Ning SAPREF Business Management System	HSSE	Policy Manual	Level 2

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Document Controller:	E. Chettiar, MS5	**Effective date:**	2004
		Revision:	20

SAPREF HSSE Regulations

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Please check the controlled version on the SAPREF Web. This page was opened on: Thursday, October 16, 2025

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1. Purpose, scope and target group

1.1 Purpose

The SAPREF Rules and Regulations stipulate the basic requirements for working safely at SAPREF.

Note: The version of this document on the SAPREF web is the controlled version of SAPREF's Health, Safety, Security and Environmental Regulations.
The HSSE Specification green booklets (Booklet 1: General HSSE Specifications, Booklet 2: Permit To Work HSSE Specifications and Booklet 3: Confined Space HSSE Specifications) which in the printed bound version is an uncontrolled copy for use in the field.

1.2 Scope

The full content of the SAPREF's Health, Safety, Security and Environmental Regulations with all references.

1.3 Target Group

All staff and Service Providers working at SAPREF.

2. Description

In this document references to other important documents are included. Most are available on the SAPREF Business Management System (Intranet). If you are a service provider and you require access to any such references, please request your SAPREF Contract Holder ('host") to provide the document/s.

CHAPTER 1 - GENERAL INTRODUCTION

1.1 Purpose

To provide people who do work on behalf of SAPREF and under SAPREF's control and people who are responsible for such work, with an easy to use Reference Guide of SAPREF's HSSE policy, Standards and the Legislative Regulations pertaining to their work.

Users should use these HSSE Regulations to:

- Establish SAPREF's Requirements and Standards.
- Develop Safe Working Procedures.
- Serve as a guideline when conducting Risk Assessments.
- Identify the relevant Legislative Regulations.
- Select the most effective Precautionary Measures.
- Improve the effectiveness of their HSE Walks/Audits.
- Educate and train their people.

1.2 Scope and Status of the Regulations

a) These HSSE Regulations will apply to all people who enter SAPREF Site/s or who do work anywhere on SAPREF's behalf and under SAPREF's control.
b) These SAPREF HSSE Regulations are intended as a concise guide and where more detail is required reference should be made to the Occupational Health and Safety Act [Act 85 of 1993] and the appropriate management system (e.g. Production / Asset / HSSE etc) within the SAPREF Business management system (Bms).
c) All activities undertaken under SAPREF Control shall, at all times, conform to the Occupational Health and Safety Act (OHS Act) and it's Regulations.

1.3 Concession Procedure

Only the Managing Director may authorise any deviation from or addition to these Regulations. The relevant Departmental Head will submit a written request including a plan for resolution in each instance to the Managing Director and all possible avenues have been explored. If granted, this plan will require review by the leadership team on dates specified in the plan.

1.4 Consequence for unauthorised Non-Conformance

The HSSE rules and Regulations are to be complied with 100% of the time unless as a concession has been granted. Non-compliances must be reported and investigated for learning which may include consequence management if appropriate.

1.5 Employees Legal Responsibilities

[Refer to OHS Act Sect. 14; "General Duties of Employees at Work"; OHS Act 16(2) Responsibilities Checklist HSSE.CL.0005]
In accordance with the OHS Act every employee shall:

a) Take reasonable care for the Health and Safety of him/herself and other persons, including stopping work if anyone's Health or Safety is at risk.
b) Co-operate with Management such that SAPREF can comply with the OHS Act.
c) Carry out any lawful order given to him/her and obey the Health and Safety Rules and Procedures as laid down by SAPREF.
d) As soon as is practicable, report any unsafe or unhealthy situation he/she become aware of to their Supervisor or Health and Safety Representative.
e) Report any incident, which may have adversely affected his/her Health or Safety to his/her Employer or Health and Safety Representative, no later than the end of the particular shift during which the incident occurred.

All requirements, directives, headings or provisions in these HSSE Regulations do not constitute a replacement of the relevant provisions of all applicable national, provincial and local legislative requirements of the Republic of South Africa. Except where the context clearly indicates a contrary intention, reference to one law in the Regulations does not necessarily exclude the applicability of other relevant laws.

Notwithstanding the contents of these HSSE Regulations, all work shall be exclusively undertaken in such a way to comply with the provisions of all applicable national, provincial and local legislative requirements of the Republic of South Africa, specifically, but not limited to, all relevant provisions of all applicable laws relating to occupational health, safety and the environment.

In addition to the OHS Act requirements, the level of risk for all work must be determined via hazard work categories (refer to HSSE.SF.0212) and the appropriate risk assessment undertaken as guided by the Risk Management Procedure SITE.PR.0005.

1.6 MOC Procedure for making HSSE changes.

10 Step Action Plan In HSSE Changes Roll Out

Table proposal/argument for change to Health & Safety Specialist

Health & Safety Specialist present proposal to HSSE Manager with case for change

HSSE Manager, Health & Safety Specialist engage key Stakeholders/Process Owner/s with proposal and case for change to get buy in.

HSSE Manager presents proposal with implementation plan to Managing Director for approval

HSSE Manager presents approved proposal to Health & Safety Specialist for roll out.

Health & Safety Specialist aligns HSSE Department first, then engage ZLT (PUM's, PS's, OMS's, AE's), SAPREF 16(2)'s, Service Providers 16(2)'s in Quarterly Meetings, TA and Projects, MSFP's, Maintenance Team, Service Providers Safety Practitioners Forums with proposed change. Attendance Registers to be filled in.

Health & Safety Specialist, where deemed necessary, approach identified ~~Zone~~ team for pilot implementation of change with set timeline (month) for monitoring change and alignment.

Site wide roll out to be implemented after successful pilot. Stakeholders to roll out to their Teams and submit Attendance Registers.
Communication Team (already engaged about change) to use intranet page to inform site of change to raise awareness.

Use of all available platforms to implement roll out and advertise change – Maintenance Monthly Meeting, MSFP Forums Safety Practitioners' Meeting, Attendance Registers to be filled in. Use HSSE Stop on Change, Information Briefs, Intranet, Pop-Up Adverts on screens, News Boards, MD's Blog.

Review implementation effectiveness as Department after a set time from change implementation

CHAPTER 2 - GENERAL HSSE REGULATIONS

2.1 SAPREF HSSE (Health, Safety, Security & Environment) Induction

2.1.1 All Service Providers shall receive HSSE induction before commencing work. Thereafter a Security Access Card shall be issued. DSTT (Durban South Training Trust) is the approved body to conduct HSE induction training on behalf of SAPREF. HSSE Induction is valid for 1 year. Service Providers returning to site after an absence of more than 6 months must re-attend the induction class regardless of whether the previous induction has expired or not.

DSTT will only perform training for those Service Providers who are in possession of a "Certificate of Fitness", and who have paid their training fee.

The responsibility to set up these appointments lies with the SAPREF Contract Holder and the Service Provider managers.

Upon successful completion of the required medical and induction course, including the associated course test, DSTT will issue a HSSE Passport to all persons who successfully undergo the HSSE Induction training.

2.1.2 The SAPREF host is responsible for ensuring that their service provider/s attend the HSSE Induction Course and that, before they start work understand the HSSE Induction and medical requirements of SAPREF.

2.1.3 The host will be responsible for completing the required documents for capturing the service provider's details into the Service Provider Access System by Security and extending the expiry date of the service provider to ensure the access card remains valid for the required period / term of contract.

2.1.4 The SAPREF host is responsible to ensure that the service provider is conversant with:

- HSSE.PR.0069: Permit to Work System
- SITE.PR.0005: Risk Management Procedure

2.1.5 The service provider must present his or her identification (government issued ID) and HSSE Induction card to security at the SAPREF Permit Office where their information will be checked on the Contractor Access System and a photograph will be taken for the issue of a SAPREF access card.

2.1.5.1. Where the HSSE Induction was carried out within the SAPREF premises, the Contract Holder or Host must make sure that the SAPREF HSSE Induction Attendance Register (HSSE.SF.0019) has been completed with the service provider's details and signed by the service provider who attended the induction, the induction facilitator and the Contract Holder. The copy of this register must be submitted to Security for the issue of either day visitor cards or long term access cards (max period 14 calendar days in the instance of a medical waiver).

2.1.6 The contract holder shall ensure that all persons required to perform work on SAPREF sites, shall attend the required HSSE training, in particular all persons required to sign acceptance of Clearance Certificates shall attend and pass SAPREF permit receivers test.

2.1.7 On completion of work, Service Provider companies are required to ensure that access cards are collected from their employees and handed over to the security at the permit office

2.1.8 All service provider HSE officers or Practitioners shall represent their company at the weekly HSE officers meeting during non-shutdown periods and daily during shutdown periods including any other meeting prescribed by the HSSE department.

2.2 SAPREF Risk Assessment

SAPREF's Risk Assessment is one of the corner stones of SAPREF's HSE Programme. This includes a number of different risk assessment tools e.g. Hazard Work Categories (HSSE.SF.0212), RAMS (Risk Assessed Method Statement), LMRA (Last Minute Risk Assessment), Risk Assessment Matrix (RAM)

a) **Hazard Work Categories:**
A number of work activities have been classified as high, medium and low in the Hazard Work Categories document (HSSE.SF.0212) as a guide to those planning, preparing, approving, overseeing and executing work activities. These are the minimum risk levels for the listed activities and notwithstanding which, ALL work activities should have / be risk assessed prior to execution.

b) **RAMS (Risk Assessed Method Statement):**
A Risk Assessed Method Statement must be carried out for all low, medium and high risk jobs.

c) **LMRA (Last Minute Risk Assessment):**
LMRA must be carried out prior to commencement of ALL work activities in the field including Permit Exempted work.

d) **RAM (Risk Assessment Matrix):**
Any activities not listed on the Hazard Work Categories document must be assessed using the RAM (Risk Assessment Matrix) to determine level of risk.

A Risk Assessment shall be conducted before any work on SAPREF plant or equipment is undertaken. A discussion of the risk assessment is to be conducted with all persons involved in the work activity. **Every worker** involved in the work activity for which the risk assessment has been conducted, shall be made aware of the hazards and risks associated with the task. Control measures should be put in place by the person responsible for the area. Communication between the supervisor, Clearance Issuer, Clearance Receiver, unit operator and artisan doing work in the field is important and must happen for understanding of activity and mitigations.
Prior to work commencement in the field, a LMRA (Last Minute Risk Assessment) shall be done. Should other risks arise during the activity, the scope of work, methodology, tools be changed, then the work shall stop and the risk assessment (RAMS) be revisited / revised. The work area to be made safe and the identified risks reported to the supervisor and MSFP as soon as possible.
[Further reference to Risk Assessment is contained in SITE.PR.0005 Risk Management].

2.3 Access to SAPREF

[Refer to Access Control HSSE.PR.0071]

SAPREF host is the person responsible to ensure that the visitor is aware of basic HSSE requirements as reflected in the Entry to SAPREF Site HSSE Induction form (HSSE.RE.0004). The host is responsible for collection of the visitor from and to the access point.

2.3.1 Visitors on Site

a) Security Access Card is required for visitors to enter SAPREF premises.
b) Visitor Access Card should be displayed on one's person while on SAPREF premises. Visitor access cards to be returned to main gate security staff when leaving SAPREF Sites.
c) Host to meet visitor at reception. The visitor shall be accompanied by the SAPREF host at all times.
d) When the visit is over the host shall accompany the visitor to the security exit point and make sure the visitor has safely departed.
e) Visitors are not allowed to wander into non-designated areas.
f) Visitors to the Island View sites will also require a Cutler Permit in order to enter the Island View Complex; this can be arranged via the respective Host.

2.3.2 After hours Work / Visitors (not applicable to shift workers)

a) All staff and Service Providers working later than 18h00 are to inform the Shift Manager / IVT Team Leader who will notify Security of their presence on the premises. On their eventual departure, they are to advise security so that the log entry can be closed.
b) All emergency call outs to Day Only Service Providers must be made via the Shift Manager, who will in turn advise Security to book them in.
c) For planned weekend work (including public holidays), the Planned Weekend Work Form (HSSE.SEC.SF.0028) must be completed and approved by the Maintenance Manager and HSSE Health & Safety Specialist and emailed ~~handed~~ to Security at least 48 hours in advance.
d) The SM or IV Team Leader reserves the right to cancel such access.
e) All such visitors are restricted to the office complex and are prohibited from using any SAPREF equipment or from visiting any process areas ~~Units~~ or Workshops.

2.3.3 Declaration of Property

The onus is on each individual accessing SAPREF to make a declaration at security of their property or any items that may be considered undesirable within the premises. Items that are to be declared are:

- Firearms and ammunition; incendiary devices (flammable devices), knives etc.
- Cameras and video recording equipment.
- Computer Notebooks and their accessories.
- Tools

2.4 Smoking

[Refer to Smoking Procedure PEOPLE.PR.0007;

Smoking is only permitted in clearly demarcated areas. Clear signs showing "smoking areas" must be displayed.

a) Smoking is not permitted in any Process Area, on any road within the ~~Refinery's~~ SAPREF site boundaries and inside a vehicle that is on our premises, but only in designated smoking areas. The responsibility is on the smoker to ensure that the area, in which he/she wishes to smoke, is a designated "Smoking Area" and certified by the Sapref fire department.
b) The area in which smoking is allowed must be free of any flammable material.
c) Ashtrays or sandpits must be provided for cigarette ends.
d) Smoking in a "non-smoking area" is a very serious offence. Offenders will immediately be escorted off the premises. Employees could face dismissal.
e) All smoking shall stop in the event of the sounding of any Emergency Alarm.
f) No matches, **E cigarette** and lighters to be taken onto process areas, tank farm, pipe tracks and loading gantries.
g) A valid Certificate of compliance issued by the Sapref Fire department is required for all smoking areas.
h) Smoking areas are to have a valid Fire Extinguisher present at all times.
i) Smoking is not permitted within the first hour: after work start, before lunch break, after lunch break and before end of shift.

2.5 Use of Motor Vehicles on site

[Refer to HSSE.PR.0005: SAPREF Driving Standard; HSSE.WI.0625: Vehicle entry permits; HSSE.SF.0016: Staff On-Site Parking Application HSSE.SF.0018: Contractor Vehicle Entry / Parking Permit Application]

SAPREF security staff has the authority to restrict or prevent entry and use of any vehicle on site. They are authorized to check the roadworthiness of all vehicles on site and require that the driver present a valid drivers license and valid PrDP when required. Traffic offences on any SAPREF road (internal or external roads), including speed trapping are reportable by the SAPREF security staff.

a) Entry into the SAPREF sites is by Vehicle Entry Permit (VEP) only. Permit applications are obtainable from the Permit Office at Main gate. Preference will be given to 'work vehicles' such as bakkies. Permit conditions apply to both staff and Service Providers alike.
b) Drivers shall at all times comply with the Local Authority Regulations
c) Vehicle condition shall comply with the National Road Traffic Act. Vehicles with the following defects may not be brought onto SAPREF Sites:
    - defective brakes
    - defective, leaking exhaust systems
    - serious oil or fuel leaks
    - unsafe loads
    - smooth tyres
    - any other defect that could pose a potential threat or hazard.
d) Bulk tankers collecting or delivering highly flammable or hazardous products shall be in possession of certified or original RAMS.
e) Vehicles carrying abnormal loads shall be escorted into the site. In addition a predetermined route is required for such vehicle. (Engineering Services Manager or Civil Engineer to advise on the preferred route)
f) Vehicles may not be parked such that they obstruct any fire fighting equipment, vehicles or roads.
g) Vehicles that are parked on site but not in marked parking areas shall be left unlocked with keys in ignition.
h) The Site Speed Limit is 30 km/h unless otherwise stated (sign posted).
i) All road signs must be observed and strictly adhered to.

j) Drivers must hold a valid Drivers Licence for the class of vehicle they are driving.
k) Driver's that are operating vehicles that are able to carry from 12 persons, including the driver, must be in possession of a valid PrDP (Professional Driver's Permit) whether there are passengers present in the vehicle or not.
l) Overtaking on site is prohibited - except when the other vehicle has stopped for legitimate business.
m) Wearing of seat belts is mandatory for all vehicle occupants where seat belts are fitted. The driver is responsible for ensuring that all the passengers have buckled before taking off. Citations will be issued to the driver if the passenger is not wearing the seat belt.
n) ***No person(s) are allowed to be transported on the back of bakkies or trucks. Alternative transportation must be used***
o) Cyclists, Pedestrians and Emergency Response vehicles have the Right-Of-Way.
p) Cyclist must use the standard cyclists road hand signals when riding withing the SAPREF Premises.
q) In an emergency, in the event of the Fire Alarm sounding, all vehicles, other than Emergency Response vehicles must move over to the side of the road, stop and switch off their engines**.**
r) In the event of a Gas Alarm, same as above but this time leave the vehicle and proceed to a safe location. Based on the wind direction the Fire Marshall will direct you to the appropriate Assembly Point.
s) Cell phones (including hands free kits) and two way radios may not be used by the driver while the vehicle is in motion within any SAPREF site perimeter. (Refer to 2.7 Use of Cell Phones and Two Way Radios)
t) Drivers must immediately report all "accidents" to their Supervisor or Host who will then record the Incident in CIS.
u) Vehicle parking in the Management Car Park is for JG 4 and above, as well as Shift Personnel.
v) On Site parking is for Job Need Vehicles ONLY, to qualify for a Vehicle Entry Permit (VEP), the application form HSSE.SF.0016 (staff) or HSSE.SF.0018 (Service Providers) must be agreed to by the respective Line Manager with final approval by the Fire Chief and the Chief Security Officer VEPs will be issued by Security against an approved application form; all VEPs expire on 31 December of each year and must be reapplied for each year. During special projects ~~Turnarounds~~, special VEPs will be issued against the same application and criteria.
w) Trailers that are towed by any vehicle shall always have a chain around the tow hitch.
x) The towing of vehicles on site shall only be done with a solid tow bar. The conditions as laid out in the National Road Traffic Act shall be adhered to.
y) All vehicles entering into SAPREF sites shall have reverse alarms fitted.

2.5.1 The use of vehicles and internal combustion engines in process areas and other restricted areas (Including Cranes)

(Refer ASSET.WI.0217 Responsibilities for Hired Cranes)

The use of vehicles or equipment in a process area shall be covered by a valid Hotwork RAMS and Clearance Certificate. Petrol driven vehicles, pumps, generators, compactors are not permitted onto process areas unless there are no diesel alternatives. Diesel driven alternatives shall be sought and if not available then an exception to this rule will require a valid Hotwork RAMS signed by the designated Fire Chief as well as the OHS Act Section 16(2) Hotwork RAMS Signatory.

The following precautions must be taken when operating any vehicle or equipment, driven by an internal combustion engine in any process unit or other restricted area. e.g. Inside the bund areas of a tank farm, LPG, storage area etc.:

a) Vehicles are only allowed into and out of process areas if accompanied by a Process Technician, Rigger (for lifting vehicles) or flagman walking ahead of the vehicle to

ensure that the vehicle only enters the areas stipulated on the Clearance Certificate and can do so without damaging pipe work or equipment.

b) The Clearance Certificate must indicate the route the vehicle or equipment may use ~~enter~~ and or any other special conditions that must be adhered to.
c) The vehicle or machine shall comply with statutory requirements. For vehicles or machines parked in a process area handbrakes and wheel chocks must be provided.
d) The area in which the vehicle or machine is operating must be free of gas or liquid hydrocarbons. Or if it cannot be made free of combustible materials a Risk assessment approved by the OHS Act section 16(2) appointee shall be done and the Hot Work RAMS Signatory, Gas Safety Inspector and designated Fire Chief shall all sign the Hot Work RAMS. The gas test for that area and the signing of the Clearance Certificate by the AGT shall be completed daily prior to work commencing/movement / starting of the vehicle.
e) In the event of Hydrocarbon/Chemical spillage or release or as directed by the operator, the Internal Combustion Engine shall be switched off immediately unless this equipment is critical to support hydrocarbon process in which case a "DO NOT ISOLATE" tag shall be placed on the combustion engine stop switch.
f) All sewers and drains within 15 metres of a running Internal Combustion Engine shall be covered and gas tested around the edges of the cover. Sewer covers to be removed at the end of each day or if rain is imminent.
g) No sampling, venting or draining of Hydrocarbons or Chemicals while the Internal Combustion Engine is in operation.
h) A valid Fire Extinguisher to be on hand at source of potential ignition.
i) Internal Combustion Engine Machines shall be located down wind of workers whenever possible. They may also not be operated inside a CSE.
j) The equipment shall not restrict Emergency Response Access, or obstruct fire fighting equipment. If this cannot be avoided, it shall be sanctioned by the Gas Safety Inspector (GSI) / Fire Chief.
k) No refueling while engine is being run, unless approved in writing by Production Unit Manager.
l) Cranes exceeding 50 tons shall follow an agreed route and positioning.
m) Measures shall be taken to avoid fuel or oil spillages. Metal drip trays shall be provided. Use of metal funnels and metal cans to carry and decant fuel is mandatory when refueling vehicles or equipment on site, as well as proper earthing.
n) Combustion engines to be switched off when going away for lunch and when the activity ends or put on hold.

Managing vehicle and mobile equipment access and activity at SAPREF controlled Sites

The Vehicle and Mobile Equipment Access and Activity Practice Elements

Risk Assessments

Intent Sites shall assess and prioritize the risks associated with vehicle and mobile equipment access and activity.

Requirements - Vehicles and Mobile Equipment as Potential Ignition Sources:

a) Vehicles and mobile equipment in areas where flammable materials are present (e.g. classified hazardous areas, are an ignition hazard. Vehicle access and mobile equipment used in these areas shall be managed based on assessment of the following risks:

- Duration of vehicle or mobile equipment in the area.
- The area where the vehicle or mobile equipment is to be located.
- The route a vehicle takes to and from the area.
- Locations of equipment containing flammable materials, including:
    - vents, drains, sewers, sample points, etc..

- All other relevant flammable hazards in the area.
- Risks posed by alternative routes or methods of .access (e.g. do closing roads create other hazards?)

b) Risks associated with vehicles and mobile equipment as potential ignition sources shall be assessed with consideration to HAZOPs and other relevant risk assessment processes used by SAPREF. Risk assessments shall include consideration of units that are not operational (e.g. in Turn Arounds) or have been decommissioned.

Vehicle Impact on coinciding activities

a) Sites shall consider the impact of vehicle entry and activity on all work planning, scheduling, and permitting, related to coinciding activities.

Vehicles as Potential Sources of Damage or Injury due to Collisions

a) Sites shall include the potential for vehicles to impact personnel (including pedestrians and bicyclists) or process equipment. HAZOPs and inherently safer design standards are appropriate processes for assessing risks associated with vehicles impacting process equipment. Management of Change (MoCs), traffic flow studies, and reviews of previous incidents are appropriate processes for assessing the risk of injury to pedestrians or bicyclists.

Additional Precautions for Internal Combustion Engines:

- Certification of pressure vessels on the machine;
- Spark arrestor on the exhaust (with certificate) – exhaust to be routed above machine;
- Emergency stop button;
- Double pole battery isolator;
- Battery enclosed;
- Air intake shut off valve;
- No diesel or oil leaks;
- All diesel hoses on the machine to be crimped – no jubilee clamps.

Some equipment that qualify for these requirements are as follows:

1) Mobile Compressors
2) Cranes
3) Bobcats
4) Piling Rigs
5) GenSets (Portable Generators)
6) Grout Mixers
7) Tractors
8) Welding Machines
9) Vibrators
10) Concrete Mixers
11) Concrete Boom Truck

In the case where a vehicle does not fully comply to these requirements, the following shall apply:

- A 4 Gas Monitor is worn by at least one person closest to the vehicle, a Yellow Man can also be used to monitor LEL continuously.
- There is person by the vehicle door or inside the cab for the duration of the activity who will switch off the truck engine should LEL be detected by the monitoring device as stipulated in the first bullet point above.
- Up front communication and alignment with all relevant stakeholders is key. The Panel person must also be made aware of such activity for further communication in case of Process ~~lant/Unit~~ upset.
- Clearance Issuer to make the final call if extra mitigations are required or there is a need to revise or revisit the Risk Assessment.

2.67 The Use of Cell phones and Two way Radios on SAPREF Premises

(Refer to HSSE.PR.0005: SAPREF Driving Standard section 2.12)

The following regulations apply at the refinery, Island View with regard to the use of cellular phones, Hands-Free kits and Two way Radios on the sites:

a) Cellphones SHALL NOT be taken onto or used in any process areas (even if switched off), laboratories, or while driving. ONLY SAPREF Fire, Safety personnel and Production Manager in possession of intrinsically safe SAPREF cell phones are permitted to use these in process areas. Photos for business use may be taken without a clearance, using these devices.
b) Cellphones SHALL be used in the office blocks, workshops, and stores and on the roadways (except while driving).
c) Cellphones must be switched off before entering all Field Auxillary Room (FAR) buildings.
d) For all Road tankers the cell phone must remain switched off and kept in the cab whilst loading.
e) A 'Hands free' kit may not be used.
f) 2-way radios shall not be used by drivers whilst driving any vehicle except in extreme emergency circumstances (such as major incidents).
g) Texting or talking on a cellphone while walking is not permitted. One should be stationery and standing out of the way of traffic before operating one's cell phone.
h) Listening to music with headphones while walking is not permitted.

2.7 Response to Emergency Situations and Alarms

a) Anyone discovering a fire or potential emergency can raise the Fire Alarm by [telephone 1333 at the Refinery] or by informing anyone that has radio contact with the control rooms.
b) At Island View, in the event of an incident SAPREF will initiate their alarm and inform TNPA IV who will also initiate their alarm. [Telephone 031-4662833 for IV site 3] the TNPA numbers are– 031-3616333 or 031-3616463
c) They must state the nature of the event and location.
d) On sounding of any Emergency Alarm:

- All activities must be stopped immediately and made safe.
- All non-essential Internal Combustion Engines must be stopped and switched off
- All non-essential people must leave all Process Units and Sites via the shortest, safest route.
- Any operational use of Fire Water must be stopped immediately.
- Administrative staff and any other staff must assemble at the nearest Emergency Assembly Point and a roll call must be conducted. unless otherwise instructed by the Evacuation Marshals.

Site Emergency for a gas alarm

On discovery of any gas leak immediately sound the site alarm. In Island View, sound the Site alarm and inform TNPA ~~Portnet~~ who will activate the Cutler alarm immediately.

- The On site all-clear alarm will only be sounded once the Shift Manager/IVT Team Leader has declared the area safe.
- Nobody is to enter the area without wearing self-contained breathing apparatus.
- The Shift Manager /IVT Team Leader shall ensure that staff are prevented from entering the area until it has been declared safe to do so.
- The leak must be recorded (in CIS) as an HSE incident.

Emergency response to H_2S alarms

- In the event of an H_2S Alarm sounding the affected area should be cleared immediately.
- Operations personnel are then required to make sure they evacuate personnel from the plant, find the source of the leak and prevent further leakage.
- Escape should be at 90 degrees to the direction of the wind via the nearest possible escape route.

Emergency alarms

Refinery:

- Possible Fire, Explosion or Hazardous gas release - Oscillating Electrical Siren
- All Clear - Oscillating Electric Siren

Island View:
Cutler alarm -

- Fire and or spillage - CONTINUOUS SIREN ALARM FOR A PERIOD OF 60 SECONDS. (Leaseholders send a representative to the FCP)
- Toxic gas cloud or disaster - CONTINUOUS SIREN WAILING ALARM (Evacuation of the Island View Complex is indicated):
- ALL CLEAR - TWO CONTINUOUS SIREN ALARMS FOR A PERIOD OF 10 SECONDS EACH.

IVT Sites –

- Possible Fire, Explosion or Hazardous gas release - Electrical alarm

2.8 Reporting of HSSE Incidents

All Injuries, no matter how slight, must be reported to the appropriate SAPREF Supervisor (Shift Manager/IVT Team Leader after hours) as soon as possible and before the injured party leaves the Site at the end of their shift or working day. This is a mandatory SITE and OHSAct requirement. In the event of an injury occurring during work covered by a permit to work, the Maintenance Services Focal Point (MSFP) and Shift Manager/IVT Team Leader must be informed immediately.
It is imperative that for **ALL INJURIES** the Health and Safety Specialist or the HSSE Manager (Refinery Safety Advisor/IVT HSSE Officer if unable to contact HSSE Manager or Health and Safety Specialist); the Clinic Sister; Clinic Manager, Shift Manager/IVT Team Leader and the SAPREF area 16(2) appointee are contacted no later than the end of the particular shift/working day during which the incident occurred. If the injured party is admitted to hospital, sent to a doctor for treatment or simply for a check-up, their employer or line manager is responsible for advising the injured party's family.

All HSSE incidents, including Near Misses must be reported via SAPREF's Continuous Improvement System (CIS) or into the Near Miss Boxes ~~(during Turnarounds)~~ before the end of that shift or working day. Failure to do so could result in the Injury not being classified as a work-related injury and all costs will then be for the injured person's account.

NOTE: If a person is suffering from a mental or psychological trauma caused by incidents experienced outside SAPREF premises like witnessing a nasty incident at home or on the way to work or any other trauma that could lead to some distraction whilst performing duties on SAPREF controlled sites, in this instance, he or she must feel free to discuss the matter with the Health and Safety Specialist or SAPREF Clinic Sister.

2.9 Entry into Production Areas

2.9.1 All areas [excluding the Alkylation Unit; and Avgas lead Injection Facility Site1 Island View]

a) Entry into any Process Area shall be with the permission of Production Maintenance Services Focal Point (MSFP) / Clearance issuer / Team Leader or Panel person of that zone. A register shall be signed for entry once this permission is granted and signed off. This does not apply to Operations personnel.
b) Anyone entering a Process Area shall at all times comply with all HSE Signs. Failure to comply will result in disciplinary action.
c) Entry into any area, which has been demarcated by a Chain; barricade, bunting (with special signage) or H_2S / Radio Active Testing bunting, is prohibited. The only exception is persons specifically authorized to work in the demarcated area.
d) The use of personal H_2S monitors is mandatory in all Process Areas at refinery and specific areas at Island View.

2.9.2 Entry to Alkylation Unit

Entry into the Alkylation Unit (HF ACID AREA) is only permitted under the following conditions:-

a) When the person has attended the required Alkylation Unit Induction Course.
b) After permission to enter has been granted by the relevant Production Maintenance Services Focal Point (MSFP) / Team Leader/ Clearance issuer or Panel person.
c) Enter and exit is only via the Alkylation Change Room.
d) When appropriate Acid Area class clothing is worn. (see 2.11 category 6 for different PPE requirements)
e) Access to the Alky plant is via a swipe access card system only.

2.9.3 Entry into Avgas lead Injection Facility Site 1 Island View

a) An approved lead medical as defined in the Lead Regulations of the OHS Act has been carried out on the individual(s).
b) Authorization by the Clearance Issuer of Island View Site.
c) The individual(s) have undergone a lead awareness presentation within the last 12 months.
d) Refer to Chapter 2.11 Category 5 for Specific PPE Requirements.
e) Pregnant persons are not allowed into the Lead facilities.

2.9.4 Refreshments on site

a) No persons are allowed to bring food items onto process areas.
b) Eating in process areas is prohibited, except in designated areas.

c) No persons other than the SAPREF approved catering company are allowed to sell food and drink items on SAPREF sites.
d) In special circumstances permission will be granted for consumption of liquids like energy drinks to prevent dehydration during work activity. These must be approved by the Health and Safety Specialist.
e) Drinking of water within the process areas is allowed, however good housekeeping must be maintained at all times.

2.10 Minimum Dress Requirements for all Process Areas

Minimum dress requirements apply for entry into:

a) All Operating Areas including pipetracks, tank farms and off plot
b) Avgas lead Induction Facility Site 1 Island View
c) Alkylation unit
d) Amine and caustic area
e) Island View and New Pier wharf areas
f) Workshops as demarcated.
g) Laboratories

The minimum standards for PPE are specified in HSSE.RG.0029: SAPREF PPE Specification Register.

Written exemption from the specified dress requirements due to safety or health reasons (e.g. use of over specs with bifocals result in distorted vision) shall be obtained from the Clinic Sister or Health & Safety Specialist

Cleaning and maintenance of PPE

Any worker required to wear PPE shall receive training in the proper use and care of PPE. PPE should be inspected, cleaned, and maintained at regular intervals so that the PPE provides the required protection. PPE shall not be shared between employees until it has been properly cleaned and sanitized. Contaminated PPE which cannot be decontaminated shall be disposed of as hazardous waste.

PPE used in the Alkylation unit

There is no need to neutralize Class A overalls (Class A gloves and boots require nuetralization since they may have touched something that was contaminated with HF).

Safety harnesses may need neutralization, depending on what the harness was attached to and what type of work was being done while wearing the harness – if it was attached to something that may have been contaminated with HF or if it was used while doing Class B or C work then it should be neutralized. Like with crane slings (section 3.5.11 of API RP 751) issues with compatibility of the harness material with HF and neutralizing chemicals should be considered.

Tool bags would depend on what it was exposed to or set down on. If it was exposed to Class B or C work (or to unneutralized tools used in Class B or C work) or set down where it may have been contaminated with HF then it should be neutralized. Use of cloth tool bags should be avoided. Tools should be carried in a box or solid container that can be easily neutralized.

Category1

Minimum requirements for everyone entering an **Operating Area** including Visitors:

a) Approved safety hat, safety shoes or boots, gloves and approved hearing protection (in designated areas).
b) Safety spectacles shall be worn in ALL Operating Areas but goggles are mandatory in caustic /amine areas/chemicals and when performing work under furnaces.
c) Goggles to be worn for activities which create a lot of dust (dismantling scaffolds, jack hammering, breaking concrete, catalyst loading etc) or where there is a risk of chemical splashes.
d) Dust Glasses can be used when executing activities involving dusty environment.
e) Persons with prescription glasses shall use PRESCRIPTION SAFETY GLASSES in Operating areas or Safety glasses (over specs) shall be placed over prescription lenses. This applies whether the lenses are hardened or not.
f) One piece Fire Resistant Overalls as per SAPREF specification. Overalls to be zipped and buttoned up at all times.
g) Drawstrings from garments worn over overalls (e.g. rain jackets) must be tucked away**. No loose clothing to be worn around rotating equipments.**
h) Long hair must be "tied up" or constrained (above the neck) upon entry to the process area. Fire resistant hair flaps to be used to cover synthetic hair extensions, long braided hair and dreadlocks.
i) No hanging jewellery e.g. chains and long earrings are permitted.
j) Other than overalls it is **recommended** that all other clothing including socks and under garments be of cotton and NOT Polyester or Nylon.
k) Electrical personnel exposed to electrical flash, explosion, fire (e.g.: testing, inspecting, maintenance of live switchboards) must use an approved fire resistant arc protection suit. Over and above this requirement, a face shield and leather gloves must be used when fuses are removed from live switchboard
l) Wearing of gloves is mandatory in all process areas. Level 2 cut resistance gloves must be worn when working with sharp edges, glass, sharp tools and when doing Mechanical work. This includes working with cladding and cold cutting of pipes or plates.
m) The use of shaded safety glasses in and outside work areas is recommended but must meet the specifications stipulated by the Health and Safety Specialist.

Minimum requirements for everyone **Working on the Wharf** in addition to items prescribed under category 1:

a) Reflective vests and Safety Helmets shall always be worn when entering and working within areas under the jurisdiction of South African Port Authorities, ie: Container Terminal & New Pier. This is a mandatory requirement by the authorities.
b) Life - Jackets to be worn when working on the Wharf within 2m of the Waters edge, including boarding or descending from a Ship.
c) A Dust Mask or face mask with appropriate cartridge to be worn during dusty conditions, i.e. Berths where maize or other fine products are loaded.
d) A facemask and appropriate cartridge must be worn when working close to volatile solvents or other organic compounds.

Minimum requirements for everyone entering a **Workshop** including visitors in addition to category 1 items:

e) No special PPE is required when walking on the designated grey walkways.
f) Use of hard hats are not compulsory in the workshop.
g) Ear protection is required when working in noisy areas of the workshop or during noisy activities.

Minimum requirements for everyone entering a **Laboratory** including visitors:

h) The use of safety shoes is mandatory for all testing areas.

i) Dresses or skirts must be longer than below the knee in order to avoid exposure of any part of the body down to the ankles
j) Socks must be worn with safety shoes when ankles are visible to minimize exposure of the body.
k) Pants worn must end at the ankle and not before – i.e. shorts or Capri pants cannot be worn
l) When performing or witnessing a test, the relevant gloves (Refer to HSSE.RG.0029 : SAPREF PPE Specification Register and safety glasses shall be worn.
m) Lab coat and safety glasses are compulsory for all people including visitors when entering the Laboratory testing area

Category 2

Category 2 does not apply anymore as all personnel entering process areas are issued with a H2S monitor.

Category 3

Minimum requirements for **special activities – flame cutting, grinding, soldering, drilling and welding:**

- The choice of attire should be selected and specified on the Clearance Certificate. Depending on whether exposure is to sparks or particles, PPE to be worn in addition to minimum PPE specified in category 1 is:
    - Double eye protection: Welding hoods over anti-flash goggles /face shield over tight dust goggles
    - Leather Gauntlet/gloves
    - Leather Aprons
    - Leather Spats
    - At least one person wearing a 4 Gas Monitor per cocoon.
- People working in the neighbourhood of the above mentioned activities (within 3 m of the job) needs to wear tight dust goggles for protection against flying particles or anti-flash goggles/glasses for protection from electric arc.

Details on the Welding Processes and Controls can be found in the Welding Controls Risk Matrix (HSSE.WI.0101) in BMS.

Category 4

Minimum requirements for **Amine and Caustic area, Acid and Chemical Storage areas:**

In addition to the requirements specified in **Category 1** the following is required :

a) Approved chemical safety goggles
b) PVC gloves when handling the chemical, chemical containers, or working on equipment.
c) Sampling, opening equipment in chemical service then a PVC suit or Microguard 3000 Disposable Overalls (Yellow in colour) or Neoprene suits, face shield, safety-glasses and PVC gloves must be worn.
d) Gum boots with steel toe cap to be worn if possibility of splashing exists i.e. refer to the RAMS and/or Clearance Certificate.

Category 5

1. Minimum PPE requirements for intrusive work within the Respirator Zone of the Avgas Lead Injection facility as defined in PROD.IV.PR.0006 is as follows:

    - Chemical resistant coverall
    - White PVC safety boots
    - Full Face Respirator Mask and approved A2P3 Cartridges/Breathing air apparatus
    - White PVC gauntlets
    - Hard Hat.

    Note:
    (i) The above PPE shall not be removed from the premises, provided that contaminated PPE has to be disposed off, it shall be treated as lead waste.
    (ii) It is preferable that each operator have a dedicated Breathing mask. Alternately if breathing masks are shared these must be sterilized with a disinfectant before use.
    (ii) In the case of unsoiled overalls, these will be packed in Plastic/ PVC bags which will be tightly sealed and be clearly marked "Lead Contaminated" and sent to an approved laundry service.

2. All Activities outside the respirator zones will be subject to the SAPREF minimum PPE requirements as mentioned in this booklet, on condition that:
    a) No potential TEL exposure ~~induction~~ nor any other activity that can potentially cause loss of containment of TEL, is in progress.
    b) A lead in air analysis, indicating "Zero" Organic Lead in Air, was done, after the last TEL loading, loss of TEL containment or intrusive maintenance activity.

Refer also to PROD.IV.PR.0006 Lead Regulation with regard to Avgas Lead Injection facility at SITE 1 and OHS Act lead Regulations.

Category 6

Minimum requirements for entry into the HF Alkylation Unit requires specific classes of approved clothing as specified within HSSE.RG.0029 (SAPREF PPE Specification Register). Further specification on types of jobs allowed within the different categories of PPE can be retrieved from PROD.CZ.WI.6520 (HF Alkylation Unit - PPE Requirements and Special Precautions).

A-Class clothing comprises of the following:

- Neoprene Gloves
- Safety Glasses/ Goggles
- Safety Helmet with attached Neoprene Neck Flap and Face-shield
- Ear-plugs/Ear-Muffs
- One Piece Fire-Resistant NOMEX overall
- Safety Boots (not shoes) with Acid resistant soles

A Class PPE is used when no physical contact with acid-containing equipment is expected. This includes the following:

- Reading meters and gauges and collection of samples by the lab
- Routine inspection of the unit, e.g. Unit checks, checking of drawings and safety walks
- Working on equipment which has been opened, dismantled and thoroughly neutralized so that there is no acid trapped in it
- Working on non-acid equipment e.g. Feed stream; air lines as long as there is no other acid work going on nearby
- Reassembling of thoroughly cleaned equipment

- Lubricating of pumps
- Scaffolding
- Any other work that does not require the opening of equipment containing acid
- Sampling of Fresh Caustic Tank; T6504
- Sampling of low-acid containing material streams above 20°C via a closed sample point systems. These include V6502 (ARN); T6502 (Spent Caustic) and the Alkylate rundown stream.

B-Class clothing comprises of the following:

- Neoprene Gloves
- Safety Glasses/ Goggles
- Safety Helmet with attached Neoprene Neck Flap and Face-shield
- Ear-plugs/Ear-Muffs
- Neoprene Pants (donned over NOMEX)
- Neoprene Jacket (donned over NOMEX)
- Neoprene Boots

B Class PPE is used for routine work on acid-containing equipment, where a low potential for the release of acidic material exists. This includes the following:

- Greasing of Valves
- Washing down spills
- Sampling of trace acid circuits equipped with DOPAK sample stations
- Loading and unloading of activated Alumina (Al2O3) and Potassium Hydroxide (KOH)
- Opening subsequent manways on Vessels pending agreement with MSFP based on outcomes of first manway opening. First opening of manways are to be facilitated in C-Class PPE.
- Internal spading of the unit after it has been neutralized e.g. Shutdowns with EnvTech
- Operating valves in high Acid Service viz. on line-ups to and from:
    1. V6503A/B/C
    2. C6503/V6505
    3. C6501
- Pulling of glands
- Cleaning of Furnace Flame Eyes
- All intrusive work on QMI's following positive isolation
- Commissioning of pumps for first time following return from maintenance
- Commissioning of control valves; relief valves and instruments

C-Class clothing comprises of the following:

- One-piece air fed Neoprene overall
- Neoprene gloves (fitted into One-piece overall above with locking mechanism)
- Neoprene Boots (integrated into One-piece suit by means of inner and outer sleeves)

C Class PPE is used for work on acid-containing equipment when acid exposure is expected under controlled conditions. This includes the following:

- Blinding and opening of lines where equipment has been depressurized
- Changing pressure gauges in acid service
- When small amounts of HF contaminated equipment are or may be vented under controlled conditions
- Work on acid equipment that is not spaded at first flange
- Initial opening of equipment after spading
- Work on small piping and manifolds before establishing that there is no HF trapped in it
- Connecting and disconnecting of HF loading hoses
- Working on pumps after it has been spaded and spading of pumps.
- Venting to atmosphere and clearing of bleeders
- Preparing of equipment for maintenance that has been in contact with HF

- Cleaning and washing of tools and equipment contaminated with HF
- Swinging open/close blinds in lines that are in HF acid service
- Removing or replacing relief valves where HF acid is present
- Sampling on non-DOPAK systems (incl. HF Acid sample)
- Dropping and cleaning of ASO and Fuel Gas guns
- Internal spading of lines the unit after it has been neutralized (excl. instances where the EnvTech neutralization method is used)
- Dismantling of Relief Valves and of equipment that has been opened (irrespective of whether it has been neutralized)
- Repairing pump valve packing

Note that work facilitated in C-Class PPE is to be supported by a second person also in C-Class PPE. Further to this, work is also to be overseen (from distance) by single person in A-Class PPE (maintaining radio contact with panel).

D-Class clothing:

- Similar to C-Class, however incorporates a BA set within the suit (i.e. no external air-feed required). Utilized by Emergency Services.

Note that work facilitated in D-Class PPE is to be supported by a second person in C-Class PPE. Further to this, work is also to be overseen (from distance) by single person in A-Class PPE (maintaining radio contact with panel).
Further note, that individuals required to utilize D-Class PPE may further be subjected to a cardiovascular stress test (treadmill or similar).

Note:

- A higher class of PPE (than that specified above) may be utilized. Under no circumstance can a lower class of PPE utilized than that specified above.
- If multiple jobs are taking place within the unit, the required PPE level will be equivalent to that of the highest level.

2.11 Use of Breathing Equipment

No person shall use any Breathing Equipment unless he/she has been properly trained in its use. It is a legal requirement (refer OHS Act section Hazardous Chemical Substances Regulations 11(2)(c) that all users of any breathing air systems shall undergo a lung-function test (by the Occupational Practitioner's discretion) prior to use. The SAPREF Supervisor, or in the case of Service Providers, the SAPREF Host, is responsible for ensuring that users of Breathing Equipment are competent and in possession of a valid SAPREF Blue or Orange Card issued by Emergency Services Department as proof of training. Only SAPREF issued Breathing Equipment shall be used except when specialised e.g. special Air Fed welding hoods, Inert Entry specilised helmets, which shall be approved by SAPREF Emergency Services Department.

The Breathing air system should be dedicated solely to its intended purpose. In the unlikely event that an air supply is needed for other purposes a CSE Certificate and RAMS MUST cover this. Shift manager must authorize use of breathing air at refinery.

2.12~~3~~ Housekeeping and Waste

[Refer to HSSE.PR.0061: Waste Management]

a) Good Housekeeping can prevent Injuries and Fires.
b) Everyone is responsible for keeping their Workplace clean and tidy at all times, i.e. "Everything must have a place and Everything must be in it's place always"
c) Any spillage of materials must be cleaned up immediately.
d) All Waste Material shall be disposed of in accordance with SAPREF procedure HSSE.PR.0061: Waste Management.

e) It is the "Disposer's" responsibility to ensure this is done - if in doubt, consult the HSSE Department.
f) Avoid accumulating waste in the work area and have it removed timeously.
g) Emergency escape routes, access ways and HSE Emergency Equipment must at all times be accessible and usable without obstruction.
h) On completing any task, the Worksite must be left clean and tidy.
i) Each Service Provider is responsible for maintaining a high standard of cleanliness within his / her area of work.
j) WORK WILL BE STOPPED IF THE STANDARD OF HOUSEKEEPING FALLS TO AN UNACCEPTABLE LEVEL!
k) During and at the end of each working period the worksite shall be left in a tidy condition, with welding cables or hoses coiled up and stored, welding bottles removed from process areas, rubbish put in the bins/bags provided and the bags removed from the work area and placed in the skips provided.
l) All pollution and any other negative environmental impacts associated with activities must be avoided.

These include:

- ~~No~~ hydrocarbon spillages to soil or storm water
- Waste is to be properly segregated. Separate and colour coded waste bins are available for the purpose of segregating waste as per SAPREF procedure HSSE.PR.0061: Waste Management.
- Recycle waste as far as practicable to reduce its negative environmental impact. This covers, for example, paper recycling, scrap sales, catalyst regeneration.
- Washings and shower water must go to effluent drains and not storm water systems.
- Asbestos containing material will be collected and placed in double plastic bags and placed into containers at the Asbestos enclosure. (Refer HSSE.RG.0027: Asbestos Register; HSSE.PR.0032: Asbestos Management at SAPREF.)
- If you are unsure of the environmental impact related to your work contact the HSSE Department for advice.

2.134 Use of Hydrocarbons and Condensate for Cleaning

a) Hydrocarbons may not be used for washing any body parts or clothing. Only Cleaning Agents supplied or approved by SAPREF may be used. If in doubt, consult SAPREF's HSSE Department.

b) Hydrocarbons may not be used to clean any equipment - this includes Workshop areas. Oil Cleaning Agents supplied or approved by SAPREF shall be used. If in doubt, consult SAPREF's HSSE Department.

c) In the event of a very viscous Hydrocarbon spillage, such as Bitumen, Propane Asphalt or Visbroken Residue, only Light, Heavy or Vacuum Gas oil if required may be used to facilitate the cleaning-up.

d) Condensate may not be used for washing and cleaning.

2.14 Regulation pertaining to product/chemical drums

No empty drums shall **remain** on site unless:

a) It is stored in a designated area ~~OR~~

No drum full or empty shall be **used for the purpose** of:

a) Supporting a person OR
b) Supporting a structure OR
c) As a working surface OR
d) Used to hold or transport any content or product other than that which has been stenciled on the drum

No person shall carry out hot work on, or within 5 metres of full or empty drums.

No person may cut, mutilate or otherwise damage any drum, unless such work is approved by the relevant RAMS. No drum should be sold for private use.

Beware: Empty drums often contain explosive mixtures. For reference see General Safety Regulation R.9 (4) of the Occupational Health & Safety Act No. 85 of 1993

Care must be taken to prevent pollution when storing drums containing product (Area to be bunded or base to be a concreted floor). In the event of accidental spillage immediate corrective action shall be put in place and the incident recorded in the Continual Improvement System (CIS). Monitor condition of the drums for rust at the base.

Drums shall be disposed off in accordance with the correct SAPREF procedure HSSE.PR.0061: Waste Management.

CHAPTER 3 - PREPARATION OF EQUIPMENT FOR MAINTENANCE

[Refer to ~~SITE.SI.0001 Standing Instructions section 2.11 and in~~ HSSE.PR.0069: Permit to Work Procedure]

3.1 Isolation

"Isolation" means the physical separation of the equipment to be worked on from sources of hazardous material, energy, motive power or radiation within the systems which are connected to the equipment. It does not include the hazards from adjacent, unconnected equipment or from the general surroundings.

3.1.1 Product / process isolation

Positive Isolation

All equipment shall be positively isolated and confirmed as such, de-pressurised and drained, and where possible purged of hazardous materials, before it is handed over to maintenance for work that requires opening. Also refer to LOTO (Lock-Out-Tag-Out) procedure PROD.WI.0022
Equipment can only be said to be positively isolated when every line to or from the **EQUIPMENT IS SPADED, OR DISCONNECTED AND BLANKED OFF** at the "live" side

of the break remote from the equipment. This also applies to positive isolation of steam, air, and hydraulic lines used to drive pumps turbines or valves. Isolation of cold water may be exempt. If positive isolation is **not possible** then the **approved work instruction** for that circumstance is to be used, failing which a **RAMS is required.**

a. Valve isolation methods

Double block and bleed valves are only acceptable as equivalent to positive isolation in special circumstances. Positive leak detection is critical in this instance, and is only effective if the bleed valve is left open as a tell tale that the block valves are indeed holding. Risk Assessment to include consideration of drain valve being (partially) blocked.
In such cases the Clearance Certificate Issuers (MSFP) shall apply the appropriate risk assessment method to ensure that RISKS/Hazards are brought to ALARP.

Single valve isolation is not considered to be positive isolation and is only acceptable:-
• For work on the outside of equipment or for insertion of spades to achieve positive isolation (a means to an end).
• Where the risk associated with inserting spades is greater than the risk that involves the completion of the work itself.
• When all remote operated valves (ROV's) are electrically, hydraulically and pneumatically isolated (de-energised) in the shut position.
• When cold water supplies from a municipal system or cooling water utility supply are isolated by block valves which are either locked or handles removed except when they are connected directly into a hydrocarbon or chemical system where backflow could occur.

Spades are also used for isolation particularly for Confined Space Entry work and **all CSE** shall be accompanied by a Spade/Isolation List**(s)** and marked-up EFD.

Instrument control valves, non return valves and relief valves are **NOT acceptable** as valve isolation.

When Block Valves are used because positive isolation is impractical the block valve must be as close to the work to be done as is practical and the valves must be "LOTO" locked.

Security of single valve isolation can only be confirmed by opening another valve or flange within the isolated system or using a pressure gauge that is confirmed to be fully functional.

Valves used for isolation shall be **locked and labeled including cooling water.** This is critical when the isolation is remote from the work area, or has to remain effective for more than 1 day or is part of a double block and bleed assembly. When locks are used there must be clearly defined procedures and secure facilities for the holding and management of the necessary keys (LOTO boxes).

When isolation is by valves the following precautions must be taken to minimise the Risk of **isolation valves passing**:

- A RAMS is required.
- suitable Personal Protective Equipment must be worn.
- adequate HSE Contingency Plans must be made.
- unauthorised persons shall be kept well clear by means of Standbys, Warning Signs and barricades.

- a Risk Assessment (RAMS) must be formalized with the OHS Act Section 16(2) appointed person.
- SAPREF Emergency Services Department must be notified.

In the case of **pump removals**, work should be conducted under a work instruction which should include the use of block valves for isolation and pump drain open for positive leak detection. As soon as the pump is then removed the inlet and discharge lines shall be blanked off.

Isolation of **instruments** from hazardous material or motive power is permitted by fully qualified Instrument Technicians.

b. Equipment opening

Permit requirements for **opening equipment** are:

- A Clearance Certificate provided that the system/equipment is effectively separated from hazardous material by spades, blanks, double block and bleed valves or valves with positive leak detection (test point) and has been depressurised and drained. Zero Energy Mindset.
- RAMS is required if there is or maybe residual fumes, liquids or deposits.

Equipment to be worked on must first be depressurised and drained with the vents and drains left open to atmosphere. There may be exceptional occasions when maintenance work or operational changes must and can only be done although the particular equipment has not been cleared of toxic or hazardous materials. A full Risk Assessment with its resultant appropriate authorization is required, following the RAMS process.

Should work start on a piece of equipment and by the end of the day it is realised that the equipment would not be completed, then such equipment shall be spaded, blanked or safely boxed up prior to leaving the job. Under no circumstances should equipment be left in an unsafe condition- it must be made safe before leaving the job.

Provided that cold work only is being carried out externally on the equipment, it can be authorised by a Clearance Certificate alone but the remaining hazards and special precautions must be entered in the appropriate (sections D,E and F) sections of the Clearance Certificate.

c) Mechanical Motive Power: Pumps, compressors, agitators, valves etc. may be driven by air, steam, or hydraulics. Isolation must be carried out by spades or mechanical separation as described in Positive Isolation and Isolation of Valves (section 3.1.1.a and b) above.
The supply and exhaust valves of air or steam driven equipment must be locked shut and at least one drain valve Locked open to atmosphere. This is to act as a double block and bleed where evidence that the supply and exhaust valves are holding is essential.
Cooling tower or fin-fan cooler fan blades must be secured to prevent them from rotating because of drafts.

d) Purging
Purging with e.g. steam, nitrogen or other medium may be necessary to reduce flammability or toxic hazard to acceptable levels. The risks associated with all such mediums shall be fully considered; equipment purged with nitrogen may present a residual asphyxiant hazard, and will require the authority of the Department of Labour if this leads to pressure testing with nitrogen.

If there is any doubt whether passing valves or blocked drains may have prevented effective depressurising and draining, the Clearance Issuer (MSFP) must consult an Authorised Gas Safety Inspector (AGSI) who will decide whether a RAMS is needed and if so either provide a written method of work separately or as part of the RAMS.

3.1.2 Electrical - General Electrical Isolation Precautions

Only authorised personnel shall carry out Electrical Isolations.

The rules and procedures to establish safe working conditions and practices on the systems, electrical equipment and conductors are laid down in Chapter 11 below.

a) For high risk situations where electrical isolation is not possible due to process or other reasons (e.g. working on live switchboards), the Risk Assessment RAMS and permit shall be discussed with the Nominated Electrical Engineer for Sub-stations.

Service Providers

Service Providers shall only be permitted to work in cubicles that are sealed and dead including adjacent panels and or if the substation board is dead. ANY deviation from this shall have a high level Risk assessment RAMS approved by Nominated Electrical Engineer.

Refer to BMS document "ASSET.ELEC.PR.0006"

SAPREF Electrical staff

SAPREF Electrical staff shall be authorized (with letter of appointment) to work on all electrical equipment to carry out normal routine maintenance work (i.e., isolation and energisation, repairs) and fault finding activities as per their authorization level as detailed in their authorization letters. ANY deviation from this shall have a high level Risk Assessment RAMS that is approved by the Nominated Electrical Engineer.

Refer to BMS document "ASSET.ELEC.PR.0006"

b) Motor drives and all other energised electrical equipment must be electrically isolated before equipment is handed over for maintenance.
c) Lock-out devices found on some stop buttons (RCU) are not valid isolation devices and may not be used.
d) The Electrician doing the electrical isolation must sign the Clearance Certificate after he has done the isolation and only then must the Clearance Issuer provide the directive for the commencement of the work.
e) Maintenance persons shall verify that electrical isolation has indeed been carried out. This is checked by trying to energise the drive/circuit being worked on by flicking the RCU switch.

Medium Voltage Motors

a) The Circuit Breaker or Contactor MUST be physically removed from LIVE conductors and locked in the isolated position and where applicable racked down.
b) The bus-bar shutters must be locked out.

Low Voltage Motors

a) The main fuses or withdrawable bucket must be withdrawn.

b) Where applicable, the circuit breaker to be switched off and in the isolated position and recorded in the substation log book.

3.1.3 Isolation of Instruments

This covers the isolation of any Instrument (and or impulse lines and power supply) from the Process and the draining/venting of any such equipment.

Only Instrument/QMI Mechanics/Technicians who have been appointed in writing as Authorised Instrument QMI Mechanics/Technicians may perform such work. An appointed person is defined as a person who has been trained in instruments or analysers and who is fully acquainted with the instrumentation or analysers in use at SAPREF. In addition, he/she will have received training in process isolation aspects pertaining to draining and venting of Instrument impulse lines, and will be appointed in writing.

They are responsible for all aspects of isolating, draining and depressurising such equipment. Under no circumstances may an authorised signatory sign for isolation before such isolation has taken place.

A Clearance Certificate issued by Production department is required where any instrument/analyser, instrument impulse line or sample line has to be disconnected from the process or opened to atmosphere. It is the responsibility of an appointed person to isolate, depressurise and drain such equipment safely. All instrument/analyser work done on the process unit is to be reported to and logged by the console operator.

On completion of the work and after the system has been returned to normal, the clearance is returned to production department and signed off in the space provided. If the work is not completed at the end of the working day, the clearance must be returned to the relevant control room and both copies marked: "NOT COMPLETE".

An appointed person shall only isolate or work on instruments, QMI analysers and computers relevant to the line of work up to and including 220 volts A.C.

For instrument process and electrical isolation refer to Instruments & QMI "Lock Out Tag Out" Procedure ASSET.WI.0240

Under no circumstances shall safety devices be overridden with wires, ropes or foxing devices from other areas or departments.

The use of overriding devices must be minimised and the following procedures must be followed:

a) Any device in the override position at the end of shift must be recorded by the Production Team Leader in their log.
b) During override situation there must be some one in attendance at all times unless authorised by the Production Team Leader in which case this authorisation must be recorded in advance in the Production Team Leader's log.
c) All systems enabled in OOS (Operational Overriding Switch) and MOS (Mechanical Overriding Switch) must be logged in the Production Team Leader's log.
d) All such entries shall bear the signature of the Production Team Leader authorising them.

3.2 Opening, Draining, Venting or Flushing of Hydrocarbons

3.2.1 Responsibility

It is the Maintenance Supervisor or Team Leader's responsibility to ensure that their subordinates are competent to open equipment safely and more importantly that they adhere to these regulations and appropriate ASSETms requirements at all times. This includes service provider personnel.

3.2.2 Precautions for draining, venting or flushing of Hydrocarbons

Draining of hydrocarbons is not allowed. If a situation develops where it is absolutely necessary to drain hydrocarbon liquid, or if such liquid is leaking, this must be considered highly dangerous. Treat as high risk requiring immediate correction. Every effort must be made to obviate the need for discharging the liquid hydrocarbons. The Production Supervisor and Production Unit Manager (PUM) of the unit involved shall be called in. The Duty Fire Officer shall be notified of the activity**. A concession is required for draining of more than 200L of light hydrocarbons** . **The Risk Assessment, Drawing and a Procedure included (RDP) process must be followed for all draining activities.** The following requirements apply:-

a) The rules for temporary connection apply (refer to Asset.SF.0031 Temporary Line Installation Form, Asset.PR.0015 Plant Change Procedure) requiring approval via a temporary plant change request and RAMS, and maintained in a register
b) In all circumstances, heavy and light Hydrocarbon venting or draining shall only be done using an approved procedure or in its absence with a RAMS. Refer to Prod.WI.0036 Draining of Volatile Hydrocarbon liquids for guidance.
c) **RAMS** s required when draining, depressurising or flushing any hydrocarbons to atmosphere in the vicinity of an un-insulated piece of hot line or valve or equipment above 200°C (HP steam, MP steam, superheated LP steam or a process line).
d) Only steel piping shall be connected. The exception to this is the use of specially ordered & tested flexible hoses during activities for use such as gully sucker activities and pollution response by Emergency Services Department and the use of approved hoses for temporary draining.
e) Draining is not permitted into a sewer or soil. Precautions and future modifications in design shall be in place to avoid this. The draining of Hydrocarbons to a concrete sealed surface or temporary bund shall only be done after the Gas Safety Inspector (GSI) is satisfied that there is no other alternative.
f) No hydrocarbons shall enter the stormwater system or cause permit conditions for effluent to be exceeded. In the event that this is not possible, the written authority of Production Manager is required. PM shall advise the Environmental Specialist to be in a position to seek authority from the Regulatory body concerned.
g) In the case of draining into a drum or container - earthing of that container is required and proper removal arranged.
h) The area shall be washed clean of Hydrocarbons as soon as possible
i) Because of the potential of an isolation block valve icing up during draining or venting of light hydrocarbons, there shall be 2 block valves in good working order in the drain or vent line. The upstream valve is to be fully opened and the downstream one used to regulate the flow. In the event of the downstream valve freezing the upstream one is to be used as an emergency close off of the flow.
j) An operator standby MUST be in attendance for the entire duration of the draining including gully sucking from a close system that may have passing valves.
k) No water shall be drained from process lines where there is a possibility of hydrocarbon breakthrough without approval of Production Unit Manager(PUM)

3.2.3 Precautions for opening of equipment

The opening of any equipment must be treated with the utmost of caution. Treat all equipment, including "Depressurised" equipment as "live" and under pressure. Adequate Personal Protective Equipment [PPE] as stipulated on the Work Permit/s shall be worn at all times. Ensure personnel are not in the "LINE OF FIRE".

Safe Working Practices for Opening Process Equipment ASSET.WI.0237 provides the specific requirements for opening:

- Flanged connections
- Screwed connections
- Screwed Caps, plugs, valves and nipples

This provides detail of permit requirement, procedure for undoing bolts, attention to pressure, isolation and communication.

3.2.4 Removal of plugs, caps or Differential Pressure (d.p.) cells from lines or equipment

When removing any plug, cap or blank with a block valve directly upstream from any drain, vent or connection on a line, or a piece of equipment excluding cold water the requirements of 3.2.2 shall be adhered to. Always ensure that caps, plugs and blanks are re-instated.

3.2.5 Precautions for isolation of thermal relief valves and cooling water to equipment

a) Comply with the requirements of 3.2.2 above and also the following.

b) A thermal relief valve shall only be isolated with the permission of the responsible Production Unit Manager who will sign and stipulate the necessary precautions to be taken on a RAMS. He/she will notify, the responsible Mechanical Engineer at the earliest opportunity.

c) Where a thermal relief valve is installed with an isolation valve, the valve must be R-locked open during normal operation. Any change to the status of an R-locked valve must be done with a RAMS signed by the responsible Production Unit Manager (OHS Act Section 16(2) appointee).

d) If it is necessary to isolate the cooling water to and from a piece of equipment, and the isolated section does not have a thermal relief valve, then the isolated section must be protected by breaking a union or a flange or "R" locking a vent/drain open.

3.2.6 Precautions for removal of Redundant Lines

In order to eliminate the incidents of cutting into wrong lines the following system will apply in all areas.

Before any work commences on redundant pipe work, Production will ensure:

a) **Comply with the requirements of 3.2.2 above.**

b) That the section of line to be removed is clearly marked with a continuous strip of paint in the colour agreed and stated in the work pack or if this is impossible then for at least one meter on either side of the point at which it is to be cut. The precautions to be stipulated on a RAMS.

c) That the line to be removed is clearly marked up on the relevant Engineering Flow Drawing.

d) That the line is indeed in a safe condition to be removed.

e) That the person in charge of removing the line is fully informed of which line it is and any precautions that need to be taken.

f) That the line has been positively isolated (i.e. spaded, capped or plugged) from all line systems.

g) First opening of any system must be witnessed by Operations for quick response in case of an emergency e.g., leak.
h) A Risk Assessed Method Statement shall be conducted and recorded on the Clearance Certificate.

3.2.7 Precautions for safety relief valve installation and removal

a) Safety and Relief Valves (RV) play a vital role in maintaining the integrity of our equipment and shall not be tampered with.
b) Any work performed on Safety or Relief valves shall be approved by the Area Engineer, the Responsible Inspector and the Production Unit Manager.
c) Defective Safety/Relief Valves shall be reported to the Production Unit Manager, Area Engineer and Responsible Inspector immediately.
d) All necessary precautions need to be put into place when performing Live Flare Spading – A High **level** Risk Assessed Method Statement (RAMS) Session must be held to develop the RAMS.
e) Emergency Services to be on standby on site during Live Flare Spading activity.
f) The Responsible Inspector shall witness the Testing of all Safety/Relief Valves.
g) The installation and removal of relief valves will be recorded in special log books which must be treated as important safety documents.
h) The **log books** must record the following minimum information:

- The RV number - this is a well defined location/nozzle where the RV is installed.
- The date it was installed and the name and signature of the Production Team Leader.
- The Production Team Leader must personally confirm that the RV has been removed and then enter the information in the log book.
- The log books are controlled records which must meet the requirements of the SITE.PR.0012 Control of Records and will be subject to audit.
- When an RV has been installed, the Production Team Leader must personally confirm that the RV has the correct number on it (for that location/nozzle), that it is legible and that there are no other numbers on it. If not, the RV must not be accepted. It is recommended that the Production Team Leader checks the RV before it is installed so that it can be returned to the Workshop for correction if necessary.

g) When the Production Team Leader has accepted the RV he/she shall enter the information in the log book.

3.3 Installation and use of Temporary Connections

(refer to Asset.SF.0031 Temp Line Installation Form, Asset.PR.0015 Plant Change Procedure)

All installations of temporary piping, hoses or pumps shall be authorised by the use of a Temporary Plant Change Request covered by a RAMS and maintained on a register.
The only exceptions to this are temporary installations that follow the "Recurring PCR process" , approved in BMS and registered in ASSET.RG.0007.

The RAMS must be signed by:

a. The authorised GSI
b. The Area Engineer for the unit concerned
c. Inspection Department
d. Fire Chief (if connected to the fire mains)
e. PUM 16(2)

The RAMS must stipulate the latest allowed date for removal of the temporary connections.

A suitable sketch showing the temporary line must be attached to the RAMS.

This excludes the extension of existing drain lines that are open ended.
NOTE: Such drains shall be open ended i.e. do not have isolation valves at the end of the line.
Further details on Installation of Temporary Lines for Steam Out, Drain or Hydraulic Testing is covered in ASSET.WI.0027; Temporary Line Installation form ASSET.SF.0031

CHAPTER 4 - MINIMUM STANDARDS FOR HOT WORK

[Refer ASSET.WI.0218: Containment of Sparks and Hot Slag]

4.1 General Hot Work Precautions

The following Precautions shall be adhered to at all times:

a) All persons conducting hot work (welding, grinding, flame cutting, drilling) shall be in possession of a HOT WORK LICENSE (orange card) issued by Emergency Services Department or an approved training provider. Failure to adhere to hot work conditions may lead to the license being revoked.
b) Area to be Hydrocarbon, Chemical and Gas Free. If it cannot be made free of combustible materials, a Risk Assessment approved by the OHS Act section 16(2) Appointee must be done and the , Area Engineer, Gas Safety Inspector and Sapref Fire Chief or Sapref Fire Officer shall sign a copy of the RAMS.
c) The equipment being worked on to be isolated, spaded and Hydrocarbon, Chemical and Gas Free. Gas tests to be conducted at intervals determined by the GSI.
d) Work must stop in the event of Hydrocarbon/Chemical spillage or release or as directed by the operator.
e) Area as mentioned above to be agreed by the Clearance Issuer and GSI. Clearance Issuer must notify GSI of any changes.
f) In the event of an emergency or the sounding of any emergency alarm all work must stop.
g) Production Team Leader to be informed, so that he/she can ensure that no sampling, venting or draining of hydrocarbons while work is in progress.
h) Separate Clearance required for each area or job.
i) SAPREF issued 4.5Kg DCP standby fire extinguisher to be on hand at the point of hot work.
j) All electrical equipment required for welding or other hot work is to be connected via a supply on earth leakage.
k) All electrical equipment required for hot work must be inspected by Electrical Department. The SAPREF Electrician will stick a valid Electrical Department sticker to the approved equipment.
l) Sparks and Slag to be contained with the use of non-combustible materials (only Fire blankets, Fire curtains and screens approved by SAPREF Emergency Services Department may be used). Fire blankets are not to be wetted during hot work activity as they are inherently designed for hot work being dry. Wetting the blanket may give rise to other potential risks.
m) Responsible Engineer and Service provider to specify any additional precautions to carry out work in accordance with the OHS Act and/or any other relevant regulations and to stipulate additional precautions and PPE to be worn.

n) All sewers and drains within 15 metres of the hot work shall be covered and gas tested around the edges of the cover. Sewer covers to be removed at the end of each day or if rain is imminent.
o) A Safety Watcher with a valid Safety Watcher card (Yellow card) must be present during any hot work activity.
p) **At least one person must wear a 4 Gas monitor per hot-work activity. The Safety Watcher outside cocoon has to wear the monitor as the fumes may affect the monitor causing nuisance alarms within the cocoon.**

The table below illustrates the target audience for each training course

TRAINING	TARGET AUDIENCE	DURATION
Breathing Apparatus and CSE Entry– Blue Card Training	Those who requires the use of breathing apparatus and those who will be conducting inspections in Confined Spaces.	2 Hours
Hazardous Work Licence (HWL) – Orange Card Training	All those who will be working in Confined Spaces and those who will be conducting hazardous work (hot work).	3 Hours
CSE Standby changes to "Safety Watcher" – Yellow Card Training	All Safety Watchers who will be standing-by for CSE, Hotwork, Working at Height and Breathing Apparatus standby.	2 Days

4.1.1 Potential hazards of Welding, burning and grinding

a) Welding flash to personnel in the vicinity could result in serious injury.
b) Hot slag and sparks causing personal injury, damage to property, and fires.
c) Broken welding cables causing arcing and fires.
d) Leakage from Oxy/Acetylene supply tubing, etc. causing a fire or an explosion.
e) Incorrect earthing procedures causing a fire.
f) Noise induced hearing loss from welding machinery.
g) Welding fumes causing occupational health problems.
h) Poorly ventilated workspaces creating oxygen deficiency.
i) Incorrect storage and use of pressurised gas cylinders causing a fire.
j) Oxy/Acetylene sets not in use to be stored in a dedicated area
k) Incorrect selection and use of protective clothing/equipment causing personal injury.
l) Combustible materials in the immediate vicinity of hot work activities could result in a fire.
m) Operating without a valid SAPREF Hot Work License resulting in hazardous behavior/conditions.

4.2 Use of Non-Intrinsically Safe Portable Battery Operated Equipment in Process Areas

In addition to the general precautions covered under 4.1, the following precautions shall also be adhered to at all times.

a) Batteries shall not be changed or charged on site or on the unit.
b) Only double locking battery cover enabled cameras to be allowed into site.
c) Equipment to be switched on/off outside the unit, with exception of cameras, LDAR machines and similar equipment as authorized by Section 16(2) Appointee and / or Fire Chief.
d) Responsible Engineer and Service Provider to specify any additional precautions to carry out work in accordance with the OHS Act and/or any other relevant regulations and to stipulate additional precautions and PPE to be worn.

CHAPTER 5 - ENTRY and WORK IN CONFINED SPACES

All CSE work under SAPREF management control fall under the requirements of HSSE.PR.0006: Confined Space Entry (CSE) procedure, (Refer to Rules and Regulations Booklet 3). For inert gas entry details refer HSSE.WI.0006: Inert Gas CSE.

5.1 Definition of Confined Space

[Refer OHS Act GSR 5; HSSE.EX.0025 : HSSE & SP Control Framework manuals;
HSSE.PR.0006: Confined Space Entry;
HSSE.WI.0006: Inert Gas CSE; HSSE.TR.0006: Confined Space Training].

OHS Act defines a confined space as a fully or partially enclosed space or nearby, where due to its construction, location or contents, or any work activity carried on therein, "there exists or is likely to exist a hazardous gas, vapour, dust or fumes, or which has or is likely to have, an oxygen content of less than 20 per cent by volume" which could create a risk for injury.
It goes further to state that "the provisions of this regulation shall mutatis mutandis also apply, in so far as they can be so applied, to any work which is performed in any place or space on the outside of and bordering on or in the immediate vicinity of, any confined space, and in which place or space, owing to its proximity to the confined space, any hazardous article, oxygen-deficient atmosphere or dangerous concentration of gas, vapour, dust or fumes may occur or be present".

Examples of confined spaces are: Tanks, Vessels, Furnaces, Stacks, Drains, Sewage Pits, Trenches, tops of Floating Roof Tanks and Barge Cargo Tanks, or similar object in which a dangerous concentration of gas, vapour, dust or fumes may be present.

Partially enclosed areas such as pits, bunds, excavations and Floating Roof Tanks are considered to be confined spaces when they are deep enough for the breathing zone to be inside the pit and the natural ventilation is insufficient to prevent possible build up of hazardous vapours. When the width (narrowest side) of such an area is less than six times the depth ventilation will be insufficient.

5.2 General Requirements for Entry into Confined Spaces

A CSE means not only complete body entry, but also inserting a head into man-way openings, hatches, pipe ends etc.
As detailed in the PTW procedure HSSE.PR.0069, a Confined Space Entry certificate, a Clearance Certificate, a signed Spade List, Isolation List with a marked up Engineering Flow Diagram (EFD) and RAMS are always required for Entry into Confined Spaces.

- Only persons who have received SAPREF Confined Space Entry training and have a valid Orange Card and are certified competent to enter a confined space are authorised to enter.
- Everyone entering the confined space must sign the Entry/Exit Register when entering or leaving the confined space EVERY TIME!

- A Qualified CSE Safety Watcher ~~Standby~~ with a valid Yellow Card, is to be posted at the entrance of the confined space to monitor the internal activity and to call for help if there is an emergency. (They are NOT to enter the confined space).

The procedure HSSE.PR.0006 Confined Space Entry covers compliance to legislation, particularly the OHS Act 85 of 1993 and the HSSE & SP Control Framework manuals : HSSE.EX.0025 on CSE. In differences the more stringent approach is adopted.

Any work carried out in a confined space will require the person to wear a 4 Gas Monitor. At least one person in a team shall wear a 4 Gas Monitor unless the team is working in different locations or elevations in the confined space, in which case, at least one person in every group of workers shall wear a 4 Gas Monitor.

The procedure includes the identification of:

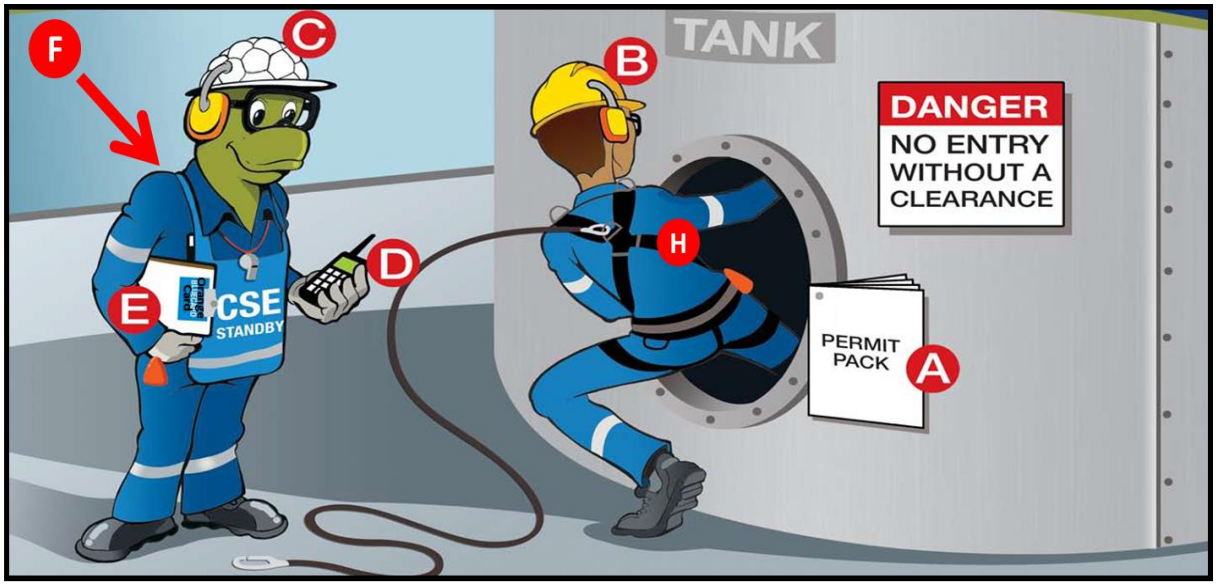
- **Hazards and controls**
- **Roles and responsibilities**
- **Competencies**
- **Rescue plans**

CATEGORIES OF CONFINED SPACE ENTRIES

- **CATEGORY 1 - Normal Entry** – Confined Space Entry atmosphere is normal – CSE Standby to be in the possession of a valid Level I First Aid Certificate **CATEGORY 2 - Fresh Air Mask Entry** - Confined Space Entry atmosphere contains some form of contaminant - CSE Standby to be in the possession of a valid Level III First Aid Certificate and a Resus Kit.

- **CATEGORY 3 - Inert Entry** - Confined Space Entry atmosphere contains an Inert Gas e.g. Nitrogen (N2) - CSE Standby to be in the possession of a valid Level III First Aid Certificate Process to be monitored via cameras.

What good looks like (WGLL) – confined space entry (CSE)



A Clearance Certificate, Confined Space Entry Certificate, Confined Space Entry Gas Test Register, Risk Assessment, Spade list and Rescue plan
B Worker to be confirmed trained on confined space entry (Orange Card)
C Trained Confined Space Entry Standby to be present (Yellow Card and CSE Standby Bib)
D Radio communication and rescue equipment to be in place (as per Rescue Plan)
E Clipboard with Confined Space Entry Register and Orange cards
F One or more standby's at each entrance of each man way (as determined by the TRA).
G "NO ENTRY" sign at the entrance or man way barricaded to prevent entry, when no confined space entry is taking place.
H 4X Gas Monitor

CHAPTER 6 - HANDLING OF HAZARDOUS SUBSTANCES

[Refer to the training material in HSSE.EX.0006: Working Safely with Hazardous Chemical Substances Advanced Course SAQA 14792 - Lecture Notes & Presentation]

6.1 Definition of a Hazardous Substance

A Hazardous Substance is any substance that has the potential to adversely affect anyone's Health or Safety, or the Environment. e.g. Hydrogen Sulphide, Sulphur Dioxide, Nitrogen, Sulphuric Acid, Hydrofluoric Acid, Lead, Solvents, Cleaning Agents, Hot products.

6.2 Summary of the Occupational Health and Safety Act requirements

[Refer OHS Act Sect 8 (2)d, e, f, g and h & OHS Act Sect. 13]

The OHS Act requires that every Employer does the following:

a) Ensures Employees are adequately trained and competent.

b) Ensures that all his/her employees are adequately trained and conversant with all the Hazards to their Health and Safety associated with any work they have to perform, i.e. that they know the following regarding any substance to which they may be exposed:

   i. What it is and where it is most likely to be found.
   ii. How to identify it.
   iii. Its potential harmful effects.
   iv. The symptoms of exposure.
   v. The precautions that must be taken to minimise exposure.
   vi. What to do in the event of exposure.

c) Provide adequate Equipment, Systems and People to minimise the Risk to People and the Environment.

d) Ensure that everyone complies with all relevant Legislation and Company Regulations, Rules and Instructions at all times.

e) Provide a copy of the Materials Safety Data Sheets (MSDS) of the hazardous substance. (Available from HSSE.RG.0013: MSDS Register)

6.3 Control of Hazardous Substances onto SAPREF Sites

[Refer to HSSE.WI.0616 : Control of Hazardous Chemical Substances on SAPREF sites]

No one may procure, or bring onto the SAPREF Site, any substance that has not been registered as an "Approved Substance" by SAPREF's Occupational Hygienist. It is everybody's responsibility to ensure that whatever substance they wish to bring onto the Site is an Approved Substance. They must contact SAPREF's HSSE Department for guidance.

All containers, drums, cans, pails etc., which are used to store hazardous chemicals must be labeled with the appropriate hazard communication label. Containers intended for other uses must not be used to store chemicals or hazardous materials. The storage of chemicals

must be certified by the Sapref Fire department after an audit is completed. This certification will be valid for 12 months

6.4 Control of exposure to Hazardous Substances

It is everybody's responsibility to ensure that before they place themselves at risk of possible exposure to a hazardous substance they are adequately trained and competent to carry out the intended activity. i.e. they must conduct a Risk Assessment to include:

a) **Potential** Harmful effects.
b) **Symptoms** of exposure.
c) Adhere to the correct precautions.
d) **What** to do in the event of exposure.

These can be found in the Material Safety Data Sheet (MSDS).

In the case of potential exposure to Lead, Pre and Post Medical Checks shall be done. This may be arranged with the SAPREF Clinic, telephone 1470 (Refer to HSSE.PR.0056: Control of Lead Procedure)

When in any doubt consult your Supervisor before doing anything that might result in you being exposed to a harmful substance.

6.4.1 Hydrogen Sulphide (H_2S gas) precautions

Properties of H2S Gas:

- H_2S is a hazardous gas that is colourless, acidic, flammable and also has a pungent odour similar to that of rotten eggs.
- Because of its density it will stay close to ground and is very toxic by inhalation.
- The effects of H_2S in low concentrations vary (headaches, nausea, dizziness, vomiting) and escalating to loss of smell due to the paralysis of the Olfactory nerves in the nose, asphyxiation, coma, brain damage, cardio-pulmonary arrest and possible fatality in higher concentrations.

H_2S gas is fatal even at low concentration and can be detected by smell only at very low concentrations for a very short duration, because the gas paralyses the sense of smell.

An appropriate H_2S monitor for such activity shall be worn as a warning device to the wearer that he/she is exposed to H_2S levels that could be harmful, and that precautions need to be taken.
The meters are designed as accurate and reliable safety warning devices for low ppm H_2S levels as prescribed by National and International Occupational Health (10 and 15 ppm Exposure).
If the wearer wants to know what level of H_2S he/she is in while wearing BA, a fit for purpose H_2S unit that measures high levels is required. If the low concentration H_2S detector (max detection 200ppm) is used for high H_2S exposure, it serves no purpose and affects the sensor life and low level accuracy of the unit.

For these reasons, **one cannot rely on detecting H_2S by smell** and the following precautions **shall** be taken when dealing with systems in which H_2S may be present.

a) All work undertaken in any H_2S service shall be covered by a Risk Assessment and the hazard category remains medium to high.
b) A Safety Certificate shall be obtained when lines or equipment that may contain H_2S are to be opened.
c) No valve or flange in an H_2S containing system shall be opened to atmosphere unless the personnel involved are wearing fresh air breathing equipment. The H_2S

monitor must be handed over to the standby in order to prevent damage. (Standby personnel to have a H_2S monitor and a breathing apparatus donned)

d) In the event of the H_2S gas alarm sounding the affected area should be cleared immediately, and suitable barricading used to stop inadvertent entry. Only staff wearing breathing air equipment will be allowed access to the contaminated area until the area is made safe.
e) No one other than authorised Production personnel may enter a chained-off area, without written Clearance from the Zone Production Team Leader.

It is the duty of the Team leader to ensure that those personnel working down-wind of gas system that may contain H_2S are notified of the activity.

6.4.2 Gas/Amine and Sourwater sampling

The following precautions shall be observed when taking any gas sample:

a) Check wind direction and ensure that there are no personnel working nearby or down-wind.
b) Ensure that there is no hot work or vehicle entry taking place in the vicinity.
c) No liquified gas may be sampled, drained, or vented from any connection that is not fitted with two isolation block valves in good working order.
d) Draining shall not be left unattended. If it is necessary to leave the area the draining must be stopped.
e) It must be ensured that the drain or sampling line is properly secured before it is operated.
f) Most gas streams in the refinery may contain harmful concentrations of H_2S, as well as certain toxic vapours. Approved breathing protection must be worn when sampling unit gas streams that may contain H2S and sampling is done to atmosphere. A standby with an alternate air source is to be present.
g) For closed loop sampling and dopak sampling stations that are on treated gas systems were H2S is less than 10PPM no fresh air mask is required. However in the event of a unit upset or shutdown and start-ups these sample point will be treated as high H2S and Breathing air equipment will be used, with a standby with an alternate air source.
h) The Teamleader and Panelperson is to ensure that any upset condition is escalated and operators are made aware of the changing conditions
i) All untreated gas streams/Sour water and Fat Amine samples are considered as high risk and will sampled using breathing apparatus and a standby with alternate air supply this will apply always even if there is a closed loop or dopak sample point, due to the high possibility of these stations forming leaks.
j) Only persons, who have been trained and competent to take a gas and Hazardous samples, may do so.
k) When taking a bomb sample of liquified gas, ensure that some of the liquid is vented off after the sample is taken to provide a vapour space inside the bomb. This must be done while the bomb is attached to the sample point, to allow the discharge to ground of any static electricity generated. Similarly when old samples are emptied from bombs they must be suitably earthed.

When sampling LPG storage vessels the following must be adhered to :

- All LPG rundown streams shall be on spec and free of H_2S.
- Suitable breathing protection shall be worn if either one of the LPG or Amine units is unsteady.
- The process technician shall stand upwind while taking the sample.
- Venting of LPG shall be kept at a minimum while taking a sample.

6.5 Handling of Alkylation Equipment in Main Workshop

[Refer ASSET.WI.0083: Preparing & Handling of Equipment in HF, Caustic and Amine Service]

The Workshop Supervisor, or the Appointee, is responsible for ensuring the following precautions are always adhered to:

a) Equipment from the Alkylation Unit shall not be accepted unless a Yellow Tag is attached.
b) All work must be carried out within the demarcated area.
c) "A" Class Clothing shall be worn at all times within the demarcated area.
d) No one shall enter the demarcated area unless they have received a Clearance Certificate.
e) A Clearance Certificate / is required to do any Hot Work in the demarcated area.
f) All parts or equipment shall be proven Acid free by a Litmus Test before being moved from the demarcated area.
g) When difficulty is experienced in stripping equipment, the Central Zone Day Supervisor, Engineer and Workshop Supervisor must agree a specific procedure in each instance.

6.6 Handling of Equipment Containing Ozone Depleting Substances

All work on equipment containing Ozone Depleting Substances (refer to HSSE.RG.0022) shall be carried out under the Permit to Work system. Person's carrying out work on equipment containing ODS must adhere to the guidelines of SANS 10147:2009, in particular the following:

3. Ozone-depleting substances used as refrigerants shall not deliberately be vented to the atmosphere by any person who maintains, services, repairs or disposes of air-conditioning or refrigeration equipment.
4. No worker shall service a refrigeration or an air-conditioning appliance or a machine that uses CFC and HCFC refrigerant or that uses mixtures that contain CFCs and HCFCs if such a worker does not make use of recovery equipment for the recovery of the refrigerant for recycling or reclamation purposes. All such workers shall, at least, have received appropriate training in dangers to the environment because of leakage of CFCs and HCFCs to the atmosphere, servicing refrigeration and air-conditioning equipment, and operation of the recovery equipment.
5. Refrigeration or air-conditioning appliances or plants that use CFC and HCFC refrigerant or that use refrigerant mixtures that contain CFCs and HCFCs, which have to be repaired or serviced, shall first be checked for refrigerant leaks and shall not be charged with new or recycled refrigerant that contains CFCs and HCFCs, until all leaks have been repaired.

CHAPTER 7 - MANUAL LIFTING/HANDLING OF HEAVY OBJECTS

7.1 SAPREF's PHILOSOPHY REGARDING HANDLING OR LIFTING OF HEAVY OBJECTS

Every effort must be made to minimise Risks associated with manual handling or lifting heavy objects. Wherever reasonably practicable, the potential risks should be engineered out. Failing which, every effort must be made to reduce the risk by utilising specially designed manual handling/lifting aids.

7.2 General Precautions

Everyone shall adhere to the following General Precautions:

a) Establish that there is no alternative to the planned manual handling operation.
b) Determine how many people are required to move the load prior to attempting to move it yourself.
c) If in any doubt whatsoever that the manual handling operation cannot be done safely, stop and report your concern to your immediate Supervisor.
d) When manual handling/lifting heavy objects,
    i. Never over-estimate your strength or fitness.
    ii. Plan your route and inspect the work area first, look for potential tripping, slipping or falling hazards before lifting the load.
    iii. Inspect the object for sharp or rough edges.
    iv. Protect your hands and feet by wearing gloves and Safety shoes/ boots.
    v. Decide before you lift the object how you are going to put it down without catching your hands or fingers.
    vi. Keep your back straight - use the power of your leg muscles, not your back muscles (to prevent spinal injuries).
    vii. Stop immediately, place object on the ground if you feel any unusual strain or pain and report your concern to your Supervisor.
    viii. Keep the object as close to your body as possible.
    ix. Concentrate and focus your mind on the job - a split second lapse could cost you months, if not years, of pain and disability.

CHAPTER 8 - WORKING AT ELEVATED LEVELS

Risk of physical injury generally increases as worksites are elevated above grade or close to an unprotected edge. The increased risk of significant injury requires the consideration of the following hierarchy of questions concerning appropriate control methods:

1. Can the equipment requiring access be relocated to grade level or can it be moved to an existing platform? (Try to avoid working from heights)
2. Does the frequency of performing this work warrant the installation of a permanent platform? (Working from permanent platforms is always safer)
3. Is this job done so infrequently that it is only practical to use scaffolds to complete the work? Working from temporary or movable, (after being secured) platforms requires the person(s) to be at-risk of a fall.
4. If the above three control methods are not feasible / practical, is the use of personal fall protection (harnesses and lanyards) the best method of control?

The use of personal fall protection should always be the last method of control, selected only after all other control methods have been considered.

The areas that pose risks are:

Working At Height includes any area where there is a risk of falling off or falling into e.g.:

- Accessing tops of fire trucks, bulk loading vehicles, rail cars, temporary storage containers etc.
- accessing elevated valves, gauges, flanges etc.
- working on fixed equipment (e.g. sampling points, gas testing) where there is no railing.
- excavation, unsecured platforms, fixed platforms with broken chains or / and swing arms.
- Pipe racks, fixed or floating tank roofs, and any unsecured landing above grade.
- Building roof tops with unprotected sides and edges.

A Fall Protection Plan must be developed by a compentent person as per Construction Regulations.

[Refer to ASSET.WI.0032: Erection and Dismantling of Scaffolds and OHS Act Construction Regulations CR16(1) and SANS 10085-1]

8.1 Scaffolding (including mobile scaffolds)

All work at a height of more than 1.8 metres from ground level, shall be done from a permanent platform or a scaffold erected for the job. All individuals working above 1.8 metres that are not on a safe platform or completed scaffold shall use double lanyard Safety Harnesses which are attached securely (100%Tie-Off) to a stable and rigid structure that will support their weight. Stable and Rigid structures exclude cable trays, small bore process pipes up to 2" in diameter and hot pipes. Where a risk of falling has been identified regardless of the height of the platform where tie off point is not available, the scaffolding up rights with a cross beam must be requested to allow tie off above head height. If unable to provide a platform with safety rails, then an alternative safe method shall be used provided that a Risk Assessment is done to stipulate what the safe method is.

8.1.1 Authority to Erect, Modify or Dismantle.

Erecting, modifying or dismantling of scaffolding must be carried out by competent people under the supervision of a competent person who has been appointed in writing under the OHS Act Construction Regulations CR 16(1).

8.1.2 Access to Scaffolds

Access onto scaffolds is only permitted if the scaffold has a valid Green "Safe to Use" Tag with the current date displayed. Valid date is within 7 days of the current date (provided that the scaffold has not been exposed to inclement weather). When scaffolds are being erected or modified a Red "Do Not Use" Tag to be displayed.

If a scaffold is required to be temporarily modified from its original design to accommodate a work activity such as removing a section of equipment, this shall only be done by authorised scaffolding personnel and shall display an Orange tag. The Orange tag shall indicate the conditions of use and the type of temporary modifications that have been made. Under these Orange tag conditions all persons on the scaffold, for whatever reason, shall wear a safety harness which is tied off 100% to a suitable support. The **blue** tag shall be used to identify load bearing scaffolding.

No person shall be permitted on scaffolding during **INCLEMENT WEATHER** (Hazardous weather) conditions. Inclement weather is defined as >40mm of rain per hour winds in

excess of 40 km per hour or electrical storms (refer to HSSE.PR.0126:Inclement Weather Procedure).

8.1.3 Responsibilities

Authorised Scaffold Supervisors are responsible for ensuring that scaffolds are built and maintained in accordance with the OHS Act and SANS 10085-1. This Supervisor shall inspect the scaffold and sign off.

Scaffolding at SAPREF sites is built for a 160kg/m² classification (access to do work and not load bearing). The Service provider must be informed if heavy or load bearing scaffolding is required before construction.

Users shall :

a) Not alter or modify any scaffold.
b) Ensure that a valid "Safe for Use" Tag is displayed on the scaffold before climbing onto it. The tag must have the scaffolding supervisor's signature. Expiry date shall not exceed seven days from date of last inspection.
c) Inspect the scaffold themselves before using it, especially after inclement weather.
d) Remove the "Safe for Use" tag if it is out of date OR if the scaffold appears unsafe to use. If the scaffold looks unsafe or the"Safe for Use" tag has expired, report the condition to their Supervisor or Clearance Issuer immediately.

8.1.4 Mobile Scaffolds

a) A Clearance Certificate is required for the use of any Mobile Scaffold. The relevant Engineering Supervisor is to ensure the conditions in ASSET.WI.0032: Erection and Dismantling of Scaffolds are adhered to.

b) The User must satisfy themselves beforehand that the scaffold will provide a safe platform from which they may work.

c) A Mobile Scaffold shall not be used unless:

- All wheels are fitted with locking devices that work and are engaged.
- The working platform is completely encompassed by "kick back plates" and hand rails.
- An access ladder is provided that is an integral part of the construction with the working platform.

8.2 Portable Ladders

[Refer OHS Act GSR 13A "Ladders" Refer: HSSE.WI.0059: Safe use of Portable Ladders]

The use of portable ladders shall conform to the following Standards:

a) All ladders must be defect free and checked by the User before use.
b) All ladders must be fitted with non-skid devices at the feet.
c) All ladders must be lashed or secured while being used.
d) Wooden ladders are not allowed on site.
e) The maximum length of any portable ladder that is required to lean against any object for support is 9 metres.
f) The ladder angle to be such that the distance away from the object at the base should be equal to 25% of the height of the ladder. (Height = base to point of rest – Ratio is Height:Width = 4:1)
g) The User must have both hands free while ascending or descending the ladder - tools or equipment must be carried in suitable containers (handmade, plastic or used liquid pails may not be used). Only SAPREF approved Tool Bags are to be used.
h) Do not use ladders horizontally as runways or scaffolding.
i) Do not leave tools or other equipment on top of a ladder.

j) Only one person at a time shall use the ladder.
k) Always maintain three point contact when ascending or descending the ladder.
l) A standby person must hold the base of the ladder to ensure its stability.
m) If a ladder is used on a platform with a potential risk of falling over the safety railings, then the person must use fall protection. A life line may be installed.
n) Life lines shall only be installed by a competent person.
o) All ladders must be registered, numbered and inspected frequently.

8.3 Rope Access Work

[Refer OHS Act Construction Regulations (CR) 18
For Rope access work legal requirements, refer to CR 18

A Service Provider must appoint a competent person in writing as a rope access supervisor with the duty of:

- Supervising all rope access work on the site, including the duty of ensuring compliance.
- Ensure that all rope access work on the construction site is carried out under competent supervision.
- Ensure that all rope access operators are competent and licensed to carry out their work. **IRATA or equivalent authorirty may deem company or people competent.**
- No Service Provider may use or allow the use of rope access work unless-

    - The design, selection and use of the equipment and anchors comply with safety standards.
    - He or she is in possession of a site specific fall protection plan developed by a competent person applicable to the specific work and environment prior to the commencement of the work, including records of maintenance and inspections of all the equipment used for the work operations.
    - Ensure that adequate measures are in place to allow rescue procedures to commence immediately in the event of a fall incident taking place.

8.4 Use of Man Cage (Man Cradle)

Although Man cages are necessary from time to time, the use thereof is discouraged or minimized. The Department of Labour shall authorise the use of a man cage.
Upon issue, the man cage shall be inspected by a competent person for any possible defects and suitability for the work required.

The issuer will sign the issue register, passing the man cage as safe for use and require a signature from user, agreeing that the cage is received in good order.

A competent person, a Rigging Supervisor/ Superintendant, must also inspect the fixing of the man cage to the crane from which it will be used, to ensure that both the man cage and the safety rope are firmly attached to their **separate** anchor points, the sling for the Safety Harnesses will be attached above the crane hook and the Man Cage slings will be attched to the crane hook.

For the checklist, refer to docment ASSET.WI.0031.

8.5 Use of Suspended Platforms

[Refer OHS Act, Construction Regulations, Regulation CR 17]
All suspended work platforms shall be erected under the supervision of a competent person who has been appointed in writing, and that all suspended platform erectors, platform

operators and platform inspectors are competent to carry out their work. No one is allowed to use or permit the use of a suspended platform unless the design, stability and construction thereof comply with Regulation CR 17 of the Construction Regulations.

CHAPTER 9 - USE OF MECHANICAL ENGINEERING TOOLS and EQUIPMENT

9.1 General Hand Tools

[Refer ASSET.ELEC.WI.0017: The Safe Use of Drilling Machines and Electrical Powered Tools, Auxiliary Power Outlets and ASSET.ELEC.WI.0012: Portable Lighting]

a) The User and his/her immediate Supervisor are responsible for ensuring that the correct Tools are used for the job and conforms to Legislative requirements that may apply.
b) Tools are to be inspected by the user prior to use.
c) Copper hammers and chisels are to be dressed if there are any visible "mushrooming" of the heads.
d) Non-Ferrous metals (Copper, Aluminium, Brass), are not to be dressed with grinders of any sort. These are to be dressed with manual filing or a hack-saw.
e) The use of hammers with wooden handles is strictly NOT allowed. Hammers should be of the Steel reinforced, Fibreglass shaft with a rubber handle type.
f) Sharp Instruments such as Screw Drivers, Chisels, and Trimming Knives must be carried in suitable carriers (SAPREF approved) to prevent injury.
g) Carrying or hoisting of tools to heights >2m, will require the use of SAPREF Approved lifting buckets or bags. The use of plastic buckets, handmade buckets of 20/25 L pails for lifting purposes is prohibited.
h) Where there is a possibility of electrical cables or wires being embedded onto walls (e.g. Workshops, Offices, Control Rooms etc.), any drilling into such area must be authorised by the Electrical Section.
i) If drilling is required to protrude the wall, the user must first check the other side of the wall to ensure it is safe.
j) Handtools at height must be attached to a lanyard to prevent falling. Grating must be covered with a fire blanket. Fish buckets to be used for bolts and nuts to avoid falling objects, tripping and slipping hazards.

9.2 Use of Portable Disc Grinders

[Refer ASSET.WI.0082 :Training, Operation and Inspection of Portable Disc]

For changing grinding disc to cutting disc refer to the above work instruction.

The use of 9" angle grinders must be covered with a valid safety certificate, with the Authorised Mechanical Engineers signature.

- Users of angle grinders need to have the appropriate training in the use of this equipment.
- Portable Disc grinders/Jack hammers etc must be equipped with a dead man's switch
- Follow the correct procedure for the changing of grinding or cutting discs.
- Angle grinders must be used in such a way that one grinds away from by-standers, support staff or combustibles.
- Double-eye protection is to be used when grinding.
- Grinding will require the minimum PPE requirements as set out by Hot-work PPE requirements.

9.3 Mobile Air Compressors

[Refer ASSET.WI.0227:Contractors Portable Air Compressors; Refer to OHS Act GMR3(1)(a)]

9.3.1 Authority and Responsibility for the use of Mobile Air Compressors

a) Mobile compressors must have a valid Certificate of Continuance; the certificate is to be displayed on the compressor and is to indicate the date of the next inspection.
b) The owner of the Compressor is responsible for obtaining and displaying the Certificate of Continuance.
c) Mobile air compressors must be inspected by the Emergency Services (EMS) before being allowed on site and conform to the minimum requirements as stipulated under 9.3.2 below.

9.3.2 General Operating Regulations for Mobile Air Compressors

As required by OHS Act GMR3(1)(a), the User must ensure the Compressor and its use conforms to section 2.5.1 of the SAPREF HSSE Regulations and the following SAPREF's Standards:

a) Compressor to be Earthed by a trained competent person appointed by the SAPREF Electrical Department.
b) Certification of pressure vessels on the machine;
c) Spark arrestor on the exhaust (with certificate) – exhaust to be routed above machine;
d) Emergency stop button;
e) Double pole battery isolator;
f) Battery enclosed;
g) Air intake shut off valve;
h) No diesel or oil leaks;
i) All diesel hoses on the machine to be crimped – no jubilee clamps allowed.
j) A Drip-Tray to be placed under the machinery.
k) Exhaust pipe shall be at least 30 cm long and vent straight up. i. e. not bent or curved.
l) All machine guards are in place.
m) Certification of the pressurized vessel components of the compressor.
n) Hoses, manifolds, screwed fittings and connections are of an approved type and defect free and all clamps are checked for possible loosening due to vibration. All hose connections shall be fitted with "hose restrainers". The onus is on the user to ensure that the equipment used is safe and is fit for purpose.
o) Drip trays must be provided under all machine parts that could leak fuel or oil.
p) The equipment shall be placed as close to the work as possible but > 15m from fire hydrants. Whenever possible the machine shall be placed down wind of the people to protect them from the exhaust fumes.
q) The equipment/hoses shall not pose a tripping/slipping hazard or obstruct stair/access ways.
r) The equipment is prevented from accidental movement by adequate brakes or chocking blocks.
s) Service Providers shall operate an auditable system (i.e. written records) for the inspection of all mobile plant and equipment utilised.
t) Any decanting of fuel into equipment shall be done using approved metal funnels, fuel cans, and hoses with electrical continuity. Prevent static electricity by earthing the machine to ground, by earthing the container to the machine or by placing the container on the ground (recorded in the Method Statement and Risk Assessment).

9.4 Machine Tools in Main Workshops

[Refer ASSET.WI.0236 :Use of Workshop Machinery]

a) No one shall start or operate any Workshop Machinery unless they have been authorised/ competent to do so by the Workshop Supervisor, Standby Supervisor or Engineer after hours.
b) The Overhead Cranes must be switched off and their fuses withdrawn when any work is done on them.
c) No-one is allowed to by-pass the limit switches intended as safety devices.
d) Machinery is to be inspected regularly as per the inspection schedule.
e) Lifting Equipment to be inspected annually by an Lifting Machinery Inspector (LMI).

CHAPTER 10 - SPECIALISED MECHANICAL ENGINEERING ACTIVITIES

[Refer ASSET.ELEC.WI.0012: Electrical Powered Tools, Auxiliary Power Outlets and Portable Lighting, ASSET.ELEC.WI.0014: Safe Use of Elec. Arc Welding Equipment]

10.1 Welding and Cutting

[Refer ASSET.WI.0228: Installation/Maintenance of Oxygen/Acetylene Equipment]

10.1.1 Authority and Responsibility for use of Welding or Flame Cutting Equipment

The SAPREF Engineer responsible for the work shall ensure that only Welders who appear on the Inspection Section's List of Approved Welders are employed to do any welding for SAPREF.

a) All Welding and Cutting Equipment shall be approved by the SAPREF authorised engineer before it is used.
b) The SAPREF authorised engineer shall ensure:
    i. The User has been adequately trained and competent.
    ii. The correct Personal Protective Equipment is used.
c) Adequate precautions are taken to protect others working in close proximity to the work area.

10.1.2 Minimum Standards for Gas Cylinders

a) All Mobile Gas Cylinder Sets must have cylinders secured by a chain to a well constructed and sturdy SAPREF approved trolley on wheels.
b) Cylinders must never:
    - be laid on the ground
    - rolled along the ground, or
    - be used as work supports.
c) All sets must be fitted with Flash-Back Arrestors at both the gauge and torch ends unless a vacuum valve is fitted on the Acetylene Cylinder. In this instance they are only required at the Gauges.
d) Only approved SAPREF Hose Clamps may be used - the SAPREF Zone Mechanical Team leader is to ensure that these standards are met. Jubilee Clamps are NOT allowed.
e) **Any** Gas Cylinder requiring a key to operate the valve, shall have the key attached to the cylinder or the trolley at all times (if provided).
f) The protective shrouds around Cylinders must not be removed.

g) Spare Cylinders must be stored separately in an upright position and secured such as to prevent them from falling over. All Gas Cylinder (Flammable or Non-Flammable) storage areas are to be Certified as compliant by the Sapref Fire department
h) Oxy/Acetylene sets not in use to be stored in a dedicated demarcated area
i) All Hoses and Fittings shall pass a Tightness Test via the "Soap Test" method before work is started.
j) All Hoses and Cables must:
    - Be continuous and undamaged.
    - Not pose a tripping/slipping hazard.
    - Not obstruct stairs or access ways.
k) All Mobile Units must be removed from Process Areas on completion of the work or at the end of the shift.
l) The use of Gas Cylinders on Process Units must conform to routine checks and check sheets either displayed at the work site or be readily available with the user.

10.2 Lifting and Rigging

[Refer ASSET.WI.0031: Rigging at SAPREF and ASSET.WI.0217: Responsibilities for Hired Cranes]

10.2.1 Authority and Responsibility for Lifting and Rigging Activities

a) The SAPREF Engineer responsible for the work must ensure that only approved Service Providers are employed to do any lifting or rigging for SAPREF.

b) The SAPREF Responsible Engineer shall ensure the following:

- Rigging activities at SAPREF shall only be carried out by trained and competent riggers. The relevant documentation is available.
- All rigging equipment must be tested by an Lifting Machinery Inspector (LMI) as per the OHS Act requirements with the relevant document in place.
- All rigging equipment shall be inspected and colour coded as per the quarterly inspection schedule.
- Service Provider lifting equipment and certificates must be audited by the SAPREF Rigging Focal Point before work is carried out.
- RAMS is required for all Lifts over live equipment.
- The area where a lift is to take place, must be 100% barricaded.
- Riggers must have a whistle to warn workers of a lift in progress.
- Riggers and their assistants are to be identifiable by means of a High Viz Vest (bib) with the words Rigger and Assistant Rigger displayed on them respectively.
- Adequate precautions are taken to protect people and all other SAPREF assets
- Proper Risk Rating is established and the appropriate Risk Assessment following the RAMS process is done.
- Those cranes exceeding 50 tons shall follow an agreed route and positioning.
- All lifts that exceed 5 ton, must have a Rigging Study detailing crane position, slew path, lift method, etc. with diagrams and must be developed by a competent Rigging Supervisor/ Superintendant.

10.2.2 Rigging on Night Shift

[Refer : ASSET.WI.0031**:** Rigging at SAPREF]

As a general rule rigging activities at night shall be avoided. In the event that this is not possible the following conditions are a pre-requisite. Night rigging requires preplanning and careful consideration of the safety of all employees involved. This includes:

a) Correct lighting for the task involved

b) Visual contact between rigger and crane operator
c) Communications between rigger and crane operator
d) Visual contact between crane operator and load
e) Safety of persons in the vicinity of the lift
f) Apart from the normal breaks, crane operators shall not work continuously for more than 12 hours

10.3 Hot Tapping of Pipelines and Tanks

Hot Tapping is a High Risk Activity which requires notification to the SAPREF Emergency Services Department and the use of Hot Tapping shall be restricted to a minimum.

- A Hotwork RAMS is required for any Hot Tapping.
- Care must be taken to prevent pollution in the immediate and surrounding environment during the Hot-tapping process.
- In the event of accidental spillage immediate corrective action must be put in place and incident recorded in the CIS System.

10.4 Excavations & Demolition Work

[Refer to OHS Act Construction Regulations, CR 13 & 14 respectively: To be carried out under supervision of a competent person appointed in writing]

10.4.1 Excavations (i.e. Excavation work and working inside excavation)

A Risk Assessed Method Statement (RAMS) countersigned by the Civil and Electrical Sections, is required for any excavation work greater than 400mm in depth. The following standards shall be applied:

a) The use of mechanical digging equipment must be approved by the Electrical Manager (EE), and either the Civil Engineer (EC) or the Pipeline Engineer (EL) as applicable to what may be underground.
b) An accurate drawing of the area and excavation shall be attached to the Work Permit.
c) Excavations where there are electrical cables or when the excavation is to be done below the PVC cable tiles or concrete cable slabs the excavation beneath must be carried out with the use of plastic spades
d) The impact on the emergency access shall be agreed with the Fire Chief and Production Unit Manager. This includes timing of access roads/access ways and the duration for the restricted access.
e) Safe access to the excavation shall be provided - jumping, sliding or climbing down is not acceptable.
f) No-one may jump across any excavation. Where necessary, safe "bridges" that are wide and sturdy enough for people to walk over shall be built. This shall require approval by the Scaffolding Inspector.
g) The method by which the excavation will be done shall be described on or attached to the RAMS.
h) Excavated soil shall be placed at least 1 metre away from the edge of the excavation, and the location specified on the Work Permit.
i) In cases of concrete or asphalt surfaces, to prevent these from collapsing into the excavation, shoring or special props shall be required or the removal of the solid surface to a point of safety.
j) Excavation shall be suitably barricaded to prevent people falling into it. A physical barrier e.g., scaffold piping wrapped with Chevron Tape is acceptable.
k) While people are working in the excavation another person must be in attendance outside the excavation.
l) "Live" electrical cables shall be clearly marked and protected to prevent accidental contact.

m) Hand shovels to be used for all excavations, any other means to be approved by Electrical and Civils Departments. Appropriate tools e.g., wooden/rubber handles to be considered.
n) All protruding reinforcing iron to be cut off or bent to prevent injury.
o) Floor inside excavations to be checked for loose material that can cause uneven surfaces.
p) Unless otherwise stated on the Work Permit, work shall stop immediately if any liquid is seen to seep into or from the excavation. The Clearance Issuer to be notified immediately.
q) Shoring shall be in accordance with CR 13(2)(b), (c) and (h) and must be inspected daily by a competent supervisor and a register filled in and signed.

Category 2 and 3 Excavations are regarded as Confined Spaces and are defined by SAPREF as follows:

There are 3 categories of Excavation work with different controls:

Category 1

1. Excavation <400mm deep: Is regarded as Low Risk and NOT CSE. PtW paperwork = RAMS and Clearance Certificate

Category 2

2. (a) Excavations >400mm deep, but <1.2m: PtW paperwork = RAMS counter signed by Civil and Electrical Sections, Gas Test once a day and wearing of 4 Gas Monitor.
(b) The Foreman must carry a radio with the relevant panel person channel and must have a close watch on the excavation activities.
(c) The requirements like Safe Access and Shoring must be adhered to.

Should the 4 Gas Monitor be activated, the job stops and the full CSE requirements immediately apply.

Category 3

3. Excavation >1.2m deep: PtW paperwork = As per number 2 above and CSE Certificate including Rescue Plan.

As normal, for each category above, LMRA must be done before the job starts.

10.4.2 Demolition work

[Refer Construction Regulations, Regulation CR 14–to be supervised by a competent person appointed in writing]
All demolition work undertaken in a process unit shall be performed under strict permit conditions and only after the approval of a RAMS. A competent Supervisor shall be present during all demolition of any equipment and pipe work that has contained a flammable or toxic substance. Demolished material (scrap metal, rubble, asbestos etc) shall not be allowed to accumulate. A disposal plan for all demolition must be in place prior to commencement of project excluding general Civils maintenance type work. This plan must be approved by the SAPREF HSSE Environmental and Health Sections.

10.5 Gritblasting

(Refer ASSET.WI.0238 Gritblasting of Equipment and Piping in Process Areas)

Gritblasting is an activity that has a high potential for injury, and therefore, a Hotwork RAMS is required for all Gritblasting. The following Standards must be adhered to:

a) The Nozzle Operator shall use additional adequate Personal Protective Equipment. i.e.
   - air fed hood which covers entire head and neck.
   - leather gauntlets.
   - overalls which leave no area of the body exposed.

b) All other people involved in the Gritblasting exercise shall wear Safety Goggles - Safety Spectacles are not acceptable.

c) When done in Process Areas the area shall be clearly demarcated with the appropriate barricading and "Gritblasting in Progress" signs displayed adequately such that they provide warning to people approaching the work from any direction.

d) Sewers or drains shall be covered to prevent contamination / blockage, ignition of vapours.

e) Gritblasting nozzle shall be earthed and be approved by an authorized and appointed person.

f) The Gritblasting nozzle shall be fitted with a "Dead Man's Handle".

g) Gritblasting shall be supervised at all times while in progress.

h) All Grit must be swept up at the end of each day or whenever it poses an unacceptable slipping hazard (NO GRIT TO BE SWEPT OR WASHED INTO THE SEWER SYSTEM)

i) All hose connections shall be fitted with "hose restrainers".

j) Gritblasting on live process systems is high risk, an emergency isolation plan is required for safe shutdown of the system if a leak is experienced which includes a marked up EFD with isolation points. EMS and Shift Manager to be notified.

k) Inspection results will be signed off by Area Engineer to allow or not to allow the gritblasting or wet blasting work to proceed on the live line or equipment.

For work on tank roofs Refer ASSET.WI.0238: Gritblasting of Equipment and Piping in Process Areas)

10.6 High Pressure Water Jetting, Refer HSSE.CL.0023

A RAMS is required for all High Pressure Water Jetting. The following Standards shall be adhered to:

a) A Safe Working Procedure must accompany the RAMS.
b) The Gas Safety Inspector [GSI], the Area Engineer and Service Provider shall agree and specify the Personal Protective Equipment [PPE] required.
c) When carried out in process areas, off-site or in the cleaning bay the wash water shall be routed to the correct effluent stream.
d) When carried out in process areas the area shall be clearly demarcated with appropriate barricading and "HP Water Jetting in Progress" signs displayed such that they provide adequate warning to people approaching the work from any direction.
e) HP jetting shall be supervised at all times while in progress.
f) The "dead mans handle" shall be available and tested before use.
g) Earthing of equipment to be approved by authorized and appointed persons when jetting in confined spaces which cannot be guaranteed hydrocarbon free.
h) Flexible lances shall be used as a last resort and in conjunction with a safety hand guard and shall be covered by a RAMS defining their use.

10.7 Removal of Floor Gratings, Manway Covers, Sewer Covers and Hand Rails

A RAMS is required for any such removal and the following minimum precautions must be taken:

a) A robust solid barricade shall immediately be erected and inspected by the supervisor responsible for the job to ensure adequacy.

10.8 Overplating on Live equipment (ref. ASSET.PR.0026):

Scope: Equipment in service or isolated and depressurised, but not yet decontaminated. The term "equipment" includes vessels, columns, tanks, heat exchangers, piping and any other equipment under internal or external pressure.

Process to be followed:

a) Complete approval form (ASSET.SF.0028) and obtain concept approval from the appropriate disciplines
b) Carry out a Hotwork RAMS
c) Create task execution mitigations and unit contingency plans (incl. marked-up EFD) as needed in case the execution does not go as planned. Discuss the contingency plan with Operations and get their acceptance.

Controls during execution:

a) Ensure appropriate flow velocity or liquid level requirements are established and maintained.
b) Ensure material has sufficient strength to safely contain the internal pressure during welding and avoid a blow-out.
c) Note: Some process materials can cause metallurgical and/or chemical changes in base materials, welds and/or heat affected zones of welds, resulting in the equipment being unsuitable for welding e.g. hydrogen embrittlement, stress corrosion cracking, etc.
d) Where air ingress may occur in the presence of vapours in the equipment, the oxygen or vapour content must be maintained at a level which prevents formation of a flammable atmosphere (important consideration for Flare systems).
e) A separate PCR is not required for overplating, as following the above steps and completing all required documentation fulfils the Management of Change (MOC).
f) Field execution shall be performed by trained and experienced personnel following approved procedure.

The overplating technique should only be done if a risk analysis of available options, including an assessment of the likely consequences of a release during the field work, shows there is no other practical alternative.

CHAPTER 11 - ELECTRICAL

11.1 Introduction

These regulations must be considered complementary to the latest revision of the Occupational Health and Safety Act (Act 85 of 1993).

11.2 General

a) It is the duty of all persons who may be concerned with operations on electrical power systems or who work on electrical equipment to make themselves thoroughly conversant with the Work Instruction governing any work including operations they may have to undertake on such systems and equipment. Ignorance of the Work Instruction shall not be accepted as an excuse for neglect of duty.
b) Every person shall report immediately to the Electrical Nominated Engineer or authorised person on all electrically dangerous situations or conditions, and any instance of electrical equipment suspected of being in an unsafe condition.
c) The Electrical Nominated Engineer or authorised person shall immediately take the necessary measures to eliminate such dangerous or unsafe conditions.
d) Under all circumstances including failure of electrical supply, all electrical equipment must be regarded as being live until properly isolated and proven to be dead.

11.3 Definition for Electrical Work at SAPREF

For the purpose of these regulations, the following definitions shall apply (bold words in the text have been defined)

Authorised person
A person over 21 years of age who has been appointed in writing by the Nominated Electrical Engineer to carry out specific work on electrical equipment. The full extent of the responsibilities and the degree of authorisation shall be clearly defined in a letter of appointment.

Certificate of Compliance
Is a certificate in the form of Annexure 1 of the Electrical Installation Regulations of the OHS Act, issued by an accredited person in respect of an electrical installation or part of an electrical installation.

Clearance Certificate, Safety Certificate(Refer HSSE.PR.0069 Permit to work).

Competent Electrical Person
In relation to machinery, any person who complies with the schedule of the OHS Act, General Machinery Regulations.

Fully Authorised Electrical Person (FAEP)
A Competent Electrical Person authorised by the Nominated Electrical Engineer who additionally has been adequately trained and possesses sufficient technical knowledge to enable him to carry out all duties associated with the operation, maintenance, and earthing of Low and Medium Voltage Apparatus and the issue/cancellation of Electrical Permits to Work.

Nominated Electrical Engineer (NEE)
The Nominated Electrical Engineer is the Senior Electrical Engineer appointed by Management in writing. He/She is responsible for the operation and maintenance of the total electrical installation and the appointment of persons authorised to work on the electrical system.

Danger
Danger to health or danger to life or limb from shock, burn or other injury to persons employed, or from fire, resulting from the use of or exposure to electrical energy.

Dead
At or about at zero potential and disconnected from any live electrical power system.

Earthed

Means connected to the general mass of the earth in such a manner as will ensure at all times an immediate safe discharge of electrical energy.

Electrical equipment

The electrical machines, apparatus and circuits forming part of an electrical installation of an electrical power system.

Note: Although electrical powered tools, safety transformers, handlamps, etc. supplied via a plug and socket, once connected form part of an electrical power system, they are not considered subject to the above definition, because they are not normally a part of the fixed electrical installation.

Electrical installation

Means any machinery, in or on any premises, used for the transmission of electricity from a point of control to a point of consumption anywhere on the premises, including any article forming part of such an installation irrespective of whether or not it is part of the electrical circuit, but excluding-

i. Any machinery of the supplier (such as a generator) related to the supply of electricity on the premises

ii. Any machinery used for the transmission of electricity of which the voltages shall not exceed 50V where such electricity is not derived from the main supply (such as batteries or other means of power generation).

For the purpose of this definition, electrical installation is deemed to include power consuming apparatus such as electric motors.

Electrical Power System

Electrical power system is analogous to the definition of electrical installation above, including generators, transformers, switchgear, cables, lines, accessories and structures used for the generation, conversion, transportation, transmission and distribution of electrical energy. Electrical power systems for the purpose of this definition exclude power consuming apparatus such as electric motors.

Electrical Station (Sub station)

An assemblage of electrical equipment at one place which may comprise of electrical transformers, electrical distribution boards, motor control centres and other electrical equipment that form part of the electrical installation.

No hot work / Safety Certificate shall be required for work within a substation environment (normally within a building or a fenced enclosure) for the use of power tools, laptops and diagnostic equipment with the exception of equipment that has a naked flame.

High voltage

Any electrical equipment which is normally operated at a voltage exceeding 36,000 volts R.M.S. A.C. or D.C.

Hazardous Area

Hazardous areas are defined according to the likelihood of a flammable atmosphere being present. The flammable atmosphere being an atmosphere containing a concentration of flammable gas, vapour or mist which is capable of being ignited.

Hazardous areas are locations where special precautions in the construction, installation, use and maintenance of electrical equipment are prescribed.

Hazardous areas in the Petroleum Industry are sub divided into the following categories:-

i. **Zone 0**
That part of a Hazardous area in which a flammable atmosphere is continuously present or likely to be present for long periods. Greater than 1000 hours per annum

ii. **Zone 1**
That part of a Hazardous area in which a flammable atmosphere is likely to occur in normal operation. Between 10 and 1000 hours per annum

iii. **Zone 2**
That part of a Hazardous area in which a flammable atmosphere is not likely to occur in normal operation and if it occurs, will exist only for a short period. Less than 10 hours per annum

iv. **Safe Area**
All areas which are not classified as hazardous areas are regarded as non-hazardous.

Isolating or isolated
Physically separating or separated from the source of electrical supply in such a manner that inadvertent re-energising is not possible.

Live
Electrically charged.

Low voltage
Any electrical equipment which is normally operated at a voltage not exceeding 1000 volts R.M.S. A.C. or D.C.

Medium Voltage
Any electrical equipment which is normally operated at a voltage exceeding 1000v but not exceeding nominal 36,000 volts R.M.S. A.C. or D.C.

Operations on electrical power systems
Actions, by which electrical equipment is connected, disconnected or isolated from an electrical power system or by which the possibilities or functions to do so are put on standby (ready for service) or are disabled. It also includes the isolating of circuits and earthing of electrical equipment.

Permit to work on electrical equipment
A form of declaration normally by two authorised Electrical Permit to Work (EPTW) issuers that it is safe to work on electrical equipment provided the conditions and limitations specified on the EPTW form are adhered to.
Note: For certain non-electrical work which does not require any electrical isolation or earthing, in other words basically sub-station access the Electrical permit may be issued by one authorised person.

Portable Electrical Equipment
Any electrically operated equipment operating at 50 volts and above, with the exception of ordinary household appliances, which are designed for use with a flexible cord at the supply end and which is intended for use by hand and to be carried /moved by hand at the place of work.

Remote control
Control of an operation from a distance: this involves a link, usually electrical, between the control device and the apparatus to be operated.

11. 4 Electrical Authorisation

Only persons authorized in writing by the Nominated Electrical Engineer or in possession of an EPTW may:

a) Carry out work on electrical power systems and electrical installation.
b) Carry out switching, isolating, and earthing on electrical power systems and electrical installations.

The EPTW Issuer shall have passed the EPTW Issuer's course, with refresher training done every two years.

Individuals carrying out Electrical Work shall be appointed in writing by NEE to one of the grades listed below:

LEVEL 1 (L1)
A competent person authorised for:

a) Signing safety permits as Electrical Engineer.
b) Approving switching procedures.
c) As Fully Authorised Electrical Person.
d) All lower categories. e.g., In practice Electrical Maintenance Engineer / Nominated Engineer.

LEVEL 2 (L2)
A competent person authorised for:

a) Switching, Electrical Protection Integrity checks, Installation, Commissioning, Testing, Phasing, Fault analysis, isolating, Energizing, De-energizing, Fault finding, Repairing and earthing High, Medium and low voltage electrical equipment.
b) Issuing of EPTW on electrical equipment.
c) Counter- signing safety permits with an electrical content.
d) As a Fully Authorised Electrical Person.
e) All lower categories e.g., in practice Electrical Supervisors , Technicians, Assistant Engineer, Distribution Engineer.

LEVEL 3 (L3)
A competent person authorised for

a) Switching low voltage electrical equipment.
b) Work on medium voltage (MV) and low voltage (LV) equipment.
c) Isolating of MV and LV equipment. For MV insulation resistance testing or when earths required to be applied, a L2 personnel will be required to vet and approve activity.
d) Certifying on Safety Permits that earthing of portable electrical equipment is safe for use on site.
e) Counter signing operational permits for electrical isolation/energizing
f) As a Competent Electrical Person e.g., in practice Senior electrical artisans.

LEVEL 3S (L3S)
A competent person authorised for

a) Switching low voltage electrical equipment, small power electrical equipment.
b) Work on low voltage electrical equipment.
c) Isolating low voltage equipment.
d) Certifying of portable electrical equipment is safe for use on site.
e) Certifying on Safety Permits that earthing of portable electrical equipment is safe for use on site.
f) Counter signing operational permits for electrical isolation / energizing

E.g., in practice Junior electrical artisan, with at least 6 month post qualification experience.

LEVEL 4 OPERATIONS (L4O)
A person authorised for operating and resetting specified electrical equipment only.
E.g. in practice operators.

LEVEL 4 INSTRUMENTS (L4I)
A competent person authorised for

a) Switching 230V Instrument and QMI equipment.
b) Work on 230V Instrument and QMI equipment.
c) Isolating 230V Instrument and QMI equipment E.g. in practice Instrument / QMI artisan, technician / supervisor.

Note: Nominated Instrument/QMI Engineer shall countersign certificate of appointments.

LEVEL 4 PROJECTS (L4P)
A competent person associated with New Construction Works:

a) Entering sub station premises for any purpose other than switching, isolating, energising or earthing. An EPTW is required if any type of work required to be performed. E.g. in practice Project Electrical/Instrument staff.

11.5 Responsibilities for Operations on Power Systems

(Refer to section 11.4 of SAPREF HSSE Regulations for Electrical Authorisation)

11.5.1 The responsibility for switching rests with the department responsible for the associated equipment as follows:-

11.5.1. 1 **Electrical Section**

a) The control, switching, isolating and earthing of the medium voltage electrical power systems. The responsibility for carrying out these functions shall be an authorised person L1 or L2.
b) The control, isolating and switching of low voltage electrical power systems. The responsibility for carrying out these functions shall be an authorised person L2 or an authorised person L3.

11.5.1. 2 **Projects Section**
Low and medium voltage equipment associated with new construction works as approved by the NEE and as defined in a letter of authorisation.

11.5.1 3 **Instrument Section**
Switching and isolating instrument supplies up to 230 volts. This operation shall be carried out by an authorised person L4I.

11.5.1.4 **Operation Department**

- Starting and stopping of electrical motors
- Starting and stopping of MV alternator (G3171). This operation to be carried out by an authorized person L4O
- Resetting of thermal overloads on MV and LV motors to be carried out by an authorized person L4O.

11.6 Electrical Sub Stations

a) Every electrical sub station and its electrical equipment must be under the control of an authorised person L2.

b) Each electrical sub station or switchgear room shall be equipped with at least one CO2 fire extinguisher or other fire extinguisher of sufficient capacity as approved by the Chief Fire Officer and at least one fire blanket. Such extinguisher(s) and blanket(s) shall be located very close to the door, on the inside of the doors or within a specially provided sealed box attached to the outside wall.
c) Every electrical sub station shall be equipped with up to date logbooks covering the following:-
    - Switching, isolating and earthing operations.
    - De-energising, Energising, Reset or related substation activity Log Book.
    - Switch operations counter reading book.
    - All electrical sub stations must comply with the Electrical Machinery Regulations of the OHS Act, in particular:-
        i. Regulation R4 - Notices
        ii. Regulation R5 - Switch and transformer premises
        iii. Regulation R6 - Electrical control gear
        iv. Regulation R7 - Switchboards

11.7 Admittance To Sub-Stations

a) Only authorized persons are permitted to enter a sub-station.
b) Access to electrical sub stations is allowed only to or under the guidance of an authorised person in accordance with authorisation given by the Nominated Electrical Engineer.
c) Sub stations shall normally be kept locked to restrict access.
d) Upon entry to a sub station then the sub station activity logbook is to be filled in with intended action / activity to be conducted. The activity log book is to be updated, if there were deviations from the intended action and shall be signed off after the activity has been completed upon exit.

11.8 Locks

a) Locks used on doors giving access to electrical sub stations shall be of a special series, different from locks used on doors to non-electrical installations or premises. (Refer to rest of Chapter 11)
b) To enable authorised persons to enter electrical sub stations each person will be issued with a standard key.

11.9 Hazardous Areas

[Refer to ASSET.ELEC.WI.0006: Apparatus and Installation in Hazardous Areas]

a) The use of electrical equipment and portable electrical apparatus for any purpose within hazardous areas is only permitted in compliance with the guidelines of the IP Code 15 Part3, SANS 10108, Regulation R8 of the Electrical Machinery Regulations of the OHS Act and SANS 10086 Part 1.

b) In selecting types of electrical apparatus, areas are designated as zone 0, zone 1, zone 2 and non hazardous, together with the designated temperature and gas group classification.

c) Site plans indicating the extent of hazardous areas shall be available to all staff on demand from Engineering documents in EDDI system under the "80" series. The drawing will show hazard boundary, divisional area, gas group and temperature classification.

d) Only equipment certified for use in hazardous areas by the South African National Standards (SANS) or an SANS approved certification authority may be used in the hazardous area as follows:-

a. Zone 0 area: Intrinsically safe apparatus Ex ia.
b. Zone 1 area: Intrinsically safe apparatus Ex ia, Ex ib, flameproof Exd, pressurised and equipped with automatic isolation in the event of pressure failure Exp, certain increased safety apparatus Exe (conditional), encapsulated Exm and specially protected apparatus Exs.
c. Zone 2 areas: As for division 0 and 1, non sparkling ExN, increased safety Exe, oil immersed Exo and powder filled Exq.
d. Non hazardous area: Normal electrical apparatus in accordance with SANS 10142.

e) Any temporary deviation from Section 11.9 must be covered by a Safety Permit.

f) The installation, repositioning or modification of electrical equipment within a hazardous area is subject to the following constraints:-
   i. New or modified electrical installations shall be certified by a Master Electrician issuing a certificate of compliance and a detailed hazardous area inspection to be carried out (ASSET.ELEC.CL.0001).
   ii. Modified electrical equipment shall be re-certified by a SANS approved authority.
   iii. No electrical power equipment is to be installed within a hazardous area without the authority of the Nominated Electrical Engineer or his appointed delegate, and with due regard for the classification of the area concerned.

g) No instrument equipment is to be installed within a hazardous area without the authority of the Instrument Nominated Engineer or his appointed delegate, and with due regard for the classification of the area concerned.

   i. Following the installation of or modification to an existing electrical installation situated within a hazardous area, a Certificate of Compliance must be completed by the Electrical Service Provider Master Electrician or where SAPREF's staff is employed then SAPREF must arrange for the certificate to be completed.
   ii. The hazardous area classification, temperature and gas group will be indicated on the appropriate hazardous area plot plan. Selection of equipment for use in the area must comply with the hazardous area requirement.

h) Installed equipment shall be visually inspected on a routine basis per unit (ASSET.ELEC.CL.0012) on a two yearly cycle as per maintenance schedule. Defects found during inspection to be rectified.

11.10 Portable Electrical Apparatus

Electrically powered hand tools pose a hazard in the form of a possible electric shock to the user. An obvious way of avoiding this hazard at SAPREF is to insist that only pneumatic hand tools are used. For various reasons this is not practical, therefore although the use of pneumatic hand tools is strongly recommended the use of electrically powered hand tools is allowed provided that certain minimum standards are met.

Prior to the introduction of equipment into SAPREF the holder must obtain confirmation from the Electrical Section that the equipment meets SAPREF requirements. This applies to both SAPREF and Service Providers.

The portable equipment must be inspected and tagged safe for use by the SAPREF Authorised person. The re-inspection date shall not exceed THREE months.
It is the responsibility of the user of portable tools to ensure that they are returned to the Electrical Section for inspection every THREE months.

Any repairs to- Service Provider's portable equipment shall be the responsibility of the contractor. Only a competent electrical person shall carry out the repair.

It is the responsibility of the holder to ensure the integrity of equipment is maintained by making regular visual inspections of machines and associated cabling when he feels it is necessary to be inspected before the expiry date on the tag.

In Hazardous Areas and where there is a possibility of cable damage, only cables of tough rubber or PVC sheath with overall copper screen shall be used.
In this respect, extension cables, earth leakage, portable lighting, lighting transformers, will be provided by SAPREF or as otherwise stated.
The following Electrical Engineering Work Instruction shall be complied with:

a) Auxiliary Power Outlets of Welding Generators and Portable Lighting - ASSET.ELEC.WI.0012: Electrical Powered Tools, Auxiliary Power Outlets and Portable Lighting
b) Safe Use Of electric Arc Welding Equipment - ASSET.ELEC.WI.0014: Safe Use of Elec. Arc Welding Equipment.

EX Rated Cables

This details the requirements for safe use of 220Volts extension socket outlets on site.
Owing to the nature of our Process we are OBLIGATED to control all possible ignition sources while doing work in the Plant.

To that end, only Certified Explosion Protected i.e. Ex rated equipment is permitted for use in Process Areas.
Standard Portable extension reel, similar to what we buy at Makro, is not designed with the integrity required to fulfil this obligation and therefore their use is limited to HYDROCARBON FREE environment.

SAPREF however, does permit use of standard electrical equipment in the Process Areas only under strict conditions stipulated in the FIRE PERMIT.
Such conditions include gas test, regular site inspections by supervision and will further include user competence.
Both Ex certified and non Ex certified Electrical portable equipment must be inspected and approved for use by Electrical Section. Such inspection can be verified by a valid inspection label/sticker

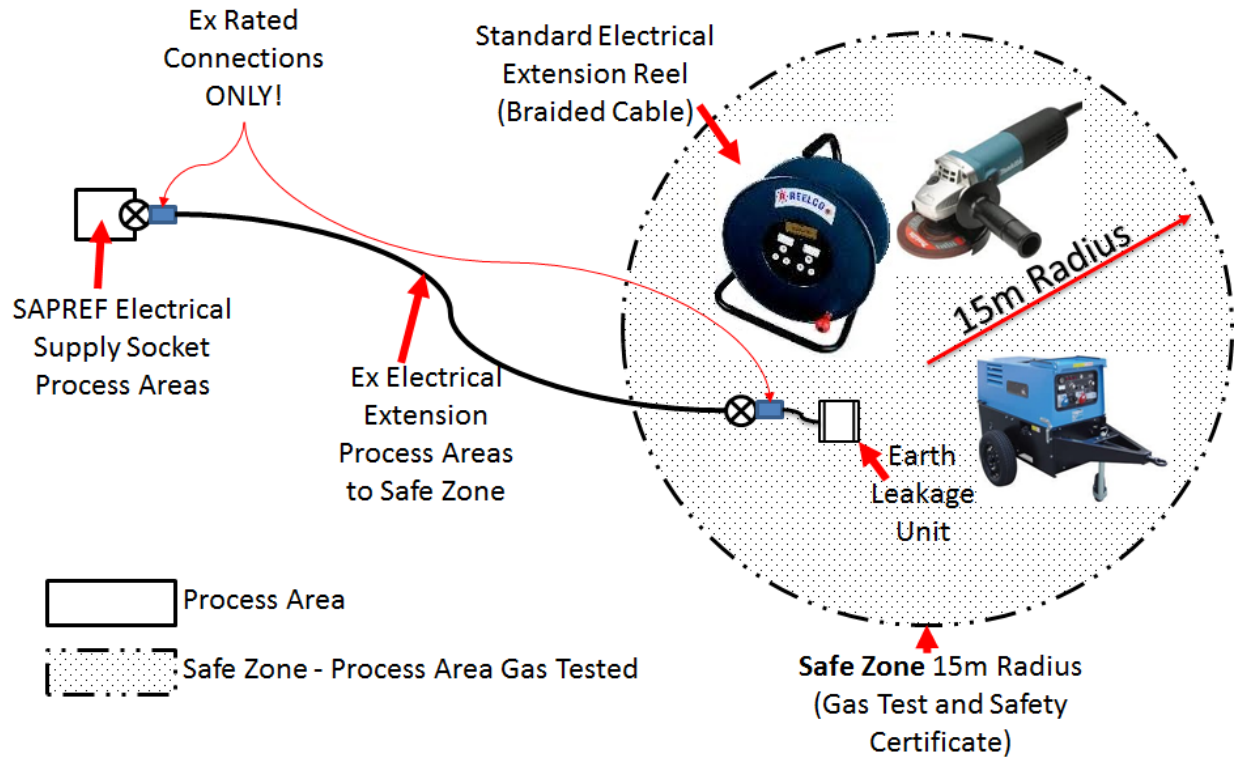
Only screened cable may be used on 220v Extension Socket Outlets.
No More than 3 Ex (explosion protected) Extension Socket Outlets may be used in one loop.
All Ex Extension Socket Outlets must be tested and Tagged Safe for use.

Safe use of 220V extension outlets

Unroll cable fully before use, this will prevent possible heat build-up which may lead to fire.
Ensure not to create tripping hazards.
No More than 3 Ex rated (explosion protected) Extension Socket Outlets may be used in one loop (Daisy Chain).

All electrical connections must be protected from moisture and must be insulated with plastic where necessary. Ex rated equipment is very expensive to buy and to maintain and therefore users must exercise care when working with this equipment. It should be treated with care and respect because they safeguard us from possible harm.

See diagram below for detail on safe use of extensions including the Earth Leakage Unit (ELU)



11.10.1. **Portable Electric Tools**
All portable electric tools shall comply with the requirements of the OHS Act and in particular Regulation R9 OF THE ELECTRICAL MACHINERY REGULATIONS and must have the relevant quarterly electrical inspection sticker on it:-

11.10.2. **Portable Electric Lights**

a) All portable electric lights shall comply with the requirements of the OHS Act and in particular Regulation R10 OF THE ELECTRICAL MACHINERY REGULATIONS.
b) Only maximum 50V hand held portable lighting shall be used for inspection of boilers and for confined spaces.
c) In explosive hazard locations, gas freeing and continuous testing for gas is necessary (Refer to 4.1 General Hot Work Precautions). Alternatively only classified Hazardous Area Equipment approved by the Electrical Section to be used.
d) Temporary lighting (which is not hand held) at 220 volt may be installed via earth leakage device, but it must be firmly fixed to some fixtures and fed via screened tough rubber or PVC sheath cable. Glass components of such temporary lighting must be suitably protected against mechanical damage.
e) Adequate earth bonding is required for all temporary metalwork such as scaffolding particularly when used in confined space with temporary and portable lighting.

11.10.3. **Electrical Appliances in Buildings**.

a) It is impractical for electrical personnel to check all equipment prior to switch on. In this respect it is mandatory that electrical appliances installed in buildings are monitored routinely by the occupant or prime user.
b) Occupants are encouraged to report immediately any malfunctioning device, damaged electrical equipment, or signs of overheating, etc.
c) All electrical appliances shall be purchased by an electrical buyer and must comply or be certified / approved by SANS. Before use, the electrical section must be informed to verify the integrity of new equipment and correctness of the electrical circuit the appliance will be plugged into. An initial inspection sticker shall be applied on new appliance to confirm inspection of equipment.
d) Portable electrical tools, extensions, cleaning machinery, etc that are used in non-process areas shall be inspected on a quarterly cycle inline.

11.11 Operation of Electric Motors

In order to minimise damage to electric motors, the following procedures must apply:

a) Starting electric motors: Pump discharge to be at minimum.
b) Stopping electric motors: pump discharge to be at minimum.
c) Motor protection relay resetting will be carried out by appointed production and authorised electrical personnel only. Appointed production personnel may reset thermal overload relays only and any resetting must be entered in the logbook provided in the sub-station.
d) "Inching" of motors by production personnel is forbidden. Direction checks on installation will be handled by electrical, mechanical and operational personnel.
e) A motor must not be "flicked", i.e. started and immediately stopped, to check that it is alive. This action causes the contactor to be opened while the high starting current, often 6 - 10x normal current , is flowing.
f) All relevant operational pre-start up checks must be carried out.
g) Motors being driven in the reverse direction by product flow through the pump or air flow in plenum chambers on fin fans, etc, must not be started until brought to a standstill.
h) Motors are monitored from the ammeter fitted remote control unit mounted adjacent to the drive. At all times when starting or stopping a drive the ammeter shall be monitored. Before attempting to start, check if overriding is required.

    i. Start Depress start button positively for one second or turn flick return switch to start and hold one second.
    ii. Stop Depress stop button positively for one second or turn flick return switch to stop and hold for one second.

i) Permissible number of consecutive starts

    i. M.V. Motors We do not have 15min timers on our motors any longer.
    ii. L.V. Motors Two consecutive starts are permissible. In all cases summon an authorised electrician to assist if unable to start or stop a drive.

No motor may be started without adequate earth protection, and guarding of moving parts.

CHAPTER12

SERVICE PROVIDER SUPERVISOR'S RESPONSIBILITY

[Refer OHS Act Construction Regulations, Regulation CR 8]

12.1 Management and Supervision of construction work as referenced in OHS Act

a) A principal contractor must in writing appoint one full-time competent person as the construction manager with the duty of managing all the construction work on a single site, including the duty of ensuring occupational health and safety compliance, and in the absence of the construction manager an alternate must be appointed by the principal contractor.

b) A principal contractor must upon having considered the size of the project, in writing appoint one or more assistant construction managers for different sections thereof,

provided that the designation of any such person does not relieve the construction manager of any personal accountability for failing in his or her management duties in terms of this regulation.

c) Where the construction manager has not appointed assistant construction managers as contemplated in sub regulation (2), or, in the opinion of an inspector, a sufficient number of such assistant construction managers have not been appointed, that inspector must direct the construction manager in writing to appoint the number of assistant construction managers indicated by the inspector, and those assistant construction managers must be regarded as having been appointed under sub regulation (2).

d) No construction manager appointed under sub regulation (1) may manage any construction work on or in any construction site other than the site in respect of which he or she has been appointed.

e) A contractor must, after consultation with the client and having considered the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the site, appoint a full-time or part-time construction health and safety officer in writing to assist in the control of all health and safety related aspects on the site: Provided that, where the question arises as to whether a construction health and safety officer is necessary, the decision of an inspector is decisive.

f) No contractor may appoint a construction health and safety officer to assist in the control of health and safety related aspects on the site unless he or she is reasonably satisfied that the construction health and safety officer that he or she intends to appoint is registered with a statutory body approved by the Chief Inspector and has necessary competencies and resources to assist the contractor

g) A construction manager must in writing appoint construction supervisors responsible for construction activities and ensuring occupational health and safety compliance on the construction site.

h) A contractor must, upon having considered the size of the project, in writing appoint one or more competent employees for different sections thereof to assist the construction supervisor contemplated in sub regulation (7), and every such employee has, to the extent clearly defined by the contractor in the letter of appointment, the same duties as the construction supervisor: Provided that the designation of any such employee does not relieve the construction supervisor of any personal accountability for failing in his or her supervisory duties in terms of this regulation.

i) Where the contractor has not appointed an employee as contemplated in sub regulation (8), or, in the opinion of an inspector, a sufficient number of such employees have not been appointed, that inspector must instruct the employer to appoint the number of employees indicated by the inspector, and those employees must be regarded as having been appointed under sub regulation (8).

j) No construction supervisor appointed under sub regulation (7) may supervise any construction work on or in any construction site other than the site in respect of which he or she has been appointed: Provided that if a sufficient number of competent employees have been appropriately designated under sub regulation (7) on all the relevant construction sites, the appointed construction supervisor may supervise more than one site.

12.2 General Requirements of Service Provider Employees

Before Starting any Task

a) Risk rate Job as per hazard work categories (HSSE.SF.0212) i.t.o. Low, Medium or High.
b) Ensure field visits before risk assessments are conducted.
c) Shall do all required risk assessments and take corrective precautions
d) Know what shall be done, and are competent to do so.
e) Know the relevant sections of the Health and Safety Act and SAPREF Regulations.
f) Have the relevant SAPREF Work Permits.
g) Ensure all conditions specified on the SAPREF Work Permits are complied with.

While the Work is in Progress

a) Display the SAPREF Work Permits (including isolation documentation where required) at all times at the work place and ensure that all conditions on all Work Permits are conformed to for the duration of the job.
b) Adhere to the Work Procedure agreed to with the Clearance Issuer, and notify him/her as soon as possible if any conditions change.

On Completion of the Job

a) Check their work to ensure it conforms to SAPREF standards.
b) Clean the work area.
c) Sign the Clearance Certificate off at the end of the shift, and discuss any concerns with their Supervisor and Clearance Issuer.

CHAPTER 13 - Fire Prevention

Fire prevention is the responsibility of every person working on the SAPREF site. It is our policy that fires, like accidents, are preventable and as a consequence unacceptable. It is therefore mandatory to take **ALL** practical precautions to prevent undesirable combustion taking place.

The following points must be borne in mind continuously, especially in areas where hydrocarbons are being processed or stored.

a) All firefighting equipment, fixed or portable, shall be kept un-obstructed at all times.

b) Emergency Services Department shall be notified immediately if any firefighting equipment has been used or misused so it can be serviced and replaced without delay.

c) Firefighting equipment has been strategically placed with a view to rapid control of potentially hazardous situations and this equipment is therefore regarded as life saving equipment and it should only be used for its intended purpose.

d) Any person who misuses, tampers or willfully damages firefighting or safety equipment will be disciplined.

e) Standby firefighting equipment required for routine or planned work may be obtained from the Emergency Services Department and returned as per issuing requirement.

f) Transportation or storage of corrosive or flammable liquids in open containers is strictly prohibited.

g) Flammable and Combustible fluid (Including all Gas cylinders (Not connected to process)) storage less than 3000 L per area or vessel must have a compliance certificate issued by the Sapref Fire department which is valid for 12 months

h) Pyrophoric iron (iron sulphide), a potential fire risk and often encountered in vessels/pipelines and process equipment, shall be kept wet in bins filled with water and properly disposed off as quickly as possible.

i) Operational ownership of the fire water main rests with Emergency Services Department and any request to have sections of the fire water main isolated for maintenance or operational needs must be directed to the Sapref Fire Chief.

j) Fire water is to be regarded as an emergency resource and shall only be used for firefighting purposes unless otherwise authorised in writing by the Fire Chief. The use of the CFI fire water system for non-emergencies must have approval from TNPA Fire and Sapref Fire Chief

The use of Fire water for external cooling of equipment shall only be used under the following conditions:

i) A valid RAMS shall be issued and signed by the responsible Gas Safety Inspector (GSI), Sapref Fire Chief and the Responsible Area Engineer.
ii) Only process fire hoses may be used.

k) The fire water supply shall only be connected to the process units if covered by a RAMS signed by the Gas Safety Inspector (GSI), the Authorised Area Engineer and Sapref Fire Chief and an approved Plant Change Request (PCR).

l) Oxy – Acetylene cylinders shall not be left in process areas when not in use and must be removed at the end of the working day.

m) Valves and fittings on gas cylinders shall not be lubricated with hydrocarbon based products.

n) No hot work shall be used on any equipment which has been in contact with Hydrocarbons unless the equipment has been certified gas free or if it cannot be made free of combustible materials a risk assessment approved by the OHS Act section 16(2) Appointee must be done and the PUM or Section 8 Appointee Signatory, Gas Safety Inspector and Sapref Fire Chief must all sign the Risk Assessment RAMS.

o) Overhead welding shall not start until precautions against falling sparks are in place.

p) Any person discovering a fire shall immediately raise the fire alarm by word, telephone 1333, or radio to the Control Room. Only trained personnel will diffuse the fire, using available firefighting equipment. Contact number for emergencies at Island View is 031 -4662833.

q) All Production Personnel shall be familiar with the use and location of firefighting equipment permanently located in their plants.

r) Firefighting operations shall be undertaken by the designated Shift Fire Crew

s) Any fire that presents a risk to people and/or company property requires immediate notification to the Sapref Fire Chief and the duty Fire Officer on call.

t) It is the responsibility of the Shift Manager/IVT Team Leader to ensure that at the start of each shift a properly designated fire crew is in place and that members of this fire crew are made aware of their role in the shift fire crew.

u) In the event of an on-site emergency the Shift Manager/IVT Team Leader will assume the responsibilities of the Incident Commander and direct all initial emergency response activities until relieved by more senior staff.

v) The duties of the Production Team leader must at all time remain focused on Plant Operations and Process Control and he should not concern himself with Emergency response activities. The control room must be manned at all times. In case of Island View the Shift Controller will monitor plant operations and Team Leader will be initial "Incident Commander" until he hands over to Fire Officer from SAPREF or eThekwini Fire.

~~w)~~ All fire events MUST BE RECORDED. It is the responsibility of the Production Team Leader and the Shift Fire Officer to complete a Company Fire Report and a CIS report before the end of the shift in which the event occurred.

x) It is the duty of the Shift Manager/IVT Team Leader to inform the Duty Manager, Production Unit Manager and Sapref Fire Chief of any fire that occurs during their shift. This shall be done as soon as practical. The Shift Manager /IVT Team Leader shall take action in preserving all evidence with regard to the fire event.

y) Emergency Services Department shall be notified immediately in the event of a fire incident or near miss.

Chapter 14 - Specific Marine Ship-Shore Operations

SAPREF Standing Instructions with regards to the management of safety risks associated with the maritime operations and maintenance of the offshore Single Buoy Mooring (SBM) and Island View jetties are derived from a requirement to be compliant with the Shell HSSE & SP Control Framework documentation.

Activities associated with Island View shall be governed by the processes and procedures highlighted within the other appropriate areas of this guidance booklet, however in relation to specific maritime issues then guidance should be sought from the relevant supporting publications, namely;

- Port Rules for Harbours of South Africa
- Internationals Safety Guide for Oil Tankers and Terminals (ISGOTT, 5th edition)
- Oil Companies International Maritime Forum (OCIMF) Publications
- Shell Maritime Process Model (MPM)

3. References

3.1 Records

ID No.	Title	Holder	Location	Working Duration	Archive Duration

3.2 External References

Document Reference	Title	Issued by	Revision / Date
	Occupational Health and Safety Act 85 of 1993		
HSSE.EX.0006	Working Safely with Hazardous Chemical Substances Advanced Course SAQA 14792 - Lecture Notes & Presentation		
	International Safety Guide for Oil Tankers and terminals 4th edition.	ISGOTT	1996
SANS 10085-1	The design, erection, use and inspection of access scaffolding Part 1: Steel access scaffolding		2004

3.3 Internal References

Doc. ID	Title
SITE.SI.0001	SAPREF Standing Instruction
SITE.PR.0005	Risk Management
SITE.PR.0012	Control of Records
ASSET.WI.0218	Containment of Sparks and Hot Slag
ASSET.PR.0015	Plant Change Procedure (PCR)
ASSET.SF.0031	Temporary Line Installation form
ASSET.PR.0014	Project Development Requests (PDR)
ASSET.PR.0030	Safety Relief Valves: from Cradle to Grave
ASSET.WI.0227	Contractors Portable Air Compressors
ASSET.WI.0228	Installation/Maintenance of Oxygen/Acetylene Equipment
ASSET.WI.0229	Inspection of Rigging Gear
ASSET.ELEC.WI.0006	Electrical Apparatus and Installation in Hazardous Areas
ASSET.WI.0236	Use of Workshop Machinery
ASSET.WI.0237	Safe Working Practices for Opening Process Equipment
ASSET.WI.0238	Grit blasting of Equipment & Piping in Process Areas
ASSET.ELEC.WI.0014	Safe use of Electric Arc Welding Equipment
ASSET.ELEC.WI.0006	Electrical Apparatus and installation in Hazardous Areas
ASSET.ELEC.WI.0012	Electrical Powered Tools, Auxiliary Power Outlets and Portable Lighting
ASSET.ELEC.WI.0014	Safe use of Electric Arc Welding Equipment
ASSET.ELEC.WI.0017	Safe Use of Drilling Machines
ASSET.WI.0031	Rigging Procedure
ASSET.WI.0032	Erection and Dismantling of Scaffolds
ASSET.WI.0082	Training, Operation and Inspection of Portable Disc Grinders
ASSET.WI.0217	Responsibilities for Hired Cranes

ASSET.WI.0083	Preparing & Handling of Equipment in HF, Caustic and Amine Service
ASSET.INSP.PR.0810	Inspection of SAPREF's Installation
PEOPLE.PR.0007	Smoking Procedure
HSSE.PR.0071	Access Control
HSSE.PR.0069	Permit to Work
HSSE.PR.0061	SAPREF Waste Management
HSSE.CL.0005	OHS Act 16.2 Responsibilities Checklist
HSSE.PR.0005	SAPREF Driving Standard
HSSE.WI.0625	Application for Vehicle Permits
HSSE.RG.0029	SAPREF PPE Specification Register
HSSE.RG.0027	Asbestos Register
HSSE.PR.0032	Asbestos Management at SAPREF
HSSE.PR.0006	Confined Space Entry (CSE) procedure
HSSE.WI.0006	Inert Gas CSE
HSSE.SF.0018	Contractor Vehicle Entry On Site Parking Application
HSSE.SF.0016	Staff On- Site Parking Application
HSSE.WI.0059	Safe use of Portable Ladders
HSSE.WI.0616	Control of Hazardous Chemical Substances on SAPREF sites
PROD.IV.PR.0006	Lead Regulation with regard to Afgas Lead Induction facility at SITE 1

4. Keywords [back to TOC]

HSSE, fire, safety, regulations

5. Definitions and abbreviations [back to TOC]

Refer to SITE.RG.0001

Additions to this list must be sent via e-mail to the Bms Administrator.

6. Revision list [back to TOC]

Revision	Date	Description	Checked by	Approved by
1	2001	Revised	R. Pearton, MS1	Nils Bosma, PM
2	2002	Revised	D. Lowe, MS	Nils Bosma, PM
3	2004	Revised to add H & E	D. Lowe, MS	Nils Bosma, PM
4(Draft)	08/06/2006	Updated for compliance enforcement	Refer to feedback folder with MS41	D. Lowe, MS
5	March 2009	Revised	J. van Belkum, MS; R. Youldon, CM; G. Tate, MM; G. Merrick, EE	Liziwe Mda, OM
6				
7	November 2013	Revised into new booklet form	David Radebe, Jayson Nadarajan, Siphiwe Zungu, Sbu Zulu,Poovan Nadar	J. van Belkum
8	July 2014	Revised with new Construction regulations	David Radebe Jayson Nadarajan	Mbulelo Yokwe

9	March 2015	Revised and clarified Caustic PPE requirements. Refer to Section 2.11 Category 4	L Mngoma, MS3 S Buthelezi, MS32	Mbulelo Yokwe
10	31st August 2015	1. Added 4 gas monitors 2. No texting/talking on cellphone while walking 3. PUM approval for water draining 4. Working at height updated to include SAPREF known activities.	J. Nadarajan, MS12 S. Khuboni, MS11 D.T. Radebe (MS1)	Mbulelo Yokwe
11	12/11/2015	Edit done in prep for de-risking roll out	Sbu Zulu	Mbulelo Yokwe
12	05/10/2016	Update Edit to reflect changes	Caliway Lloyd MS11 Sbu Zulu MS1	Mbulelo Yokwe
13	31/08/2017	Cleaned the strikethrough and yellow highlighted areas. Isolation Matrix removed as per HSSE exec	David Thulani Radebe	Mbulelo yokwe
14	11/01/2019	1.6 MOC Procedure for making HSSE changes	David Thulani Radebe / Lloyd Gonde	Mbulelo Yokwe
15	17/01/2019 and 24/01/2019	2.10.3 Removed that only males are allowed in Avgas plant. And added that pregnant persons not allowed.	David Thulani Radebe / Lloyd Gonde	Mbulelo Yokwe
16	10/04/2019	Alkylation PPE clean out of strikethrough on the procedure	David Radebe / Lloyd Gonde	Mbulelo Yokwe
17	07/06/2019	2.7(a) updated to include Production Manager carrying intrinsically safe phone in the process units.	David Radebe	Mbulelo Yokwe
18	15/11/2019	10.8 included on over platting on live equipment.	David Radebe/ Vasu Pather	Mbulelo Yokwe
19	19/02/2021	6.4.2 on use of FA for sampling gas streams	David Radebe/Sinethemba Buthelezi	Lubin Schabalala(MS)
20	29/07/2024	Revised according to new ways of working i.e without Refinery operating. Also updated according to revised PTW procedure. Updated Excavation section.	L Mngoma, IHS4	M Francis, IHS

7. Appendices