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Compiled By:
Stuart Smit
Technical Oversight & Assurance
Generation

Accepted By:
Roley McIntyre
Senior Manager - OHS
Sustainable Systems

Approved By:
Arnold Van Geuns
Functional Manager
Technical Oversight & Assurance
Generation

Authorised By:
Thava Govender
Group Executive
Generation

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## 19. BATTERIES AND BATTERY ROOM

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1. INTRODUCTION

These regulations were established in compliance with the general duties of the employer, self-employed persons, manufacturers and others regarding articles and substances for use at work, to provide for the health and safety of persons in connection with the use of plant and machinery as prescribed in the OHS - Act.

2. PURPOSE

To specify and provide requirements for the application of compulsory health and safety standards and procedures for the safeguard of plant and the protection of all persons, who work on plant and machinery under the control of Eskom, Generation Division.

3. APPLICABILITY

(a) The provisions of these Plant Safety Regulations shall apply to all persons, including contractors performing work for Eskom Generation as provided in the Construction Regulations, and/or contract and as implemented by the appropriate employee designated in terms of these regulations and/or the OHS - Act and Regulations.

(b) In the case of a new plant and plant that is re-commissioned after declassification, these regulations will apply when a Safety Clearance Certificate has been issued.

(c) In the case of a decommissioned plant these regulations will not apply after a declassification certificate has been issued.

(d) In instances where both these Plant Safety Regulations and legislated standards or regulations in terms of the OHS - Act are applicable, these regulations shall be applied consistent with the objective of the OHS - Act and regulations under the Act. Where there is conflict between these regulations and the OHS - Act or Regulations, these Plant Safety Regulations shall not be applied in such a manner as to contravene the OHS - Act and Regulations. In instances of conflict the OHS - Act and Regulations shall prevail.

The Plant Safety Regulations shall apply to plant with the exclusion of the following, mobile portable lifting equipment, domestic circuits, appliances and tools, for the exclusions, section 1 of the Act shall be applied without reference to the Plant Safety Regulations.

4. AMENDMENTS

(a) Any amendments to these regulations must be approved by the Group Executive for Generation. Amendments to these regulations will be communicated to all authorised persons by the Regulations Management Committee.

(b) The Group Executive for Generation shall appoint a Plant Safety Regulations Management Committee to review these regulations when required to recommend and to ensure continuity and uniformity of amendments, waivers and exemptions in accordance with procedure GPC 36-232.

(c) Local procedure approved by the delegated employer may be established to supplement these regulations at any site.
5. **EXEMPTIONS**

The Group Executive for Generation and / or **Functional Manager** may grant **exemption**, variance, exception, interim directives, **waiver** or deviation if satisfied that health and **safety** will not be compromised, but release from the requirements of these **Plant Safety Regulations** shall not be released from the statutory requirements of the OHS - Act and Regulations.

6. **GENERAL**

6.1 **GENERAL INFORMATION**

(a) A copy of these **regulations** must be available either electronically or in print form to all **authorised persons** and to other persons as decided by the **employer**. **Authorised persons** are to refer to the latest revision of these **regulations** as reflected on the Eskom intranet.

(b) These regulations are and remain the property of Eskom.

6.1.1 **Specific Information**

(a) Training manuals and any local procedure and or instructions relating to the requirements shall be regarded as an extension of these **regulations**.

(b) Ignorance of these **regulations** or statutory requirements shall not be accepted as an excuse for neglect of duty.

(c) Any contravention of these **regulations** may be the subject of a full enquiry by staff appointed for this purpose by the Group Executive for Generation or his/her delegate. For the purpose of these regulations, the term Group Executive for Generation shall mean the Chief Executive Officer in terms of the **OHS - Act**.

6.1.2 **Official language**

The **regulations** are prepared in English.

6.1.3 **Inception**

These **regulations** shall come into operation with effect from 1st April 2013 and are the minimum requirements that need to be adhered to.

6.2 **DEFINITIONS**

For the purposes of the **Plant Safety Regulations**, the definitions set out hereunder will apply. Words such as "his" used in one gender equally apply to the other gender.

6.2.1 **Apparatus** - means any generator, transformer, motor, switchgear, isolator, feeder, convertor, rectifier, electrostatic precipitator or any other high-voltage plant installed in a station.

6.2.1 **Alive / live** - means electrically connected to a power source and/or electrically charged.
6.2.2 Amend / Amendment - means a permanent change to the regulations, which will be implemented by electronic issue of a revised page or pages to replace existing pages in the Plant Safety Regulations.

6.2.3 Application - means a request made on the permit to work form, signed by a responsible person, or the person acting on his behalf, made available to an appointed person, detailing what plant requires isolation, the work to be done and at what date and time the work is to be carried out. (See section 7.7.1) In the case of a computerised permit to work the printed name on the form represents the signature of the responsible person as protected by the password.

6.2.4 Appointed person - means a person who has been authorised in terms of these regulations to be responsible for: (i) Ensuring that the isolation and de-isolation on the plant covered by a permit to work is effectively carried out taking health and safety precautions into account. (ii) Issuing of prepared permits once all the associated test certificates are available and the required risk assessments have been presented to the appointed person by the responsible person for review in terms of these regulations.

6.2.5 Approved - means sanctioned for use by the Group Executive (Generation) or his or her delegate.

6.2.6 Authorise / authority / authorisation / authorised - means permission in writing granted to perform specific duties on specified plant in terms of these regulations.

6.2.7 Authorised / Competent Service Provider – means (from the OHSA Act) for Lifts / Escalators / Passenger Conveyors. A registered company that employs competent Lift Mechanics / Operators who under contract with the user performs the maintenance, examinations and tests as indicated in the OHSA Act regulation 7 (Maintenance on Lifts / Hoists / Escalators).

6.2.8 Authorised Supervisor - means a person who has been authorised in terms of these regulations to ensure that the work on the plant covered by a permit to work is executed in a safe manner taking health and safety precautions into account and within the terms in these regulations.

6.2.9 Cautionary notice - means a dated and signed document issued by a seconded responsible person to each responsible person, who signs on the cautionary notice, initially and whenever there is a change to the declared outage permit to work and which identifies those changes.

6.2.10 Certified / certificate - means confirmation in writing by an authorised competent person that a specific requirement has been fulfilled. The employer shall identify and authorise such person.

6.2.11 Clean-hands approach - means having both hands clean and free to carry out isolations safely and effectively.

6.2.12 Clearance / clear / cleared - means a declaration on the permit to work form, signed and issued by the responsible person in charge of the work, stating that all personnel, tools and debris have been withdrawn and that the plant is in a safe and serviceable condition. (See section 7.11).
6.2.13 **Cold stress area** - means the environment in which the time weighted average dry-bulb temperature taken over a period of four hours is less than 6 degrees Celsius. (Refer Environmental Regulation Thermal Requirements 2 of the Act).

6.2.14 **Confined space** - means an enclosed, restricted or limited space with minimal or limited access or with a single point of entry and exit, in which because of its construction, location, contents, or any work carried out therein, a hazardous substance may accumulate or an oxygen-deficient atmosphere may occur, and includes any chamber, tunnel, pipe, pit, sewer, container, valve, pumps, sump or similar construction, equipment, machinery or object in which a dangerous liquid or a dangerous concentration of gas, vapour, dust or fumes may be present. See 15.4.

6.2.15 **Confined space warning sign** - means a sign in an approved form that is attached permanently or non-permanently adjacent to the locked or open access door / hatch to the confined space for the purpose of entry. (See appendix: 14).

6.2.16 **Construction work** - means any work in connection with:

(a) The erection, maintenance, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure.

(b) The installation, erection, dismantling or maintenance of a fixed plant where such work includes the risk of a person falling.

(c) The construction, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system or any similar civil engineering structure.

(d) The moving of earth, clearing of land, the making of an excavation, piling, or any similar type of work. See Eskom procedure “Construction Safety Health and Environment Management” Reference number EPC 32-136.

6.2.17 **Continuous Risk Assessment** - means those hazards identified on the risk assessment requiring the authorised person to check that the controls remain functional and intact.

6.2.18 **Current** - means a true reflection of all information associated with the document at hand. A register is current / to be kept current with the issued permit and risk assessment conducted in line with the work to be undertaken.

6.2.19 **Danger / dangerous** - means a condition/substance that constitutes a risk of personal injury, impairment of health, death or plant damage.

6.2.20 **Dead** - means any apparatus which is at or about zero potential and disconnected or isolated from any live electrical power or any other energy source. Rotating plant shall not be regarded as dead until it is stationary or is being slowly rotated by means of barring gear and is not excited.

6.2.21 **Declassified plant** - means decommissioned plant that has been declassified in terms of these regulations by the issue of a declassification certificate. (See section 17).
6.2.22 Decommissioned plant - means plant that has been permanently shut down and isolated from all sources of supply or energy. Where possible fluids and gases must be removed, and the plant decontaminated as far as practicable. (See section 17).

6.2.23 Domestic circuit - means an electrical circuit used for lighting and domestic plug-socket outlets, which does not exceed a voltage level of 250 volts between phase and neutral. (See section 13.1c).

6.2.24 Earthed - means electrically connected to the general mass of the earth in such a manner as to ensure, at all times, an immediate safe discharge of electrical energy.

6.2.25 Employee - means a person employed by Eskom.

6.2.26 Employer - means a person appointed in writing by Eskom as the delegated employer in terms of the provisions of the Act, (normally the Power Station Manager).

6.2.27 Environmental certificate - means a certificate that must be issued by a person certified and verified by the Approved Inspection Authority (AIA) who is able to do such measurements and have results interpretation skills to indicate that the area to be entered complies with the requirements for thermal, lighting, ventilation and pollution. (Refer Environmental Regulation of the Act.) The person performing these tests must use instruments calibrated bi-annually as per the relevant SANS 17025: (See appendix 9).

6.2.28 Examining Committee - means a committee convened for the purpose of examining employees and non-employees to determine whether their knowledge is adequate to justify authorisation in terms of these regulations. (See section 7.2).

6.2.29 Exemption - means permission of a temporary nature to be excused from a provision of the regulations.

6.2.30 Fuel gas - means natural gas, manufactured gas, liquefied petroleum gas (LPG) and mixtures of these gasses and air/gas mixtures.

6.2.31 Functional Manager - means the manager appointed by the Managing Director (Generation Division) as custodian of the regulations to compile, amend, and clarify the regulations, and to grant exemptions.

6.2.32 Gas Test Certificate - means a certificate that must be issued by a person certified and verified by the Approved Inspection Authority (AIA) who is able to do such measurements and have results interpretation skills to indicate that the area to be entered is free from all toxic and hazardous substances. The person performing these tests must use instruments calibrated bi-annually as per the relevant SANS 17025. (See appendix 2).

6.2.33 Hazard(s) - means a source of or exposure to danger.

6.2.34 High-voltage - means a voltage exceeding 1 000 volts ac or dc.

6.2.35 Heat stress area - means the area in which the time weighted average WBGT index determined over a period of one hour exceeds 30. (Refer Environmental Regulation Thermal Requirements 2 of the Act).
6.2.36 **Hot work** - means any activity involving, a source of ignition, such as welding, cutting, grinding, sparks, and any electrical equipment that could give off sparks and any other work that could serve as a source of ignition that can pose a danger, specifically when carried out in a confined environment or in the vicinity of any combustible material. Refer to SANS 10287 NFPA 51B.

6.2.37 **Hot work approval** - means a document that approves hot work and states the precautions to be taken before, during and after hot work. This document is prepared and signed by the hot work monitor. (Refer General Safety Regulation 9 of the Act) (See example appendix 5, 6 and 7).

6.2.38 **Hot work monitor** - means the person(s) appointed by each site to perform the duties required to complete and approve the hot work approval document and be responsible to ensure that precautions detailed therein are carried out and the provision of adequate fire fighting equipment. The hot work monitors training must include "UN 120361 Monitor and make recommendations on the application of health and safety principals regarding the prevention of fires and protection systems in a working place".

6.2.39 **Isolate/isolation/isolated** - means to make safe to work on by effectively disconnecting from all possible sources of dangerous energy and/or harmful substances.

6.2.40 **Key safe** - means an approved device for the secure retention of safety lock keys used for isolation purposes associated with the issue of a permit to work. (See section 7.5).

6.2.41 **Limited access register** - means an access control system used by the person in charge of the plant to give a person(s) permission to enter a restricted area, or to carry out an activity on the plant. (See example appendix 15).


6.2.43 **Low-voltage** - means a voltage not exceeding 1 000 volts ac or dc.

6.2.44 **Non-employee** - means a contractor’s employee who has been authorised in terms of these regulations, whose authorisation shall lapse with the termination of his employment with that particular contractor.

6.2.45 **Outage(s)** - means predetermined repair/overhaul/maintenance endeavours undertaken during the power station life cycle to ensure that the power station units have the capability to produce electricity as per the production plans.

6.2.46 **Outage manager/project manager** - means the person appointed in writing by the Power Station Manager to be responsible for the completion of the project.

6.2.47 **Outage permit to work** - means a permit to work issued by a seconded appointed person to a seconded responsible person to safeguard those working on the plant involved in a declared outage. (See section 8.4).
6.2.48 Operating activity - means the opening and closing of breakers/isolators and valves/dampers for the control of the plant and to effect isolations, and to control other activities involved in the operating process of electricity generation, which are done in accordance with formulated safe procedures.

6.2.49 Operating lock - means a lock used to lock a key safe and forming part of a unique series of locks that can be opened by common keys in possession of appointed persons only. (See section 7.5.2).

6.2.50 Permit to work - means a written declaration on the permit to work form, signed by the appointed person and issued to the responsible person in charge of the work, informing the latter that the plant to be worked on has been isolated as detailed.

6.2.51 Permit to work form - means the printed form containing sections entitled application, permit to work, suspension, suspension revocation, clearance and revocation, and used for the authorisation of all work to be carried out on the plant in terms of these regulations. (See example appendix 16).

6.2.52 Permit issued - means the process of issuing a permit to work, the isolations (as applicable) of which have been affected and reflected as complete on the permit by signature of an appointed person, all required safety certificates have been attached to the permit and the associated risk assessment has been presented for concurrence by the responsible person. Note: The Appointed person who isolates the plant need not be the same appointed person who issues the permit to the responsible person.

6.2.53 Person in charge of the plant - means the person delegated in writing to be in charge of the operation of the plant.

6.2.54 Plant - means structure, machinery, apparatus or equipment which does not fall within the scope of the Operating Regulations for High-voltage Systems, and excludes, mobile, portable lifting equipment, domestic circuits, appliances and tools. (See section 3).

6.2.55 Portable electrical equipment - means electrical tools that are carried by hand or mobile to the place of work, which have an electrical cord. These include hand-drills, grinders, soldering irons, vacuum cleaners, lead lights, extension leads, welding machines, industrial bolt heaters and special electrical test equipment such as monitoring equipment. etc. (See section 18).

6.2.56 Power circuit – means:

- all high-voltage circuits;
- all low-voltage circuits exceeding 250 volts but less than 1 000 volts;
- all low-voltage circuits not exceeding 250 volts, protected by fuses or circuit breakers of a capacity higher than 15 amperes;
- all direct-current supplies exceeding 50 volts;
- all direct-current supplies not exceeding 50 volts but with a capacity higher than 15 amperes.
6.2.57 Pre-work checklist - means a form on which dangers and hazards are noted as identified by the risk assessment and which must be discussed with all the workers allocated to do work under a specific permit to work. The responsible person/authorised supervisor must complete the pre-work checklist in conjunction with the workers register. (See appendix 4).

6.2.58 Principal Contractor - means an employer, as defined in section 1 of the relevant Act, who performs construction work and is appointed by the Client or the Client's Agent to be in overall control and management of a part of or the whole of a construction site. See Eskom Procedure “Construction Safety Health and Environment Management” Reference number EPC 32-136.

6.2.59 Prohibitory sign - means a sign in approved form attached to a point of isolation for the duration of a permit to work and prohibiting interference with the isolation to which it is attached. (See section 16.1 and appendix 12).

6.2.60 Radiation-hazard warning sign - means a sign in approved form calling attention to the danger of ionising radiation on, or in the area of, the plant to which it is attached. (See section 16.3).

6.2.61 Radiation protection controller - means a person who has been appointed in writing to execute the administrative obligations in respect of radiation protection for industrial radiography at a certain site. (See section 11.2.2).

6.2.62 Radioactive source - means anything that may cause radiation exposure, by emitting ionising radiation or releasing radioactive substances or materials.

6.2.63 Regulations - means the Plant Safety Regulations.

6.2.64 Rescuer - means a trained competent person whose function is to alert the rescue and medical services if required, and performs duties in terms of sections 15.12 and 15.13.

6.2.65 Responsible person - means a person who has been authorised in terms of these regulations to be responsible for ensuring that the work on the plant covered by a permit to work can be carried out and executed taking health and safety precautions into account and within the terms of these regulations.

6.2.66 Restricted area - means an enclosed / demarcated area which is neither a live chamber nor a prohibited area and which is enclosed / demarcated for the purpose of ensuring power system and plant security as well as the safety and health of personnel.

6.2.67 Revocation / revoke / revoked - means a declaration on the permit to work form, signed by the appointed person, formally withdrawing the authority to work previously given on the permit to work, and stating the date and time of the withdrawal. (See section 7.12).
6.2.68 Risk assessment - means the process / program to determine as far as reasonably possible, what the dangers / hazards to the health and safety of persons attached to any activity or work and plant operation are and the precautions that are to be taken to mitigate the risks, dangers and hazards. This is applicable to work performed on the plant covered by a permit to work in order to ensure the health and safety of all persons performing the activity or work on plant. Risks that require continuous assessment shall be reflected on the permit form in the Hazards / Risks section on the permit form. The risk assessment shall be initiated and conducted by the responsible person in concurrence with the appointed person. (See appendix 11and 11a).

6.2.69 Safe / safely / safety - means a condition not posing any danger, an activity that can be carried out without danger, or protection against danger.

6.2.70 Safety Clearance Certificate - means a certificate that is issued after installation of new plant, and plant that is re-commissioned after declassification, before energy of any form is applied to such plant for the first time.

6.2.71 Safety panel means apparatus or line that has been isolated and earthed as a precautionary measure to prevent contact with the live high-voltage apparatus or line where there is a risk of encroaching in person or with machinery or objects on the safe working clearances when work is being performed near or close to such apparatus or line. The apparatus or line is therefore deemed to be safe only if it is isolated and earthed in accordance with the ORHVS.

6.2.72 Safety lock - means a lock used for locking isolations and for which only a single, unique key is available. This key may open more than one lock provided that the locks form a defined suite of locks. (See section 7.5.3).

6.2.73 Sanction for test - means a written agreement on the sanction for test form, signed by the appointed person and by the responsible person in charge of the work, for the purpose of making known exactly how tests or activities are to be carried out under uninterrupted supervision. (See appendix 17 and 17a).

6.2.74 Skilled person - means a person who has been trained, has adequate knowledge for the task at hand and declared competent in writing.

6.2.75 Subcontractor - means a contractor that is employed by a Principal Contractor and has no direct formal contractual agreement of employment with the Client. See Eskom Procedure “Construction Safety Health and Environment Management” Reference number EPC 32-136.

6.2.76 Supervise / supervision - means to oversee the actions of a person(s) to such an extent as to prevent any dangerous act, as far as reasonably practicable. Such a Supervisor must be trained in risk assessment and able to understand the dangers / hazards associated with the task and who has the authority to ensure that precautionary measures taken are implemented.

6.2.77 Suspension / suspend / suspended - means a mutual agreement on the permit to work form between the responsible person and the appointed person, which stipulates that the work detailed on the permit to work has been suspended for the purpose specified on the permit to work.
6.2.78 **Suspension revocation** - means a written declaration on the *permit to work form*, signed by both the **appointed person** and the **responsible person**, stating that the **suspension** has been **revoked**, the **isolations** as detailed on the *permit to work* re-applied, and that **work** may be **safely** resumed. (See section 9.10).

6.2.79 **Temporary electrical installation** - means installation that is intended for use for a pre-determined short-term duration and will be removed after this time period. (See section 18).

6.2.80 **Testing device** - means an **approved** and calibrated tester used to determine whether electrical circuits are **dead** or **alive**.

6.2.81 **Thermal requirements** - Requirements in accordance with Environmental Regulations 2 (1) of the Act.

6.2.82 **Waiver** - means permission of a permanent nature to be excused from a provision of the regulations.

6.2.83 **WBGT index (Wet Bulb Globe Temperature index)** - means a number which characterises the thermal conditions in the environment to which that number applies, calculated from dry bulb, wet bulb and globe thermometers temperature readings. Refer Environmental Regulation of the Act. Environmental Certificate. (See appendix 9).

6.2.84 **Warning sign (danger)** - means a sign in **approved** form calling attention to the **danger** of approach to, or interference with, the **plant** or equipment to which it is attached. (See section 16.2 and appendix 13).

6.2.85 **Work / working** - means all human activities in connection with **plant**, excluding operating activities and non-dangerous activities performed on the external parts of **plant** and which cannot affect the health and **safety** of workers or the **safe** operation of the **plant**.

6.2.86 **Workers’ Register** - means a list of workers that is kept current on a register for the allocation of **work** under the control of a specific *permit to work*.

### 6.3 ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
<td>AIA</td>
<td>Approved Inspection Authority</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>EPE</td>
<td>Electrical Protective Equipment</td>
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<tr>
<td>EST</td>
<td>Estimated</td>
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<tr>
<td>EWT</td>
<td>Estimated Work Time</td>
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<tr>
<td>GGP</td>
<td>Generation Group Procedure</td>
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<tr>
<td>GGS</td>
<td>Generation Group Standard</td>
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<td>GGD</td>
<td>Generation Group Directive</td>
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<tr>
<td>DC</td>
<td>Direct Current</td>
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<tr>
<td>AC</td>
<td>Alternating Current</td>
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</table>
7. REGULATIONS

7.1 DANGEROUS CONDITIONS AND INCIDENTS

(a) All dangerous conditions and incidents must be reported as soon as possible to the immediate supervisor and/or health and safety representative and/or construction safety officer and all employees on site shall be immediately warned of the dangerous condition by the employee reporting.

(b) The supervisor, health and safety representative, or construction safety officer shall immediately ensure that all employees who might reasonably be unaware of the danger are notified and the dangerous conditions shall be immediately reported to the person in charge of the plant, who shall record such a report and steps taken to remove the danger.

7.2 EXAMINING COMMITTEE

(a) The purpose of the examining committee is to evaluate and recommend employees and non-employees for authorisation and re-authorisation according to these regulations. See PC 240-46979537.

(b) The examining committee at a site must consist of at least three representatives, one of these from the related technical discipline at every meeting. Every representative must be appointed in writing by the employer.

(c) The examining committee must have current knowledge of these regulations and of the plant to be able to evaluate personnel.
7.3  AUTHORISATION OF PERSONNEL

(a) Only persons who have satisfied the examining committee that their technical knowledge is adequate to perform specific duties on specified plant and that their knowledge of these regulations is sufficient to justify such an appointment, may be authorised. See PC 240-46979537.

(b) A person may be authorised simultaneously as both an appointed person and a responsible person, but may not exercise both these authorisations on one permit to work. In cases of simultaneous authorisation, separate authorisation certificates must be issued.

(c) Re-evaluation and re-authorisation of personnel must be done at intervals not exceeding two years.

(d) Authorisation certificates will not be transferable between sites.

(e) A person may be authorised for supervision only.

(f) Once a person has completed the theoretical and practical training with the intention of being authorised, they must appear before the examining committee within three months of completion of the theoretical training.

(g) A person training for authorisation as an appointed person will be allowed to perform the isolation provided that an appointed person is in attendance. This appointed person shall be fully responsible for the trainee and accountable for the isolation.

(h) A person intending to be authorised must be skilled to perform risk assessments.

(i) All training and authorisation records shall be kept for audit purposes.

7.3.1 Appointed person

(a) The certificate of authorisation for an appointed person must:
   • have a unique reference number;
   • state the authorisation and expiry date;
   • state the person’s full name, designation, Eskom unique number and/or ID number;
   • specify the plant and duties to which it applies;
   • bear the signature of the employer (in terms of the Act).

(See example in PC 240-46979537).

7.3.2 Responsible person

(a) The certificate of authorisation for a responsible person must:
   • have a unique reference number;
   • state the authorisation and expiry date.

(b) State the person’s full name, designation, and Eskom unique number and/or ID number.

(c) State the plant and duties to which it applies.

(d) Bear the signature of the employer (in terms of the Act).
7.3.3 Authorised supervisor

(a) The certificate of authorisation for an authorised supervisor must:

- have a unique reference number;
- state the authorisation and expiry date;
- state the person's full name, designation, and Eskom unique number and/or ID number;
- state the plant and duties to which it applies;
- bear the signature of the employer (in terms of the Act).

(See example in PC 240-46979537).

7.3.4 General duties for supervision shall include but not limited to:

(a) Give suitable advice and assistance to the employer and contractors on undertaking the measures needed for safe execution of the work.

(b) Ensure that suitable arrangements are made and implemented for the co-ordination of health and safety measures during planning and preparation for execution of the work, including facilitating.

(c) Co-operation and co-ordination between persons in the execution of the work.

(d) Implementation of measures for prevention of incidents.

(e) Take all reasonable steps to identify hazards and co-ordinate the work.

(f) Promptly provide the employer and every contractor who has been or may be appointed in the execution of the work, of such information in his possession as is relevant to each.

(g) Prepare, review and update all records and information during work in progress to ensure the health and safety of any person.

7.4 SECURITY AND INTEGRITY OF POINTS OF ISOLATION

(a) Before a permit to work is issued, all points of plant isolation must be immobilised and a prohibitory sign must be attached.

(b) The integrity of isolations is ensured by the application, of at least one safety lock at each point of isolation by the appointed person. Circumstances may necessitate the application of additional safety locks at a point of isolation.

7.5 KEY SAFE SYSTEM

7.5.1 Key safe

(a) A key safe is a lock-out device conforming to the general requirements as shown in Appendix 1. Each key safe at a site must be clearly marked with a unique identifying number.
7.5.2 Operating lock

(a) An operating lock series must be different from any other series in use at a site. If the operating locks cannot be clearly distinguished from other series in use at that site, they must be provided with a permanent identifying feature.

7.5.3 Safety lock

(a) A safety lock or suite of safety locks must:
   - be marked with an individual number;
   - have only one available key permanently marked with the same number;
   - form part of a series that is different from any other series in use at that site.

(b) The available key must be affixed to a key-ring in such a manner as to prevent its removal without the use of tools. Furthermore, the dimensions of the ring must be such that destruction of the ring is necessary before it can be removed from a locked key safe.

(c) No duplicate or master keys must be available for safety locks, except in the case of a suite of safety locks where a single master key for the suite of safety locks is permissible. If the safety lock key is lost, the relevant head of department/function will be in charge of the removal of the safety lock. The incident must be recorded in the appointed person's logbook and the head of shift's logbook.

7.5.4 Key safe application

(a) All the keys of the safety locks used for isolation(s) in respect of a permit to work must be placed together on one key safe bar. The key safe must be locked by the appointed person, with a safety lock as well as an operating lock. (See appendix 1.) The key of this safety lock must be attached to the permit form and handed to the responsible person.

(b) If a suite of safety locks is used the suite must be confined to the isolations in respect of a single permit to work. The key for this suite of safety locks is then placed on the applicable key safe. Note: Locks from a suite of safety locks may not be used for isolations on any high voltage apparatus.

(c) If any additional permit to work is required necessitating all or part of the same isolation, then (an) additional safety lock(s) must be applied to the above mentioned key safe and the key(s) issued to the responsible person(s) with the relevant permit to work.

(d) The issue of any other permit to work requiring different points of isolation together with the original isolation points will require the use of a separate key safe(s) with the permits cross referenced.

7.5.5 Key safe integrity

(a) No person may at any time open, damage, or interfere with a key safe, or its locks or the keys retained thereon.

(b) No operating lock may be removed from a key safe while any safety lock is still applied on that specific key safe, except in exceptional circumstances or where the health or safety of employees or third persons may be affected or where plant may be damaged.
(c) If it becomes necessary to gain access to the keys on the key safe for any reason other than the suspension or revocation of a permit to work, permission must be obtained from the relevant head of department / function. The relevant head of department / function must personally witness the procedure of gaining access, unless in gaining this access further threats may result to health and safety of persons, plant or property. Under these conditions of gaining access to the keys on the key safe, the event must be recorded in the appropriate appointed person's logbook and the head of shift's logbook.

(d) If a key safe has to be extended, the operating lock must be replaced by a safety lock and the key of this safety lock must be placed on the extended key safe.

7.5.6 Issuing of keys

(a) Operating lock keys, each with a unique identification number, may only be issued to appointed persons. The issuing thereof must be recorded in a register kept by the employer, stating the unique identification number, the name of the person to whom the key is being issued and the date of issue. In all cases the signature and authorisation reference number of the person receiving the key and the signature of the person issuing the key must be entered. Furthermore, when the key is returned, its receipt must be recorded and the person receiving the key and the signature of the appointed person who is returning the key must be reflected, together with the date on which the key was returned.

7.6 RISK ASSESSMENT

Risk Assessments and pre-work checklists must be completed for all work under any Permit to Work. (See appendix 4 and 11).

7.7 PERMIT TO WORK SYSTEM

(a) A permit to work is required for work to be done on plant by employees as well as non-employees. Normally the permit to work will be issued using the computerised system. In the event that the computerised system is unavailable, the standard computerised permit to work form must be completed manually in duplicate. (See appendix 16). Original of permit to work form shall be issued to the responsible person. A copy of permit to work form remains with the Appointed Person.

(b) The original of the permit to work form must be filed after revocation of the permit to work. Permit to work forms, sanction for test, workers' registers, risk assessment(s), pre-work checklist(s), limited access register(s), gas test certificate(s), environmental certificate(s) and hot work approval(s) plus any other related documents where relevant must be filed for one year and be available for incident investigation and audit purposes.

(c) A package must be made up of the permit to work, sanction for test, workers' register(s), risk assessment(s), pre-work checklist(s), gas test certificate(s), environmental certificate(s), hot work approval(s) plus any other related documents where relevant.

7.7.1 Permit to work Application.

(a) The application for a permit to work must be completed by a responsible person or a person who has passed the theory section of the Plant Safety Regulations course,
on behalf of a responsible person in charge of the work, detailing in full the work to be carried out. Any special requirements such as hot work, radiological work or work in a confined space must be stated. This is done by entering the information in the computerised permit to work system using an authorisation password. This system must be programmed to allow access only to the responsible person or the person acting on his behalf.

(b) The responsible person or person acting on his behalf must complete the permit to work application section stating:

- the plant requiring isolation, in detail;
- the scope of the work to be carried out in detail;
- any special requirements including identified dangers and hazards that require continued assessments during the period of work. (See appendix 16, 11 and 11a);
- the time and date on which the work is to be commenced;
- risk assessment number must be entered during the application stage i.e. prior to PTW printing.

The same special requirements apply when a manual permit to work system is used. If satisfied with the contents of the application, the responsible person must approve it in the approval space by entering his authorisation password (password signature) or signature.

(c) The name of the responsible person and person acting on his behalf must be displayed on the computer screen and printed on the permit to work form. The responsible person or person acting on his behalf must transfer where possible by electronic means the permit to work application to the appointed person for approval. (Up to this point no signature is required; signatures will be replaced by password signature).

(d) The appointed person must verify that a risk assessment number has been reflected on the permit to work form, before he proceeds to isolate the plant.

(e) The responsible person must physically sign the application section of the permit to work, satisfying himself of the correctness of the plant detail, the work detail, those hazards and dangers requiring continuous risk assessment have been stipulated before he proceeds to verify that the plant has been isolated as requested.

7.8 PERMIT TO WORK SECTION

7.8.1 Isolations

(a) The appointed person must carry out the necessary isolations to ensure that work can proceed without danger, ensuring that the correct plant is being isolated, using safety locks and prohibitory signs according to the requirements of these regulations, applying general good safety practice, and adhering to any local procedures which may be in force regarding the isolation of that particular plant.

The “test before touch (GGD1221) principle must be adhered to.

(b) If any preparation for the issue of a permit to work needs to be done, the appointed person may request the responsible person to assist with the preparation without a permit to work provided that the preparation is covered by a local procedure. The appointed person shall remain responsible for the preparation. The appointed
person and the responsible person shall both be present for the duration of the said preparation.

(c) In addition, prohibitory signs must also be affixed, where practicable, to all remote control stations associated with the isolated plant.

(d) A clean-hands approach must be followed when extracting fuses or the opening of isolators etc. The "test before touch" principle (GGD1221) must be adhered to.

(e) Any safety tests, with approved testing devices, which may be required by these regulations, or which may be considered expedient in the particular circumstances, must be carried out. The person performing these tests must be certified competent.

The original of any relevant test certificate(s) must be attached to the original of the permit to work form prior to the issue of the permit to work and cross-referencing is required. Each individual permit to work shall be issued with an individual test certificate.

See Appendices for example of Environmental and Gas test certificates. (See examples appendices 2 and 9).

(f) Any special requests, conditions, dangers and hazards must be stipulated on the permit to work.

(g) The key safe number, and the number of the safety lock key that is handed to the responsible person, must be recorded in the relevant spaces provided on the permit to work form. The appointed person must document the isolations effected on the permit form, before signing to state that they have been affected.

(h) After completion of this section of the permit to work, the responsible person must be informed that the permit to work is ready for issue and acceptance. The permit to work shall not be accepted by the responsible person until the appointed person and responsible person have discussed and signed the risk assessment, as well as verified that all associated safety test certificates are available.

(i) If it may become necessary to issue another permit to work requiring exactly the same points of isolation, or an isolation which involves only some of those isolation points. It is only necessary to apply an additional safety lock to the same key safe, cross-reference the related permits to work, and issue the additional permit to work needed.

(j) Where it is necessary to use some or all of the original isolation points, in addition to other isolation points, for another permit to work, an additional safety lock must be applied to the original key safe. The key for this safety lock, together with the safety lock keys for the additional isolating points, must be placed on another key safe and locked with an additional operating lock and safety lock. Cross-referencing of these permits to work is required.

7.8.2 Acceptance

(a) The responsible person must ensure that the application section of the permit to work form has been signed by him.

(b) The responsible person must ensure that the correct plant has been isolated, that the work details are correct, that the stated isolations have been effected, and that these are adequate for the prescribed work to be carried out without danger.
(c) The appointed person who will allow the responsible person to accept the permit to work after verification of the risk assessment and all relevant documents as applicable. (See section 7.8.1f):

- The responsible person must sign the permit to work, having taken into consideration the contents of the permit to work including any special conditions, requests, dangers and hazards endorsed thereon.
- The permit to work will be deemed to be in force after the responsible person has signed acceptance.

(d) The original of the permit to work form, risk assessment, relevant documents and the specified key safe key must be kept in a safe place which is accessible only to appropriate responsible persons, until the work has been completed.

(e) No worker may work under more than one permit to work at a time.

(f) A responsible person may be issued with more than one permit to work at a time, provided that an adequate level of supervision is provided at each place of work as determined by the risk assessment. In terms of this regulation, supervision is essential and must satisfy the level determined by the initial risk assessment and any continuous risk assessments.

(g) Accountability for the permit to work and its associated supervision will remain with the responsible person at all times. Without derogating from his accountability and responsibility, the responsible person may delegate his responsibility for supervision to an authorised supervisor, who will be required to supervise the work as per the scope of the permit to work. Should supervision be delegated, the authorised supervisor shall be fully responsible for supervision of the work to ensure its safe execution in accordance with the permit to work. The delegation to the authorised supervisor shall not relieve the responsible person from his/her accountability for the permit to work and its associated supervision. Once the authorised supervisor is appointed, the responsible person should be allowed to leave site but remain contactable at all times.

(h) No alterations to the work scope and or isolations shall be allowed on an issued permit to work. A new permit to work must be issued if the original scope of work changes.

(i) The permit to work, original and copy shall only be printed once.

7.9 PERMIT SUSPENSION

(a) If it becomes necessary to suspend a permit to work the responsible person or the authorised supervisor must make the work area safe, inform all the workers that it is no longer safe to carry on working, withdraw them from the plant and complete the withdrawal section of the workers' register. The holder of the permit to work must ensure that the workers' register is in fact signed off before he suspends both copies the permit to work. (See section 7.14).

(b) The reason for the permit suspension is to be endorsed on the permit by the responsible person as applicable.

(c) Upon reinstatement of the permit to work, the suspension revocation must be filled in and both copies signed. A new workers' register and pre-work checklist, if applicable, must then be completed should the work be continued. The risk assessment must also be re-evaluated should there have been any change to the scope of work. A new permit to work must be issued if the scope of work changed.
7.10 CHANGING RESPONSIBILITIES

(a) In the event of another responsible person becoming responsible for the work, both the original and the copy of the permit to work must be accepted by the incoming responsible person, (see section 7.8.2), as well as the workers’ register, risk assessment and pre-work checklist, must be endorsed with the date and time when the new responsible person assumes the responsibilities as the responsible person. Alternate to this, a new workers register, risk assessment and pre-work checklist must be completed by the new responsible person.

(b) Should the safe execution of the work be taken over by an authorised supervisor, the responsible person must now ensure that the authorised supervisor(s) is (are) aware of the details of the permit to work of all the dangers, hazards and precautions that must be adhered to, and keep a workers’ register of the authorised supervisor(s). The applicable section of the workers’ register, risk assessment and pre-work checklist, must be endorsed with the date and time when that authorised supervisor(s) assumes the responsibilities as the authorised supervisor. Alternate to this, a new worker’s register, risk assessment and pre-work checklist must be completed by the authorised supervisor.

(c) Absence of person in charge of supervision:

- When it is impossible for the person responsible for supervision to be present for the duration of the work in progress, the holder of the permit to work, shall, delegate the task of supervision to another authorised supervisor/responsible person. However, this shall not be applicable for live or plant in operation permits.

- The name of this authorised supervisor/responsible person must be recorded in the workers’ register.

- Should another authorised supervisor/responsible person not be available then all workers shall be withdrawn from the work during the absence of the person in charge of supervision.

- A worker* may be in charge of supervision if he is so authorised. The responsible person must withdraw the worker’s name from the workers’ register. New workers register must be completed by both the responsible person and the authorised supervisor (worker*).

- This regulation emphasises the fact that there must always be a suitable level of supervision of work at all times as determined according to the risk assessment. Unless the risk assessment specifically requires direct and continuous supervision of work by the responsible person or authorised supervisor continuously, it is not mandatory. However an appropriate supervision level should be exercised to ensure that the work under the permit to work can be executed safely. Where applicable, such supervision may be done intermittently.

- If a responsible person or an authorised supervisor is used to supervise the execution of work, this individual must be on site at all times and be in a position to provide a determined level of supervision. See section 7.8.2 g to further clarify this.

7.11 CLEARANCE

(a) On completion of the work, the responsible person or the authorised supervisor in charge of the safe execution of the work at that time must inform all the workers
involved that it is no longer safe to work on that plant. All the workers must be withdrawn from the workplace and the responsible person or the authorised supervisor must confirm this by signing the appropriate section of the workers' register. In turn if an authorised supervisor is used, the responsible person will also need to also withdraw the authorised supervisor from the responsible person's workers register.

(b) The responsible person must ensure that the plant is in a safe and serviceable condition and that all tools, debris and loose material have been withdrawn from the plant and then sign the clearance on the original and copy of the permit to work, specifying any endorsement which may be necessary. The original of the permit to work form, together with the appropriate key safe key, and the original of the workers' register(s), risk assessment(s) and pre-work checklist(s) and other relevant documents must be left at the place where the permit to work was issued. The appointed person must then be informed that the permit to work has been cleared.

7.12 REVOCATION

(a) On receipt of the original cleared permit to work and the key safe key, the appointed person must ensure that the workers' register(s), pre-work checklist(s) and risk assessment(s) and other relevant documents are attached to the cleared permit to work before he signs the revocation on the original permit to work. Should there be any known outstanding documentation the appointed person shall not revoke the permit to work.

(b) The isolations and prohibitory signs must be removed and the plant prepared for service, subject to any endorsements made by the responsible person, and provided no other permit to work is still in force on that plant.

7.13 NON-AVAILABILITY OF THE ORIGINAL PERMIT TO WORK FORM

(a) If, for any reason, the original of the permit to work form is not available when it is required to be cleared, the appropriate head of department/function or, in the case of a non-employee, the site representative of that company must then countersign the copy of the permit to work.

If available, all other accompanying permit documents shall be attached to the copy of the permit to work.

(b) This signature on the copy of the permit to work authorises the appointed person to revoke the permit to work in question.

7.14 NON-AVAILABILITY OF THE RESPONSIBLE PERSON.

(a) In the event of the responsible person to whom a permit to work has been issued not being available to clear the permit to work, the official in charge shall decide which other responsible person shall clear the permit to work.

(b) Such responsible person shall first countersign the “change of responsibility” portion on the permit to work form, the existing risk assessment and as applicable, the pre-work checklist briefing and workers register used. If these are not available, a new workers register, pre-work checklist and risk assessment shall be completed as necessary. He shall supervise the completion of the work, fill in and sign the
clearance on the permit to work form, workers register as applicable and return permit to work form to the appointed person concerned.

(c) The official in charge shall take all reasonable steps to ensure that no dangerous condition arises from such transfer of responsibility".

7.15 WORKERS' REGISTER

(a) If the responsible person is not going to carry out the work personally, the permit to work must be shown to all workers involved in that work. The nature and physical location of the work, isolation boundaries as well as any special conditions, requests, dangers and hazards requiring continuous assessment, must be physically explained and shown to all workers inclusive of the relevant personal protective clothing and equipment to be used during the execution of the work.

Once this has been done, the responsible person must then enter the permit to work number and the names and unique/ID numbers of all the workers involved onto the worker's register.

(b) Each worker by signing adjacent to his name on the worker's register acknowledges that he has been shown and briefed on the following:

- The applicable permit to work under which he shall work.
- Any special conditions or hazards requiring continuous assessment as per the risk assessment and required personal protective clothing or equipment.
- The isolation boundaries as per the permit form and shown the specific physical work site or area.
- The nature of the actual work to be carried out as described on the permit form.

In addition the worker shall be:

- Satisfied that the work described by the responsible person can be carried out in a safe manner.
- Aware that if an unsafe condition arises during the execution of the work, that the work is to be stopped immediately and this fact reported to the responsible person, who must in turn must address the condition / act to the satisfaction of the worker before any further work is carried out.

Once all workers have signed the workers register, the responsible person shall then sign the register in the space provided also specifying the date and time. (See appendix 10).

Note: In instances where there are many workers days, pre-printed workers names that make up the workers register may be used, provided that the need for signatures or format of the register is not altered in any way. All names of workers, who were not briefed in terms of the requirements of 7.1.5 b, shall be identified and scratched through on pre-printed workers register forms.

(c) The responsible person must also enter the number of the workers register in the relevant block on the permit to work. Subsequent workers register numbers need not be entered onto the permit to work.

(d) The original of the workers' register(s), risk assessment and pre-work checklist must be attached to the original of the permit to work by the responsible person. Any subsequent workers' registers, risk assessments and pre-work checklists must also be attached to the permit to work.
(e) If the responsible person is not going to supervise the work personally, an authorised supervisor must be allocated by signing the specific section of the workers' register. The permit must be shown to the authorised supervisor, and the nature and physical location of the work, as well as any special conditions, requests, dangers and hazards requiring continuous assessment as per the risk assessment involved must be explained to the authorised supervisor who must countersign the risk assessment. (See appendix 10, 11 and 11a). The authorised supervisor shall then compile his own risk assessment considering the hazards and risks from the original risk assessment from the responsible person and those applicable for the tasks that he will supervise. The authorised supervisor will then be deemed to be responsible for the safe execution of the work taking health and safety precautions into account and within the terms of these regulations.

(f) The responsible person must keep a workers register as per scope of work for each authorised supervisor.

(g) The authorised supervisor must then explain the nature, physical location of the work, isolation boundaries as well as any special conditions, requests, dangers and hazards requiring continuous assessment must be physically explained and shown to all workers, inclusive of the relevant personal protective clothing and equipment to be used during the execution of the work. The risk assessment and pre-work checklist must be discussed with all the workers. (See example appendix 4, 11 and 11a).

(h) The authorised supervisor must then enter the permit to work number, names and unique/ID numbers of all the workers involved on the workers register. Each worker by signing adjacent to his name on the workers register acknowledges that he has been shown and or has been briefed on the following:

- The applicable permit to work under which he shall work.
- Any special conditions or hazards requiring continuous assessment as per the risk assessment and required personal protective clothing or equipment.
- The isolation boundaries as per the permit form and shown the specific physical work site or area.
- The nature of the actual work to be carried out as described on the permit form.

In addition the worker shall be:

- Satisfied that the work described by the responsible person can be carried out in a safe manner.
- Aware that if an unsafe condition arises during the execution of the work, that the work is to be stopped immediately and this fact reported to the responsible person who must in turn must address the condition / act to the satisfaction of the worker before any further work is carried out.

Once all workers have signed the register, the authorised supervisor shall then sign the register in the space provided also specifying the date and time. (See appendix 10).

Note: In instances where there are many workers, pre-printed workers names that make up the workers register may be used, provided that the need for signatures or format of the register is not altered in any way. All names of workers, who were not briefed in terms of the requirements of 7.1.5 b, shall be identified and scratched through on pre-printed workers register forms.

(i) During the work, if conditions change, the risk assessment must be re-evaluated and signed by the responsible person / authorised supervisor. (Continuous Risk
Assessment Record, see Appendix 11a). The workers must be informed of any additional hazards as applicable.

(j) If work expands over a period of more than one day or a shift, on completion of the work for that day or at the end of that shift; workers’ must be briefed and the workers register updated accordingly by them signing off the register adjacent to their name and workers register “withdrawn”. When the work resumes the next day or shift, the workers’ must once again be briefed and a new workers register completed to reflect the time and date that workers were once again “briefed”.

This is also applicable when a worker is allocated from one task/work to another.

(k) The workers register must remain current at all times.

(l) The “test before touch” principle GGD1221 must be adhered to before any work is started on any plant.

8. DECLARED OUTAGES, PERMIT SYSTEM

The Construction Regulations (Act 85 of 1993) and Eskom Procedure EPC 32-136 Construction Safety, Health and Environment Management should be referred to for more information.

Regulations for work during declared outages at power stations/return to service plant.

8.1 DECLARED OUTAGE

(a) An outage will only be a declared outage after the Power Station Manager / Project Manager or his authorised delegate has issued a document to this effect, thereby transferring management of the work to the designated Manager. This may include units or plant systems that have been placed in long term cold reserve, providing that the unit or plant system has been formally handed over to the designated Manager. The declaration will also define the extent of the plant covered by the outage and its duration.

8.2 GENERAL REQUIREMENTS.

(a) Work in terms of section 8 will only be allowed at power stations where:

- A designated Outage Manager has been appointed.
- A document has been issued by the Power Station Manager/Project Manager or his authorised delegate, defining the procedures to be followed to ensure the health and safety of personnel during the declared outage work; this document must also stipulate the date and time that the outage commences.
- Each site has an approved local procedure in place describing the complete outage permit(s) to work process and the safety precautions.
- It is possible to interrupt, at a pre-planned time and for a pre-planned period, on any working day of the declared outage during which an outage permit(s) to work is in force, all the work being done on the plant covered by that outage permit(s) to work.
- Specific appointed person(s) has / have been seconded to the designated Outage Manager for the duration of the declared outage.
- Specific **responsible person(s)** has / have been seconded to the designated Outage Manager for the duration of the declared **outage**.

- The appointment of both the seconded **appointed person** and the seconded **responsible person** must be in writing.

### 8.3 RESPONSIBILITIES

(a) The responsibility for ensuring compliance with the procedures set out in the document produced in terms of section (8.2) rests with the designated Manager;

(b) The responsible person(s) seconded to the designated Manager (seconded responsible person(s)) are responsible for duties as per section (7.8.2a), signing acceptance of the outage permit(s) to work, and for ensuring that all responsible persons working on the declared outage are informed initially and kept informed regarding the changes in the outage permit(s) to work. This must be done by means of uniquely numbered cautionary notices issued to the responsible persons. The seconded responsible person must keep a register of all the responsible persons that are working on the outage.

(c) If a change in **isolations** of an outage permit to work during the absence of the seconded **responsible person** is essential, the changes in the **isolations** must be verified to be adequate for the prescribed work to be carried out by another seconded **responsible person**;

(d) The **responsible person(s)** must sign a register when they are issued with a cautionary notice. This register must be stored in the locked outage permit to work box. Each **responsible person** working on the outage must ensure that his name is on the seconded **responsible person's** register. The **responsible person(s)** must now ensure that all the **authorised supervisor(s)** are aware of the details of the outage permit to work and of all the dangers, hazards and precautions that must be adhered to and keep a **worker's register** of the **authorised supervisor(s)**.

(e) The **appointed person(s)** seconded to the designated Manager are responsible for all **isolations**, de-isolations and/or test-running of **plant** which is undergoing a declared **outage**. If a change in **isolations** during the absence of the seconded **appointed person** is essential, it may be carried out by another seconded **appointed person**.

(f) The responsibilities of a **responsible person** include:

- Ensuring that the **cautionary notice** register is signed and that instructions in the **cautionary notices** are implemented.

- Ensuring that the **work** is carried out and executed taking **health** and **safety** precautions into account and within the terms of these **regulations**.

- Taking note of the **outage permit to work** and changes thereto.

(g) Informing the workers of these changes.

- Keeping a **current workers register**, **risk assessment** and **pre- work checklist**.

- If the **responsible person** has delegated **supervision** to an **authorised supervisor**, the **responsible person's** duties will be as follows:

- Maintaining a **workers register** of the **authorised supervisor(s)** working on the **outage**.
• Issuing the **authorised supervisor(s)** with a copy of the **outage permit to work** and the cautionary notice.

(h) The **authorised supervisor(s)** will be responsible for ensuring that the **work on the plant** covered by a **permit to work** is executed taking **health** and **safety** precautions into account and within the terms of these **regulations** by:

- Maintaining a **current workers' register** and up to date **risk assessment**.
- Informing the workers of changes in accordance with the **cautionary notice** and **pre-work checklist**.

See section 7.15 for further information pertaining to workers registers.

(i) **Change of seconded responsible person:**

- The **appointment** shall be in writing by the designated Outage Manager. Provisions in accordance with section 7.10 shall apply.

### 8.4 THE OUTAGE PERMIT(S) TO WORK SYSTEM

(a) The purpose of an **outage permit(s) to work** is to minimise congestion during a declared **outage**.

(b) For the application of the **key safe** system and **isolations**. (See section 7.5.4 and section 7.8.1). In the case of an **outage permit to work** the seconded **appointed person(s)** and seconded **responsible person(s)** carry out the duties assigned to the **appointed person** and the **responsible person** in 7.5.4 and 7.8 respectively.

(c) The computerised format of an **outage permit to work** must allow sufficient space for the recording of **isolations** and remarks.

(d) **Outage permit(s) to work** covering the **work** to be carried out on **plant** during a declared **outage** must be issued by the seconded **appointed person(s)** to the seconded **responsible person(s)**.

(e) An **outage permit(s) to work** must contain details of all points of **isolations** effected. Any individual **plant** items previously associated with the declared **outage** that are now **dangerous to work** on, must be stated clearly on the **current cautionary notice(s)**. All relevant **responsible persons** must be informed by means of the **cautionary notice(s)** and appropriate steps must be taken to **safe-guard** personnel against any **dangers** or risk to health and **safety**.

A copy of the **outage permit to work** with the **cautionary notice** shall be issued to each **authorised supervisor**.

(f) The original of an **outage permit(s) to work**, the **key safe** key, the seconded **responsible person’s cautionary notice** register, must be stored in a locked **outage permit to work** box for the period of validity. The **outage permit to work** box must be secured with a unique lock, the key being retained by the designated Manager. This duty can be delegated to a seconded **responsible person** in the absence of the designated Manager.

(g) An **outage permit(s) to work** remains in force until changes in **isolations** become necessary, whereupon, the original must be **cleared and revoked** and a **new outage permit(s) to work** issued. The seconded **responsible person(s)** must then sign acceptance of the new **outage permit(s) to work**.

(h) All **responsible persons** must acquaint themselves with the new **outage permit(s) to work** as well as the **cautionary notice(s)** and ensure that the **authorised**
supervisors are issued with the new copy of the outage permit to work, the cautionary notice, with the risk assessments and pre-work checklists that must be evaluated for relevance.

For the purpose of outage permit(s) to work regulation section (7.11 b) does not apply, except at the final clearance and revocation stage.

(i) Changes to the outage permit to work must always be carried out at a pre-planned time of any day. The designated Manager must ensure that all responsible persons and authorised supervisors are aware of this time and its duration.

(j) No item of plant included in an outage permit(s) to work may be made alive, charged up, or test-run until a new outage permit to work, which excludes those items of plant, has been issued.

(k) When testing or test running of plant is required, it must be carried out under a separate permit to work in terms of section 9.

(l) A package must be made up of the outage permit(s) to work, cautionary notice(s) and register(s), sanction(s) for test, workers' register(s), risk assessment(s), pre-work checklist(s), and gas test certificate(s), environmental certificate(s), hot work approval(s) plus any other related documents where relevant. This package must be retained for one year for auditing and incident investigation purposes.

9. TESTING / TEST-RUNNING OF PLANT

This regulation applies to the testing and test-running of plant that is subject to the suspension of the permit to work. Such testing or test-running must be carried out under uninterrupted supervision of the holder of the permit to work.

9.1 PLANT TESTING

(a) Whenever it becomes necessary to test or test-run plant during the process of work under a permit to work, the following must be done:
   • The applicable permit to work workers’ register must be signed off and withdrawn after the workers have been informed and warned of the required tests to be undertaken.
   • All cross-referenced permits to work must be cleared or suspended.
   • The permit to work on the plant to be tested must be suspended.
   • A risk assessment must be updated and a sanction for test must be applied for.
   • The appointed person must ensure that it is safe to operate the plant and erect warning signs where necessary.
   • The responsible person must complete a new workers’ register if assistance is required for testing.

9.2 RESPONSIBLE PERSON

(a) The responsible person must inform the workers involved in the work that it is no longer safe to do any further work on that plant, and that testing will be carried out.
(b) The **responsible person** must ensure that the **workers' register** for the **work** aspect is withdrawn and then relinquish the **authority to work** on that **plant** by signing the applicable **permit to work suspension**.

(c) The **risk assessment** must be updated accordingly.

(d) The reference number of the specific **sanction for test** must be entered on the **permit to work form**.

### 9.3 SUSPENSION OF PERMIT TO WORK ON THE PLANT TO BE TESTED

(a) When a **permit to work** is **suspended**, the **suspension** section of the form must:

- Be signed by both the **appointed person** and the **responsible person**.
- Specify the date and time from which the **suspension** becomes effective.
- Only be completed once an associated **sanction for test** form has been prepared and is ready for signature.
- Reflect a time and date corresponding as close as practically possible to that of the associated **sanction for test**.
- Be signed by both the **appointed person** and the **responsible person** in the spaces provided, on completion of the activities specified in the associated **sanction for test** form, before **work** recommences under the **permit to work**.

### 9.4 SANCTION FOR TEST FORM

#### 9.4.1 A sanction for test form must:

(a) Only be issued at the time of **suspension** of the **permit to work** applicable to the specific **plant** on which stipulated tests or activities are to be performed.

(b) **Sanction for test** may only be signed after the **appointed person** has reviewed the updated **risk assessment**.

(c) Carry the signature of the **responsible person** declaring full control and understanding of the implications of the stipulated tests and activities that are to be performed, and agreement with the precise detailed procedure to be followed.

(d) Contain the mutually agreed test procedure or instructions to be followed by the **responsible person** and the **appointed person**.

(e) Include particulars, entered in the appropriate spaces, detailing the communication channel and the signals to be used to indicate starting, stopping and **isolation**. The actual **isolation** to be removed to allow the test or activity, which may be required in terms of the **sanction for test** to be carried out must also be specified.

(f) Bear the date and time of the issue of the **sanction for test** and **suspension** of the work permit. The date and time of issue must correspond with the date and time entered on the associated **permit to work suspension** as far as practically possible. (See appendix 16 and 17).

#### 9.4.2 A sanction for test form must not be issued unless:

(a) The **permit to work** to be **suspended** is the only one in force on that **plant** and is not **suspended**.
9.5 APPOINTED PERSON

(a) The appointed person must sign the permit to work suspension on both copies of the permit to work, thus temporarily invalidating the permit to work. The date and time of suspension must be entered and must coincide with the date and time of the sanction for test as far as practically possible.

(b) The sanction for test must then be signed by both the appointed person and the responsible person. The responsible person must retain the original, and the suspended permit to work must be affixed to the duplicate of the sanction for test.

(c) The appointed person must then ensure that it is safe to operate the plant.

(d) The appointed person must then remove the isolation which are required to be removed in order to operate the plant. This must be done under the direct supervision of the responsible person. The plant may then be tested according to the procedure laid down in the sanction for test.

9.6 TESTING OF THE PLANT

(a) The responsible person must remain at the plant and the appointed person must remain at the stop / start / isolation control point(s) for as long as the testing of plant is in progress.

(b) If, for any reason, the responsible person or appointed person is called away from the plant or the stop / start / isolation control point(s) respectively during testing, the energy supply point must be isolated and locked with a safety lock, in the isolated position. The key used for isolating the energy supply must be handed to the responsible person for safe-keeping until testing can recommence.

(c) Adjustments to the plant must be carried out under supervision of the responsible person while the energy supply is isolated and verified by the responsible person, e.g. changing the mass used for the balancing of rotating parts or altering the direction of rotation of motors (excluding high-voltage motors)

(d) Testing of the plant may not continue until both the responsible person and the appointed person have resumed their positions at the plant and the stop/start/isolation control point(s) respectively, and it has been confirmed that the communication channel has been re-established.

(e) Clear communication shall be ensured between the appointed person and responsible person during testing.

9.7 CHANGE OF APPOINTED OR RESPONSIBLE PERSON

(a) If new appointed person or responsible person takes over the responsibility for a sanction for test, the following must be done:

- The new responsible person must countersign both the permit to work, risk assessment, workers’ register (as applicable) and the sanction for test.
- The new appointed person must countersign the sanction for test once he has verified that the risk assessment has been updated for the work to be performed.
9.8 COMPLETION OF TEST

The sanction for test form must be cleared by the responsible person and revoked by the appointed person on completion of the specified test procedure, thereby cancelling the sanction for test.

9.9 ISOLATIONS RE-APPLIED

The appointed person must ensure that all the isolations (as specified on the permit to work) are re-applied. The responsible person must then be informed that the permit to work is ready for reinstatement and the permit to work's suspension revocation must be signed. Before signing the suspension revocation section on the permit, all isolations will once again need to be verified by the responsible person.

9.10 PERMIT TO WORK SUSPENSION REVOCATION

Having ensured that the original isolations (as specified on the permit to work) have been re-applied, the responsible person again accepts authority to work on the plant by signing the permit to work's suspension revocation, specifying the date and time. Where applicable, a new workers' register, risk assessment and pre-work checklist must be completed by the responsible person or the authorised supervisor.

10. PLANT IN OPERATION

(a) Risk Assessments and pre-work checklists must be completed for all work under any Permit to Work.

(b) A "plant in Operation" permit to work shall only be valid for a period of 12 hours.

(c) If it is not practical to stop the operation of plant, work on such plant may only be allowed provided the following precautions are taken:

- A permit to work has been issued, endorsed "Plant In Operation".
- Only responsible persons, or skilled persons under the continuous personal supervision of a responsible person, may adjust machinery in operation, or any parts adjacent to dangerous moving parts, or lubricate such machinery, or tighten valve glands, or perform "ON LINE LEAK SEALING" and / or as determined by the Risk Assessment.
- If a responsible person carries out the work, a skilled person or another responsible person must nevertheless remain in attendance for the duration of the work.
- Routine cleaning and lubrication of machinery in operation is allowed without a permit to work, except where such cleaning or lubrication necessitates close approach to dangerous moving parts.
- This regulation may not be interpreted so as to allow a breach of the requirements of any regulation contained herein.
11. RESTRICTED AREA

(a) Where access is prohibited for the purpose of power system protection and security, or to protect the health and safety of persons, such an area is regarded as a restricted area.

(b) A person must obtain permission for access to a restricted area through an approved system such as the limited access register.

(c) Typical examples of restricted areas are:
   • switch rooms;
   • equipment rooms.

(d) Issue of keys to restricted areas for inspections/activity only:
   • Keys to restricted areas and to apparatus must be kept under lock and key in the key cabinet provided for that purpose. The key to this key cabinet must be kept in the custody of the person on duty responsible for the issue and return of keys to restricted areas.
   • Keys to restricted areas may be issued only to a person who is authorised in terms of this regulation, who will be held solely responsible for these keys while they are in his possession. He must not let any of these keys pass out of his possession until they are returned to the person responsible for the safe custody of the keys.
   • When a key to a restricted area is issued to a person, the particulars of the key, the identity of the person to whom the key is being issued and the time and date of issue must be recorded. In all cases the signature of the person receiving the key and that of the person issuing the key must be entered against the record. Similarly, when a key to a restricted area is returned, its receipt shall be recorded.
   • A person who has unlocked a door or gate giving access to a restricted area shall, during the period when the door or gate is unlocked, be responsible for enforcing compliance with the regulations. On withdrawing from a restricted area for any reason, the person to whom a restricted area key has been issued shall be responsible for ensuring that all persons have withdrawn from the restricted area and that the doors or gates are securely locked before returning the key to the person responsible for the custody of the key.
   • Under no circumstances may the key to a restricted area be left in the lock or be kept for longer than is necessary by the person to whom it has been issued.
   • Each door or gate giving access to a restricted area shall be marked with the name of the restricted area and, where necessary, with a distinguishing number close to the lock. A label marked with the name of the restricted area and the distinguishing number corresponding to the lock shall be attached to the key by means of a suitable key ring.
   • Only authorised persons shall use master keys for access to restricted areas.
   • Every door and gate giving access to a restricted area shall normally be closed and locked. To facilitate an emergency exit, a door or gate giving access to a restricted area shall remain unlocked while inspection of isolations or operating is in progress, provided no un-authorised persons may gain unrestricted access.
11.1 LIMITED ACCESS REGISTER (LAR)

(a) There are circumstances in which an activity must be carried out that does not fall under the definition of work.

(b) It is nevertheless important to exercise control over such activities in order to have a record of who is performing the activity and where that person is performing the activity, as well as the expected duration of the activity. The person in charge of the plant must use the limited access register to maintain control over such activities.

(c) Activities allowed in terms of a limited access register must satisfy the following criteria:
   - They must involve no danger to the person carrying out the activity.
   - No plant isolations must be required.
   - The activity must be performed by a skilled person.
   - There must be no risk of a production loss.
   - The duration of the activity must be less than 12 hours.

(d) Upon completion of the activity it is important to notify the person in charge of the plant that conditions are back to normal and that the limited access register has been signed off.

(e) Should it become apparent, while the activity is in progress, that the activity is jeopardising the safe operation of the plant, or that it will affect the health and safety of persons, the activity must be stopped, the limited access register must be cancelled, and a permit to work must be applied for.

(f) A limited access register must be kept at each control desk. A format for such a register is shown in the example appendix 15.

11.2 RADIOACTIVITY

11.2.1 Duties of employer

The employer shall comply with all the requirements of Eskom Standard EST 32-226 - Requirements and rules for radiation protection and the safety of radiation sources.

11.2.2 Appointment of Radiation Protection Controller

The employer must appoint a Radiation Protection Controller in writing for each site to meet all administrative obligations in respect of radiation protection for industrial radiography and to exercise control over the discharge of such obligations.

11.2.3 Duties of the Radiation Protection Controller

The Radiation Protection Controller must ensure that all requirements for industrial radiography as prescribed in Generation Standard, 238-40 (GGS 1300) – Radiation protection safety requirements for industrial radiography, are strictly adhered to.
11.2.4 Appointment of Radiation Protection Officer

The employer must appoint a Radiation Protection Officer and if applicable, an Acting Radiation Protection Officer in writing for each site to meet all administrative obligations in respect of radioactive source and to exercise control over the discharge of such obligations.

11.2.5 Duties of the Radiation Protection Officer

(a) The Radiation Protection Officer's responsibilities are defined in Government regulation R247, chapter 4, section 26, Government Gazette 14596, 26 February 1993.

(b) In short, the Radiation Protection Officer must: ensure that all the requirements for the safe use of industrial gauges containing radioactive sources, as prescribed in Generation Standard 238-39 (GGS1311) – ‘Requirements for Safe use of industrial gauges containing radioactive sources’ are strictly adhered to.

(c) Ensure that all the requirements for the safe use of soil moisture and density gauges containing radioactive sources as prescribed in Generation Standard, 238-45 (GGS 1318) – ‘Radiation protection requirements for Soil moisture and density gauges’ are strictly adhered to.

(d) Ensure that all the requirements for the safe use of unsealed sources as prescribed in Generation Standard, 238-41 (GGS 1306) – ‘Radiation protection requirements for safe use of unsealed sources’, are strictly adhered to.

(e) Ensure that all the requirements for the safe use of baggage inspection X-ray devices as prescribed in Generation Standard, 238-45 (GGS 1310) – ‘Radiation protection requirements for baggage inspection X-ray devices’, are strictly adhered to.

(f) Ensure that all work on plant where there is a possibility of exposure to radioactive sources and listed electronic products is covered by a permit to work, that all such sources are isolated by a person authorised thereto. That the Radiation Protection Officer and/or Radiation Protection Controller are involved before work commences.

(g) Ensure that radioactive sources and/or listed electronic products are only des-isolated after the work has been completed and the permit to work has been cleared, and that the Radiation Protection Officer and/or Radiation Protection Controller are involved.

(h) Ensure that only persons registered with the Directorate Radiation Control, Department of Health are allowed to use radioactive sources and/or listed electronic products for industrial or medical radiography.

(i) Ensure that all access into containers or plant where radioactive sources and/or listed electronic products are used as measuring equipment are shut and locked in order to prevent accidental entry into such containers or plant and possible exposure to the ionising radiation they contain, and that these access points are also marked with a radiation-hazard warning sign.

11.3 INDUSTRIAL INSTRUMENTS CONTAINING RADIOACTIVE SOURCES

Radioactive sources used in industrial instruments may only be removed from their containers or replaced into their containers by authorised employees of the supplier, or by employees trained and authorised to do so by the supplier. All work involving radioactive sources and / or listed electronic products must be done under the supervision of the Radiation Protection Officer and / or Radiation Protection Controller.
11.4 UNAUTHORISED INTERFERENCE

No person may handle, isolate, de-isolate or work on any radioactive source and/or listed electronic product without being authorised to do so.

11.4.1 Training for Radiation Protection Officers

(a) No person may handle, isolate, de-isolate or work on any radioactive source and/or listed electronic products without being trained to do so.

(b) A Radiation Protection Officer or Radiation Protection Controller must have successfully completed the relevant Eskom Radiation Protection Officer’s training course or equivalent.

12. HIGH-VOLTAGE APPARATUS

12.1 OPERATING REGULATIONS FOR HIGH-VOLTAGE SYSTEMS

Where it is necessary to isolate high-voltage apparatus in order to comply with these regulations, such isolation must be carried out by an Appointed Operator authorised in terms of the Operating Regulations for High-Voltage Systems.

12.2 MECHANICAL WORK ON HIGH-VOLTAGE APPARATUS

When mechanical work, resulting in possible contact with normally live parts, must be carried out on high-voltage electrical apparatus, a high-voltage work permit must be issued to a responsible person in terms of the Operating Regulations for High-Voltage Systems, and a permit to work must be issued to the responsible person for the required mechanical work in terms of the Plant Safety Regulations. These two permits must be cross-referenced and separate workers’ registers, must be kept.

Note: The LV permit must be X-referenced to the HV permit.

13. ELECTRICAL APPARATUS

Regulations for work on low-voltage electrical apparatus:

13.1 GENERAL SAFETY PRECAUTIONS

(a) The consequences of shock or burns from short circuits associated with low-voltage electrical apparatus may be serious, and under some circumstances even fatal.

(b) A permit to work must be issued before commencing any work on low-voltage power circuits, or apparatus supplied by such a power circuit, with the exception of work on domestic circuits.

(c) Wherever reasonably possible, work on low-voltage electrical apparatus must be carried out while that apparatus is dead.

(d) In the event of the work being carried out while the power circuit or apparatus is alive, the permit to work must be clearly endorsed ‘ALIVE’ and the correct PPE worn.
13.2 WORK ON DEAD APPARATUS

(a) When work is to be done on apparatus supplied from a power circuit provided with a circuit breaker, isolator or fused isolator, such circuit breaker or isolator must be locked in the OFF position, if practicable, and a prohibitory sign affixed. (See section 7.4)

The “test before touch” principle must be adhered to.

(b) If the circuit breaker is extractable, it must be extracted, locked to prevent insertion, and a prohibitory sign affixed.

(c) When work must be done on apparatus where the primary isolation is the extraction of power fuses, the fuses must be extracted. A barrier must be inserted across the fuse bases and locked in position, if practicable.

(d) The barrier must be designed in such a way that re-insertion of any fuse is impossible with the barrier in position, and be of such dimensions as to effectively shield any live fuse terminals from inadvertent contact.

(e) A prohibitory sign must be affixed to the barrier.

(f) The requirement to fit a barrier need not apply in cases where the door giving access to the fuses can be locked in the CLOSED position, provided that the door is equipped with an opening which has been permanently fitted with a sheet of solid transparent material which allows the fuse bases to be observed. In such cases the isolation must consist of extraction of the fuses, locking the door in the closed position and affixing a prohibitory sign to the door. The door must remain locked for the duration of the permit to work.

(g) A clean-hands approach must be used when extracting fuses.

(h) When work on dead apparatus necessitates close approach to any live apparatus, warning signs must be posted at suitable points as close as safely possible to such live apparatus.

(i) No person may touch, or apply conducting material, other than the probes of a testing device, to un-insulted low-voltage apparatus, until such apparatus has been proved not to be alive by an appointed person / responsible person using an approved testing device.

(j) The “test before touch (GGD1221) principle must be adhered to.

(k) The approved testing device must be proved on a live power supply before and after testing, in order to ensure that it is in good working order. Where a live power supply is not available, an approved testing device with a self-testing facility may be used.

(l) Where it is impracticable for the appointed person to carry out this test, the responsible person in charge of the work must assist the appointed person to carry out such test before the permit to work is issued.

13.3 WORK ON LIVE APPARATUS

(a) Risk Assessments and Pre-Work checklists must be completed for all work under any Permit to Work

(b) A “plant alive” permit to work shall only be valid for a period of 12hours:

• Work on live low-voltage apparatus, where direct contact is possible, supplied from power circuits, may only be undertaken by a responsible person, or by a
skilled person under the direct and continuous supervision of a responsible person.

- If the work is carried out by a responsible person, a skilled person or another responsible person must nevertheless remain in attendance for the duration of the work.

- Work may not commence until a permit to work that is clearly endorsed ‘ALIVE’ has been issued.

- The person doing the work must stand on a dry insulating mat and use insulating tools and necessary PPE and protective clothing as per the risk assessment requirements, Generation Policy GPL 36-941 and Standard GST 36-942. (Refer Electrical Machinery Regulation (2) of the Act.

### 13.3.1 Work below Power Lines

When the minimum safe working clearance between persons, machinery or objects and live apparatus or lines cannot be maintained such live apparatus or lines shall be isolated and earthed as a safety panel.

### 14. ROLLING STOCK

The operation of locomotives must conform to the requirements of the Act, General Safety Regulations 10 of the Act.

In particular:

(a) At no time may any person cross railway lines by passing between, underneath, or over any items of rolling stock.

(b) The following precautions must be taken when it becomes necessary to enter between items of rolling stock:

   - At no time may any part of a person’s body be between, or pass between, couplings of adjoining vehicles.
   - The couplings of adjoining stationary vehicles must be engaged, as far as is reasonably practicable.
   - Vehicles on either side of the work must be firmly secured against movement, by the use of sprags or brakes, where necessary.
   - All means of motive power, such as the locomotive or capstan rope, must be withdrawn or detached from the train and thereafter the locomotive driver or capstan operator must act only on the signals given by the shunter or other person who is in charge of the work.
   - Precautions must be taken to prevent the approach of traffic by switching points, and the use of red flags or red lamps as warning signs.

(c) The points giving access to a line must be set to prevent movements to that line while loading or unloading vehicles. Red flags or red lamps must be placed in suitable positions near the points to warn approaching traffic.

(d) Where possible, sidings under repair must be physically isolated by rendering access switch points inoperative and attaching a prohibitory sign to switch levers. Red flags or red lamps must be fixed at a suitable distance from the place of work in all cases.
(e) Where it is not possible to render the access switch points inoperative, a suitable derailer must be fitted where appropriate.

(f) No person may ride on any rolling stock, except within the confines of such vehicles as are safe for the transport of persons, and with the knowledge of the driver.

(g) No person may climb, ride, or work on the roof of rolling stock, or on top of any load or equipment carried on rolling stock, under overhead traction lines. When a locomotive is left unattended, the controlling gear must be locked in the off position, the brakes applied, and the brake control locked in the on position.

(h) Barriers or railings provided adjacent to any railway line must at all times be maintained in proper condition.

15. MECHANICAL PLANT

Regulations for work on mechanical plant.

15.1 GENERAL SAFETY PRECAUTIONS

(a) All affected plant must be isolated and a permit to work must be issued before work commences, except for activities carried out under section 15.2a.

(b) Double isolations must be applied where possible. A non-return valve must not be considered a point of isolation, except where it is of the screw-down type.

(c) When it is essential for work to be carried out where a non-return valve is the only point of isolation and it is impractical to shut down the plant, an approved local procedure must be developed before such work is allowed. This procedure must incorporate a risk assessment and stipulate the dangers, hazards, risks and precautions that are to be taken in order to ensure the safety of workers, such as:

- ensuring that the system is not charged with a substance which contains latent energy;
- ensuring that the maximum system pressure is less than 600 Kpa;
- inspection by the appointed person and the responsible person to ensure that the non-return valve does not leak;
- the correct procedure for de-pressurisation of that particular section of plant;
- the necessary precautions to ensure that positive system pressure is maintained on the downstream side of the non-return valve;
- the insertion of a blank flange or spade between the opening and the non-return valve if practicable;
- continuous supervision of the work by the responsible person;
- the protective clothing that must be worn.

(d) Gratings or covers over all trenches, bunkers or sumps must be maintained in good condition and kept in position at all times. If removal of these are required for any reason, the opening must be physically barricaded off with scaffold piping or a similar construction method for the period during which the gratings or covers are removed. Barrier tape may not be used for this application. Gratings or covers must be replaced as soon as the work has been completed.

CONTROLLED DISCLOSURE

When downloaded from the EDS database, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.
(e) When work must be carried out in an elevated position and there is any likelihood of danger from falling objects, the danger area must be clearly demarcated and warning signs must be displayed conspicuously (clearly visible).

15.2 PRESSURE EQUIPMENT SUCH AS BUT NOT LIMITED TO VESSELS UNDER PRESSURE, BOILER PRESSURE PARTS AND PRESSURISED SYSTEMS

(a) A permit to work is not required for floating of safety valves, tightening of internally seated access doors and caps provided that a risk assessment has been done.

(b) A permit to work is required for work on any vessel that normally operates under pressure. The permit to work must not be issued until the plant has been isolated, brought to atmospheric pressure, and drained, and cooled and ventilated and environmental certificate has been issued. (Environmental certificate: see example appendix 9). At least one drain and vent must be locked in the open position.

(c) For pipes and vessels where no draining facilities are available, the necessary drainage and/or reduction to atmospheric pressure required by section (15.2 b) may be carried out by slackening the flange bolts and partial opening of the joint, provided that:
   • The drainage and or reduction to atmospheric pressure must be done according to a local procedure.
   • The appointed person remains responsible for the drainage and/or reduction to atmospheric pressure.
   • The appointed person has discussed the nature and danger of the process with the responsible person and they both consider the procedure to be safe.
   • The responsible person has verified those isolations already affected will allow depressurisation safely.

(d) Where there is no means of safe isolation Freeze Plugging or other similar methods may be used providing the process is covered by an approved local procedure, provided that:
   • The appointed person remains responsible for the isolations and/or reduction to atmospheric pressure.
   • The appointed person has discussed the nature and danger of the process with the responsible person and they consider the procedure to be safe.

(e) A local site specific procedure must be developed and a sanction for test issued when statutory and non-statutory pressure tests are to be carried out. Note: section (9.6a) is not applicable in this instance.

15.3 BOILER PLANT OTHER THAN PRESSURE PARTS.

(a) No person may enter combustion chambers, ash hoppers, submersible scraper conveyors or boiler passes until: (1) It has been isolated, cooled, ventilated and an Environmental Certificate issued (appendix 9). (2). Cleared of all dangerous gases, ash build-up, clinkers removed and a Gas Test Certificate issued (appendix 2). (3).Boiler, Ash hopper Coal Silo Safe Entry Certificate issued (appendix 8). (4) A local procedure developed that describes the safe work practises to be used for the work to be undertaken and a risk assessment done. (5). A permit to work issued. The requirements under section (15.2 b, 15.5a) and (15.13) shall also be adhered to.
(b) The thermal requirements as per the Environmental Regulations for Workplaces (Thermal requirements 2 of the Act) shall apply. A local procedure describing the thermal requirements for access to heat stress and cold stress areas shall be developed.

(c) No internal work on any item of pulverised-fuel plant on a steaming boiler may commence until the plant has been isolated, cooled, ventilated, and certified clear of all dangerous gases, and a permit to work has been issued. Certificates as per section (15.3 a) shall be applicable.

(d) The changing of burner impellers or core-air tubes on a steaming boiler is considered a dangerous practice. If it is essential for this to be done on load, it may only be carried out by a skilled person, under the direct supervision of a responsible person once a risk assessment has been carried out and authorised by the PSM or his delegate. All persons involved must wear suitable protective equipment. (It is advisable that a local procedure be developed for this type of work).

(e) Work may not commence until the boiler and turbine controls have been immobilised and the boiler furnace pressure is stable and negative and a permit to work stating the precautions taken has been issued as per risk assessment.

15.4 BUNKERS AND SIMILAR CONTAINERS

For the purpose of this regulation, ‘bunker’ also means a silo, staith, ash hopper or similar container:

(a) Entry into bunkers, irrespective of the purpose, shall only be allowed after a permit to work has been issued.

(b) The following provisions will apply to such approved entry:

- Where access is from the top of the bunker the person entering the bunker must wear a safety harness. The rescue line or lines of which must be properly secured and kept taut as vertically as possible above the place of work, by one or more other person(s), who must remain outside the bunker and be dedicated to this task during the whole period the person is in the bunker.

- Where the bunker is designed for bottom access the site must provide a local procedure for removing all hang-ups. After all hang-ups have been removed and certified (Boiler, Ash hopper, coal, Silo’s Safe Entry Certificate: example appendix 8), the permit to work may be issued and work can proceed without a safety harness provided that the work is confined to the bottom of the bunker.

- Every person working in a bunker must be fully conversant with the work to be carried out and with the procedure for managing the safety harness and attached lines in such a way as to ensure safety while in the bunker.

- Adequate approved lighting must be provided.

(c) All points of material entry into the bunker must be guarded to prevent entry of unplanned material into the bunker.

(d) Undercutting of any material hang-up in a bunker is strictly forbidden while personnel are in the bottom of the bunker.

(e) Bunker that contains coal, or where explosive mixtures may be present, the requirements of 15.13 will apply.
(f) Where a staithe-lashing machine is used, requiring an on-board operator, the work must be carried out in accordance with a local procedure ensuring that, among other things, provision is made for:

- training of personnel;
- safe access;
- testing and monitoring of gas levels and WBGT index;
- availability of breathing apparatus;
- adequate and approved lighting;
- adequate communications;
- control of coal flow to and from the working area;
- protection against engulfment, Refer General Safety Regulation 7 of the Act.

(g) No person may enter a bunker containing radioactive measuring equipment until the radioactive source and/or listed electronic product has been isolated by a person authorised to do so in accordance with the regulations for radioactivity. (See section 11.2.4).

15.5 CONVEYING PLANT

(a) No maintenance, cleaning or scraping of belt conveyors, screw conveyors, chain conveyors, bucket elevators or conditioners may be allowed, unless the drive motors are isolated and a permit to work has been issued.

(b) The adjustment of pulleys and idlers in motion in order to align the belt is allowed, provided that the requirements of section 10 are complied with.

(c) It is permissible to clean a conveyor-belt structure or chute from the outside without a permit to work, provided that a local procedure for the cleaning has been developed. That the emergency trip mechanism has been operated and precautions have been taken to ensure that it will not be reset before the cleaning operation has been completed. As an additional precaution, the belts must be stopped sequentially by the operation of the successive emergency trip mechanisms and it must be proved that starting of the belt is inhibited by the trip mechanism.

15.6 DUST PLANT, ASH-HANDLING PLANT AND RESERVOIRS.

(a) Entry into ash sumps shall only be allowed after:

- All the supplies to level-detecting probes have been isolated.
- All possible points of inflow of substances have been isolated.
- Steps have been taken to ensure that no lifting equipment can traverse the sump opening concerned or, in the case of an open sump, the area where work must be carried out, unless the work is carried out under the direct supervision of a responsible person or authorised supervisor.
- An Environmental certificate is issued.
- A Gas test certificate is issued.
- A permit to work is issued.
(b) The user shall, wherever practicable, cause every mixing, agitating or similar machine to be so arranged that it cannot be set in motion unless the doors, covers, guards or other means are in position and that the machine will come to a stop. If any one of them is opened unlocked or removed or if the dangerous moving parts of the machine are exposed for any reason whatsoever.

(c) Provided that the provisions of this section shall not apply to doors, covers or guards which are bolted in position or to an inspection hatch which is provided for controlling a process while the machine is in operation. (Refer Driven Machine Regulation 11(2) of the Act).

(d) At each site local procedures pertaining to the shape, manner of construction, operation of pen-stocks or storage of water on ash dumps, ash dams and reservoirs must be developed and strictly adhered to.

(e) Electrostatic precipitators are live chambers as defined in the Operating Regulations for High-Voltage Systems (definition 1.44 in ORHVS book), and must be treated accordingly. (See section 12). A local procedure shall be available describing the isolations and access control system.

(f) Rodding of electrostatic precipitator dust hoppers is strictly prohibited, unless the field concerned has been isolated and earthed in accordance with a local procedure.

(g) No entry shall be allowed into an electrostatic precipitator, unless all the fields on that side have been isolated and earthed in accordance with a local procedure.

(h) For entrance into electrostatic precipitators, precipitator hoppers, or bag-filter chambers. (See section 12.2 and section 15.13).

(i) Special precautions in accordance with a local procedure must be taken to allow hot work on or in any flue gas conditioning, fabric bag filter plant. (See section 15.4f section 15.13 and section 15.14).

15.7 HYDROGEN PRODUCTION PLANT AND HYDROGEN-COOLED GENERATORS

(a) No person may smoke or perform hot work within the hydrogen control cabinet, or cubicle, or demarcated area, or any confined space near any hydrogen plant. (See section 15.14).

(b) Work in any hydrogen plant may only be carried out with approved insulated/spark-free tools.

(c) Before work commences on any hydrogen-cooled generator, which involves the opening up of any part of a casing or vessel, which normally contains hydrogen, the hydrogen supply must be disconnected from the hydrogen system and a section of pipe work removed. The casing or vessel must be cleared of hydrogen and completely purged by CO₂ (or other inert gas) which must, in turn, be replaced by air.

(d) The casing or vessel must then be tested, certified free of hydrogen (and purging gas), an environmental certificate, gas test certificate and permit to work issued in respect of the casing or vessel.

(e) Before work commences on any part of hydrogen production plant, that part must be isolated from all sources of hydrogen. All enclosures containing hydrogen must, be purged with CO₂ or other inert gas), opened to atmosphere and thoroughly ventilated. It must then be tested, certified free of hydrogen and purging gas, an environmental certificate, gas test certificate and permit to work must be issued.
The original of the environmental certificate and gas test certificate must be attached to the original of the permit to work.

15.8 CHEMICAL PLANT AND WATER-TREATMENT PLANT

(a) Personal protective equipment, clothing, and safe handling equipment must be provided and used where danger may arise from the use or handling of chemicals.

(b) Showers and eye-wash fountains must be provided adjacent to the area where chemical spills may occur. In addition, these must be maintained in an operational condition and tested before work commences.

(c) Entry into any container which contained dangerous chemical substances shall only be allowed after the conditions stipulated by an authorised person have been complied with, and a permit to work detailing these stipulations has been issued. The container/area must be certified free of any dangerous chemicals and or substances. (Refer Material Safety Data Sheet.).

(d) All chlorinating plant must be maintained in such a manner as to avoid leakage, and all buildings’ housing such plant must be effectively ventilated.

(e) Safety signs depicting normal and emergency procedures must be permanently posted at the entrances to such buildings.

(f) Approved detectors and breathing apparatus must be available at all places where chlorine gas is used.

(g) When work has to be carried out on a chlorinating plant, a permit to work must be issued in accordance with section (15.13d).

15.9 INTERNAL-COMBUSTION ENGINES (FIXED INSTALLATION)

(a) Special precautions must be taken to ensure that all exhaust gases are vented safely outside the work area.

(b) Before work commences on any engine, the fuel supply, starting equipment and associated driven machine must be isolated where reasonably practical and a permit to work issued.

15.10 COMPRESSED AIR, GAS, LIQUID, VAPOUR OR FUEL OIL VAPOUR OR FUEL OIL

(a) Before work commences on the internal parts of any plant containing, or operated by, compressed air, gas, liquid, vapour or fuel oil, the supply must be isolated and the fluid removed from the associated receivers and pipe work, where after, these must be ventilated and left open to atmosphere. It must then be certified clear of all dangerous gases and permit to work issued.

(b) In the case of fuel oil pipe work or storage tanks, the fuel oil must be completely removed using a detergent, the vapour or gasses purged using air and be certified clear of all dangerous gasses. An environmental certificate, gas test certificate, hot work approval document and a permit to work shall be issued, before any hot work can be considered. Refer to section (15.14). A local procedure must be in place to regulate this hot work. (Refer NFPA 30 Appendix: C4.5 to C4.10.)

(c) In the case of fuel gas the purging of pipe work with air is required before any work proceeds, unless the pipe work is 65mm nominal bore or greater nominal bore and 15 metres or greater in length, when purging with an inert gas is required. Purging lines
must be vented to the open air and purging conducted in accordance with an approved local procedure. This procedure must conform to NFPA 54; section 4.3 particular attention must be paid to tables 4.3.1 and 4.3.2.

15.11 LIFTS, ESCALATORS, LIFTING MACHINES, WORKSHOP AND MOBILE EQUIPMENT

(a) A local procedure and lockout system must be used when work has to be carried out on workshop or mobile equipment, unless the permit to work system is used.

(b) No unauthorised person may enter a lift motor room, escalator motor enclosure, or climb onto a crane rail, crane, telpher or other lifting machine without the knowledge of the machine operator.

(c) No unauthorised person may work on or near the wheel track of an overhead travelling crane, telpher, hoist, lift shaft or other lifting machine, or in any place where there is a possibility of being struck by the crane or equipment, unless effective measures have been taken to ensure that the machine does not come within five metres of that place.

(d) None of the moving parts of a hoist, lift, escalator or lifting machine may be dismantled, unless all parts of the hoist or lifting machine are so secured or supported as to remain stable.

(e) Before work is carried out on installed power-driven lifting machines, the power supply must be isolated and prohibitory signs attached to control points and a permit to work must be issued.

(f) Before work is carried out on installed passenger lifts, escalators or goods lifts, the power supply must be isolated and prohibitory signs attached to control points and lift doors.

(g) A risk assessment is to be carried out and if determined from this assessment, the shaft space, lift well or motor room enclosure is to be tested and certified clear of any potential dangerous gases. An environmental certificate and permit to work must thereafter be issued.

(h) Work on hoists, lifts, escalators and lifting machines may only be carried out by Competent Persons and or Authorised / Competent Service Providers.

15.12 HYDRO-ELECTRIC PLANT AND LARGE CIRCULATING-WATER SYSTEMS.

Refer to confined space section. (See section 15.13).

(a) No person may enter, nor may work be carried out in, any tunnel, pipeline, aqueduct, associated turbine or pump until:

- The tunnel, pipeline, aqueduct, associated turbine or pump has been isolated from all sources of water, drained, and vented to atmosphere.
- At least one drain and vent must be locked in the open position.
- Access doors as required are opened and locked in the open position.
- An environmental and a gas test certificate have been issued.
- An adequate supply of fresh air is present.
- Supplies of compressed air and chemical injections have been isolated where applicable.
• The power supplies to motors, which operate valves, turning gear, high-pressure oil pumps, intake gates or head-stocks have been isolated.

• All hand-operated mechanisms have been rendered inoperative and locked in this position. The associated driving or driven machine has been isolated where access can be gained to the impellers of pumps and turbines.

• **Prohibitory signs** have been affixed to all points of isolation.

• A **permit to work** has been issued.

(b) **Work** / inspection parties must consist of not less than two persons, wearing suitable **safety** equipment. Each working party must be accompanied by a **rescuer**.

(c) A suitable distance must be maintained between members of a **work/inspection party** and the **rescuer**, so as to ensure that:

• Assistance can be given or obtained, should a member of the party suffer a misadventure.

• Other members can be timeously warned of any **danger**.

(d) Before working parties may work the **appointed person** must arrange and personally ensure that all **dangerous** areas are barricaded off.

(e) On completion of all work the **appointed person** must inspect the entire system to ensure all personnel, tools, materials and debris have been removed before closing the access doors. (See section 15.12b).

15.13 **CONFINED SPACES SUCH AS VESSELS, MILLS, CULVERTS, FLUES, FURNACES, DUCTS, PITS, SEWERS, TUNNELS AND UNDERGROUND CHAMBERS. (REFER GENERAL SAFETY REGULATION 5 OF THE ACT)**

(a) At least one door or manhole giving access to each **confined space** must be provided with a means to lock such door or manhole in the open position. A **confined space warning sign** must also be attached next to such entrance of a **confined space** when entry into this area will be required.

(b) The door or manhole concerned must be locked in the open position and a confined space warning sign attached before any person is allowed to enter such **confined space**. The locking, or other preventative measure, must constitute an integral part of the **isolation** required before the **permit to work** is issued. Where such a door or manhole cover must be removed by a maintenance person, provisos similar to those stipulated under (section 15.2c and 7.8.1b) must apply.

(c) Before any door giving access to a **confined space** is closed, the person closing such door must ensure that there are no persons inside the confined space, and that all tools, equipment and debris have been removed.

(d) Where a **confined space** can be isolated and adequately ventilated, this must be done before the space is tested and **certified** clear of all **dangerous** gases and an **environmental certificate**, issued before any person is allowed to enter.

In addition:

• Adequate ventilation, gas monitoring and **WBGT index** monitoring (heat stress – cold stress) must be maintained while persons remain in the space.

• Only **approved** lighting and portable electrical tools shall be allowed, (Refer Electrical Machinery Regulation 10 of the Act. (See section 18).
• A permit to work must be issued.

(e) Where there is a possibility of dangerous substances being present in a confined space which cannot be effectively isolated and adequately ventilated, the following measures must be taken before any person is allowed to enter that space:

• All practical steps must be taken to prevent the ingress of dangerous substances.
• Every person who enters the confined space must wear approved breathing apparatus.
• Every person who enters the confined space must wear a safety harness to which a rescue line is attached.
• A rescuer 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(s) attached to the safety harness(es), and must assist in the removal of any person from the confined space. An additional set of breathing apparatus must be available for the use of the rescuer.
• Adequate steps must be taken to ensure that all persons wearing breathing apparatus are withdrawn from the confined space before the end of the specified working duration of the breathing apparatus.
• A permit to work must be issued.

(f) Where it is not possible to reduce the WBGT index to be below 30 for manual work, access shall only be allowed, provided that relevant training has been done and a local procedure is developed that explains in detail the access control and safety precautions as described in the environmental regulations. (Refer Environmental Regulation 2(4) of the Act).

(g) If the original scope of work changes, a new permit to work must be issued, or if hazardous substances are used, the risk assessment, pre-work checklist, the environmental certificate, gas test certificate shall be re-evaluated and re-issued as required.

15.14 HOT WORK

Refer General Safety Regulation 9 of the Act.

(a) Hot work monitors must receive relevant hot work monitoring training. Requirements are applicable at places, other than workplaces, which have been specifically designated and equipped for such hot work. The risk assessment will indicate whether or not a permit to work shall be required. A hot work approval document shall be required for all hot work. (See appendix 5, 6 and 7). Refer to SANS 10287; NFPA 51B.

(b) No employer or user of machinery shall require or allow hot work to be undertaken, unless:

• The workplace is effectively partitioned off and where not practicable, all other persons exposed to the dangers and hazards are warned and provided with suitable protective equipment.
• Each site must prepare a formal hot work procedure, which at least achieves the minimum requirements as laid down in these regulations.
(c) When work must be carried out that involves hot work a request must be made by the responsible person to the site hot work monitor for a hot work approval, wherein the precautions must be stated as to how the area is to be prepared, controlled and monitored before, during and after the hot work conditions. The work must be carried out in accordance with a local procedure.

(d) Before work/hot work commences in or on a confined space which contains/has contained oil, gas or any other flammable substance (i.e. an explosive atmosphere), it must be ensured that:

- A request has been made by the responsible person to the station hot work monitor for a hot work approval, where in it must be stated how the area is to be prepared, controlled and monitored before, during and after the hot work.
- All requirements relating to confined space shall be adhered to. (See section 15.13).

16. SIGNS

16.1 PROHIBITORY SIGN

(a) Only approved prohibitory signs may be used at points of isolation and all persons must obey them at all times. (See appendix 12).

(b) Prohibitory signs must be affixed to all points of isolation and where possible all remote control stations of plant under a permit to work, but may only be displayed for the duration of the permit to work.

(c) Prohibitory signs must be displayed conspicuously (clearly visible), and affixed (attached) in such a way as to prevent accidental removal while on display.

16.2 WARNING SIGN (DANGER)

(a) Only approved warning signs may be used to warn against danger. (See appendix 13).

(b) Warning signs must be displayed for the duration of a dangerous condition.

(c) Warning signs must be displayed conspicuously (clearly visible), and affixed (attached) in such a way as to prevent accidental removal while on display.

16.3 RADIATION-HAZARD WARNING SIGN

(a) Only approved radiation-hazard warning signs may be used to warn against radiation hazards. (See appendix 18).

(b) The approved sign must be permanently affixed to all equipment or areas containing radioactive sources.

(c) The temporary posting of radiation-hazard warning signs during industrial x-ray activities must be done in accordance with the requirements stated in the Generation Standard, 238-40 (GGS 1300) – Radiation protection safety requirements for industrial radiography.
16.4  CONFINED SPACE WARNING SIGN

(a) Only approved confined space warning signs may be used to warn workers. (See appendix 14).

(b) The approved sign must be affixed next to all the lockable entrances of confined spaces when entry into these areas will be required under a permit to work.

(c) If an area becomes a confined space due to the type of work carried out inside it, a confined space warning sign must be affixed to all entrances to that area.

16.5  FIRE PROTECTION EQUIPMENT

(a) All persons must evacuate an enclosed space immediately after a fire has been reported in that space, or after the discharge of any extinguishing gases.

(b) After the operation of automatic extinguishing equipment the area must be thoroughly ventilated before any person is allowed to enter that area.

(c) Suitable breathing apparatus must be used if entry is necessary before all dangerous gases have been cleared away.

(d) The doors to any enclosure protected by automatic CO₂ (or any other chemical) extinguishing equipment must be kept closed, except when work, cleaning or inspection is being carried out inside the enclosure.

(e) Before work, cleaning or inspection is carried out in an enclosure protected by automatic extinguishing equipment (with the exception of sprinkler systems), the automatic control must be rendered inoperative, the equipment left on hand control, and a prohibitory sign attached. A local procedure for entry is to be developed.

(f) The automatic control must be restored immediately after the persons engaged in the work or inspection, have withdrawn from the protected enclosure.

(g) The date and time of the disabling and restoration of automatic extinguishing equipment must be logged in the appropriate appointed person’s logbook.

(h) Water base spray systems must be isolated (where applicable) and form part of the isolations for a permit to work.

(i) Any isolation performed on any part of a fire system constitutes impairment to the system. Approval must be obtained prior to any impairment being effected. This approval process must be regulated by an approved local procedure. Refer 36-690 (GGS-0350) - Generation Fire Risk Management, ESKADABE8 – Fire Risk Management, Administrative Controls and 36-962 (GGP 1184) Generation Major Plant Risk Reporting. Refer to NFPA

17.  DECOMMISSIONING ANDDECLASSIFICATION OF PLANT

(a) Plant can be considered decommissioned when it is permanently shut down, isolated from all sources of energy and as far as possible all fluids, gases and substances drained and the systems decontaminated. The plant is still under the control of the permit to work system and therefore, if work is to be done on the plant a permit to work must be issued.

(b) Decommissioned plant must be identified by signage marked "DECOMMISSIONED" at all points of isolation and on the main plant components.
(c) In order to declassify decommissioned plant all sources of energy must be permanently severed by the removal of sections of cabling / wiring or pipe work/ducting to make it impossible to provide an energy source to the plant.

(d) In addition all confined spaces must be permanently opened by the removal of doors or covers and decontaminated.

(e) All hazardous substances have been removed from the plant as far as reasonable.

(f) When all requirements for declassification are satisfied, the declassification certificate for that particular plant area must be completed and signed by the Power Station Manager. The relevant government authority must be informed if required.

(g) The plant safety regulations will then not apply to the plant area defined in the declassification certificate.

(h) Declassified plant must be identified by signage marked "DECLASSIFIED" at all points where energy sources are severed and on the main plant components.

(i) All asbestos and other hazardous substances and materials must be clearly identified, on the plant and on the certificate.

18. THE USE OF PORTABLE ELECTRICAL EQUIPMENT AND TEMPORARY ELECTRICAL SUPPLY

(a) All portable electrical equipment to be used during the work must be inspected prior to commencement of work. No cords and extensions that have open wires, frayed covering on wires, cable joints, cracked plug-tops, loose pins, visible damage or faults in any way shall be used. Faulty tools, cords or extensions must be withdrawn from service immediately.

(b) No person shall use portable electric equipment unless it is connected to a source of electrical energy incorporating an earth leakage protection device. This protection must protect all the connected phases and the neutral when the portable electric equipment is used.

(c) All portable electrical equipment that is not double insulated must have an earth connection from the conductive enclosure that is electrically connected to the point of supply (for example, the metal casing of a welding machine must be solidly earthed when in use).

(d) A Certificate of Compliance (Refer Electrical Installation Regulation of the Act) accompanies all temporary electrical installations and their associated distribution boards.

(e) The power supply to temporary electrical installations must have a clearance certificate before being energised.

19. BATTERIES AND BATTERY ROOM

Note: Do not smoke or create sparks, arcs or flames in battery areas. If a device is used that produces significant heat or a spark, gas monitoring should be done during the work activity to ensure and explosive atmosphere does not develop:

(a) Wear appropriate Personal Protective Clothing, Personal Protective Equipment and chemical protection as follows, (See Generation Policy GLP 36-941 and Standard GST 36-942):
rubber latex type gloves (Electrically rated and Acid resistant);
chemical apron;
inherently flame resistant clothing for all electrical work;
hard hat with arc face shield;
safety glasses;
safety shoes;
class 00 or better voltage rated rubber gloves with leather protectors should be worn when connecting / torquing battery terminals / links or connecting up resistive load banks and cables;
use approved spark free and insulated tools or insulating sleeves over non-insulated tools;
ensure that spill kits are available.

20. DEVELOPMENT TEAM

The following people were involved in the development of this document:

- Stuart Smit;
- Alfie Axel;
- Nick Visagie;
- Gawie Botha;
- Hendrick Pieters;
- Robbie Venter.

21. REVIEW

This document has been seen and accepted by representatives from Power Stations, Corporate Occupational Health and Safety and the Eskom Legal Department.

22. JUSTIFICATION FOR REVISION

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<th>Date</th>
<th>Rev.</th>
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<td>December 2012</td>
<td>36-681</td>
<td>S.R. Smit</td>
<td>6.2.16 - Confined space warning signs to be attached when entry is required only under a permit to work. 6.2.40 Hot work monitor training revised to include “UN</td>
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23. APPENDICES

Appendix 1 - Key Safe Schematic Drawing
Appendix 2 - Gas Test Certificate
Appendix 3 - Declassification Certificate.
Appendix 4 - Pre-Work Check List
Appendix 6 - Hot Work Approval Part 2.
Appendix 7 - Hot Work Approval Part 3.
Appendix 8 - Ash Hopper, Coal Silo Safe Entry Certificate.
Appendix 9 - Environmental Certificate
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Appendix 12 - Prohibitory Sign
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Appendix 14 - Confined Space Sign
Appendix 15 - Limited Access Register (LAR)
Appendix 16 - Permit To Work form
Appendix 17 - Sanction For Test form.
Appendix 18 - Radiation Warning Sign.
Appendix 19 - Manual Permit To Work
### Key Safe Schematic Drawing Example

- **Drilled bar**: securely attached to solid permanent wall plate, or frame.
- **Dimensions**: are in millimetres
- **Material**: steel
- **Holes**: clearance size for safety lock shackle and operating lock Shackle.

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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>175 ± 25</td>
<td>Min 1 hole diameter</td>
<td>Min 10 max 20</td>
<td></td>
</tr>
<tr>
<td>Min 100</td>
<td>Min of</td>
<td>Operating lock position</td>
<td></td>
</tr>
<tr>
<td>Min 1 hole diameter</td>
<td>Min 1 hole diameter</td>
<td>First safety lock</td>
<td></td>
</tr>
<tr>
<td>Min 1 hole diameter</td>
<td>Min 1 hole diameter</td>
<td>Additional safety locks</td>
<td></td>
</tr>
<tr>
<td>Min 1 hole diameter</td>
<td>Min 1 hole diameter</td>
<td>Key-ring positions</td>
<td></td>
</tr>
</tbody>
</table>

---

**CONTROLLED DISCLOSURE**

When downloaded from the EDS database, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.
PLANT SAFETY REGULATIONS

GAS TEST CERTIFICATE EXAMPLE

<table>
<thead>
<tr>
<th>Substance.</th>
<th>Concentration.</th>
<th>Safe limits.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide (CO)</td>
<td></td>
<td>&lt;50 ppm</td>
</tr>
<tr>
<td>Carbon Dioxide (CO₂)</td>
<td></td>
<td>&lt;0.5%/500 ppm</td>
</tr>
<tr>
<td>Ammonia NH₃</td>
<td></td>
<td>25 ppm</td>
</tr>
<tr>
<td>Lower Explosion Level Gases LEL</td>
<td></td>
<td>25.0%</td>
</tr>
<tr>
<td>Oxygen (O₂) % in air</td>
<td></td>
<td>&gt;=20.0&lt;=21.0</td>
</tr>
<tr>
<td>Hydrogen Sulphide H₂S</td>
<td></td>
<td>10 ppm</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Safety precautions required:

Safety equipment provided:

Continuous gas monitoring required:

The gas test must be repeated:

Entry into is restricted*/not restricted* and must only be allowed with the following precautions: (Delete the word not applicable)

I declare that the initial conditions are safe to carry out work as stipulated on the permit to work.

NAME. SIGNATURE. DATE TIME.

or

I declare that the initial conditions are not safe and therefore work as stipulated on the permit to work may not begin.

DATE TIME.
CERTIFICATE

I, the undersigned, hereby declare that the plant area specified below has been declassified in terms of the Plant Safety Regulations.

Energy sources severed:

<table>
<thead>
<tr>
<th>Energy source</th>
<th>Method of severance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Systems drained/ decontaminated:

<table>
<thead>
<tr>
<th>System</th>
<th>Drainage / decontamination carried out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Confined spaces opened:

<table>
<thead>
<tr>
<th>Confined space</th>
<th>Doors / covers removed, decontamination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Name: ................... Signature: ................... Date: .......... Time: .............
Visit the workplace: Apply STAR and perform 3-Way Communication. Review and update Risk Assessment Form as necessary.

<table>
<thead>
<tr>
<th>Preparation.</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there positive identification of plant to be worked on?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has drainage been completed and pressure at zero?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are valves locked open?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are valves locked closed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there Prohibitory signs at the points of Isolation?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are pipes / lines disconnected / blank flange inserted as necessary?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are systems purged with air/steam/inert gas/detergent as applicable?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the workplace free of toxic material/hazardous Substances?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the workplace free of flammable material (Hot Work Approval)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the fresh air available (Natural or forced)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is a Gas test certificate required?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are all radioactive sources isolated?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is an environnmental certificate required?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are all electrical isolations effected as per the permit?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there adequate and approved lighting at the work site?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can pollution occur?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other there other permits on same plant?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If “Yes” can work continue safely considering these permits on the same system?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remember to apply “Test before Touch” principle.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you and or your team equipped to “Hook up at heights”?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you reviewed the Flash hazard assessment for the work area as applicable?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any other precautions that must be maintained:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If applicable, have all Workers including you as the Responsible Person / Authorised Supervisor signed onto the Workers Register?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Responsible Person / Authorised Supervisor:

Name: ..........................  Signature ...............................  Date:..........................

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HOT WORK APPROVAL

BEFORE INITIATING HOT WORK, CAN THIS JOB BE AVOIDED?
IS THERE A SAFER WAY?

This HOT WORK APPROVAL is required for any temporary operation involving open flames or producing heat and/or sparks. This includes but is not limited to: Brazing, Cutting, Grinding, Soldering, Torch Applied Roofing and Welding.

INSTRUCTIONS

1. Hot Work Monitor
   A. Verify precautions listed at right (or do not proceed with the work)
   B. Complete and retain Part 1
   C. Issue Part 2 to person doing job.

HOT WORK BEING DONE BY
□ Employee □ Contractor

DATE ___________ JOB NUMBER ___________

LOCATION/BUILDING AND FLOOR ___________

NATURE OF JOB ___________

NAME OF PERSON DOING HOT WORK ___________

I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.

SIGNED ___________

APPROVAL EXPRES ___________ DATE ___________ TIME ___________ AM □ PM □

NOTE: EMERGENCY NOTIFICATION ON BACK OF FORM, USE AS APPROPRIATE FOR YOUR FACILITY.
## HOT WORK APPROVAL EXAMPLE

### WARNING!

**HOT WORK IN PROGRESS WATCH FOR FIRE!**

**PART 2**

### INSTRUCTIONS

1. Person doing Hot Work: Indicate time started and post approval at Hot Work location. After Hot Work, indicate time completed and leave approval posted for Hot Work monitor.

2. **Hot Work monitor**: Prior to leaving area, do final inspection, sign, leave approval posted and notify R P

3. Monitor: After 4 hours, do final inspection, sign and return to R P

### HOT WORK BEING DONE BY

- **EMPLOYEE**
- **CONTRACTOR**

### DATE

### JOB NUMBER

### LOCATION/BUILDING AND FLOOR

### NATURE OF JOB

### NAME OF PERSON DOING HOT WORK

I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.

**SIGNED** Hot Work Monitor

### TIME STARTED

### TIME FINISHED

### PERMIT EXPIRES

### DATE

### TIME

**AM**

**PM**

**0446**

---

**Hot Work monitor** **SIGNOFF**:

Work area and all adjacent areas to which sparks and heat might have spread were inspected during the work period and were found fire safe.

**Signed:**

### FINAL CHECKUP

Work area was monitored for 4 hours following Hot Work and found fire safe.

**Signed:**

---

### REQUIRED PRECAUTIONS CHECKLIST

- Available sprinklers, hose streams and extinguishers are in service/operable.
- Hot Work equipment in good repair.

### REQUIREMENTS WITHIN 35 ft (11m) of work

- Flammable liquids, dust, lint and oily deposits removed.
- Explosive atmosphere in area eliminated.
- Floors swept clean.
- Combustible floors wet down, covered with damp sand or fire-resistant sheets.
- Remove other combustibles where possible. Otherwise protect with fire-resistant tarps or metal shields.
- All wall and floor openings covered.
- Fire-resistant tarps or metal suspended beneath work.
- Protect or shut down ducts and conveyors that might carry sparks to distant combustibles.

### Work on walls, ceilings or roofs

- Construction is noncombustible and without combustible covering or insulation.
- Combustibles on other side of walls, ceilings or roofs are moved away.

### Work on enclosed equipment

- Enclosed equipment cleaned of all combustibles.
- Containers purged of flammable liquids/vapors.
- Pressurized vessels, piping and equipment removed from service, isolated and vented.

### Hot Work monitor/Hot Work area monitoring

- **Hot Work monitor** will be provided during and for 80 minutes after work, including any coffee or lunch breaks.
- **Hot Work monitor** is supplied with suitable extinguishers, and where practical, a charged small hose.
- **Hot Work monitor** is trained in use of equipment and in sounding alarm.
- **Hot Work monitor** may be required in adjoining areas, above and below.

### Other Precautions Taken:

---

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## Hot Work Approval Example

### In Case of Emergency:

**Call:**

**At:**

---

**WARNING!**

HOT WORK IN PROGRESS WATCH FOR FIRE!

---

**WARNING!**
### PLANT SAFETY REGULATIONS BOILER ASH HOPPER, COAL SILO’S SAFE ENTRY CERTIFICATE EXAMPLE

<table>
<thead>
<tr>
<th>Permit No:</th>
<th>Area to be inspected (This is an example)</th>
<th>Safe to enter</th>
<th>Comments</th>
<th>Inspected by:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Safe to enter</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>1. Boiler</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Ash Hopper</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Coal Silo</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Other applicable plant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
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<tr>
<td>6.</td>
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<tr>
<td>7.</td>
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<tr>
<td>8.</td>
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<tr>
<td>9.</td>
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<tr>
<td>10.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Any clinker formation visible.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Any other ash build-up observed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Any coal hang-ups</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Permit to work** number: ………………………………………………………………………

**Environmental certificate** Number: ……………………………………………………………

**Location of work**: ………………………………………………………………………………………

**Equipment used**: ………………………………………………………………………………………

**Instrument serial number**: …………………………………………………………………………………

**Calibration authority**: ………………………………………………………………………………………

**Calibration certificate** number: ………………………………………………………………………………

**Calibration due date**: ………………………………………………………………………………………

**Before calibration**: ……………………………………………………………………………………………

**After calibration**: ……………………………………………………………………………………………

<table>
<thead>
<tr>
<th>Wet Bulb Temperature</th>
<th>Dry Bulb Temperature</th>
<th>Globe Temperature</th>
<th>Wet Bulb Globe Temperature Index</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;32.5 °C</td>
<td>&lt;37.0 °C</td>
<td>&lt;35.0 °C</td>
<td>&lt;30</td>
<td></td>
</tr>
</tbody>
</table>

**NB**: When assessing heat levels, the following should also be looked at.

**Poor Illumination**:  
Comments & Precautionary measures:

**Poor Ventilation**:  
Comments & Precautionary measures:

**Visible dust**:  
Comments & Precautionary measures:

**Ergonomics**:  
Comments & Precautionary measures:

**Certified person**

Name: ………………………….. Signature: ………………………….. Date: …………………………..
**PLANT SAFETY REGULATIONS**  
**WORKERS REGISTER EXAMPLE**

---

**PLANT SAFETY REGULATIONS**  
**WORKERS REGISTER.**

---

**RESPONSIBLE PERSON / AUTHORISED SUPERVISOR** - I hereby declare that permit No: …………………. associated with plant………………………… has been shown to all *Workers / Authorised Supervisor* reflected on the register below. I also declare that the permit, special conditions, hazards requiring continuous assessment and required PPE or equipment has been discussed and shown to all concerned, as well as the isolation boundaries of the permit, specific work area and nature of the work to be undertaken. Further to this I have explained that if an unsafe situation may arise either before or during the execution of work, it must be brought to my attention. I have also highlighted the fact that all Workers have the right for any identified unsafe situation to be corrected before commencing or recommencing work.

<table>
<thead>
<tr>
<th>NAME</th>
<th>SIGN</th>
<th>TIME</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WORKERS / AUTHORISED SUPERVISOR.** Names of persons briefed by the *Responsible Person / Authorised Supervisor* for the work at hand. See section 7.15 (b) and 7.15 (h) of the regulations.

<table>
<thead>
<tr>
<th>NAME</th>
<th>UNIQUE / ID No.</th>
<th>TIME &amp; DATE BRIEFED</th>
<th>SIGNATURE</th>
<th>TIME &amp; DATE WITHDRAWN</th>
<th>SIGNATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**RESPONSIBLE PERSON / AUTHORISED SUPERVISOR WITHDRAWL.** I hereby declare that the *Workers / Authorised Supervisor (if applicable)* involved in this work has been withdrawn and informed that it is no longer safe to work.

<table>
<thead>
<tr>
<th>NAME</th>
<th>SIGN</th>
<th>DATE</th>
<th>TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(*delete that not applicable)*
### PLANT SAFETY REGULATIONS

#### RISK ASSESSMENT FORM EXAMPLE (2/2)

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Hazard</th>
<th>Hazard</th>
<th>Hazard</th>
<th>Hazard</th>
<th>Hazard</th>
<th>Hazard</th>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft</td>
<td>Dangers</td>
<td>Hazard</td>
<td>Incident</td>
<td>Lose</td>
<td>Cables</td>
<td>Manual</td>
<td>Manhole</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airplane</td>
<td>Danger</td>
<td>Hazard</td>
<td>Incident</td>
<td>Lose</td>
<td>Cables</td>
<td>Manual</td>
<td>Manhole</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aircraft</td>
<td>Dangers</td>
<td>Hazard</td>
<td>Incident</td>
<td>Lose</td>
<td>Cables</td>
<td>Manual</td>
<td>Manhole</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airplane</td>
<td>Danger</td>
<td>Hazard</td>
<td>Incident</td>
<td>Lose</td>
<td>Cables</td>
<td>Manual</td>
<td>Manhole</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Continuous Risk Assessment Record**

<table>
<thead>
<tr>
<th>Date Re-Assessed</th>
<th>Signature</th>
<th>Date Re-Assessed</th>
<th>Signature</th>
<th>Date Re-Assessed</th>
<th>Signature</th>
<th>Date Re-Assessed</th>
<th>Signature</th>
</tr>
</thead>
</table>

**Impact Scale**

- Low: Immediate impact, no significant effects to personnel or equipment.
- Moderate: Significant impact, potential for personnel or equipment damage.
- High: Extreme impact, risk of severe injury or equipment failure.

**Likelihood Scale**

- Low: Occurs rarely, minimal risk.
- Moderate: Occurs occasionally, moderate risk.
- High: Occurs frequently, high risk.

**Risk Rating**

- L = Low: Controls are acceptable. Work can start.
- M = Medium: Controls are insufficient. Work should not be attempted.
- H = High: Controls are unacceptable. Work cannot start.

**Key for decision making**

- Compiling: RP
- Reviewed: APS
- Approved by: APS

**Compiled by (RP)**

Name: [Name]

Signature: [Signature]

Date: [Date]
SHAPE: Circular

COLOUR: White with red border and oblique diametrical line

SIZE: Standard sizes to suit application

MATERIAL: To suit application

(For further details see SANS specification N° 1186)
SHAPE: Triangular

COLOUR: Yellow centre with black border and black exclamation mark

SIZE: Standard sizes to suit application

MATERIAL: To suit application

(For further details see SANS specification № 1186)
PLANT SAFETY REGULATIONS
CONFINED SPACE
WARNING SIGN EXAMPLE

SHAPE: Triangular

COLOUR: Yellow centre with black border and black pictogram

SIZE: Standard sizes to suit application

MATERIAL: To suit application

(For further details see SANS specification No 1186)
Activities under the LAR procedure must satisfy the following criteria:
- There is no risk of trip.
- There is no personal danger.
- No plant isolation is required.
- Activity duration is less than 12 hours.
- Activity must be performed by a skilled person.

<table>
<thead>
<tr>
<th>ACTIVITY STARTED</th>
<th>ACTIVITY COMPLETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE</td>
<td>SYSTEM</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### PTW Form Example

**APPLICATION**

<table>
<thead>
<tr>
<th>UNIT</th>
<th>PLANT CODE</th>
<th>PLANT REQUIRING ISOLATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**HAZARDS**

- Work to be Carried Out
- Cross References

**PPE**

- PTW No.
- Environmental Cert No.
- Site Test Cert No.
- Unit Work Approval Date
- Risk Assessment No.
- Site Entity Certificate
- Worksite Register No.

**ISOLATIONS / INSTRUCTIONS**

<table>
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<tr>
<th>PLANT CODE</th>
<th>COMPONENT</th>
<th>INSTRUCTIONS</th>
<th>REQ</th>
<th>LOCATION</th>
<th>STATUS</th>
<th>KEY</th>
<th>OPS</th>
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**SIGNATURES**

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<th>PERMIT ISSUED</th>
<th>CLEARANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>T</td>
<td>D</td>
</tr>
</tbody>
</table>

- Application Completed By
- Responsible Person
- Signature

**RESPONSIBLE PERSON**

- Signature
- Key Safe No.
- Safety Lock No.

**RECOMMENDATION**

- D
- T

**PLANT SHUTDOWN AGREED**

- Responsible Person
- Signature
- Recommending Completed

**ISOLATIONS EFFECTED**

- D
- T

**TARGET COMPLETION**

- Recommend Dept
- Signature

**NOTES AND ABREVIATIONS OVERLEAF**

**SIGNATURE**

- D
- T

---

**CONTROLLED DISCLOSURE**

When downloaded from the EDS database, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database.
SANCTION FOR TEST

No……………………………………

Plant covered by sanction for test…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………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## SANCTION FOR TEST (continued)

The signal for starting will constitute the following, or in the case of a verbal instruction, have the following wording:

…………………………………………………………………………………………… …………………………………………………………
…………………………………………………………………………………………… ………………………………………………………..

The signal for stopping will constitute the following, or in the case of a verbal instruction, have the following wording:

…………………………………………………………………………………………… …………………………………………………………
…………………………………………………………………………………………… ………………………………………………………..

The signal for requesting isolation will constitute the following, or in the case of a verbal request, have the following wording:

…………………………………………………………………………………………… …………………………………………………………
…………………………………………………………………………………………… ………………………………………………………..

The signal for confirming that the isolation has been effected will constitute the following, or in the case of a verbal confirmation, have the following wording:

…………………………………………………………………………………………… ………………………………………………………….
………………………………………………………………………… ………………………………………………….

Following isolation, an instruction to start the plant will be taken to imply an instruction to de-isolate the plant as well.

| Appointed person: Name: ………………………………… | Sign: …………………………………………………… |
| Date:……………………………… | Time:……………………………… |

| Responsible person: Name: ………………………………… | Sign: …………………………………………………… |
| Date:……………………………… | Time:……………………………… |

### Cancellation

We the undersigned hereby declare that the above test has been satisfactorily completed and respectively clear and revoke this sanction for test.

| Responsible person: Name: ………………………………… | Sign: …………………………………………………… |
| Date:……………………………… | Time:……………………………… |

| Appointed person: Name: ………………………………… | Sign: …………………………………………………… |
| Date:……………………………… | Time:……………………………… |
SHAPE: Triangular

COLOUR: Yellow centre with black border and black pictogram

SIZE: Standard sizes to suit application

MATERIAL: ABS Plastic

(For further details see SANS specification N° 1186)
PLANT SAFETY REGULATIONS MANUAL PERMIT TO WORK EXAMPLE

On a site where the computerised permit to work system is not installed, or if the system fails for any reason, permits to work must be issued manually. Manual permit to work issue must be done by manually completing the standard computerised documents; these notes are to provide guidance to enable the documents to be correctly completed.

- APPLICATION (top section of the form)
  - The Responsible Person (RP) or the person acting on his behalf (applicant) must complete those sections, which are applicable. See section 7.7.1

- SIGNATURES (bottom section of the form)
  - The RP or the applicant must then print his name and the date and time at “application completed by” under “permit application”. If the RP is the applicant he must also print his name and sign as the RP

- PERMIT TO WORK (middle section of the form)
  - The Appointed Person (AP) must carry out the necessary isolations and affix prohibitory signs. The AP must then list all the points of isolation on the PTW form and complete all columns including, REQ, LOCATION, STATUS, KEY, OPS. Ensuring that the plant as requested is safe to work on. See section 7.7.

- REQ= REQUIRED- mark this field when the isolation points are required by the RP.
- LOCATION- this is the plant code of the isolation point.
- STATUS- this is the status of the of the isolation point, use the standard abbreviations.
- KEY- in this field record the number of the safety lock key used for this isolation point.
- OPS= OPERATIONS- mark this field if this isolation point is used by the AP.
  - The AP can add any remarks below the list of isolations. (e.g. ALIVE)

- SIGNATURES (bottom section of the form)
  - The AP must then print his name and the date and time, and the key safe No. and safety lock No., and then sign the form under “permit issued”. The RP must check all points of isolation and then complete the section under “permit acceptance” by printing his name and the date and time and then sign acceptance. The PTW is now in force.
**MANUAL PERMIT TO WORK** (continued)

- “Production Scheduled”, “Plant shutdown agreed” and “Target Completion” are not applicable unless specifically required by a site from a process control point of view.

- **WORKERS’ REGISTER**
  - This is printed as a separate document and must be completed by RP/AS, when workers are working under the supervision of the RP/AS. See section 7.15.

- **PERMIT SUSPENSION**
  - This is printed on the PTW form and must be filled in by the RP and AP (printing their name date and time and signing) when any testing of the plant is required. See section 7.9.

- **SUSPENSION REVOCATION**
  - This is also printed on the PTW form and must be filled in by the RP and AP (printing their name date and time and signing), and listing the isolations that have been re-applied. See section 7.9.

**CLEARANCE**

On completion of the work the RP must inform all workers that it is no longer safe to work on the plant and withdraw the workers’ register, the RP must then print his name, the date and time, and sign the PTW form. See section 7.10.

**REVOCATION**

The AP can now print his name, date and time and sign the PTW form formally withdrawing the authority to work. The AP must then remove the isolations and prohibitory signs and prepare the plant for service taking note of endorsements and other related PTW’s.

“Recommissioning completed” is not applicable unless specifically required by a particular site.

**CHANGE OF RESPONSIBLE PERSON**

This is printed on the PTW form (for PTW purposes) and must be completed when there is a change of RP. It is also printed on the worker’s register (for workers’ register purposes) and must be completed when there is a change of RP. See section 7.10.