring results must be recorded and attached to the permit and be available at the entry.
- e) If atmospheric monitoring cannot confirm a safe environment before entry, then personnel should not enter the confined space until further controls are implemented, and the working atmosphere becomes safe for entry and work.
- f) Gas test and heat monitoring equipment has a current and valid calibration certificate.
- g) Preference be given to the usage of telescopic probes, where the permit issuer needs to enter the Confined Space while performing test work.

4. Work Permit before the work commences

If test results conclude that a safe atmosphere exists in the Confined Space, the following is noted in the Safe Work Permit before the work commence:

- a) Personal Protective Equipment required by employees conducting work.
- b) Time and date.
- c) Approved portable multi-gas continuous gas monitoring device serial number.
- d) Work rest-regime required.
- e) Safety and equipment measures
- f) Special instructions during "hot work".
- g) and any additional special instructions.

5. Control measures

- a. While planning activities requiring a potential entry in a confined space, alternative and safer methods are considered at all times.
- b. The hierarchy of controls is utilised to scrutinise the risk assessment process and explore all alternatives to avoid the need of having personnel enter confined spaces.
- c. The hierarchy of controls is applied when considering the control of confined spaces hazards, first considering elimination, engineering controls and administrative controls before resorting to personal protective equipment.

6. Personal protective equipment

Peaking will ensure that where it is not reasonably practicable to ensure the confined space contains a safe oxygen level or safe levels of airborne contaminants, the RP should provide:

CONTROLLED DISCLOSURE

- a) Appropriate respiratory protective equipment (RPE) which would render sufficient protection against the contaminant encountered.
- b) Where there is the risk of asphyxiation, the entrants are provided with self-contained breathing apparatus.
- c) Where employees are required to make use of full-body harnesses, when working inside a confined space, lifelines are attached to the harnesses and runs back to a point outside the confined space.

7. Prohibitions

- a. No person may enter a confined space without following this procedure.
- b. No "hot work" related activities (welding, flame cutting or grinding) shall be performed in the Confined Space unless the Confined Space is declared safe for "hot work" and a "hot work" permit has been issued;
- c. No Safe Work Permit is issued without a continuous approved portable multi-gas monitoring device issued to the employees conducting work in the Confined Space;
- d. "Hot work" and volatile organic compounds (VOC's) may never be used inside a Confined Space during the same work activity. Thus, one work permit for each task with only one work permits being active at any given time.
- e. Only the persons contained in the list compiled by the responsible supervisor may be allowed to enter the confined space;
- f. No persons or equipment shall be allowed in a confined space containing a flammable atmosphere;
- g. No cutting torches/equipment shall be left in confined space during breaks;
- h. Oxygen or compressed air may never be used for ventilation purpose;
- i. No smoking or eating is allowed in any confined space.
- j. No confined space work must be undertaken unless there is an emergency rescue plans in place and rescue team is available and ready to execute the rescue plan.

8. Emergency Preparedness and response

No confined space work must be undertaken unless there is an emergency rescue plans in place and rescue team is available and ready to execute the rescue plan. Account needs to be taken not only of accidents arising out of specified risks, but also any other accident in which a person may need to be recovered.

To be suitable and sufficient the arrangements for rescue should include consideration of:

- Rescue and resuscitation equipment.
- Harness and fall arrest systems
- Self-Contained Breathing Apparatus
- Raising the alarm and rescue.
- Safeguarding the rescuer.
- Fire safety.
- Control of plant.
- First aid.

CONTROLLED DISCLOSURE

- Training.

It is the RP's responsibility to ensure any measures deemed necessary are in place and tested prior to any confined space entry or where required by its risk assessment. One person must remain on duty outside the confined space and this person must maintain communication with those inside the confined space. The rescuer must control the rescue line attached to the safety harness and must assist in the removal of any person from the confined in the case of an emergency.

An adequate communication system is required to enable:

- Communication between people inside and people outside the confined space.
- Help to be summoned in an emergency.

Systems can include speech, tugs on a rope, telephones, radios etc. Equipment to be used in potentially flammable or explosive atmospheres should be specially protected so they do not present a source of ignition.

In the event of an emergency the following persons should be notified as soon as possible as per Emergency Preparedness Plan,

- Rescue team personnel
- Managers/Supervisor
- Officer SHE
- Occupational Health Practitioner
- Emergency Medical Services

9. Acceptance

This document has been seen and accepted by:

Full Name and Surname	Designation
Nathi Ndlovu	Risk and Assurance Manager
Shivana Maharaj	Engineering Manager
Pamela Mrubata	Plant Manager
James L'etang	Senior Manager Technical
Maremane Tsotetsi	Plant Manager - Drakensberg
Patrick Mhlongo	Plant Manager – Ingula Pump Storage Scheme
Khaya Kebeni	Plant Manager - Palmiet
Shawn Hurling	Plant Manager - Renewable

10. Revisions

Date	Rev.	Compiler	Remarks
July 2025	1	Thato Lekgau	New document

11. Development Team

- N/A

CONTROLLED DISCLOSURE

Appendix A – Acceptable Gas Levels

Agent	CAS Number	Formula	OEL-8 TWA	Hour	OEL- STEL/C	Notations
Carbon Monoxide	630-08-0	CO	50		-	-
Carbon Dioxide	124-38-9	CO ₂	10 000		60 000	-
Sulphur Dioxide	7446-09-05	SO ₂	-		0.5	-
Oxygen	-	O ₂	No less than 19.5% Not more than 23.5%			
Lower Explosive Limit	-	LEL	Not more than 10%			

Confined spaces are classified into three different classes, namely:


Class A: Spaces those present situations which are immediately dangerous to life or health (IDHL). These include spaces that are either deficient in oxygen or contain explosive, flammable, or toxic atmospheres.

Class B: Spaces do not present an immediate threat to life and health; however, they have the potential for causing injury or illness if protective measures are not taken.

Class C: Spaces are those where any hazards posed are so insignificant that no special work practices or procedures are required.

CONTROLLED DISCLOSURE

Appendix B – Peaking Confined Spaces

 Eskom	PEAKING POWER STATION
THIS WORK INSTRUCTION SHALL APPLY TO THE FOLLOWING CONFINED SPACES, INCLUDING BUT NOT LIMITED TO	
Area	Classification
1. FUEL SUPPLY AND STORAGE	
1.1 Diesel Tanks	A
1.2 Fuel oil plant storage tanks	A
1.3 Propane gas storage tanks	A
2. GAS TURBINE PLANTS	
2.1 Combustion Chamber	A
2.2 Pulverised fuel ducting (pf pipe work)	A
2.3 Combustion air ducting and dampers	A
2.4 Primary air fans	B
2.5 Forced draught fans	B
2.6 Air heaters	B
2.7 Gas ducting and dampers	A
2.8 Induced draught fans	B
2.9 Smokestacks	B
2.10 Electrostatic precipitators	A
3. HYDRO POWER STATIONS	
3.1 Draft Tube	C
3.2 Spiral Casing	B
3.3 Penstocks/Waterways	C
3.4 Generator Enclosures	B
3.5 Bulk Oil Tanks	A
3.6 Blowdown Air Receiver	B
3.7 Main Drainage Sump(s)	A
3.8 Bulk Diesel Tanks	A
3.9 Bulk Water Tanks	B
3.10 Lift/Elevator Wells	B
3.11 Shaft Seal Enclosures	C
3.12 Bearing Sumps/Tanks	B
3.13 Hydraulic Oil Tanks	A
3.14 Main Inlet Valve Pits	A
3.15 Cable/Pipe tunnels trenches	B
6. POWER STATION ELECTRICAL SYSTEMS	
6.1 Generator bus bars and trunking	B
6.2 Generator transformers internal	B
8. STRUCTURES AND NON-PLANT SYSTEMS	
8.1 Clean and dirty water systems and station drains	B
8.2 Cable tunnels and ducts.	B

CONTROLLED DISCLOSURE

Appendix C Gas Test Certificate

	PLANT SAFETY REGULATIONS GAS TEST CERTIFICATE	Serial No.:
		Document Reference: 240-150642762
		Appendix 2

I the undersigned, hereby declare that a gas test has been carried out on the following

Plant: _____

Results of the gas test are:		Instrument serial number: _____
Substance	Concentration	Safe Limits
Carbon monoxide {CO}		<50 ppm
Carbon Dioxide. {CO ₂ }		<0.5%/500 ppm
Ammonia NH ₃		25 ppm
Lower Explosion Level Gases LEL		25.0%
Oxygen. {O ₂ } % in air		>=20.0<=21.0
Hydrogen Sulphide H ₂ S		10 ppm
Other		
Other		
Safety precautions required:		
Safety equipment required:		
Continuous gas monitoring required:		
The test must be repeated:		
Entry is restricted * / not restricted * and must only be allowed with the following precautions: (Delete the words not applicable)		

I declare that the workplace is safe to carry out work as stipulated on the permit to work number:

NAME	SIGNATURE	DATE	TIME

or

I declare that the workplace is not safe and therefore work as stipulated on the permit to work number: _____ may not begin

NAME	SIGNATURE	DATE	TIME

Peaking Template No: 167A/13079

CONTROLLED DISCLOSURE

Appendix D Environmental Certificate

	PLANT SAFETY REGULATIONS ENVIRONMENTAL CERTIFICATE	Serial No.:
		Document Reference: 240-150642762
		Appendix 7

Permit to work number Environmental certificate number:

Location of work:

Equipment used:

Instrument serial number:

IN ORDER TO EVALUATE THE WORK TO BE SAFE / UNSAFE, THE BELOW VALUES SHOULD BE APPLIED AS SAFE LIMITS				
<32.5 °C	<37.0 °C	<35.0 °C	<30	
Wet Bulb Temperature	Dry Bulb Temperature	Globe Temperature	Wet Bulb Globe Temperature Index	Time:

NB: Refer to thermal requirements Environmental Regulation for Workplaces OHS Act Section 2 (Cold Stress)

AUTHORISED / COMPETENT PERSON

Name: Signature: Date:

Peaking Template No: 167A/18868

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system. No part of this document may be reproduced in any manner or form by third parties without the written consent of Eskom Holdings SOC Ltd, © copyright Eskom Holdings SOC Ltd, Reg No 2002/015527/30