

Natref management of PSCE

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1. Purpose of Identification of PSCE

- Prioritisation of deployment of available resources for inspection, testing and maintenance of plant assets identified as PSCEs.

2. Definition of Safety Critical Equipment

- PSCE categories:
 - a) Instrumentation
 - b) Process Containing Equipment
 - c) Mitigating Equipment which protects PSCE

2. Definition of Safety Critical Equipment

- a) Instrumentation as PSCE:
 - Instrumented protective systems or (SIF) that have been SIL rated for safety reasons shall be added to the list of PSCE.
 - Where SIL reviews have not been performed, all trips protecting the process against significant safety consequences

2. Definition of Safety Critical Equipment

b) Process Containing Equipment as PSCE

- Process containing equipment shall be deemed PSCE when:
 - It has the potential to cause a major process safety incident should it fail and release hazardous chemicals, and
 - There is a known mechanism of failure, such as (but not limited to) corrosion or erosion.
- Process containing equipment may include but not limited to:
 - Pressure vessels, heat exchangers, columns, reactors, filters
 - Relief devices and vent systems
 - Piping systems, including piping components such as valves
 - Storage tanks
 - Rotating and reciprocating equipment such as pumps, compressors, turbines
 - Instrumentation components containing hazardous chemicals such as valve bodies, level chambers, pressure transmitters, thermo-wells, local pressure indicators and
 - Miscellaneous equipment

2. Definition of Safety Critical Equipment

- c) Mitigating Equipment Protecting The PSCE:
- All active and passive mitigating systems intended to reduce the consequences of a loss of containment

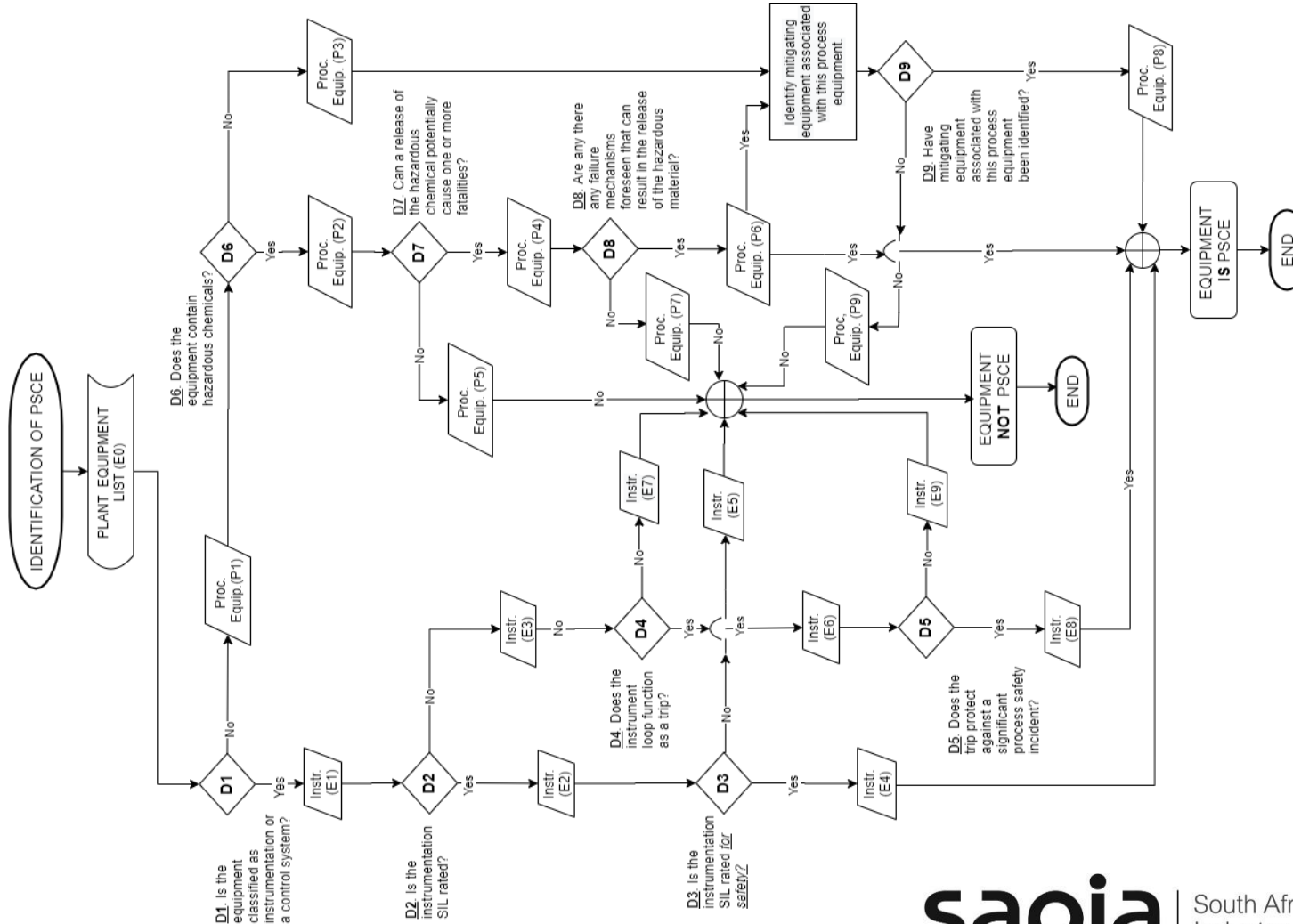
Mitigating equipment may include but not limited to.

- Active fire protection systems, Fireproofing
- Deluge and sprinkler systems
- Emergency shutdown systems and shut-off valves, some of which may be manually activated
- Fire walls
- Bund walls
- Flare systems
- Inert gas systems required for process safety reasons
- Fire and gas detectors
- Long bolt protection from external fires
- Emergency communication systems
- Emergency effluent handling systems
- Explosion suppression systems

3. Process of Selection of PSCE

- PSCE are identified during the PHA or related studies wherein risk scenarios are developed, analysed and recorded
- PSCE should ideally be less than 20% of the total master equipment list, i.e. the “critical few” that should be singled out.
- Equipment containing hazardous chemicals and their related mitigating systems may subsequently be added or removed from the list of PSCE through a justification by inputs from a PHA study or similar process.
- Modifications to the plant (MOC) shall consider the effect of the modification on the list of PSCE.
- Records of the above process shall be kept in order to explain the reasons and logic of the decisions taken for future reference.

3. Process of Selection of PSCE



4. Pre-requisites for Maintenance of PSCE

- All equipment is identifiable (not necessarily by the allocation of a functional location/site number and/or by physical marking).
- All maintenance work is managed using a Maintenance Management System (MMS).
- A MMS system is used to plan and schedule maintenance work and manage backlogs.
- All equipment containing hazardous chemicals, control systems, passive protective systems and mitigating systems are maintained and repaired in accordance with RAGAGEP.
- Inspection and test procedures have been developed and implemented.
- Revisions to PSI as a result of modifications, repairs, etc. are performed timeously.
- All inspections and tests are performed by appropriately trained/qualified personnel. All inspections and tests are performed by appropriately trained/qualified personnel.



The End