
Well Integrity Surveillance and Barrier Assurance Training Course for Asset Leaders

22 – 26 November 2026
Muscat





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Programme Summary

Well integrity surveillance and barrier assurance is the subject of this one-week training course for wells, production and asset leaders, ending in a well integrity review pack for one well group. Producing and injection wells age, and a barrier failure or unmanaged annulus pressure can stop output, harm people and damage the environment, yet integrity data often sits with separate wells, production and inspection teams. The programme moves from the barrier model to surveillance, annulus pressure, risk ranking, anomaly response and lifecycle decisions, applied to a well group the participant selects. Mars Training Centre UK delivers this programme on well integrity surveillance and barrier assurance to mixed-organisation cohorts.

The Business Case

A well stock is a large and ageing asset, and every well carries barriers that must hold for decades. When surveillance results, anomalies and intervention budgets are handled separately, leaders cannot say which wells carry the highest risk or why a repair was deferred. A shared barrier register, one risk ranking and one anomaly log let leaders act on the wells that matter first.

- Unplanned Well Shutdowns: Fall as barrier weaknesses are found and managed before they become failures.
- Intervention Spend: Falls as work is ranked by risk instead of by the loudest request.
- Safety and Environmental Exposure: Falls as annulus pressure and leak signs follow set limits and response steps.

Principles and Evidence Base

- ISO 16530-1 Well Integrity Life Cycle Governance: Frames the management system and life cycle stages used across all five sessions.
- Barrier Envelope Concept: Supplies the model for the barrier register built in Session 1.
- Risk Matrix Ranking: Shapes the well risk ranking made in Session 3.
- Annulus Pressure Limit Logic: Guides the annulus pressure management plan reviewed in Session 2.

Intended Participants

- Wells leaders who own the integrity management system and approve repair or abandonment decisions.
- Production leaders who run wells within set operating limits and report anomalies.
- Asset managers who balance integrity risk against intervention cost and output.
- Surveillance and integrity team leaders who brief management on the condition of the well stock.



Typical functions include operating companies, offshore platforms, onshore producing fields and gas storage or injection sites.

Learning Outcomes

1. Participants will be able to construct a barrier register that shows the primary and secondary barriers of each well.
2. Participants will be able to diagnose annulus pressure behaviour and judge whether a well stays within its limits.
3. Participants will be able to prioritise wells for action using a documented risk ranking.
4. Participants will be able to evaluate anomalies and select a response with a clear owner and deadline.
5. Participants will be able to justify repair, suspension or abandonment decisions across the well life cycle.
6. Participants will be able to prepare a review pack that supports the next integrity committee decision.

Programme Structure

Day 1: Well Integrity Surveillance and Barrier Foundations

Which barriers keep each well safe, and who owns them?

- Well Barrier Register
- Barrier Envelope Diagram
- Well Integrity Management System Map
- Well Life Cycle Stage Chart
- Roles and Accountability Matrix

Day 2: Surveillance and Annulus Pressure

What do monitoring results say about the health of each barrier?

- Surveillance Frequency Schedule
- Annulus Pressure Management Plan
- Pressure Build-Up and Bleed-Down Interpretation
- Leak Test Result Review
- Operating Limits Table

Day 3: Risk Ranking and Anomaly Response

Which wells carry the highest risk, and what response does each anomaly need?



- Well Risk Matrix
- Anomaly Log Classification
- Barrier Failure Scenario Review
- Response Option Table
- Deviation Approval Record

Day 4: Lifecycle Decisions and Intervention Planning

When should a well be repaired, restricted, suspended or abandoned?

- Repair or Restrict Decision Tree
- Intervention Priority Ranking
- Suspension and Abandonment Criteria
- Injection Well Integrity Checklist
- Cost and Risk Trade-Off Sheet

Day 5: Well Integrity Review Pack for One Well Group

Do the barrier register, surveillance findings, risk ranking and decisions agree for one well group?

- Applying the Session 1 Well Barrier Register
- Testing the Session 2 Operating Limits Table
- Checking the Session 3 Well Risk Matrix
- Reviewing the Session 4 Intervention Priority Ranking
- Completing the Well Integrity Review Pack

Methodology

The programme uses a case analysis method built on a shared case of a mixed well stock with producing and injection wells, rising annulus pressure on several wells and a limited intervention budget. Participants build each artefact on the case, then on their own well group, with written facilitator feedback after each session.

- Suggested activity: Reading annulus pressure trends for eight wells and sorting them by response needed.
- Suggested activity: Ranking a mixed well group on a risk matrix and defending the order.
- Suggested activity: Presenting an intervention plan to a mock integrity committee.

Capstone Output

Each participant completes a well integrity review pack for one well group. It holds a barrier register, an annulus pressure summary, a risk ranking, an anomaly response table and a lifecycle decision note. The pack is used at work to brief the integrity committee, justify intervention budgets and set the next surveillance priorities.



Frequently Asked Questions

Is well integrity surveillance and barrier assurance suitable for leaders who are not well engineers?

Yes. Well integrity surveillance and barrier assurance is taught through field cases and templates, assuming experience in production, wells or asset management but no well design calculations.

Which standard does well integrity surveillance and barrier assurance rest on?

Well integrity surveillance and barrier assurance rests on ISO 16530-1 for life cycle governance, together with the barrier envelope concept and risk matrix ranking.

How is the pack from well integrity surveillance and barrier assurance used at work?

You use the well integrity review pack to brief the integrity committee, justify intervention spending and set surveillance priorities.

How does well integrity surveillance and barrier assurance differ from well control training?

Well integrity surveillance and barrier assurance addresses the condition of existing wells over their life, while well control training addresses the response to an influx during drilling or intervention.