

Offshore process isolation failures present major accident hazard risk

Isolation failures are one of the main causes of hydrocarbon releases on offshore installations on the UK Continental Shelf. These are not minor incidents – many have the potential to cause serious injury, fatalities or major accidents if ignited.

The Health and Safety Executive (HSE) continues to find serious failings during inspections and investigations, which has led to significant enforcement action in recent years.

Now the regulator is highlighting the findings from its inspections and investigations to assist operators in improving their safety performance on offshore installations.



A drilling rig and platform used in the oil and gas industry for offshore fuel exploration

Scott Templeton, Principal Specialist Inspector in HSE's Energy Division – Offshore, said:

“The problem is not the procedures on paper, it is that people are not following them. Most UK operators have isolation procedures that broadly follow [HSG 253](#) (the guidance on safe isolation of plant and equipment).

“Effective and lasting improvement requires everyone involved in isolations, from senior management to those carrying out work on the plant, to share a genuine commitment to achieving and maintaining isolation procedures and practice to the required standard.

“We will soon issue updated inspection guidance, so operators know what to expect they will be assessed on. Safe isolation will remain an inspection priority.”

Findings from inspections and investigations

HSE inspections have identified critical gaps in offshore isolation practices:

- Company standards failing to meet HSG 253 requirements – some duty holder ‘selection tools’ specify lower isolation standards than HSG 253 requires.
- Poor hazard identification – risk assessments frequently miss trapped fluids, pressure sources and non-return valves. Electronic systems encourage ‘copy and paste’ approaches which can fail to reflect actual task hazards.
- Inadequate isolation planning – dutyholders are proceeding with complex isolations (multiple passing valves, extended boundaries) rather than waiting for shutdowns, resulting in risks that are not as low as reasonably practicable (ALARP).
- Inaccurate piping and instrumentation diagrams (P&IDs) – plant drawings do not reflect actual conditions, leading to incorrect isolation design and implementation issues.
- Missing or inadequate method statements – step-by-step instructions for applying, testing and removing isolations are either absent, insufficiently detailed or unclear, increasing the risk of human error.

All variations from isolation standards must be risk-assessed and approved by a technically competent, operationally independent person (typically onshore). Control measures identified in risk assessments must be followed.

Questions for your organisation

Procedures

- Do your isolation procedures align with HSG 253?
- Do they give clear guidance on venting and depressurising safely?
- Do they require detailed method statements?

Risk management

- When do you allow single block and bleed isolations on hazardous fluids, and how do you ensure risks are ALARP?
- Have you defined an acceptable leakage rate for isolation valve integrity?
- How do you handle situations where valve integrity is hard to prove, such as flare headers?
- What are your ‘cleanliness criteria’ before breaking containment?

People

- How do you minimise human error?
- Is training and competency assessment suitable for everyone involved in isolations?
- How effective are you at recognising high-risk activities when multiple jobs are happening simultaneously?

Assurance

- Is your monitoring and audit system robust enough to catch procedural violations?
- How do you manage deviations from isolation procedures?
- Do you have a system to consider plant modifications that would reduce isolation risks?
- Do you identify problem valves and fix them?

The solution

Isolation risks exist at every stage – from planning through to completion. Good procedures alone are not enough. Everyone from senior management to those doing the work must genuinely commit to following procedures every time.

HSE is engaging with industry to share learning and improve standards. Updated guidance will be issued soon.

These failures are entirely preventable. The question is whether your organisation will prevent them.

Further information

HSE hosted a webinar on process isolations in the offshore oil and gas sector. Essential viewing for all those involved in isolation activities for offshore installations in the UKCS, from design and installation, through to approval and audit.

This is available to watch via Health & Safety matters website. Register here to watch: [Offshore UKCS Process Isolations – Regulatory Expectations and Learnings](#)

HSG 253 'The safe isolation of plant and equipment' provides comprehensive guidance on isolation procedures.