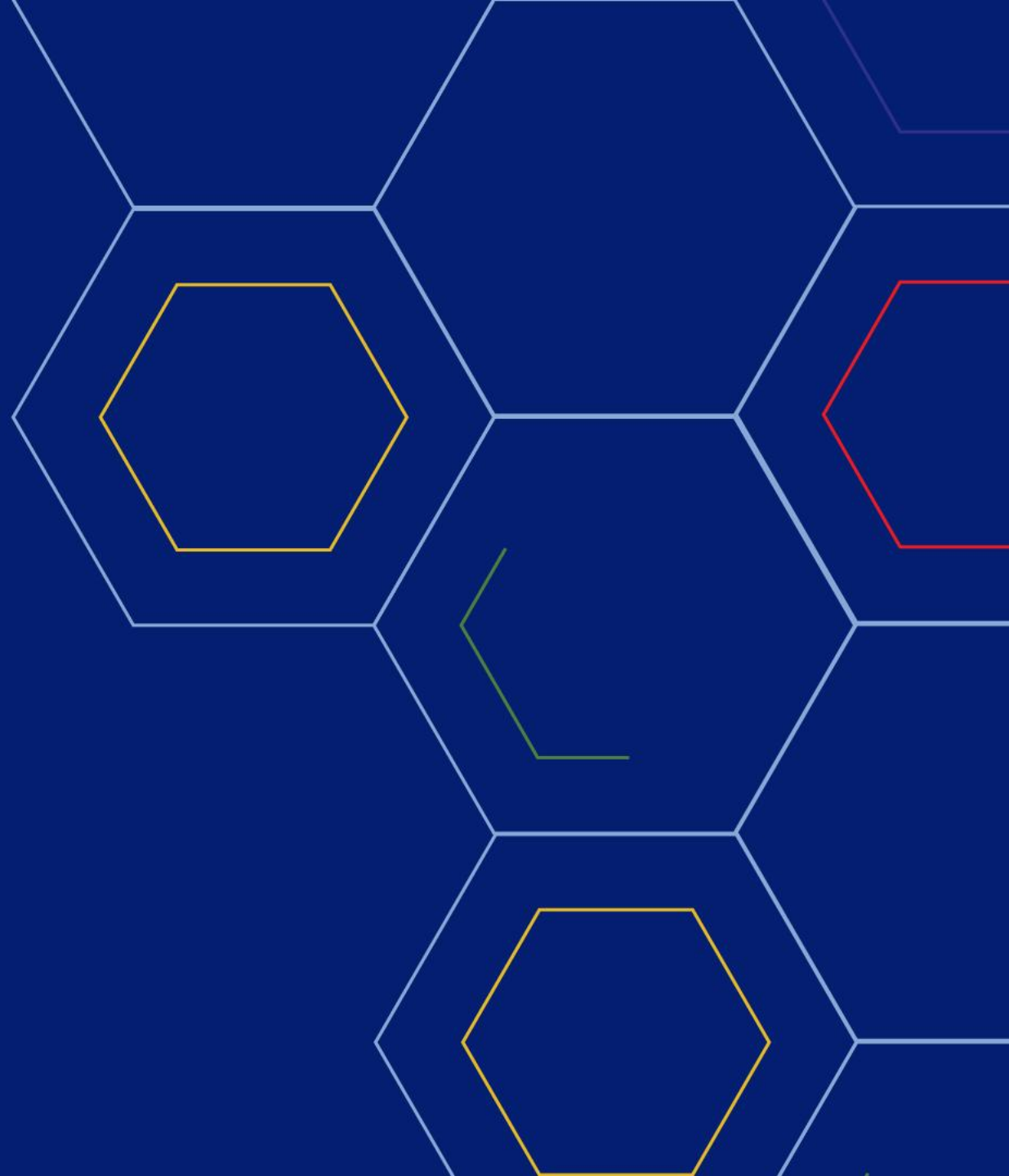




FUELS INDUSTRY
Association of South Africa

IOGP Process Safety 2023 Incident LFI





Summary of failed barriers

Hardware Barriers	Human Barriers	Management System Barriers
<ul style="list-style-type: none">• Structural Integrity• Process Containment• Detection Systems• Protection Systems (including deluge and fire water systems)• Ignition Control• Shutdown Systems (including operational well isolation and drilling well control equipment)• Emergency Response Equipment and Systems	<ul style="list-style-type: none">• Operating in accordance with procedures (PTW, Isolation of equipment, Overrides and inhibits of safety systems, Shift handover, etc.)• Surveillance, operator rounds and routine inspection• Acceptance of handover or restart of facilities or equipment• Authorization of temporary and mobile equipment• Response to emergencies	<ul style="list-style-type: none">• Risk assessment and control• Asset design and integrity• Execution of activities• Plans and procedures• Monitoring, reporting and learning• Organization, resources and capability



Summary of Causal Factors

People (Acts)

- **Use of Protective Methods:** Failure to warn of hazard, Equipment or materials not secured
- **Following Procedures:** Improper position (in the line of fire), Deviation unintentional (by individual or group), Deviation intentional (by individual or group), Overexertion or improper position/posture for task

Process (Conditions)

- **Tools, Equipment, Materials and Products:** Inadequate design/specification/management of change, Inadequate/defective tools/equipment/materials/products, Inadequate maintenance/inspection/testing
- **Organizational:** Inadequate hazard identification or risk assessment, Inadequate supervision, Failure to report/learn from events, Inadequate work standards/procedures, Inadequate training/competence
- **Protective Systems:** Inadequate/defective warning systems/safety devices, Inadequate security provisions or systems
- **Workplace Hazards:** Hazardous atmosphere (explosive/toxic/asphyxiant)