


| | | |
|---|------------|------------|
|  | REGULATION | Generation |
|---|------------|------------|

**Title: GENERATION PLANT
SAFETY REGULATIONS**

Unique Identifier: 240-150642762

Alternative Reference Number

Area of Applicability Eskom Holdings SOC Ltd

Functional Area: Generation Sustainability

Revision: 3

Total Pages: 82

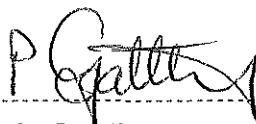
Next Review Date: November 2022

Disclosure Classification: CONTROLLED

Compiled by

Functional Responsibility

Authorized by


G van Oudtshoorn
Chairperson GX PSR /
ORHVS Care Group

Paula Goatley
Snr Manager Operating and
Maintenance CoE

Bheki Nxumalo
Group Executive
Generation

Date 30/10/2019

Date 31/10/19

Date 2019-11-14

CONTENTS

Page

| | |
|---|-----------|
| 1. INTRODUCTION..... | 5 |
| 2. SUPPORTING CLAUSES | 5 |
| 2.1 SCOPE | 5 |
| 2.1.1 PURPOSE | 5 |
| 2.1.2 APPLICABILITY | 5 |
| 2.1.3 EFFECTIVE DATE | 5 |
| 2.2 NORMATIVE / INFORMATIVE | 5 |
| 2.2.1 NORMATIVE | 5 |
| 2.2.2 INFORMATIVE | 6 |
| 3. AMENDMENTS | 6 |
| 4. EXEMPTIONS..... | 6 |
| 5. GENERAL..... | 7 |
| 5.1 GENERAL INFORMATION | 7 |
| 5.2 SPECIFIC INFORMATION | 7 |
| 5.2.1 OFFICIAL LANGUAGE | 7 |
| 6. DEFINITIONS | 7 |
| 6.2 ABBREVIATIONS | 15 |
| 6.3 RELATED/SUPPORTING DOCUMENTS | 15 |
| 7. REGULATIONS | 16 |
| 7.1 DANGEROUS CONDITIONS AND INCIDENTS | 16 |
| 7.2 EXAMINING COMMITTEE | 16 |
| 7.3 AUTHORISATION OF PERSONNEL | 16 |
| 7.4 APPOINTED PERSON | 17 |
| 7.5 RESPONSIBLE PERSON | 17 |
| 7.6 AUTHORISED SUPERVISOR | 17 |
| 7.7 GENERAL DUTIES FOR SUPERVISION SHALL INCLUDE BUT NOT LIMITED TO | 18 |
| 7.8 SECURITY AND INTEGRITY OF POINTS OF ISOLATION | 18 |
| 7.9 KEY SAFE SYSTEM | 18 |
| 7.10 RISK ASSESSMENT | 20 |
| 7.11 PERMIT TO WORK SYSTEM | 20 |
| 7.12 NON-AVAILABILITY OF THE ORIGINAL PERMIT TO WORK FORM | 25 |
| 7.13 NON-AVAILABILITY OF THE RESPONSIBLE PERSON | 25 |
| 7.14 WORKERS REGISTER | 26 |
| 8. DECLARED OUTAGES, PERMIT SYSTEM..... | 28 |
| 8.1 DECLARED OUTAGE | 28 |
| 8.2 GENERAL REQUIREMENTS | 28 |
| 8.3 RESPONSIBILITIES | 29 |
| 8.4 THE OUTAGE PERMIT TO WORK SYSTEM | 31 |
| 9. TESTING / TEST-RUNNING OF PLANT | 32 |
| 9.1 PLANT TESTING | 32 |
| 9.2 RESPONSIBLE PERSON | 33 |
| 9.3 SUSPENSION OF PERMIT TO WORK ON THE PLANT TO BE TESTED | 33 |
| 9.4 SANCTION FOR TEST FORM | 34 |
| 10. PLANT IN OPERATION | 35 |
| 11. RESTRICTED AREA..... | 36 |
| 12. LIMITED ACCESS REGISTER (LAR) | 37 |

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

| | |
|--|-----------|
| 13. RADIOACTIVITY | 38 |
| 13 1 DUTIES OF EMPLOYER | 38 |
| 13 2 APPOINTMENT OF RADIATION PROTECTION CONTROLLER | 38 |
| 13 3 DUTIES OF THE RADIATION PROTECTION CONTROLLER | 38 |
| 13 4 APPOINTMENT OF RADIATION PROTECTION OFFICER | 38 |
| 13 5 DUTIES OF THE RADIATION PROTECTION OFFICER | 38 |
| 13 6 INDUSTRIAL INSTRUMENTS CONTAINING RADIOACTIVE SOURCES | 39 |
| 13 7 UNAUTHORISED INTERFERENCE | 39 |
| 13 8 TRAINING FOR RADIATION PROTECTION OFFICERS | 39 |
| 14. HIGH-VOLTAGE APPARATUS | 39 |
| 14 1 OPERATING REGULATIONS FOR HIGH-VOLTAGE SYSTEMS | 39 |
| 14 2 MECHANICAL WORK ON HIGH-VOLTAGE APPARATUS | 39 |
| 15. ELECTRICAL PLANT | 40 |
| 15 1 GENERAL SAFETY PRECAUTIONS | 40 |
| 15 2 WORK ON DEAD PLANT | 40 |
| 15 3 WORK ON LIVE PLANT | 41 |
| 15 4 WORK BELOW POWER LINES | 41 |
| 16. ROLLING STOCK | 41 |
| 17. MECHANICAL PLANT | 42 |
| 17 1 GENERAL SAFETY PRECAUTIONS | 42 |
| 17 2 PRESSURE EQUIPMENT SUCH AS BUT NOT LIMITED TO VESSELS UNDER PRESSURE, STEAM GENERATOR PRESSURE PARTS AND PRESSURISED SYSTEMS | 43 |
| 17 3 STEAM GENERATOR PLANT OTHER THAN PRESSURE PARTS | 44 |
| 17 4 BUNKERS AND SIMILAR CONTAINERS | 45 |
| 17 5 CONVEYING PLANT | 46 |
| 17.6 DUST PLANT, ASH-HANDLING PLANT AND RESERVOIRS | 46 |
| 17 7 HYDROGEN PRODUCTION PLANT AND HYDROGEN-COOLED GENERATORS | 47 |
| 17 8 CHEMICAL PLANT AND WATER-TREATMENT PLANT | 48 |
| 17 9 INTERNAL-COMBUSTION ENGINES (FIXED INSTALLATION) | 48 |
| 17 10 COMPRESSED AIR, GAS, LIQUID, VAPOUR OR FUEL OIL VAPOUR OR FUEL OIL | 48 |
| 17 11 LIFTS, ESCALATORS, LIFTING MACHINES, WORKSHOP AND MOBILE EQUIPMENT | 49 |
| 18. HYDRO-ELECTRIC PLANT AND LARGE CIRCULATING-WATER SYSTEMS. | 49 |
| 18 1 CONFINED SPACES SUCH AS VESSELS, MILLS, CULVERTS, FLUES, FURNACES, DUCTS, PITS, SEWERS, TUNNELS AND UNDERGROUND CHAMBERS (REFER GENERAL SAFETY REGULATION 5 OF THE OHS ACT) | 50 |
| 19. HOT WORK | 51 |
| 20. SIGNS | 52 |
| 20 1 PROHIBITORY SIGN | 52 |
| 20 2 WARNING SIGN (DANGER) | 52 |
| 20 3 RADIATION-HAZARD WARNING SIGN | 52 |
| 20 4 CONFINED SPACE WARNING SIGN | 53 |
| 21. FIRE PROTECTION EQUIPMENT | 53 |
| 22. DECOMMISSIONING AND DECLASSIFICATION OF PLANT | 53 |
| 23. THE USE OF PORTABLE ELECTRICAL EQUIPMENT AND TEMPORARY ELECTRICAL SUPPLY | 54 |
| 24. BATTERIES AND BATTERY ROOM | 55 |
| 25. DEVELOPMENT TEAM | 55 |
| 26. REVIEW | 55 |
| 27. JUSTIFICATION FOR REVISION | 56 |

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

| | |
|--|----|
| 28. APPENDIX 1 - KEY SAFE SCHEMATIC DRAWING | 57 |
| 29. APPENDIX 2 - GAS TEST CERTIFICATE | 58 |
| 30. APPENDIX 3 - DECLASSIFICATION CERTIFICATE | 59 |
| 31. APPENDIX 4 - PRE-WORK CHECK LIST | 60 |
| 32. APPENDIX 5 - PLANT SAFETY REGULATIONS HOT WORK APPROVAL | 61 |
| 33. APPENDIX 6 - PLANT SAFETY REGULATIONS SAFE ENTRY CERTIFICATE | 64 |
| 34. APPENDIX 7 - ENVIRONMENTAL CERTIFICATE | 65 |
| 35. APPENDIX 8 - WORKERS REGISTER | 66 |
| 36. APPENDIX 9 - PERMIT RISK ASSESSMENT FORM | 67 |
| 37. APPENDIX 10 - PROHIBITORY SIGN | 69 |
| 38. APPENDIX 11 - WARNING SIGN (DANGER) | 70 |
| 39. APPENDIX 12 - CONFINED SPACE WARNING SIGN | 71 |
| 40. APPENDIX 13 - LIMITED ACCESS REGISTER | 72 |
| 41. APPENDIX 14 - PTW FORM | 73 |
| 42. APPENDIX 15 - SANCTION FOR TEST | 75 |
| 43. APPENDIX 16 - RADIATION-HAZARD WARNING SIGN | 77 |
| 44. APPENDIX 17 - MANUAL PERMIT TO WORK | 78 |
| 45. APPENDIX 18 - CAUTIONARY NOTICE REGISTER | 80 |
| 46. APPENDIX 19 - CAUTIONARY NOTICE | 82 |

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

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. SUPPORTING CLAUSES

2.1 SCOPE

The Plant Safety Regulations shall apply to plant with the exclusion of the following, mobile portable lifting equipment, domestic circuits, appliances and tools.

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.

- (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

These regulations shall come into operation with effect from the date of signature and are the minimum requirements that need to be adhered to

2.2 NORMATIVE / INFORMATIVE

2.2.1 NORMATIVE

- i Occupational Health and Safety Act
- ii. ISO 9001 Quality Management System

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

2.2.2 INFORMATIVE

- i) Construction Safety Health and Environment Management EPC 32-136.
- ii) Eskom Standard 32-226
- iii) Eskom Fire Risk Management 32-124
- iv) GRG 36-680
- v) Generation Major Plant Risk Reporting 36-962
- vi) Generation Standard 238-39
- vii) Generation Standard 238-40
- viii) Generation Standard 238-41
- ix) Generation Standard 238-45
- x) Operating Regulations for High-Voltage Systems - 240-114967625
- xi) Training, Evaluation and Authorisation of Personnel operating under Statutory and Eskom health and safety requirements 240-46979537
- xii) Safety Measures, Approved Protective Clothing and Personal Protective Equipment against the Thermal Hazards of an Electrical Arc for Metal Clad Switchgear (Up to 11kV) 240-56179027
- xiii) SANS 10287
- xiv) SANS 17025
- xv) NFPA 51B

3. AMENDMENTS

- (a) **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) Minor amendments to these regulations by the **Plant Safety Regulations Management Committee** between formal reviews of the regulation book, as well as the clarification of rules sought from time to time shall be recorded and controlled in a Decision Register
- (d) Local procedure **approved** by the responsible manager may be established to supplement these **regulations** at any site.

4. 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 mean a release from the statutory requirements of the OHS Act and Regulations.

CONTROLLED DISCLOSURE

5. GENERAL

5.1 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 Hyperwave and or Eskom intranet
- (b) These regulations are and remain the property of Eskom.

5.2 SPECIFIC INFORMATION

- (a) Training manuals, the decision register and any local procedure and or instructions relating to these regulations 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

OFFICIAL LANGUAGE

The **regulations** are prepared in English

6. 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

- 6.1.1 **Apparatus** - means any generator, transformer, motor, switchgear, isolator, feeder, convertor, rectifier, electrostatic precipitator or any other high-voltage plant installed in a station
- 6.1.2 **Alive / live** - means electrically connected to a power source and/or electrically charged.
- 6.1.3 **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**.
- 6.1.4 **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 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
- 6.1.5 **Appointed person** - means a person who has been authorised in terms of these regulations to be responsible for
 - (i) Determining appropriate and effective isolations for the anticipated **work** to be carried out safely
 - (ii) 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.

CONTROLLED DISCLOSURE

(iii) 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.

- 6.1.6 Appointed Operator** – means a person who has been trained and authorised in terms of Operating Regulations for high Voltage Systems to do operating at power stations in terms ORHVS.
- 6.1.7 Approved** - means sanctioned for use by the Group Executive (Generation) or his or her delegate
- 6.1.8 Authorise / authority / authorisation / authorised** - means permission in writing granted to perform specific duties on specified plant in terms of these **regulations**.
- 6.1.9 Authorised / Competent Service Provider** – means (from the OHS 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 OHS Act regulation 7 (Maintenance on Lifts / Hoists / Escalators)
- 6.1.10 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**.
- 6.1.11 Cautionary notice** - means a dated and signed document issued by a seconded **responsible person** to each **responsible person**, who signs on the **cautionary notice register**, initially, whenever there is a change to the declared **outage permit to work** and which identifies those changes.
- 6.1.12 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
- 6.1.13 Clean-hands approach** - means having both hands clean and free to carry out **isolations safely** and effectively
- 6.1.14 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.
- 6.1.15 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 Regulations for Work places, sub Regulation 2 - Thermal Requirements of the Act)
- 6.1.16 Competent Person** – means a person who has in respect of the work or task to be performed, the required knowledge, training, experience and, where applicable, qualifications, specific to that work or task to be performed and who is able to recognize hazards associated with a particular task, and has the ability to mitigate those hazards.
- 6.1.17 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, entrapment may occur, 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.

- 6.1.18 Confined space warning sign** - means a sign in an **approved** form that is attached permanently or non-permanently and conspicuously at the locked or open access door / hatch to the **confined space** for the purpose of entry
- 6.1.19 Construction work** - means any **work** in connection with.
- The construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or
 - The construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work
- 6.1.20 Continuous Risk Assessment** - means those hazards identified on the **risk assessment** requiring the **authorised** person to check that the controls remain functional and intact
- 6.1.21 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
- 6.1.22 Danger / dangerous** - means a condition/substance that constitutes a risk of personal injury, impairment of health, death or **plant** damage
- 6.1.23 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
- 6.1.24 Decision Register** – means a recorded decision taken by the **Plant Safety Regulations** Management Committee in support of safety and the regulations contained in this book
- 6.1.25 Declassified plant** - means **decommissioned plant** that has been declassified in terms of these **regulations** by the issue of a **declassification certificate**
- 6.1.26 Declassification certificate** - means a certificate issued after plant has been decommissioned and all sources of energy of any form have been removed from the plant
- 6.1.27 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.
- 6.1.28 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
- 6.1.29 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
- 6.1.30 Employee** - means a person employed by Eskom.
- 6.1.31 Employer** - means a person appointed in writing by Eskom as the responsible manager in terms of the provisions of the Act, (normally the General Manager / Power Station Manager)
- 6.1.32 Environmental certificate** - means a certificate that must be issued by a person certified by an Approved Inspection Authority (AIA) or by an Eskom SAIOH registered Occupational Hygienist or an Occupational Hygiene Technologist, who is able to do such measurements and have interpretation skills to indicate that the area to be entered complies with the requirements for thermal, lighting, ventilation and pollution (Refer Environmental Regulations for Workspaces of the Act) The person performing these tests must use instruments calibrated bi-annually as per SANS 17025

- 6.1.33 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**
- 6.1.34 Exemption** - means permission of a temporary nature to be excused from a provision of the **regulations**.
- 6.1.35 Fuel gas** - means *natural gas, manufactured gas, liquefied petroleum gas (LPG) and mixtures of these gasses and air/gas mixtures*
- 6.1.36 Functional Manager** - means the manager appointed by the Group Executive (Generation Division) as custodian of the **regulations** to compile, amend, and clarify the **regulations**, and to grant **exemptions**.
- 6.1.37 Gas Pass** – means air and gas passage or ducts transporting the air or gas to and from the steam generator combustion chamber
- 6.1.38 Gas Test Certificate** - means a certificate that must be issued by a person certified by an Approved Inspection Authority (AIA), or an Eskom SAIOH registered Occupational Hygienist or an Occupational Hygiene Technologist, who is able to do such measurements and have 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 traceable to a national or international standard as per SANS 17025.
- 6.1.39 Hazard(s)** - means a source of or exposure to danger
- 6.1.40 High-voltage** - means a voltage exceeding 1 000 volts ac or dc
- 6.1.41 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 Regulations for Workplaces, sub regulation 2 of the Act).
- 6.1.42 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 space or in the vicinity of any combustible material Refer to SANS 10287 NFPA 51B
- 6.1.43 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)
- 6.1.44 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 firefighting equipment The **hot work monitors training** must include knowledge on the "triangle of combustion", causes of fire, identification of combustible materials, fire spread, classes of fire, methods of extinguishing fire and which extinguishing agent to choose for safety reasons, as well as the use of fire extinguishers and fire hose reels
- 6.1.45 Isolate / isolation / isolated** - means to make **safe to work** on by effectively disconnecting from all possible sources of **dangerous** energy and/or harmful substances
- 6.1.46 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**
- 6.1.47 Limited access register** - means an access control system used by the **person in charge of the plant** to give a person(s) permission to carry out an activity on the **plant**.
- 6.1.48 Listed electronic product** - means any electronic product listed in Gov. Regulation R.1302 relating to the Hazardous Substances Act, 1973 (Act No 15 of 1973) that emits ionising electro-magnetic, particulate radiation or any sonic, infrasonic or ultra-sonic wave

CONTROLLED DISCLOSURE

- 6.1.49 Low-voltage** - means a voltage not exceeding 1 000 volts ac or dc
- 6.1.50 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
- 6.1.51 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
- 6.1.52 Outage manager / project manager** - means the person appointed in writing by the General Manager / Power Station Manager to be responsible for the completion of the project.
- 6.1.53 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
- 6.1.54 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 health and **safety procedures**
- 6.1.55 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
- 6.1.56 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.
- 6.1.57 Permit to work form** - means the printed form containing sections entitled **application**, **isolations**, signatures, **suspension**, **suspension revocation**, special endorsements / requests, change of **responsible person**, abbreviations, used for the **authorisation** of all **work** to be carried out on the **plant** in terms of these **regulations**
- 6.1.58 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***
- 6.1.59 Person in charge of the plant** - means the person delegated in writing to be in charge of the operation of the **plant**.
- 6.1.60 Plant** - means structure, machinery, **low voltage electrical equipment** 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
- 6.1.61 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

6.1.62 Power circuit – means.

- i. all high-voltage circuits,
- ii all low-voltage circuits exceeding 250 volts but less than 1 000 volts;
- iii. all low-voltage circuits not exceeding 250 volts, protected by fuses or circuit breakers of a capacity higher than 15 amperes;
- iv all direct-current supplies exceeding 50 volts,
- v all direct-current supplies not exceeding 50 volts but with a capacity higher than 15 amperes

6.1.63 Pressure equipment – means a steam generator, pressure vessel, piping (pressure accessory) and safety accessory (safety valve)**6.1.64 Pressure parts** - means the parts through which the feed water and steam flows where the pressure of the system, is much higher than atmospheric pressure (50kPa), is generally termed as steam generator / turbine pressure parts**6.1.65 Pre-work checklist** - means a form used by the Responsible Person or Authorised Supervisor to check that he has considered or verified all requirements before starting actual physical work**6.1.66 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**6.1.67 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.**6.1.68 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.**6.1.69 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.**6.1.70 Radiation protection officer** - means a person who has been appointed in writing to execute the administrative obligations in respect of industrial gauges and soil moisture and density gauges containing Radioactive sources and Listed electronic products at a certain site**6.1.71 Radioactive source** - means anything that may cause radiation exposure, by emitting ionising radiation or releasing radioactive substances or materials**6.1.72 Regulations** - means the Plant Safety Regulations**6.1.73 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 18.1 (e) (iv).**6.1.74 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**.

CONTROLLED DISCLOSURE

- 6.1.75 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.
- 6.1.76 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.
- 6.1.77 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, as well as the precautions that are to be taken to mitigate identified the risks, **dangers** and **hazards**. This is applicable to **work** performed on the **plant** covered by a **permit to work** to ensure the health and **safety** of all persons performing the activity or **work** on **plant** Risks that require continuous assessment shall be reflected in the Hazards / Risks section on the permit to work form Prior to a permits issue, a **risk assessment** shall be performed by the **responsible person** in concurrence with the **appointed person**.
- Note It will be permissible for the **risk assessment** process to be initiated during the permit application and work package preparation phase by a responsible person's delegate, provided that this person has passed the theory section of **Plant Safety Regulations** training as well as risk assessment training
- The final risk assessment process must be completed with inputs from staff involved with the task to be performed
- 6.1.78 Safe / safely / safety** - means a condition not posing any **danger**, an activity that can be carried out without **danger**, or protection against **danger**
- 6.1.79 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
- 6.1.80 Safe Entry Certificate** – means a certificate issued after an inspection performed by a Competent Person declaring that area safe for entry and work to be carried out.
- 6.1.81 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**.
- 6.1.82 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
- 6.1.83 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
- 6.1.84 Skilled person** - means a person who has been trained, has adequate knowledge for the task at hand and declared competent in writing

- 6.1.85 Steam generator** - means any plant to convert water continuously into steam at a pressure higher than atmospheric pressure and where the heat is derived from a source other than steam, and includes any super heater or economiser which is an integral part of a steam generator or is separately fired there from, fired steam and hot-water boilers, waste-heat boilers, waste-incineration boilers, and electrode or immersion-type electrically heated boilers.
- 6.1.86 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
- 6.1.87 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** techniques and be able to understand the **dangers / hazards** associated with the task and who has the **authority** to ensure that precautionary measures taken are implemented
- 6.1.88 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**
- 6.1.89 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
- 6.1.90 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
- 6.1.91 Testing device** - means an **approved** and calibrated tester used to determine whether electrical circuits are **dead** or **alive**.
- 6.1.92 Thermal requirements** - Requirements in accordance with Environmental Regulations for Workplaces, sub regulation 2 of the Act.
- 6.1.93 Waiver** - means permission of a permanent nature to be excused from a provision of compliance the **regulations**.
- 6.1.94 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 (outdoors), wet bulb and globe thermometers temperature readings. Refer Environmental Regulations for Workplaces of the Act
- 6.1.95 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
- 6.1.96 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**
- 6.1.97 Worker** - means a person who has been allocated work to be carried out under a permit to work, this may also be the **Authorised Supervisor**.
- 6.1.98 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**.

6.2 ABBREVIATIONS

| Abbreviation | Explanation |
|---------------------|---|
| AC | Alternating Current |
| AIA | Approved Inspection Authority |
| AO | Appointed Operator |
| AP | Appointed Person |
| AS | Authorised Supervisor |
| EPE | Electrical Protective Equipment |
| EST | Estimated |
| EWT | Estimated Work Time |
| GGP | Generation Group Procedure |
| GGD | Generation Group Directive |
| GGS | Generation Group Standard |
| Kpa | Kilo - Pascal's |
| LAR | Limited Access Register |
| LPG | Liquid Petroleum Gas |
| NFPA | National Fire Prevention Association |
| OHS Act | Occupational Health and Safety (Act) |
| OH | Occupational Hygiene |
| ORHVS | Operating Regulation for High Voltage Systems |
| PPE | Personal Protective Equipment |
| PTW | Permit to Work |
| RP | Responsible Person |
| SANS | South Africa National Standards |
| WBGT | Wet Bulb Globe Temperature |

6.3 RELATED/SUPPORTING DOCUMENTS

- Appendix 1 - Key Safe Schematic Drawing
- Appendix 2 - Gas Test Certificate
- Appendix 3 - Declassification Certificate
- Appendix 4 - Pre-Work Check List
- Appendix 5 - Hot Work Approval Part 1
- Appendix 6 - Hot Work Approval Part 2.
- Appendix 7 - Hot Work Approval Part 3.
- Appendix 8 - Ash Hopper, Coal Silo Safe Entry Certificate.

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

- Appendix 9 - Environmental Certificate
- Appendix 10 - Worker's Register
- Appendix 11- Risk Assessment
- Appendix 12 - Prohibitory Sign
- Appendix 13 - Warning Sign (Danger)
- 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

7. REGULATIONS

7.1 DANGEROUS CONDITIONS AND INCIDENTS

- (a) All at risk behaviours, risks and conditions and incidents must be reported as soon as possible to the immediate supervisor and / or health and safety representative and / or Occupational Health and Safety (OHS) Officer. All employees on site shall be immediately warned of this dangerous condition by the employee reporting.
- (b) The supervisor, health and **safety** representative, or OHS 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 hazard or risk.

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 Procedure 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 Procedure 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**.

CONTROLLED DISCLOSURE

to work. In cases of simultaneous **authorisation**, separate **authorisation** certificates must be issued

- (c) Each authorisation certificate shall only be valid for a maximum period of two years
- (d) **Authorisation** certificates will not be transferable between sites.
- (e) 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
- (f) 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**.
- (g) All training and **authorisation** records shall be kept for audit purposes (Minimum 3 years)

7.4 APPOINTED PERSON

The certificate of authorisation for an **appointed person** must:

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

7.5 RESPONSIBLE PERSON

The certificate of authorisation for a **responsible person** must:

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

7.6 AUTHORISED SUPERVISOR

The certificate of authorisation for an **authorised supervisor** must:

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

CONTROLLED DISCLOSURE

7.7 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** and healthy 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

7.8 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 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**

7.9 KEY SAFE SYSTEM**7.9.1 Key safe**

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.

7.9.2 Operating lock

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.

7.9.3 Safety lock

- (a) A **safety lock** or suite of **safety locks** must
 - i. be marked with an individual number,
 - ii have only one available key permanently marked with the same number,
 - iii 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**.

CONTROLLED DISCLOSURE

- (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
- (d) 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

7.9.4 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**. The **key safe** must be locked by the **appointed person**, with a **safety lock** as well as an **operating lock**. The key of this **safety lock** must be attached to the original 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**
- (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.

7.9.5 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 circumstances such as 7.9.5 (d)
- (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** which must then be locked with a **safety lock** and **operating lock**. The key of the **safety lock** must be attached to the original permit form and handed to the **responsible person**

7.9.6 Issuing of keys

- (a) **Operating lock** keys, each with a unique identification number, may only be issued to **appointed persons**.
- (b) The issuing thereof must be recorded in a register kept by the **employer**, stating the unique identification number,
- (c) The name of the person to whom the key is being issued and the date of issue.
- (d) 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.
- (e) 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

7.10 RISK ASSESSMENT

Risk Assessments must be completed by a competent person before any activity or **work** commences

7.11 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, a standard pre-printed computerised **permit to work form** must be completed manually and in duplicate. The 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 and copy of the **permit to work form** must be filed after **revocation** of the **permit to work**
- (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
- (d) **Permit to work forms**, **sanction for test**, **workers register(s)**, **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 at least one year and be available for incident investigation and audit purposes.

7.11.1 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

CONTROLLED DISCLOSURE

-
- (b) The **responsible person** or a person acting on his behalf must complete the **permit to work application** section stating
- i the plant requiring isolation, in detail,
 - ii the scope of the work to be carried out in detail;
 - iii any special requirements including identified dangers and hazards that require continued assessments during the period of work
 - iv the time and date on which the work is to be commenced,
 - v. risk assessment number must be entered *during the application stage i.e prior to PTW printing*
 - vi. the first workers register 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** and first workers register numbers are reflected on the **permit to work form**, before he proceeds to **isolate** the **plant** after determining the required isolations.
- (e) The **responsible person** must physically sign the **application** section of the **permit to work** on both the original and copy, 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.

7.11.2 Isolations

- (a) The **appointed person** must determine and then carry out the required **isolations** necessary to ensure that **work** can proceed without **danger**, ensuring that the correct **plant** is **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**. In order to carry out the required isolations, the AP may make use of operating personnel for assistance in effecting the isolations. The AP must verify the actual isolation points on the plant, as applied on the permit to be issued and remains accountable for the effected isolations listed on the permit to work
- (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**.

CONTROLLED DISCLOSURE

- (d) A **clean-hands approach** must be followed when extracting fuses or the opening of isolators etc. The "test before touch" principle must be adhered to when extracting fuses.
- (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(s).
- See Appendices for example of **Environmental** and **Gas test certificates** etc.
- (f) Any special requests, conditions, **dangers** and **hazards** must be stipulated on the **permit to work**.
- (g) The **appointed person** must document the **isolations** effected as well as record the particular safety lock number used on the permit before signing to state that they have been affected.
- (h) 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**.
- (i) After completion of this section of the **permit to work**, the **responsible person** must be informed that the **permit to work** is issued and ready for 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.
- (j) If it becomes 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.
- (k) 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 be locked with an additional **operating lock** and **safety lock**. Cross-referencing of these **permits to work** is required.

7.11.3 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** will allow the **responsible person** to accept the **permit to work** after verification of the **risk assessment** and all relevant documents as applicable.

CONTROLLED DISCLOSURE

- i 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
 - ii 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 / authorised supervisor 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 subsequent **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 and the previous permit must be cleared if the original scope of **work** changes
- (i) The **permit to work**, original and copy shall only be printed once

7.11.4 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. The permit suspension section on both the original and copy of the permit must be filled in and signed by the responsible person and appointed person
- (c) Upon reinstatement of the **permit to work**, the **suspension revocation** must be filled in on both the original and copy of the permit and signed. A new **workers register** (if applicable) and a **pre-work checklist** must then be completed should the **work** be continued. The **risk assessment** must also be re-evaluated. Should there be any change to the scope of **work**, a new **permit to work** must be issued

CONTROLLED DISCLOSURE

7.11.5 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**, 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)**. A new **workers register**, **risk assessment** and **pre-work checklist** must be completed by the **authorised supervisor(s)**
- (c) Absence of person in charge of supervision.
- i 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 plant alive or plant in operation permits.
 - ii The name of this authorised supervisor / responsible person must be recorded in the permit holder's workers register
 - iii 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
 - iv. A worker* may be in charge of supervision if he is so authorised. The responsible person must withdraw the original workers register.
 - v. A new workers register must be completed by both the responsible person and the authorised supervisor (worker*)
 - vi 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 it is not mandatory. However an appropriate level of supervision 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
 - vii 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 7.11.3 (g) to further clarify this.

7.11.6 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** by allowing the workers to sign off on the workers register, and the **responsible person** or the **authorised supervisor** must confirm this by signing the appropriate section of the **workers register**. Should an **authorised supervisor** be used, the **responsible person** will also need to withdraw the authorised supervisor from the **responsible person's workers register**

CONTROLLED DISCLOSURE

- (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 removed 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 and copy 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.

7.11.7 Revocation

- (a) On receipt of the cleared original and copy of the **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 and copy of the **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**.

7.12 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 endorse (countersign) the copy of the **permit to work**, the responsible person must clear the permit to work by signing the clearance section on the copy of the permit to work indicating that all workers have been withdrawn from the work and the plant is in a serviceable condition.

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.

7.13 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 appropriate head of department / function or, in the case of a **non-employee**, the site representative of that company shall decide which other **responsible person** shall clear the **permit to work**.
- (b) Such **responsible person** shall first sign the "change of responsibility" portion on the **permit to work form**, the existing **risk assessment** and as applicable, the **pre-work checklist** 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 *appropriate head of department / function* or, in the case of a **non-employee**, the site representative of that company shall take all reasonable steps to ensure that no unsafe condition arises from such change.

CONTROLLED DISCLOSURE

7.14 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, the associated plant as well as the names and unique / ID numbers of all the workers involved in the work 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.
- i The applicable permit to work under which he shall work.
 - ii The applicable risk assessment document
 - iii Any special conditions or hazards requiring continuous assessment as per the risk assessment and required personal protective clothing or equipment.
 - iv The isolation boundaries as per the permit form and shown the specific physical work site or area
 - v. The nature of the actual work to be carried out as described on the permit form

In addition the worker shall be.

- i) Satisfied that the work described by the responsible person can be carried out in a healthy and safe manner.
- ii) *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 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 **workers register** in the space provided also specifying the date and time (appendix 10).

Note: In instances where there are many working days for one specific task, pre-printed workers names that make up the **workers register** may be used, provided that the need for signatures or format of the **workers register** is not altered in any way. All names of workers, who were not briefed in terms of the requirements of 7.14 b, shall be identified and scratched through on pre-printed workers register forms

- (c) The **responsible person** must verify 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

CONTROLLED DISCLOSURE

risk assessment The **authorised supervisor** shall then compile his own risk assessment considering the hazards and risks from the original **risk assessment** conducted by 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**. The authorised supervisor shall only appear on one workers register at any time
- (g) The **authorised supervisor** must then physically explain the nature, physical location of the **work**, isolation boundaries as well as any special conditions, requests, **dangers** and **hazards** requiring continuous assessment 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** must be shown to and discussed with all the workers
- (h) The **authorised supervisor** must then enter the permit to work number, the associated plant, as well as the 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
- i A copy of the applicable permit to work under which he shall work.
 - ii The applicable risk assessment document
 - iii Any special conditions or hazards requiring continuous assessment as per the risk assessment and required personal protective clothing or equipment.
 - iv The isolation boundaries as per the permit form and shown the specific physical work site or area
 - v The nature of the actual work to be carried out as described on the permit form.

In addition the worker shall be

- i) Satisfied that the work described by the **authorised supervisor** can be carried out in a healthy and safe manner.
- ii) Aware that if an at risk behaviour or condition arises during the execution of the work, that the **work** is to be stopped immediately and this fact reported to the **authorised supervisor** who 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 **authorised supervisor** shall then sign the **workers register** in the space provided also specifying the date and time

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 **workers register** is not altered in any way. All names of workers, who were not briefed in terms of the requirements of 7.14 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**. The workers must be informed of any additional **hazards** or **dangers** 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 **workers register** adjacent to

CONTROLLED DISCLOSURE

their name, **workers register** "withdrawn" and the **responsible person / authorised supervisor** shall then sign off the workers register. 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 must be adhered to before any **work** is started on any **plant**

8. DECLARED OUTAGES, PERMIT SYSTEM

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

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

8.1 DECLARED OUTAGE

- (a) An outage will only be a declared outage after the General Manager / 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
 - i A designated Outage Manager has been appointed
 - ii A document has been issued by the General Manager / 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 and expected completion date.
 - iii. Each site has an approved local outage procedure in place describing roles and responsibilities of individuals, planning meetings and outage permit to work change times, health and safety requirements as well as any other unique requirement to that station regarding the outage permit to work process
 - iv. It is possible to interrupt and change, at a pre-planned time and for a pre-planned period, on any working day of the declared outage during which an outage **permit to work** is in force, all the work being done on the plant covered by that outage **permit to work**.
 - v Specific appointed person(s) has / have been seconded to the designated Outage Manager for the duration of the declared outage.

CONTROLLED DISCLOSURE

- vi. Specific responsible person(s) has / have been seconded to the designated Outage Manager for the duration of the declared outage
- vii. 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 Outage Manager
- (b) The responsible person(s) seconded to the designated Manager (seconded responsible person(s)) are responsible for duties as per section (7.11.3), signing acceptance of the outage permit to work, and for ensuring that all **responsible persons** working on the declared outage are informed initially and kept informed regarding specific areas of plant that remain or become hazardous, as well as any changes on the outage permit to work. This must be done by means of uniquely numbered cautionary notice issued to the responsible persons
- (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 the **cautionary notice** register when they are issued with a **cautionary notice**. On receipt of a new cautionary notice, the old or outdated **cautionary notice** must be handed back to the seconded **responsible person**

The **cautionary notice** register must be stored or managed so as to ensure that it is adequately controlled at all times

Each **responsible person** working on the outage must ensure that his name is on the seconded **responsible person's cautionary notice** register. The **responsible person(s)** must ensure that **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) Seconded **appointed person(s)** are responsible for all **isolations**, de-isolations and / or test-running of **plant** during 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) Seconded **appointed persons** shall mark-up pipe and instrumentation diagrams / single line system drawings, to identify those areas of plant and or equipment that are covered by the outage permit's isolations, thereby indicating safe to work areas
- (g) Seconded **responsible persons** shall make use of the marked up pipe and instrumentation diagrams / single line system drawings to indicate to the **responsible person(s)**, those areas of plant that are covered by the particular outage permit isolations
- (h) Seconded **responsible person(s)** must have a name list of all authorised responsible persons to ensure that only these persons sign onto the **cautionary notice** register.
- (i) The responsibilities of a **responsible person(s)** include:
 - i. Discuss the scope of work, the exact location where work will take place as well as the information contained in the outage permit risk assessment and cautionary notice with the seconded responsible person for relevance for the work at hand

CONTROLLED DISCLOSURE

-
- ii Update the risk assessment with any risks identified from the outage permit as applicable and then allow the seconded responsible person to sign the risk assessment document "Reviewed by Sec RP"
 - iii Record the risk assessment number on the cautionary notice register
 - iv Sign the cautionary notice register.
 - v Inform all workers about the information contained on the cautionary notice and risk assessment documents
 - vi. Ensure that the work is carried out and executed taking health and safety precautions into account and within the terms of these regulations and any relevant local procedure
 - vii Taking note of other permit changes and possible impact thereof.
 - viii. Keeping a current workers **register, risk assessment and pre-work checklist**
- (j) If the responsible person has delegated supervision to an **authorised supervisor**, the **responsible person's** duties will be as follows.
- i. Maintaining a workers register of the authorised supervisor(s) working on the outage
 - ii. Informing the authorised supervisor of changes on the outage permit and hazards documented on the **cautionary notice** and **risk assessment** documents
- (k) The **authorised supervisor(s)** will ensure 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
- i Maintaining a current workers register and up to date risk assessment
 - ii Informing the workers of changes on the outage permit and hazards documented on the **cautionary notice** and **risk assessment** documents

See section 7 14 for further information pertaining to workers registers

- (l) Change of seconded **responsible person**:

When there is a change of seconded **responsible person** on an outage permit, the new seconded responsible person will sign the change of responsible person on the reverse side of the outage permit, as well as all other relevant documentation as per Regulation 8 3.

- (m) Non-availability of the responsible person

In the event of the responsible person who has signed onto the cautionary notice register not being available to sign off , the appropriate head of department / function or, in the case of a non-employee, the site representative of that company official in charge shall decide which other responsible person shall take over the work and sign off

- (n) Non availability of safety lock key

If the safety lock key is lost or not available, the relevant head of department / function will be in charge of the removal of the safety lock. The incident must be recorded in the seconded appointed person's logbook.

8.4 THE OUTAGE PERMIT TO WORK SYSTEM

- (a) The purpose of an **outage permit to work** is to minimise congestion during a declared **outage**.
- (b) For the application of the **key safe** system and **isolations** (see section 7.9.4 and section 7.11.2) 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** as in 7.9.4 and 7.11.2 respectively.
- (c) Once the outage permit has been issued to the seconded **responsible person**, the seconded **responsible person** shall place the particular outage permit **safety lock** key onto a separate key safe making provision for him as well as other **responsible persons** to immobilise the outage permit safety lock key by means of their **safety locks**.
- (d) Each **responsible person** working on the outage shall be issued with an individual **safety lock** used for the immobilisation of the outage key safe. Once the **responsible person(s)** has signed onto the **cautionary notice register**, he will lock the associated key safe with his individual **safety lock**. This **safety lock** must be removed by the **responsible person** when he signs OFF or SUSPENSION from the applicable cautionary notice register.
- (e) The computerised format of an **outage permit to work** must allow sufficient space for the recording of **isolations** and remarks.
- (f) **Outage permit to work** covering the **work** to be carried out on **plant** during a declared **outage** must be issued by the seconded **appointed person** to the seconded **responsible person**.
- (g) An **outage permit to work** must contain details of all points of **isolations** effected and be supported by a base line **risk assessment**. Any individual **plant** items previously associated with the declared **outage** that are now hazardous to **work** on, must be stated clearly on the **current cautionary notice**.
- (h) All relevant **responsible persons** must be informed by means of the **cautionary notice** of any hazards. Appropriate steps must be taken to **safe-guard** personnel against any **dangers** or risk to health and **safety**.

The relevant responsible person should then inform the authorised supervisor of the hazards from the cautionary notice. Appropriate steps must be taken to **safe-guard** personnel against any **dangers** or risk to health and **safety**.
- (i) The original of an **outage permit to work**, the base line **risk assessment**, the **cautionary notice** register and cautionary notice, must be adequately controlled and stored.
- (j) An **outage permit to work** remains in force until changes in **isolations** become necessary (as required), whereupon the original and copy of the permit must be suspended. The seconded appointed person shall change the isolations as required. Thereafter the **outage permit to work** suspension section must be **revoked**. The previous permit must now be cleared by the seconded **responsible person** and revoked by the seconded appointed person.
- (k) All **responsible persons** must acquaint themselves with the new **outage permit to work** as well as the **cautionary notice** and ensure that any **authorised supervisors** are informed accordingly.

CONTROLLED DISCLOSURE

When the need arises for a change in isolations to an outage permit, a **responsible person** will either sign OFF the **cautionary notice** register if his work is complete or SUSPENSION from the **cautionary notice** register if his work is not yet complete. This can only be carried out after the **responsible person** has withdrawn all workers or **authorised supervisor(s)** from his **workers register**.

An outage permit to work can only be cleared and revoked once all **responsible persons** have signed OFF the cautionary notice register for that particular **outage permit** with all relevant documentation submitted.

For the purpose of **outage permit to work regulation** section (7 11 6 b) does not apply, except at the final **clearance** and **revocation** stage.

- (l) Changes to the **outage permit to work** shall always be carried out at a pre-determined time of any day. The Outage Manager must ensure that all **responsible persons** are aware of this time and its duration.
- (m) No item of **plant** included in an **outage permit to work** may be made **alive**, charged up, or test-run until a new **outage permit to work** excluding those items of **plant**, has been issued.
- (n) 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.
- (o) A package must be made up of the **outage permit to work**, **cautionary notice** and cautionary notice register, **sanction(s) for test**, **workers register(s)**, **risk assessment(s)**, pre-work checklist(s), and gas test **certificate(s)**, safe entry 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.
 - i. 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.*
 - ii. All cross-referenced permits to work must be cleared or suspended.
 - iii. The permit to work on the plant to be tested must be suspended.
 - iv. *The risk assessment must be updated.*
 - v. a sanction for test must be applied for.
 - vi. The appointed person must ensure that it is safe to operate the plant and erect warning signs where necessary.
 - vii. *The responsible person must complete a new workers register if assistance is required for testing.*

CONTROLLED DISCLOSURE

- (b) The following must be done under a sanction for test (but not limited to)
- i Balancing the rotating parts under a mechanical permit to work
 - ii Proving that repairs on pressure parts have been successful under a mechanical permit to work.
 - iii Ensuring that there are no hidden defects which may cause stoppages under operational conditions under a mechanical permit to work
 - iv Checking direction of rotation of all motors under either a mechanical or electrical permit to work. If the direction of the motor was checked under a mechanical permit to work, this sanction for test needs to be cancelled.
 - v Changing direction of rotation of motors (excluding HV Motors) under an electrical permit to work
- (c) Adjustments to the plant must be carried out under supervision of the responsible person while the energy supply is isolated and the isolation is verified by the responsible person.

9.2 RESPONSIBLE PERSON

- i) 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
- ii) The **responsible person** must ensure that the **workers register** for the **work** is withdrawn and then relinquish the **authority to work** on that **plant** by signing the applicable **permit to work suspension**
- iii) The **risk assessment** must be updated accordingly
- iv) 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

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

- i Be signed by both the appointed person and the responsible person
- ii Specify the date and time from which the suspension becomes effective
- iii Only be completed once an associated sanction for test form has been prepared and is ready for signature
- iv Reflect a time and date corresponding to that of the associated sanction for test
- v. 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**.

CONTROLLED DISCLOSURE

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 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 that are to be performed.
- (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 method to be used to indicate starting, stopping and **isolation**. The actual **isolation** to be removed to allow the test, 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 **permit to work**. The date and time of issue must correspond with the date and time entered on the associated **permit to work suspension**

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

- (a) The **permit(s) to work** is / are **suspended**
- (b) The points of **isolation** affected by the procedures stipulated on the **sanction for test** forms are only required for the **permit to work** that is to be **suspended**

9.4.3 Appointed person / Responsible person

- (a) The **appointed person** and **responsible 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**
- (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 **isolations** 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**

9.4.4 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**, the key used for

isolating the energy supply must be handed to the **responsible person** for safe-keeping until testing can recommence

- (c) 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 method has been re-established
- (d) Clear communication shall be ensured between the **appointed person** and **responsible person** during testing

9.4.5 Change of appointed or responsible person

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

- i. The new responsible person must countersign the **permit to work, risk assessment, workers register** (as applicable) and the sanction for test form
- ii. 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

9.4.6 Completion of test

The **sanction for test** form must be cancelled by the **responsible person** and by the **appointed person** on completion of the specified test procedure

9.4.7 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**.

9.4.8 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 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, workers register** and **pre-work checklists** must be completed for all **work** under a "**plant in operation**" **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:
 - i. A permit to work has been issued, endorsed "**plant In operation**".
 - ii Only responsible persons, or skilled persons under the direct supervision of a another responsible person may
adjust machinery in operation, or any parts adjacent to dangerous moving parts,

CONTROLLED DISCLOSURE

- lubricate machinery in operation,
 - tighten valve glands,
 - stroke checking of valves and dampers
 - perform "On Line Leak Sealing" as determined by the Risk Assessment
- iii. If a responsible person carries out the work, another responsible person must remain in attendance for the duration of the work.
 - iv. 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.
 - v 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** method.
- (c) Typical examples of **restricted areas** are.
 - i. Switch gear rooms
 - ii. Equipment rooms.
 - iii Hazardous areas.
- (d) Issue of keys to **restricted areas** for inspections / activity only.
 - i Keys to restricted areas 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.
 - ii. Keys to restricted areas may be issued only to a person who is authorised in terms of ORHVS Module 1, who will be held solely responsible for this key whilst in his possession. He must not let this key pass out of his possession until it is returned to the person responsible for the safe custody of the keys.
 - iii *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*
 - iv 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.*

CONTROLLED DISCLOSURE

- v 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
- vi Each door or gate giving access to a restricted area shall be marked with the name of the restricted area and, where necessary, with an identification number close to the lock. A label marked with the name of the restricted area and the identification number corresponding to the lock shall be attached to the key by means of a suitable key ring.
- vii Only authorised persons shall use master keys for access to restricted areas.
- viii 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 as well as when work is being done, provided no un-authorised persons are able to gain unrestricted access.

12. 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** in context to these regulations.
- (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:
 - i There must be no danger to the person(s) carrying out the activity.
 - ii There must be no plant isolations required
 - iii The activity must be performed by a skilled person
 - iv There must be no risk of a production loss
 - v 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 immediately, 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

CONTROLLED DISCLOSURE

13. RADIOACTIVITY

13.1 DUTIES OF EMPLOYER

The **employer** shall comply with all the requirements of Eskom Standard EST 32-226 - Radiation protection and safety of radiation sources standard

13.2 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

13.3 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 – *Radiation protection requirements for industrial radiography*, are strictly adhered to

13.4 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.

13.5 DUTIES OF THE RADIATION PROTECTION OFFICER

- (a) The **Radiation Protection Officer's** responsibilities are defined in Regulations issued via Government notice 247 in Government gazette 14596, dated 26 February 1993
- (b) 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 – '*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 – '*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 – '*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, 238-38 – '*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**

CONTROLLED DISCLOSURE

- (g) Ensure that **radioactive sources** and / or **listed electronic products** are only de-**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 labelled with a **radiation-hazard warning sign**

13.6 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**

13.7 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

13.8 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

14. HIGH-VOLTAGE APPARATUS

14.1 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

14.2 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

CONTROLLED DISCLOSURE

Note: The plant safety regulations (PSR) permit to work must be X-referenced to the HV (ORHVS) work permit

15. ELECTRICAL PLANT

Regulations for work on low-voltage electrical plant.

15.1 GENERAL SAFETY PRECAUTIONS

- (a) The consequences of shock or burns from short circuits associated with **low-voltage electrical plant** 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 **plant** supplied by such a **power circuit**, with the exception of **work on domestic circuits**
- (c) Wherever reasonably possible, **work on low-voltage electrical plant** must be carried out while that **plant is dead**.
- (d) In the event of the **work** being carried out while the **power circuit** or **plant is alive**, the **permit to work** must be clearly endorsed '**plant alive**', the correct PPE worn and process followed

15.2 WORK ON DEAD PLANT

- (a) When **work** is to be done on **plant** supplied from a **power circuit** provided with a circuit breaker, isolator or fused isolator, such circuit breaker, isolator or fused isolator must be locked in the OPEN position, if practicable, and a **prohibitory sign** affixed. If such a circuit breaker, isolator or fused isolator cannot be locked in the open position, it shall be inhibited to prevent it being accidentally made alive
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 **plant** 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 plant** necessitates close approach to any **live apparatus**, **warning signs** must be posted at suitable points as close as **safely** possible to such **live apparatus**.

CONTROLLED DISCLOSURE

- (i) No person may touch, or apply conducting material, other than the probes of an **approved testing device**, to un-insulated **low-voltage plant**, until such **plant** has been proved not to be **alive** by an **appointed person / responsible person** using an **approved testing device**
- (j) The "test before touch 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) In cases where there is no visible air gap and 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

15.3 WORK ON LIVE PLANT

- (a) **Risk Assessments, workers register and pre-work checklists** must be completed for all work under a "**plant alive**" **permit to work**
- (b) A "**plant alive**" **permit to work** shall only be valid for a period of 12hours
 - i Work on live low-voltage plant, 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 supervision of another responsible person
 - ii If the work is carried out by a responsible person, another responsible person must remain in attendance for the duration of the work.
 - iii Work may not commence until a permit to work that is clearly endorsed '**plant alive**' has been issued.
 - iv. The person doing the **work** must stand on a dry insulating mat, use insulating tools, necessary PPE and relevant arc flash protective clothing as per the **risk assessment** requirements.

15.4 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 in terms of ORHVS**. See 240-114967625 (*ORHVS Minimum Safe Working Clearance*)

16. ROLLING STOCK

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

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:

CONTROLLED DISCLOSURE

- i At no time may any part of a person's body be between, or pass between, *couplings of adjoining vehicles*.
 - ii. The couplings of adjoining stationary vehicles must be engaged, as far as is reasonably practicable
 - iii. Vehicles on either side of the work must be firmly secured against movement, by the use of sprags or brakes, where necessary
 - iv 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*
 - v 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 off-loading 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 de-railer 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 and approval 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*

17. MECHANICAL PLANT

Regulations for work on mechanical plant

17.1 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 17.2 a.
- (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 health and **safety** of workers, such as.

CONTROLLED DISCLOSURE

-
- i ensuring that the system is not charged with a substance which contains latent energy,
 - ii ensuring that the maximum system pressure is less than 50 KPa,
 - iii inspection by the appointed person and the responsible person to ensure that the non-return valve does not pass,
 - iv. the correct procedure for de-pressurisation of that particular section of plant,
 - v. the necessary precautions to ensure that positive system pressure is maintained on the downstream side of the non-return valve;
 - vi the insertion of a blank flange or spade between the opening and the non-return valve if practicable,
 - vii continuous supervision of the work by the responsible person;
 - viii the personal 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
- (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)

17.2 PRESSURE EQUIPMENT SUCH AS BUT NOT LIMITED TO VESSELS UNDER PRESSURE, STEAM GENERATOR 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 with a determination that the risk exposure can be tolerated
- (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. At least one drain and vent must be locked in the open position and form part of the isolation
- (c) For pipes and vessels where no draining facilities are available, the necessary drainage and / or reduction to atmospheric pressure required by section (17.2 b) may be carried out by slackening the flange bolts and partial opening of the joint, provided that
- i The drainage and / or reduction to atmospheric pressure is done according to an approved local procedure.
 - ii The appointed person remains responsible for the drainage and / or reduction to atmospheric pressure
 - iii 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
 - iv The responsible person has verified those isolations already affected will allow depressurisation safely

CONTROLLED DISCLOSURE

- (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, as well as
- i. *The appointed person remains responsible for the isolations and / or reduction to atmospheric pressure*
 - ii. *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) An approved 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 4.4 a) is not applicable in this instance
- (f) When entry is required into the gas pass of a steam generator for purpose of a hydraulic pressure test inspection, the test pressure must be reduced before entry is allowed *Entry is to be limited for inspection purposes only*
- (g) When entry is required into the gas pass of a steam generator for purpose of internal inspection including identification and location of steam generator tube failure the following shall be adhered to.
- i. The steam generator Gas Pass to be isolated, cooled, ventilated, cleared of all dangerous gases, Safe Entry Certificate, Environmental Certificate, Gas Test Certificate and Gas Pass PTW issued
 - ii. An approved local work instruction developed that describes the safe practices for all internal inspections, with the provision for the steam generator not to be drained, be undertaken and a risk assessment done
 - iii. Pressure parts PTW must be issued and shall be cross referenced to the Gas Pass PTW, as per the approved local work instruction
 - iv. A PTW issued and the requirements under section (17 3 a) and (18 1) followed

17.3 STEAM GENERATOR PLANT OTHER THAN PRESSURE PARTS.

- (a) For the removal of loose ash build up and or clinkers, ultimately for the purpose of issuing a **Safe Entry Certificate** in order to carry out work within a steam generator, the following requirements shall apply
- i. The steam generator to be isolated, cooled, ventilated and an Environmental Certificate issued
 - ii. Cleared of all dangerous gases and a Gas Test Certificate issued.
 - iii. An approved local procedure developed that describes the safe work practices for all work to be undertaken and a risk assessment done
 - iv. A permit to work issued and the requirements under section (17.2 b, and (18.1) followed
- (b) For the purposes of work within a steam generator, a **Safe Entry Certificate** shall be obtained as well as the requirements of (17 3 a) stated above met
- (c) 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

- (d) No internal work on any item of pulverised-fuel plant on a steaming steam generator 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 (17 3a) shall be applicable.
- (e) The changing of burner impellers or core-air tubes on a steaming steam generator is considered a dangerous practice. If it is essential for this to be done on load, it must be in accordance with an authorised procedure, carried out by a skilled person under the direct supervision of a **responsible person**, the associated **permit to work** risk assessment has been authorised by the General Manager / PSM or his delegate. All persons involved must wear suitable protective equipment. (It is a requirement that a local procedure be developed for this type of work)
- (f) Work may not commence until the steam generator and turbine controls have been immobilised and the steam generator furnace pressure is stable and negative and a permit to work stating the precautions taken has been issued as per the risk assessment.

17.4 BUNKERS AND SIMILAR CONTAINERS

For the purpose of this **regulation**, 'bunker' also means a silo, staithe, 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
 - i. Where access is from the top of the bunker there must be a fall arrest plan and 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
 - ii. 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 by means of a Safe Entry Certificate 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.
 - iii. Every person working in a bunker must be fully conversant with the work to be *carried out and with the procedure for utilising the safety harness and attached lines* in such a way as to ensure safety while in the bunker
 - iv. 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) For a bunker that contains coal, or where explosive mixtures may be present, the requirements of 18 1 will apply

CONTROLLED DISCLOSURE

-
- (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
- i training of personnel,
 - ii safe access,
 - iii testing and monitoring of gas levels and WBGT index,
 - iv availability of breathing apparatus;
 - v adequate and approved lighting,
 - vi adequate communication,
 - vii control of coal flow to and from the working area,
 - viii protection against engulfment, Refer General Safety Regulation 7 of the OHS 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.

17.5 CONVEYING PLANT

- (a) No maintenance, cleaning, scraping or climbing over / onto 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

17.6 DUST PLANT, ASH-HANDLING PLANT AND RESERVOIRS.

- (a) Entry into ash sumps shall only be allowed after
- i All the supplies to level-detecting probes have been isolated.
 - ii All possible points of inflow of substances have been isolated.
 - iii. 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.
 - iv An Environmental certificate is issued
 - v A Gas test certificate is issued.
 - vi Safe entry certificate is issued.
 - vii A permit to **work** is issued in accordance with Regulation 18.1

CONTROLLED DISCLOSURE

- (b) The user shall wherever practicable, cause every mixing, agitating or similar machine to be so arranged that it cannot be set in motion or continue to operate unless doors, covers, guards or other means of ensuring inadvertent contact with any moving parts is in position.
- (c) Provided that the provisions of this section shall not apply to doors, covers or guards which are bolted in position or for an inspection hatch which is provided for controlling a process while the machine is in operation (Refer Driven Machine Regulation 12(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** and must be treated accordingly. A local procedure shall be available describing the **isolations** and access control system and be strictly adhered to.
- (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 and precipitator hoppers (See section 14.2 and section 18.1) or fabric filter chambers (See section 18.1).
- (i) Special precautions in accordance with a local procedure must be taken to allow **hot work** on or in any flue gas conditioning, fabric filter plant (See section 18.1 and section 19)

17.7 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.
- (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**

CONTROLLED DISCLOSURE

17.8 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 to 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, breathing apparatus and eye protection 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** including a gas test certificate and environmental certificate shall be issued.

17.9 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.

17.10 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** / harmful 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 (19). A local procedure must be in place to regulate this **hot work**.
- (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 or greater 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.

17.11 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, telfer or other lifting machine without the knowledge and approval of the machine operator
- (c) No unauthorised person may work on or near the wheel track of an overhead travelling crane, telfer, 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 and a **permit to work** must be issued. Should routine maintenance need to be done, it can be done according to an OEM approved procedure
- (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** / harmful gases. An **environmental certificate, gas test 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
- (i) Over head crane load testing is to be done in conjunction with an authorised procedure with a Plant in Operation Permit, by a Lifting Machine Inspector registered with the Engineering Council of South Africa

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

- (a) No person may enter, nor may **work** be carried out in, any tunnel, pipeline, aqueduct, associated turbine or pump until:
 - i The tunnel, pipeline, aqueduct, associated turbine or pump has been isolated from all sources of water, drained, and vented to atmosphere
 - ii At least one drain and vent must be locked in the open position and form part of the isolation
 - iii Access doors as required are opened and locked in the open position and form part of the isolation
 - iv An environmental and a gas test certificate have been issued
 - v An adequate supply of fresh air is present
 - vi Supplies of compressed air and chemical injections have been isolated where applicable.

CONTROLLED DISCLOSURE

- vii. The power supply to motors, which operate valves, turning gear, high-pressure oil pumps, intake gates or head-stocks have been isolated
 - viii. 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
 - ix. Prohibitory signs have been affixed to all points of isolation.
 - x. A permit to work has been issued
- (b) Working or an inspection party must consist of at least two persons, wearing suitable **safety** equipment. Additional to this, each working or inspection party must be accompanied by a **rescuer**
 - (c) A suitable distance must be maintained between members of a **work** or inspection party and the **rescuer**, so as to ensure that
 - i. Assistance can be given or obtained, should a member of the work or inspection party suffer a misadventure
 - ii. 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** with the inspection party must *inspect the entire system to ensure all personnel, tools, materials and debris have been removed before closing the access doors*

18.1 CONFINED SPACES SUCH AS VESSELS, MILLS, CULVERTS, FLUES, FURNACES, DUCTS, PITS, SEWERS, TUNNELS AND UNDERGROUND CHAMBERS. (REFER GENERAL SAFETY REGULATION 5 OF THE OHS 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 17 2 c and 7 11 2 b) 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 environmentally tested and **certified**. Thereafter a **gas test certificate, environmental certificate** as well as a safe entry certificate (where required) must be issued before any person is allowed to enter.

In addition:

- i Adequate ventilation, gas monitoring and thermal stress monitoring (heat stress – WBGT index - cold stress) must be maintained while persons remain in the space
 - ii Only approved lighting and portable electrical tools shall be allowed, (Refer Electrical Machinery Regulation 10 of the Act).
 - iii 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
- i All practical steps must be taken to prevent the ingress of dangerous substances.
 - ii Every person who enters the confined space must wear approved breathing apparatus
 - iii. Every person who enters the confined space must wear a safety harness to which a rescue line is attached
 - iv. 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 in the case of an emergency. An additional set of breathing apparatus must be available for the use of the rescuer.
 - v 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
 - vi 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 in place that explains in detail the access control and health and **safety** precautions as described in the environmental **regulations** (Refer Environmental Regulations for Workplaces 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 is introduced, the **risk assessment**, **pre-work checklist**, the **environmental certificate**, **gas test certificate** as well as a safe entry certificate (where required) shall be re-evaluated and re-issued as required

19. 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**. Refer to SANS 10287, NFPA 51B.
- (b) No **employer** or user of machinery shall require or allow **hot work** to be undertaken, unless.

CONTROLLED DISCLOSURE

- I 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.
 - II 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 a **confined space** which contains / has contained oil, gas or any other flammable substance (i.e. an explosive atmosphere), it must be ensured that.

All requirements relating to **confined space** areas shall be adhered to.
(See section 18.1)

20. SIGNS

20.1 PROHIBITORY SIGN

- (a) Only **approved prohibitory signs** may be used at points of **isolation** and all persons must obey them at all times
- (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

20.2 WARNING SIGN (DANGER)

- (a) Only **approved warning signs** may be used to warn against **danger**.
- (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

20.3 RADIATION-HAZARD WARNING SIGN

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

CONTROLLED DISCLOSURE

20.4 CONFINED SPACE WARNING SIGN

- (a) Only **approved confined space warning signs** may be used to warn workers.
- (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 (attached) conspicuously (clearly visible) at all entrances to that area.

21. 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 fire 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 followed
- (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 to 36-962 Generation Major Plant Risk Reporting and 32-124 Eskom Fire Risk Management.

22. DECOMMISSIONING AND DECLASSIFICATION 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**

CONTROLLED DISCLOSURE

- (d) In addition all **confined spaces** must be permanently opened by the removal of doors or covers and decontaminated, including being purged with fresh air
- (e) All **hazardous** substances have been removed from the **plant**
- (f) When all requirements for declassification are satisfied, the **declassification certificate** for that particular **plant** area must be completed and signed by the General Manager / 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. See *Asbestos Regulations – OHS Act*

23. 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 OHS 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

24. 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 an explosive atmosphere condition 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*:
- i. rubber latex type gloves (Electrically rated and Acid resistant),
 - ii. chemical apron,
 - iii. inherently flame resistant clothing for all electrical work,
 - iv. hard hat with arc face shield,
 - v. safety glasses,
 - vi. safety shoes,
 - vii. 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,
 - viii. use approved spark free and insulated tools or insulating sleeves over non-insulated tools,
 - ix. ensure that eye wash fountains or safety showers or spill kits are available

25. DEVELOPMENT TEAM

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

26. REVIEW

| Name | Designation |
|-----------------------|---|
| 1 Gerhard V Outshoorn | Chairperson of the GX PSR/ORHVS care group |
| 2 Errol Lapin | Senior Advisor – Generation Sustainability |
| 3 Sean Murphy | Senior Supervisor Technical Operating - Camden |
| 4 Robbie Venter | Legislative ETDP – Learning Delivery - Duvha |
| 5 Ritta Zimu | Senior Supervisor Technical Operating - Peaking |
| 6 Raymond Azevedo | Manager Learning Delivery - Kriel |
| 7 Andre Holtzhausen | Operating Support Manager - Koeberg |

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

27. JUSTIFICATION FOR REVISION


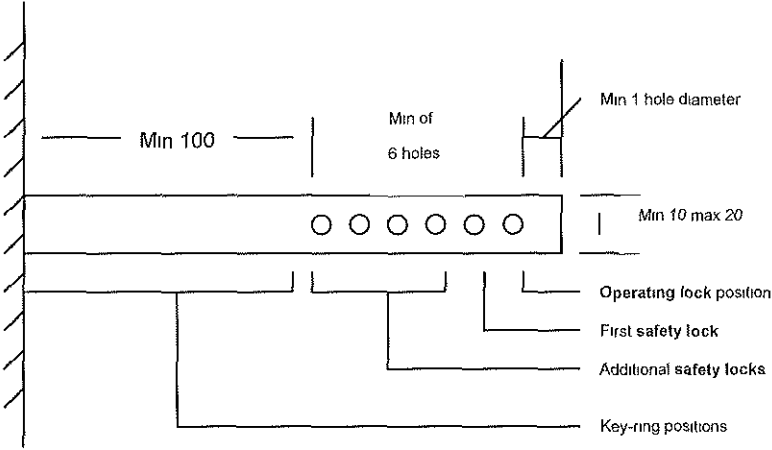
| Date | Rev. | Compiler | Remarks |
|---------------|-----------------|------------------|--|
| July 2012 | 36-681 Rev0 | S R Smit | Scheduled review of GGR-0992 Replaces GGR-992 New Risk Assessment form added New procedure reference number Decentralised distribution of the regulations |
| December 2012 | 36-681 Rev 1 | S R.Smit | <p>6 2 16 - Confined space warning signs to be attached when entry is required only under a permit to work</p> <p>6 2 40 Hot work monitor training revised to 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"</p> <p>6 2 77 Skilled person defined as having adequate knowledge and declared competent in writing</p> <p>7 15 Worker's Register Workers are now required to sign onto and off the workers register once briefed by the Responsible Person or Authorised Supervisor Six criteria "shall" criteria added making it clear to workers what they are signing for</p> <p>7 7 1 (b) Manual permit to work system The word "signature" has been added as a means of permit approval in the place of a place of an electronic pass word</p> <p>15 13 (a) Confined space sign to be affixed only when entry into that confined space is required under a permit to work. Appendix 10 New Worker's Register form compiled, making provision for workers to sign onto and off the register</p> |
| December 2015 | 2 | S R Smit | Scheduled review of document including new procedural format Decision Register information update into the document |
| November 2019 | 1 | G van Oudtshoorn | Scheduled review of document and number change to 240-150642762 New Definitions Competent Person (Changed) Gas Pass Pressure Equipment Pressure Parts Steam Generator New Abbreviation AO Appointed Operator |

Note that all Appendixes below are templates with the minimum requirements required

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


28. APPENDIX 1 - KEY SAFE SCHEMATIC DRAWING

| | | | |
|--|---|-------------------------------------|----------|
|  | PLANT SAFETY REGULATIONS KEY SAFE SCHEMATIC DRAWING. | DOCUMENT REFERENCE 240-150642762 | REV 3 |
| | APPENDIX 1 | | |
|  | | | |
| 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 | | |

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


29. APPENDIX 2 - GAS TEST CERTIFICATE

| | | | | | |
|---|-----------------------|--|--------------------------|-------------------------------------|----------|
|  | | PLANT SAFETY REGULATIONS GAS TEST CERTIFICATE | | DOCUMENT REFERENCE 240-150642762 | REV 3 |
| | | | | Appendix 2 | |
| I the under signed, hereby declare that a gas test has been carried out on the following | | | | | |
| Plant: | | | | | |
| The results of the gas test are | | | Instrument serial number | | |
| Substance. | Concentration. | Safe limits. | | | |
| Carbon monoxide {CO} | | <50 ppm | | | |
| Carbon Dioxide {CO ₂ } | | <0.5%/500 ppm | | | |
| Ammonia NH ₃ | | 25 ppm | | | |
| Lower Explosion Level Gases LEL | | 25.0% | | | |
| Oxygen {O ₂ } % in air | | >=20.0<=21.0 | | | |
| Hydrogen Sulphide H ₂ S | | 10 ppm | | | |
| Other | | | | | |
| Other | | | | | |
| Safety precautions required | | | | | |
| | | | | | |
| Safety equipment 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 work place is safe to carry out work as stipulated on the permit to work number | | | | | |
| NAME. | SIGNATURE. | DATE | TIME. | | |
| | | | | | |
| or | | | | | |
| I declare that the work place is not safe and therefore work as stipulated on the permit to work number may not begin | | | | | |
| NAME | SIGNATURE. | DATE | TIME. | | |
| | | | | | |

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

30. APPENDIX 3 - DECLASSIFICATION CERTIFICATE

| | | | |
|---|--|-------------------------------------|----------|
|  | PLANT SAFETY REGULATIONS DECLASSIFICATION CERTIFICATE | DOCUMENT REFERENCE 240-150642762 | REV 3 |
| | APPENDIX 3 | | |

CERTIFICATE No.....

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

.....

.....

.....

Energy sources severed:

| Energy source | Method of severance |
|---------------|---------------------|
| | |
| | |
| | |
| | |
| | |
| | |

Systems drained / decontaminated:

| System | Drainage / decontamination carried out |
|--------|--|
| | |
| | |
| | |
| | |
| | |

Confined spaces opened:

| Confined space | Doors / covers removed, decontamination |
|----------------|---|
| | |
| | |
| | |
| | |
| | |

Prepared by:

| | | | |
|--------|-------------|--------|--------|
| Name . | Signature . | Date . | Time . |
|--------|-------------|--------|--------|


Approved by:

| | | | |
|----------|-----------|-------|--------|
| Name. | Signature | Date. | Time . |
| GM / PSM | | | |

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

31. APPENDIX 4 - PRE-WORK CHECK LIST

| | | | |
|---|---|--------------------|-----|
|  | <p align="center">PLANT SAFETY REGULATIONS PRE-WORK CHECK LIST</p> | DOCUMENT REFERENCE | REV |
| | | 240-150642762 | 3 |
| | | APPENDIX 4 | |

Permit No:

Visit the workplace. Apply STAR and perform 3-Way Communication Review and update Risk Assessment Form as necessary

Preparation.

(Tick the appropriate block).

| | YES | NO | N/A |
|---|-----|----|-----|
| Is there positive identification of plant to be worked on? | | | |
| Has drainage been completed and pressure at zero? | | | |
| Are valves locked open? | | | |
| Are valves locked closed? | | | |
| Are there Prohibitory signs at the points of isolation? | | | |
| Are pipes / lines disconnected / blank flange inserted as necessary? | | | |
| Are systems purged with air / steam / inert gas / detergent as applicable? | | | |
| Is the workplace free of toxic or hazardous substances? | | | |
| Is the workplace free of flammable material (Hot Work Approval)? | | | |
| Is fresh air available (Natural or forced)? | | | |
| Is a Gas test certificate required? | | | |
| Are all radioactive sources isolated? | | | |
| Is an environmental certificate required? | | | |
| Is a safe entry certificate required? | | | |
| Are all electrical isolations effected as per the permit? | | | |
| Is there adequate and approved lighting at the work site? | | | |
| Can pollution occur? | | | |
| Are there other permits on same plant? | | | |
| If "Yes" can work continue safely considering these permits on the same system? | | | |
| Remember to apply "Test before Touch" principle | | | |
| Are you and or your team equipped to "Hook up at heights"? | | | |
| Have you reviewed the Flash hazard assessment for the work area as applicable? | | | |
| Any other precautions that must be maintained | | | |

Responsible Person / Authorised Supervisor.

Name:


Signature

Date:

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

32. APPENDIX 5 - PLANT SAFETY REGULATIONS HOT WORK APPROVAL

| | | | |
|---|---|-------------------------------------|----------|
|  | PLANT SAFETY REGULATIONS HOT WORK APPROVAL Part 1 | DOCUMENT REFERENCE 240-150642762 | REV 3 |
| | | APPENDIX 5 | |

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 hot work operation involving open flames or producing heat and/or sparks. This includes, but is not limited to, Blowing, Cutting, Grinding, Soldering, Torch Applications, Heating and Welding.

PART 1

INSTRUCTIONS

1. Hot Work Monitor
 - A. Verify precautions listed at right (or do not proceed with the work)
 - B. Complete and return Part 1
 - C. Issue Part 2 to persons 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 _____

Verify the above location has been maintained, the precautions checked on the Required Precautions Checklist have been taken to prevent fire and permission is granted for this work.
 SIGNED Hot Work Monitor _____

APPROVAL DATE TIME AM/PM
 EXPIRES _____

NOTE: EMERGENCY NOTIFICATION ON BACK OF FORM USE AS APPROPRIATE FOR YOUR FACILITY



REQUIRED PRECAUTIONS CHECKLIST

- Fire watches must be posted at all times during hot work operations
- Hot Work Monitor to guard repair

REQUIREMENTS WITHIN 35 ft (11m) of work

- Flammable liquids, dust and oily deposits removed
- Flammable atmosphere eliminated
- Flares swept clean
- Cables at the facility and other cables with flammable insulation removed
- Remove other combustibles where possible (if work is performed on flammable or combustible materials, all walls and floor openings covered)
- Fire extinguishers suspended to nearby work
- Hot work shall be conducted and completed in an upright position unless otherwise specified

Work on walls, ceilings or roofs

- Construction with open sides and without enclosed stairways is prohibited
- Charring of other parts of walls, ceilings or roofs is prohibited

Work on enclosed equipment

- Enclosed equipment shall be opened as required
- Flammable liquids and gases removed or vented
- Flammable gases, vapors and liquids removed or vented


Hot Work Monitor

- Hot Work Monitor when posted during hot work operations
- Hot Work Monitor shall be available during work operations
- Hot Work Monitor shall be available during work operations
- Hot Work Monitor shall be available during work operations
- Hot Work Monitor shall be available during work operations

Other Precautions Taken

0146

CONTROLLED DISCLOSURE

| | | | |
|---|---|-------------------------------------|----------|
|  | PLANT SAFETY REGULATIONS HOT WORK APPROVAL Part 2 | DOCUMENT REFERENCE 240-150642762 | REV 3 |
| | APPENDIX 5 | | |

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 <input type="checkbox"/> AM <input type="checkbox"/> PM | TIME FINISHED <input type="checkbox"/> AM <input type="checkbox"/> PM |
| PERMIT EXPIRES DATE _____ TIME _____ AM _____ PM _____ | |

Hot Work monitor SIGNOFF:
 Work area and all adjacent areas to which sparks and heat might have spread were inspected during the watch 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 tarpaulins or metal shields
- All wall and floor openings covered
- Fire-resistant tarpaulins 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 60 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
- Monitor Hot Work area for 4 hours after job is completed

Other Precautions Taken:

0446

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 HOT WORK APPROVAL Part 3 | DOCUMENT REFERENCE 240-150642762 | REV 3 |
| | | APPENDIX 5 | |

WARNING!

HOT WORK IN PROGRESS WATCH FOR FIRE!

| |
|--|
| IN CASE OF EMERGENCY: CALL: _____ AT: _____ _____ _____ _____ |
|--|

WARNING!




240-150642762 Page 63 of 82

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

33. APPENDIX 6 - PLANT SAFETY REGULATIONS SAFE ENTRY CERTIFICATE

| | | | | | |
|---|-------------------------------------|--|-----------------|-------------------------------------|----------|
|  | | PLANT SAFETY REGULATIONS SAFE ENTRY CERTIFICATE | | DOCUMENT REFERENCE 240-150642762 | REV 3 |
| | | | | APPENDIX 6 | |
| Plant Area: | | | | Permit No: | |
| <u>Plant areas inspected</u> | <u>Safe to enter</u> Yes No | | <u>Comments</u> | <u>Inspected by:</u> | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

DECLARATION:
The above plant area is found to be safe to enter.

AUTHORISED / COMPETENT PERSON:

Name: Signature:

Date: Time:

DECLARATION:
The above plant area is found to be not safe to enter.

AUTHORISED / COMPETENT PERSON:

Name: Signature:

Date: Time:

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

34. APPENDIX 7 - ENVIRONMENTAL CERTIFICATE

| | | | |
|---|---|-------------------------------------|----------|
|  | <p align="center">PLANT SAFETY REGULATIONS ENVIRONMENTAL CERTIFICATE</p> | DOCUMENT REFERENCE 240-150642762 | REV 3 |
| | | APPENDIX 7 | |

Permit to work number _____ Environmental certificate Number

Location of work

Equipment used

Instrument serial number

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

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


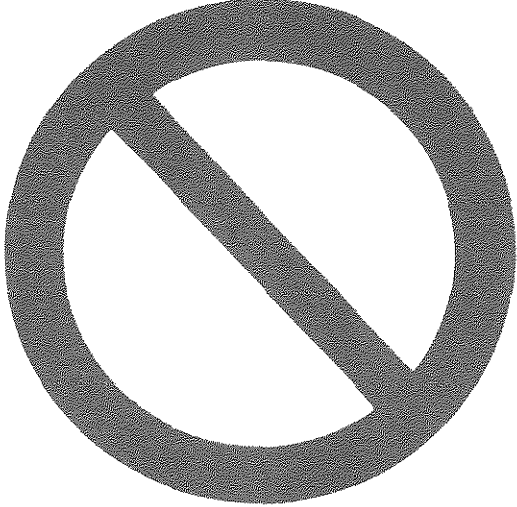
AUTHORISED / COMPETENT PERSON

Name Signature.. Date.

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

37. APPENDIX 10 - PROHIBITORY SIGN

| | | | |
|--|--|---|--------------|
|  | <p>PLANT SAFETY REGULATIONS PROHIBITORY SIGN</p> | <p>DOCUMENT REFERENCE 240-150642762</p> | <p>REV 3</p> |
| | | <p>APPENDIX 10</p> | |
|  | | | |
| SHAPE | Circular | | |
| COLOUR | White with red border and oblique diametrical line | | |
| SIZE | Standard sizes to suit application | | |
| MATERIAL | To suit application | | |

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

38. APPENDIX 11 - WARNING SIGN (DANGER)

| | | | |
|---|--|-------------------------------------|-------|
|  | <p>PLANT SAFETY REGULATIONS WARNING SIGN (DANGER)</p> | DOCUMENT REFERENCE 240-150642762 | REV 3 |
| | | APPENDIX 11 | |
|  | | | |
| SHAPE | Triangular | | |
| COLOUR | Yellow centre with black border and black exclamation Mark | | |
| SIZE | Standard sizes to suit application | | |
| MATERIAL | To suit application | | |

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


39. APPENDIX 12 - CONFINED SPACE WARNING SIGN

| | | | |
|---|---|---|--------------|
|  | <p>PLANT SAFETY REGULATIONS CONFINED SPACE WARNING SIGN</p> | <p>DOCUMENT REFERENCE 240-150642762</p> | <p>REV 3</p> |
| | | <p>APPENDIX 12</p> | |
|  | | | |
| SHAPE | Triangular | | |
| COLOUR | Yellow centre with black border and black pictogram | | |
| SIZE | Standard sizes to suit application | | |
| MATERIAL | To suit application | | |

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


40. APPENDIX 13 - LIMITED ACCESS REGISTER


|  | | PLANT SAFETY REGULATIONS LIMITED ACCESS REGISTER | | | | DOCUMENT REFERENCE | REV | | |
|---|--------|---|------------------|----------|------|--------------------|----------|------|----------|
| | | | | | | 240-150642762 | 3 | | |
| APPENDIX 13 | | | | | | | | | |
| 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 . | | | | | | | | | |
| | | | ACTIVITY STARTED | | | ACTIVITY COMPLETE | | | |
| DATE | SYSTEM | DESCRIPTION OF ACTIVITY | SKILLED PERSON | OPERATOR | TIME | SKILLED PERSON | OPERATOR | TIME | COMMENTS |
| | | | | | | | | | |

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

41. APPENDIX 14 - PTW FORM

| | | | |
|---|--|-------------------------------------|----------|
|  | PLANT SAFETY REGULATIONS PTW FORM (1/2) | DOCUMENT REFERENCE 240-150642762 | REV 3 |
| | | APPENDIX 14 | |

| | | | |
|---|--------------------------|----------|------------------------------------|
|  | ***** | | DOCUMENT REFERENCE 38-681 Rev 1 |
| | Plant Safety Regulations | | ORIGINAL |
| | | Accepted | |


| | | | | | | |
|--------------------|---------|------------|------------------------|---------------------------|--|--|
| APPLICATION | DEPT | PRIORITY | JOB NO | EWT | LOCATION | |
| | UNIT | PLANT CODE | | PLANT REQUIRING ISOLATION | | |
| | HAZARDS | | WORK TO BE CARRIED OUT | | CROSS REFERENCES | |
| | PPE | | | | PTW No. Environmental Cert No Gas Test Cert No Hot Work Approval Part Potential Production Loss Recommissioning Required Risk Assessment No Safe Entry Certificate Workers Register No | |
| | | | | | | |

| | | | | | | | | | |
|-------------------|---------------------------|------------------------|--|--|-----|----------|----------|-----|-----|
| ISOLATIONS | ISOLATIONS / INSTRUCTIONS | | | | | | | | |
| | PLANT CODE | COMPONENT/INSTRUCTIONS | | | REQ | LOCATION | STATUS * | KEY | OPS |
| | | | | | | | | | |

| | | | | | | |
|---------------------|--------------------------|--|--------------------|----------------|---------------------------|-----------|
| SIGNATURES | PERMIT APPLICATION | | PERMIT ISSUED | | CLEARANCE | |
| | D | T | D | T | D | T |
| | APPLICATION COMPLETED BY | | APPOINTED PERSON | SIGNATURE | RESPONSIBLE PERSON | SIGNATURE |
| | | | | ** | | ** |
| | RESPONSIBLE PERSON | SIGNATURE | KEY SAFE NO | SAFETY LOCK NO | REVOCATION | |
| | | ** | | | D | T |
| | PRODUCTION SCHEDULED | | PERMIT ACCEPTANCE | | APPOINTED PERSON | SIGNATURE |
| | | | D | T | | ** |
| | PLANT SHUTDOWN AGREED | | RESPONSIBLE PERSON | SIGNATURE | RECOMMISSIONING COMPLETED | |
| | | | | ** | D | T |
| ISOLATIONS EFFECTED | | TARGET COMPLETION | | RECOMM DEPT | SIGNATURE | |
| D | T | D | T | | ** | |
| APPOINTED PERSON | SIGNATURE | | | | | |
| | ** | ** EC NOTES AND ABBREVIATIONS OVERLEAF ** SIGNATURE | | | | |

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 PTW FORM (2/2) | DOCUMENT REFERENCE 240-150642762 | REV 3 |
| | | APPENDIX 14 | |

| | | | |
|---|-----------|--|-----------|
| 1 st REQUEST OF PERMIT SUSPENSION AS AGREED IN SANCTION FOR TEST | | | No |
| RESPONSIBLE PERSON | | APPOINTED PERSON | |
| Date | Time | Date | Time |
| Name | Signature | Name | Signature |
| | | | |
| 1 st SUSPENSION REVOCATION | | | |
| RESPONSIBLE PERSON | | APPOINTED PERSON | |
| Date | Time | Date | Time |
| Name | Signature | Name | Signature |
| | | | |
| 2 nd REQUEST OF PERMIT SUSPENSION AS AGREED IN SANCTION FOR TEST | | | No |
| RESPONSIBLE PERSON | | APPOINTED PERSON | |
| Date | Time | Date | Time |
| Name | Signature | Name | Signature |
| | | | |
| 2 nd SUSPENSION REVOCATION | | | |
| RESPONSIBLE PERSON | | APPOINTED PERSON | |
| Date | Time | Date | Time |
| Name | Signature | Name | Signature |
| | | | |
| SPECIAL ENDORSEMENTS / REQUESTS | | | |
| | | | |
| Date | Time | | |
| Name | Signature | | |
| CHANGE OF RESPONSIBILITY FOR PERMIT TO WORK | | | |
| 1 st RESPONSIBLE PERSON / SECONDED RESPONSIBLE PERSON | | 2 nd RESPONSIBLE PERSON / SECONDED RESPONSIBLE PERSON | |
| Date | Time | Date | Time |
| Name | Signature | Name | Signature |
| | | | |
| 3 rd RESPONSIBLE PERSON / SECONDED RESPONSIBLE PERSON | | 4 th RESPONSIBLE PERSON / SECONDED RESPONSIBLE PERSON | |
| Date | Time | Date | Time |
| Name | Signature | Name | Signature |
| | | | |

| ABBREVIATIONS THAT CAN BE USED TO INDICATE ISOLATION STATUS | | | | | |
|---|-----------------------|------------------|--------------|---|------------------|
| ABBREVIATION | DESCRIPTION | COMPONENT | ABBREVIATION | DESCRIPTION | COMPONENT |
| L/O | Locked open | Valve | TEST | In test position | Breaker/isolator |
| L/S | Locked shut | Valve | F/W | Fuses withdrawn | Fuse |
| O | Open | Valve | C/L | Cabinet locked | Cabinet |
| S | Shut | Valve | FW+CL | Fuses withdrawn, barrier/cabinet locked | Fuse Holder |
| R/O+L | Racked out and locked | Breaker/isolator | L/O+CF | Locked open and control fuses withdrawn | Breaker Isolator |
| R/O | Racked out | Breaker/isolator | IA/S | Instrument air shut | Valve |

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

42. APPENDIX 15 - SANCTION FOR TEST

| | | | |
|---|---|---|--------------|
|  | <p align="center">PLANT SAFETY REGULATIONS SANCTION FOR TEST</p> | <p>DOCUMENT REFERENCE 240-150642762</p> | <p>REV 3</p> |
| | | <p align="center">APPENDIX 15</p> | |
| <p>SANCTION FOR TEST NUMBER</p> <p>Plant covered by sanction for test</p> <p>We, the undersigned hereby declare that the following is to be carried out</p> <p>We acknowledge that permit to work number has been suspended, the associated worker's register(s) has been withdrawn, that no work other than the work detailed below may be performed during the period that this sanction for test is in force</p> <p>The work permissible under this sanction for test will constitute the following</p> <p>In order to ensure the safety of personnel at all times, plant may only be started, stopped and isolated as directed by the responsible person, and then only if the appointed person is certain that the instruction has been correctly understood. In all instances of telephone / radio communication, the persons giving, acknowledging, or confirming instructions, will be identified by first stating their name</p> <p>The actual isolation affected will consist of the following</p> | | | |

CONTROLLED DISCLOSURE


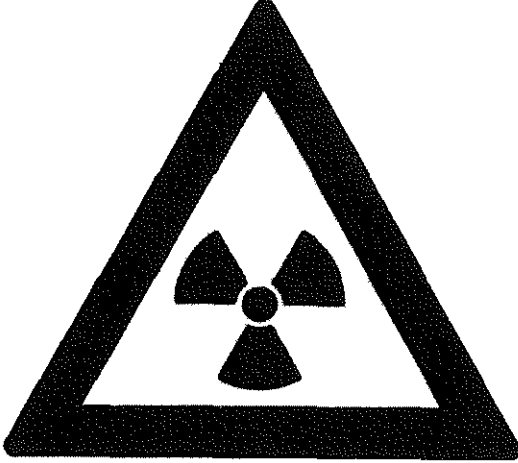
When downloaded from the EDS database, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the database

| | | | |
|---|---|---|--------------|
|  | <p align="center">PLANT SAFETY REGULATIONS SANCTION FOR TEST</p> | <p>DOCUMENT REFERENCE 240-150642762</p> | <p>Rev 3</p> |
| | | <p align="center">APPENDIX 15</p> | |
| <p>SANCTION FOR TEST (continued)</p> <p>The signal for starting will be a verbal instruction have the following wording</p> <p>The signal for stopping will be a verbal instruction, have the following wording</p> <p>The signal for requesting isolation will be a verbal request, have the following wording</p> <p>The signal for confirming that the isolation has been effected will be a verbal confirmation, have the following wording</p> <p>Following isolation, an instruction to start the plant will be taken to imply an instruction to de-isolate the plant as well</p> <p>Appointed person Name Sign</p> <p>Date Time</p> <p>Responsible person Name Sign</p> <p>Date Time</p> <p>Cancellation</p> <p>We the undersigned hereby declare that the above test has been satisfactorily completed and cancel this sanction for test</p> <p>Responsible person Name Sign</p> <p>Date Time</p> <p>Appointed person Name Sign</p> <p>Date Time</p> | | | |

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


43. APPENDIX 16 - RADIATION-HAZARD WARNING SIGN

| | | | |
|--|---|---|--------------|
|  | <p>PLANT SAFETY REGULATIONS RADIATION-HAZARD WARNING SIGN</p> | <p>DOCUMENT REFERENCE 240-150642762</p> | <p>REV 3</p> |
| | | <p>APPENDIX 16</p> | |
|  | | | |
| <p>SHAPE: Triangular</p> <p>COLOUR: Yellow centre with black border and black pictogram</p> <p>SIZE: Standard sizes to suit application</p> <p>MATERIAL: ABS Plastic</p> | | | |

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

44. APPENDIX 17 - MANUAL PERMIT TO WORK

| | | | |
|--|--|---|--------------|
|  | <p>PLANT SAFETY REGULATIONS MANUAL PERMIT TO WORK</p> | <p>DOCUMENT REFERENCE 240-150642762</p> | <p>REV 3</p> |
| | | <p>APPENDIX 17</p> | |
| <p>PLANT SAFETY REGULATIONS MANUAL PERMIT TO WORK.</p> <p>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.</p> <p><u>APPLICATION</u> (top section of the form)</p> <ul style="list-style-type: none"> * The Responsible Person (RP) or the person acting on his behalf (applicant) must complete those sections, which are applicable <p><u>SIGNATURES</u> (bottom section of the form)</p> <ul style="list-style-type: none"> * 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 <p><u>ISOLATION SECTION</u> (middle section of the form)</p> <ul style="list-style-type: none"> * The Appointed Person (AP) must determine and then 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. <p>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</p> <p><u>SIGNATURES</u> (bottom section of the form)</p> <ul style="list-style-type: none"> * The AP must then print his name and the date and time, the key safe No. safety lock No., and then signs 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 signs acceptance. The PTW is now in force. | | | |

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.

| | | | |
|---|---|--------------------|-------|
|  | <p align="center">PLANT SAFETY REGULATIONS MANUAL PERMIT TO WORK</p> | DOCUMENT REFERENCE | REV 3 |
| | | 240-150642762 | |
| | | APPENDIX 17 | |

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

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

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), when testing of plant has been completed

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

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

- * "Recommissioning completed" is not applicable unless specifically required by a particular site


SPECIAL ENDORSEMENTS / REQUESTS

- * The AP / RP can add any remarks, endorsements and / or requests and must then print his name, the date and time, and sign

CHANGE OF RESPONSIBLE PERSON

- * This is printed on the PTW form and must be completed when there is a change of RP

46. APPENDIX 19 - CAUTIONARY NOTICE

| | | | |
|---|--|---|--|
|  | <p>PLANT SAFETY REGULATIONS CAUTIONARY NOTICE</p> | <p>DOCUMENT REFERENCE 240-150642762</p> | <p>REV 3</p> |
| | | APPENDIX 19 | |
| <p>CAUTIONARY NOTICE NUMBER <input style="width: 150px; height: 25px;" type="text"/></p> | | | |
| UNIT N°: | <input style="width: 150px; height: 25px;" type="text"/> | RISK ASS N° | <input style="width: 150px; height: 25px;" type="text"/> |
| SYSTEM | <input style="width: 150px; height: 25px;" type="text"/> | PERMIT N°: | <input style="width: 150px; height: 25px;" type="text"/> |
| <p>CAUTIONARY INFORMATION</p> <p>The following plant areas and or equipment is not currently included in the above referenced outage permit to work Work on the listed plant, equipment or areas below are prohibited</p> <p><u>CAUTIONARY INFORMATION:</u></p> <p>1)</p> <p>2).</p> <p>3)</p> <p><u>ACTUAL CHANGE EFFECTED.</u></p> <p>1)</p> <p>2)</p> <p>3)</p> | | | |
| Seconded Appointed Person | | Seconded Responsible Person | |
| Name _____ Sign _____ | | Name _____ Sign _____ | |
| Date . _____ | | Date _____ | |

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