



PetroSA

HSSE Moment **Management of Change (MOC)**

(Some Difficulties in Practice)

SAPIA RPSM Meeting

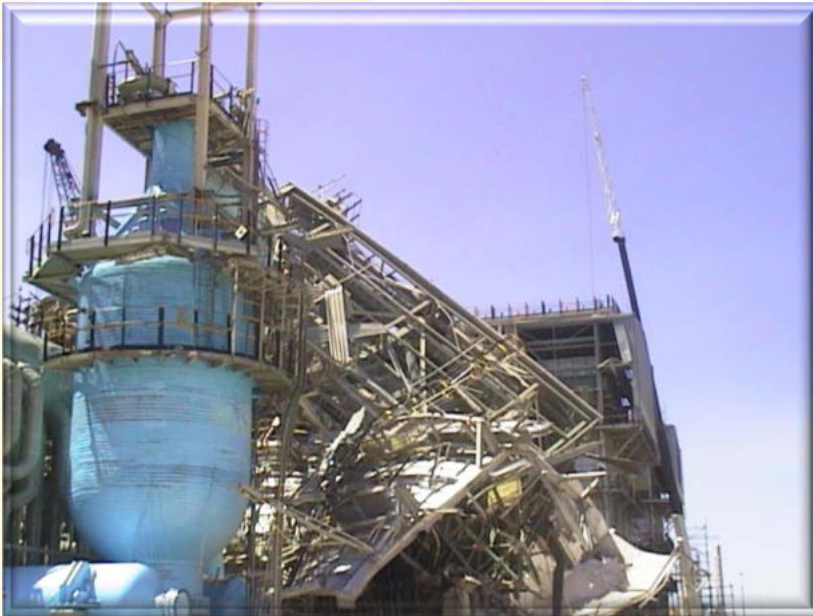




PetroSA

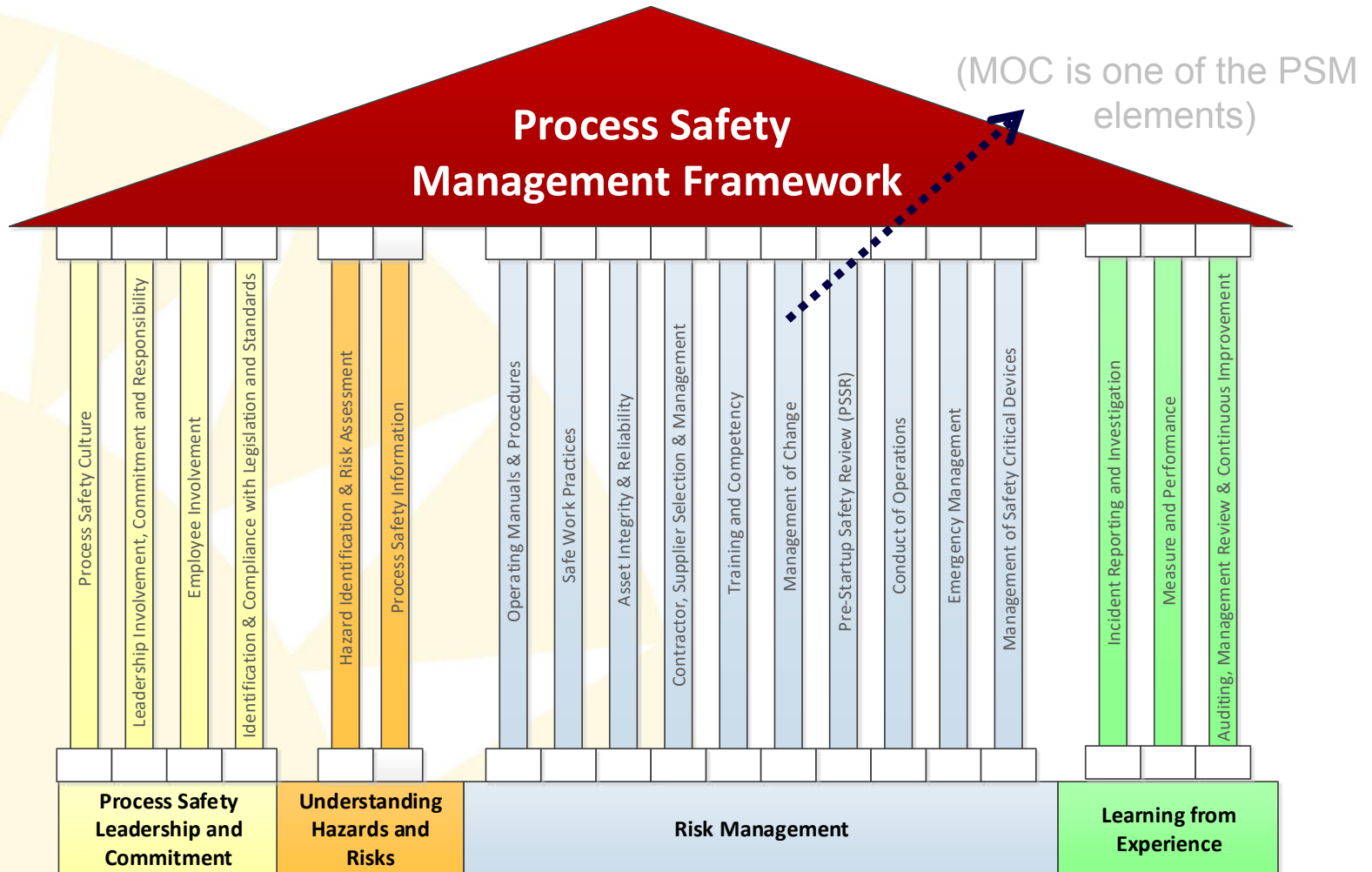
| Process Safety Management: Focus...?

“...to prevent **catastrophic** accidents by properly identifying, evaluating and addressing SHERQ concerns in a timely manner”



Process Safety Management

PSM is a method of identifying, understanding, and controlling process hazards and preventing process-related injuries and accidents





PetroSA

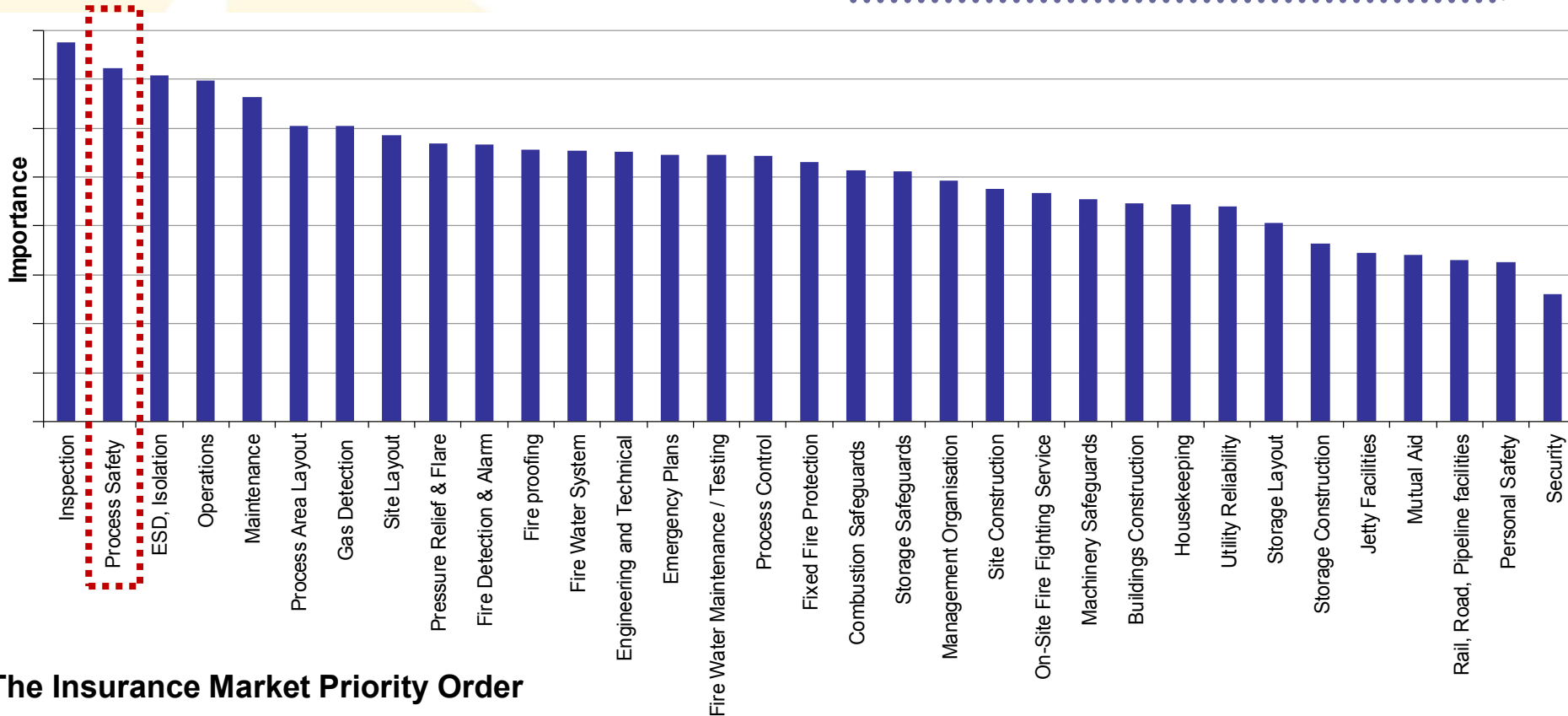
MOC is important to business...?

80% of all large scale accidents in the process industries trace their origins back to “Change”

VS.

Change is essential to a company's survival

We have to be able to continuously improve our process and keep up with industry standards



The Insurance Market Priority Order



PetroSA

OHSAct – employer liability...(1)

Section 8: General Duties of Employers:

“Every Employer shall provide and maintain a working environment that is safe and without risk to the health of his employees:

- the *provision and maintenance of systems of work* plant and machinery that are safe and without risks to health,
HSE – MS / PSMF
- *taking practicable steps* to eliminate or mitigate any hazard or potential hazard to the safety or health of employees”,
Risk Assessment / HIRA
- Making *arrangements for ensuring the safety* and absence of risks to health in connection with the production, processing, use handling, storage or transport of articles or substances”,
HSE – MS / Risk Assessment / HIRA / ALARP
- Establishing *what hazards to the health and safety of persons are attached to any work* which is performed , any article or substance which is produced, processed, used, handled, stored or transported and any plant or machinery which is used in the business and he shall further establish what precautionary measures should be taken with respect to such work, article, substance plant, machinery in order to protect the health and safety of persons and he shall provide the necessary means to apply such precautionary measures”.

OHSAct – employer liability...(2)

Section 8: General Duties of Employers:

“Every Employer shall provide and maintain a working environment that is safe and without risk to the health of his employees:

- Providing such information, instructions training and supervision as may be necessary to ensure the health and safety at work of employees”,
Functional Training (How To) & Regulatory
- Not permitting any employee to do any work or to produce, process, use, handle, store or transport any article or substance or to operate any plant or machinery, unless the precautionary measures have been taken”,
All Participate in Risk Assessment
- Taking all the necessary measures to ensure that the requirements of this act are complied with by every person in his employment or on premises under his control where plant or machinery is used”,
Consequence Management
- Enforcing such measures as may be necessary in the interests of health and safety”,

Ensuring that work is performed and that plant or machinery is used under general supervision of a person that is trained to understand the hazards associated with it and who have the authority to ensure that precautionary measures taken by the employer are implemented ” **Supervisor / Manager is Accountable**



PetroSA

| Management of Change...definition.

“MOC is a process for **evaluating** and **controlling modifications** to facility design, operation, organisation, or activities – prior to implementation – to be sure **no new hazards are introduced**”

- Risks are identified, evaluated and minimised,
- Current practice is aligned and updated (PSI, PHA, Works Procedures, Training Manuals, Mechanical Integrity, PSSR...)
- *but... most MOC systems have recurring challenges when operating,....*



MOC - Challenges in Practice...

Changes for the MOC process are not always recognised as such:

- longitudinal weld seam leaks in firewater supply piping handled as part of normal maintenance management because it is a change-in-kind. Interim substitution measures were decided upon as part of management action.
- However, 360° positional coverage of firewater as per design basis is essential for proper fire mitigation.
- Robust what-if technical engineering evaluation would assist in ensuring proper substitution measures for mitigation.
- Firewater header pressure drops and circulation can increase beyond jockey pump limits.

In this case, it is prudent to do the technical MOC and be **properly prepared** for the exact required substitution measures should a firewater header section be isolated. The **presence of the correct expertise** at the review session and the **choice of the MOCA Project Leader (SHE Engineer)** is paramount.



PetroSA

MOC - Challenges in Practice...

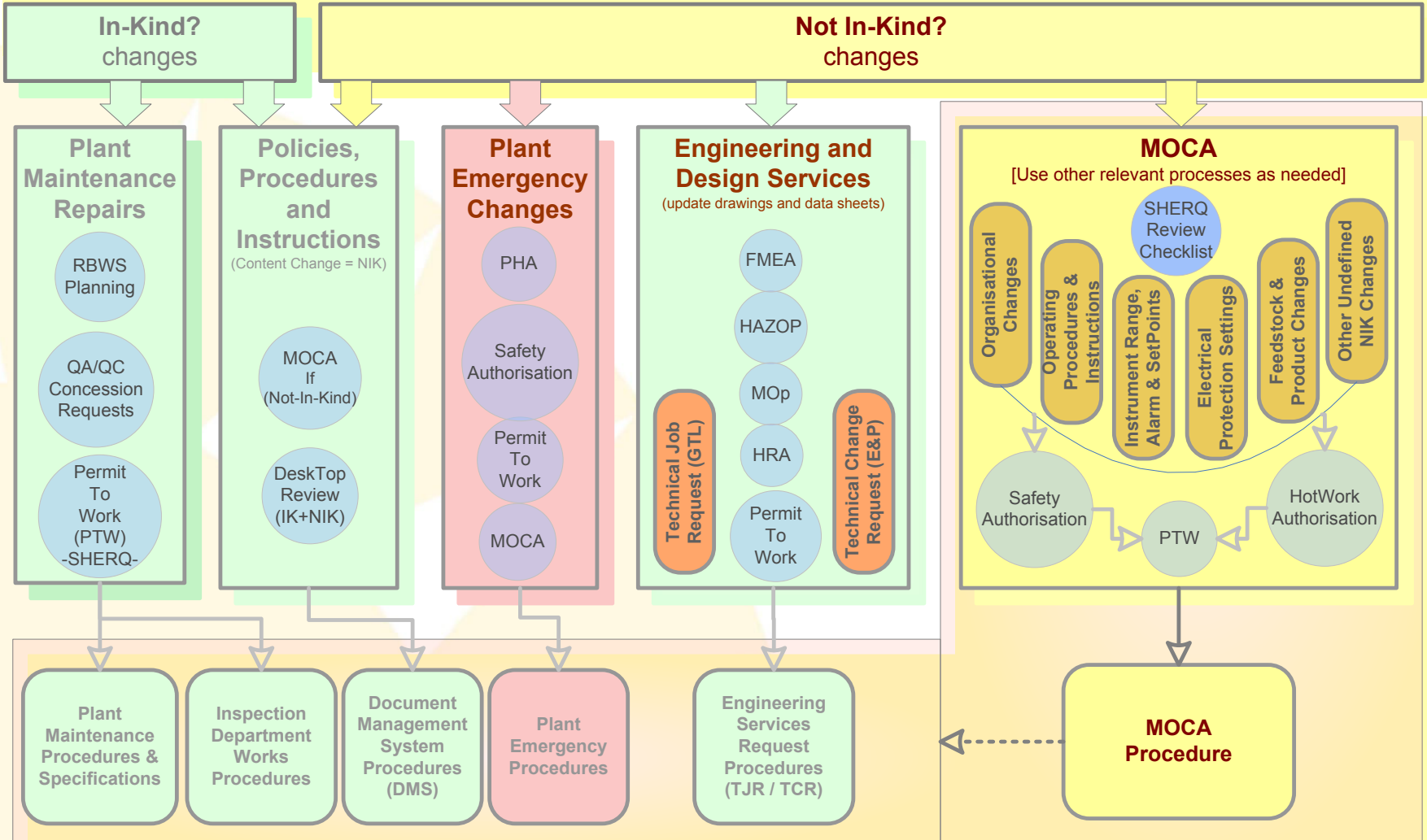
MOC process does not guarantee the identification of all technical engineering risks:

- Permanent bypass of non-producing well pressure and temperature trip based upon OEM technical advisory done by instrument maintenance department.
- Concerned that pressure envelope would be compromised and thus replacement of transmitters not an option.
- MOCA project leader an experienced Control Systems Technician.
- MOCA signed off by Asset Owner as legal appointment.
- MOCA technical package has gaps in verifiable evidence for assurance.

Choice of the MOCA project leader is significant as the need for the presence of **internal** reservoir and subsea engineering expertise at the review session was not identified. Gaps in the MOCA package means the necessary PSM assurance cannot be provided that the change was properly evaluated and instituted. Best to **carefully choose** a MOCA Project Leader – by definition of the nature of most MOC's in process plants – it **should?** be a professional technologist or engineer.

Management of Change Landscape

What Kind is the Change?





PetroSA

| MOC Landscape: ..Straightforward?

- **Challenge in practice to recognise what the change means in practice...**
 - The definition of IK and NIK may lead asset owners astray.
 - Best to add to this definition with decision tree and examples and to detail the MOC internal regulatory landscape.
 - PetroSA directs IK replacements of large equipment through the TJR “MOC” Process.
- **MOC sign-off by PSM Department?:**
 - Is it prudent that an MOC needs to be signed off by PSM before implementation?
 - MOC process should not be cumbersome, but consequence is major.
 - Challenge is that “I do not know that which I do not know and should know”
- **MOCA is high-risk...what about competency?**
 - ECSA professionalism does provide assurance that requisite foundational training exposure is done.
 - Is there a need to define the occupational competency requirement for MOCA Project Leaders, noting that only process design experience is not sufficient. Production exposure and experience is also necessary as is exposure to PSM.
- **Key Questions in the Context of Change....?**
 - How to handle the changes more efficiently, and
 - How the relevant change requests can be passed to the appropriate engineering disciplines.
 - We should keep in mind that a modest MOC system that is regularly used and works is much better than an elaborate, sophisticated system with an impeccable paper trail that is occasionally winked at, bypassed, or sometimes totally ignored.



PetroSA

Thank You.



Pictures: Ben Schoeman