

EIE SHORT COURSES

TAILORED COURSES FOR INDUSTRY NEEDS

MIX & MATCH PROVEN MODULES TO BUILD YOUR PERFECT TRAINING SOLUTION

Practical short-course training in process safety, risk management and formal safety case aligned with the real challenges of oil & gas, LNG, petrochemical and chemical industries.



MIX & MATCH MODULES

Choose and combine the modules you need to meet your specific training requirements.



INDUSTRY FOCUSED

Designed for oil & gas, LNG, petrochemical and chemical operations.



PRACTICAL & APPLICABLE

Real-world examples, case studies and hands-on activities for immediate impact.



BUILD CAPABILITY

Strengthen knowledge, improve performance and support a strong safety culture.



BUILD YOUR TRAINING PROGRAM



+



+



+



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YOUR TAILORED TRAINING SOLUTION

Right content. Right people.
Right outcomes.

OUR SHORT COURSE MODULE AREAS



Process Safety
& Risk Management



HAZOP, HAZID
& Risk Workshops



LOPA, SIL
& Functional Safety



Fire & Explosion
Protection



Formal Safety Case
Development



BowTie, QRA &
Risk Analysis



Leadership, Safety
Culture & Human
Factors



IN-HOUSE OR PUBLIC

Delivered in-house at your facility or in public sessions across Australia and Asia.



FLEXIBLE & EFFICIENT

Short, focused courses that fit around your operational needs.



EXPERT-LED

Delivered by experienced industry professionals with real-world insight.



PRACTICAL TAKEAWAYS

Clear tools, templates and checklists you can apply immediately.

CONTACT



+61 8 6102 5051



martin.bardsley@enhanceie.com.au



www.enhanceie.com.au



PO Box 7314, Cloisters Square WA 6850
Western Australia

CONTACT US TODAY TO DISCUSS YOUR TRAINING NEEDS

In-house or open-enrolment options available.

Introduction to Process Safety

Understand why process safety is different from personal safety.

**Build awareness. Ask better questions.
Improve practical risk decisions.**

This short course introduces the foundations of process safety using real-world scenarios and the Texas City case. You will learn to recognise how hazards escalate, why safeguards matter, and where specialist review and authority are required.


**SCENARIO
EVIDENCE**

**OPTION
CONSIDERATION**

**RISK
JUDGEMENT**

DECISION
(subject to review)

DURATION

Three hours


DELIVERY

 Face-to-face or
live online

FORMAT

 Instructor-led
short course

PARTICIPATION

 Guided exercises
and practical
industrial scenarios

MATERIALS

 Learner workbook
and practical
job aid

CUSTOMISATION

 Client-specific
examples may be
incorporated


BLOCK 1 — FOUNDATION

- Why process safety is different from personal safety
- Texas City case: what happened and why it matters
- Elements of a major-accident scenario and event-chain thinking
- How hazards escalate and safeguards prevent or limit outcomes
- Common reasoning errors and missing elements



BLOCK 2 — METHOD

- Build the scenario: hazard, cause, event and consequence
- Apply the evidence-to-decision pathway
- Identify safeguards across the lifecycle
- Recognise credible escalation pathways
- Know when to escalate for specialist or authorised review
- Document a traceable preliminary view



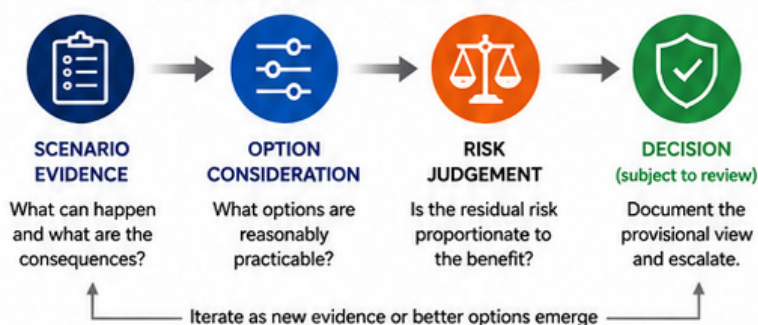
BLOCK 3 — APPLICATION

- Guided exercises using onshore and offshore scenarios
- Classify events and identify escalation pathways
- Map safeguards and ask critical evidence questions
- Spot missing elements in simplified case studies
- Prepare a preliminary summary for specialist review

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- ✓ Describe why process safety is different from personal safety.
- ✓ Construct a simple event chain from hazard to consequence.
- ✓ Identify key safeguards and where they should act.
- ✓ Use the evidence-to-decision pathway to structure a preliminary argument.
- ✓ Recognise missing evidence and know when to escalate for specialist review.

THE EVIDENCE-TO-DECISION MODEL



WHO SHOULD ATTEND

- Graduate and early-career engineers
- Operations and maintenance personnel
- Project and design personnel
- HSE and process-safety personnel
- Technical supervisors and managers
- Personnel who contribute to engineering, safety, risk, assurance or operational reviews



TRAINING BOUNDARY

This short course develops awareness, recognition and guided-participation skills in process safety. It does not by itself provide certification, professional authorisation or authority to make formal technical, legal, design, operational or risk-acceptance decisions. These decisions require competent and authorised personnel working under applicable company and jurisdictional requirements.

Examples outside this training boundary include:


 Approving
designs

 Selecting formal
criteria

 Accepting
risk

 Signing safety
cases

BUILD MORE DEFENSIBLE PROCESS-SAFETY THINKING ACROSS YOUR TEAM

Contact EIE to discuss public delivery, in-house training or a course adapted to your facility and operating context.

Dr Martin Bardsley

PhD (Chemical Engineering), CAMTAB
Enhance Integration Engineering Pty Ltd



+61 450 302 750



Martin.Bardsley@eieng.com.au



staging.eieng.com.au

PROCESS HAZARD AWARENESS

Recognising hazards and their effects on people, plant, the environment and business in offshore and onshore petroleum, petrochemical and chemical facilities

Recognise developing process hazards before they become major events.

This practical awareness course helps participants identify weak signals, trace hazard-to-harm pathways and review controls across realistic industrial scenarios. Learners build a structured way to notice what is changing, connect likely consequences, test control status and escalate specialist uncertainty early.



DURATION

Three hours



DELIVERY

Face-to-face or live online



FORMAT

Instructor-led short course



PARTICIPATION

Guided exercises and practical industrial scenarios



MATERIALS

Learner workbook and workplace job aid



CUSTOMISATION

Client-specific examples may be incorporated where suitable

WHO SHOULD ATTEND



- Graduate and early-career engineers
- Operations and maintenance personnel
- Project and design personnel
- HSE and process-safety personnel
- Technical supervisors and managers
- Personnel who work with fire, explosion, release or major-hazard scenarios

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- Distinguish hazard, risk and consequence using precise cause-and-effect language
- Identify hazard sources, weak signals and loss-of-control cues in realistic scenarios
- Trace consequences across people, plant, environment, business, legal/regulatory and community impacts
- Review controls along the chain from prevention through response and recovery
- Use the Hazard Awareness Review approach and escalate uncertainty appropriately

COURSE CONTENT



BLOCK 1 – RECOGNISE

- Hazard, risk and consequence
- Process safety and personal safety
- Material, energy and reaction sources
- Weak signals that deserve challenge
- Loss of control, loss of containment and visible release cues



BLOCK 2 – CONNECT

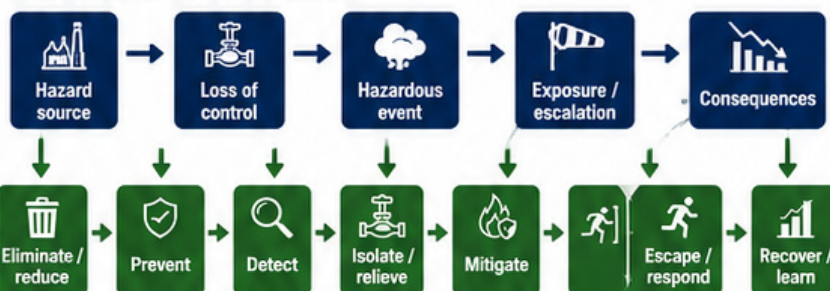
- Release forms and dispersion pathways
- Fire, explosion, toxic, cryogenic and reactive scenarios
- Exposure and escalation pathways
- Consequence families across people, plant, environment and business
- Control status, evidence and scenario reasoning



BLOCK 3 – INTERRUPT AND ESCALATE

- Hierarchy of controls and event-stage intervention
- Critical controls, degraded barriers and uncertainty
- Offshore, onshore and chemical/batch context differences
- Guided Hazard Awareness Review activities
- Escalation boundaries and specialist support

THE HAZARD-TO-HARM CHAIN



TRAINING BOUNDARY



Course enquiries and in-house delivery options



Dr Martin Bardsley

PhD (Chemical Engineering), CAMTAB
Enhance Integration Engineering Pty Ltd



Phone: +61 450 302 750



Email: Martin.Bardsley@eieng.com.au

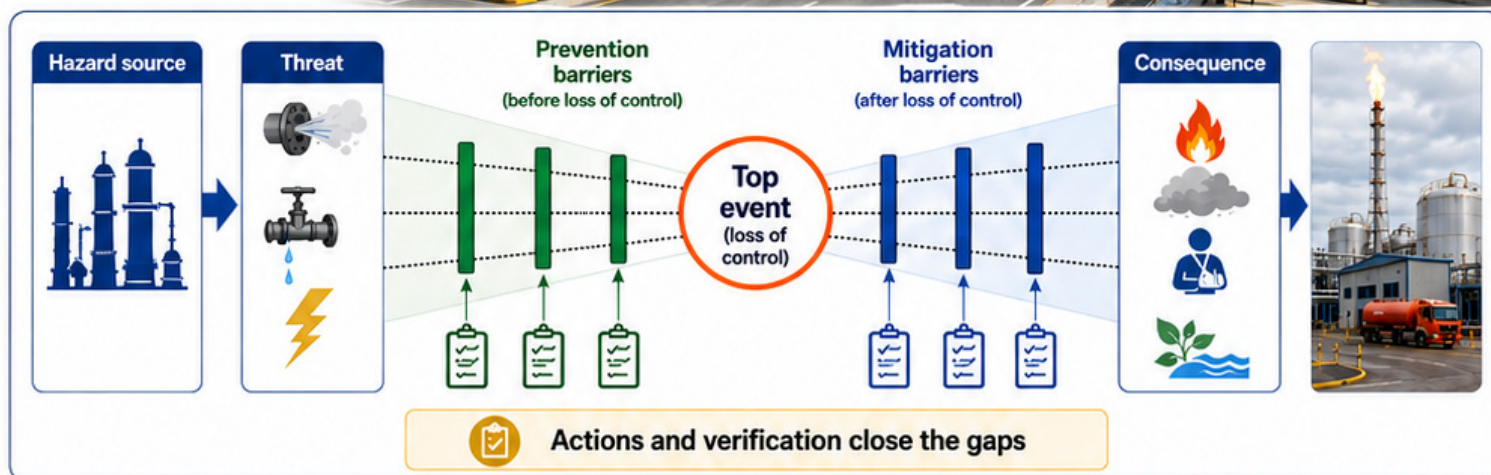


Website: <https://staging.eieng.com.au/>

Introduction to Hazard Identification and HAZID

A practical, barrier-based short course for process safety awareness and guided participation

- ✓ Recognise credible scenarios.
- ✓ Separate causes, loss of control and consequences.
- ✓ Identify barriers and escalation questions.



 Duration Three hours (including two 10-minute breaks)	 Delivery Instructor-led classroom course	 Level Beginner	 Audience Multidisciplinary technical personnel	 Practical learning Guided scenario exercises	 Output Worksheet and workplace job aid
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1 BLOCK 1 — FOUNDATION

- HAZID purpose, terminology and MAE focus
- Hazard, threat, top event and consequence
- Prevention and mitigation barriers
- Scenario logic before controls
- Worked example and guided activity

2 BLOCK 2 — METHOD

- Readiness, scope and boundaries
- Operating modes, assumptions and data gaps
- Team roles and workshop prompts
- Write one stable scenario sentence
- Record verifiable barriers and useful actions
- Build the worksheet in a disciplined order

3 BLOCK 3 — APPLICATION

- Screen for major-accident potential
- Challenge technical credibility
- Test barriers with evidence questions
- Maintenance restart case study
- Supported loading area review
- Final scenario and workplace job aid



By the end of the course, participants will be able to:

- 1 Describe the purpose, terminology and principal steps of hazard identification and a structured HAZID study.
- 2 Construct a simple hazard scenario by identifying the hazard source, initiating threat, top event, consequences, prevention barriers and mitigation barriers.
- 3 Complete a guided HAZID worksheet, recognise missing evidence or weak controls, and identify matters requiring facilitator, engineering, operations, process-safety or other specialist review.

The HAZID worksheet steps



Who should attend

- Engineers
- Operators and technicians
- Maintenance personnel
- HSE and process-safety staff
- Supervisors and project personnel
- Technical leaders new to formal HAZID



Competence boundary

This course supports hazard recognition and guided HAZID participation only.

Not within this training boundary:

- Formal HAZID facilitation
- Independent scenario credibility decisions
- Formal barrier credit or risk acceptance
- ALARP demonstration
- Safety-critical gap closure
- Startup or operational authorisation

Recognise credible scenarios. Identify barriers. Escalate the right questions.



Dr Martin Bardsley
PhD (Chemical Engineering), CAMTAB
Enhance Integration Engineering Pty Ltd



+61 450 302 750



Martin.Bardsley@eieng.com.au



staging.eieng.com.au

SHORT COURSE

Introduction to HAZOP

Understanding the Method, Reading the Worksheet and Contributing Effectively

Three-hour instructor-led introductory course



DURATION

180 minutes
including two
10-minute breaks



LEVEL

Introductory;
guided application
and team-member
participation



APPLICATIONS

Onshore, offshore,
petrochemical and
chemical process
applications



LANGUAGE & UNITS

Australian English
SI units



COURSE PURPOSE

This course builds confidence to read, understand and contribute meaningfully to HAZOP studies. Learners will understand the method, apply it to a simple process node and recognise when to escalate issues to specialist reviews.

YOU WILL LEARN TO

- ✓ Explain the purpose of HAZOP and its place in process safety, projects and management of change
- ✓ Read and challenge a HAZOP worksheet row using the golden thread
- ✓ Identify deviations, causes, consequences and safeguards with correct terminology
- ✓ Recognise assumptions, weak safeguards and escalation requirements
- ✓ Complete one guided mini-HAZOP for a process node

THE HAZOP MODEL – THE GOLDEN THREAD

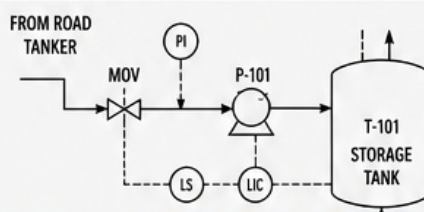


A HAZOP row creates a traceable path from design intent to actions. Every element must logically support the next.



RECURRING CASE

Solvent transfer from road tanker to storage tank T-101.



PROCESS NODE EXAMPLE

Unloading and transfer to storage tank with key equipment and instruments.



PRACTICAL LEARNING

Guided mini-HAZOP with team roles, discussion and action writing.

COURSE CONTENT OVERVIEW

-  **Module 1** Why HAZOP Matters
-  **Module 2** Key Terms and Concepts
-  **Module 3** How a HAZOP Works
-  **Module 4** Reading the Worksheet
-  **Module 5** Team Roles and Contribution
-  **Module 6** Mini-HAZOP Workshop (2 rows)
-  **Module 7** Actions, Closeout and Next Steps

YOU WILL WORK WITH

- HAZOP definitions and principles
- Guidewords, deviations and examples
- HAZOP worksheet and golden thread review
- Safeguards: technical, procedural and human
- Action writing and closeout practice
- One controlled mini-HAZOP (two rows)



COMPETENCE BOUNDARY

This course supports awareness, recognition and guided application. It does not confer HAZOP facilitation competence, design authority, risk acceptance authority or specialist competence in LOPA, SIL, QRA, relief design or complex reaction hazards.



WHO SHOULD ATTEND

- Engineers and technical specialists
- Operators and supervisors
- Maintenance and reliability personnel
- Instrument, control and electrical staff
- HSE and process-safety personnel
- Project, commissioning and contractors
- Graduates and early-career professionals



DELIVERY AND MATERIALS

Instructor-led classroom course for 13-24 participants. Includes a workbook, case-study diagrams and HAZOP worksheet. Adaptable to live online delivery with interactive activities.



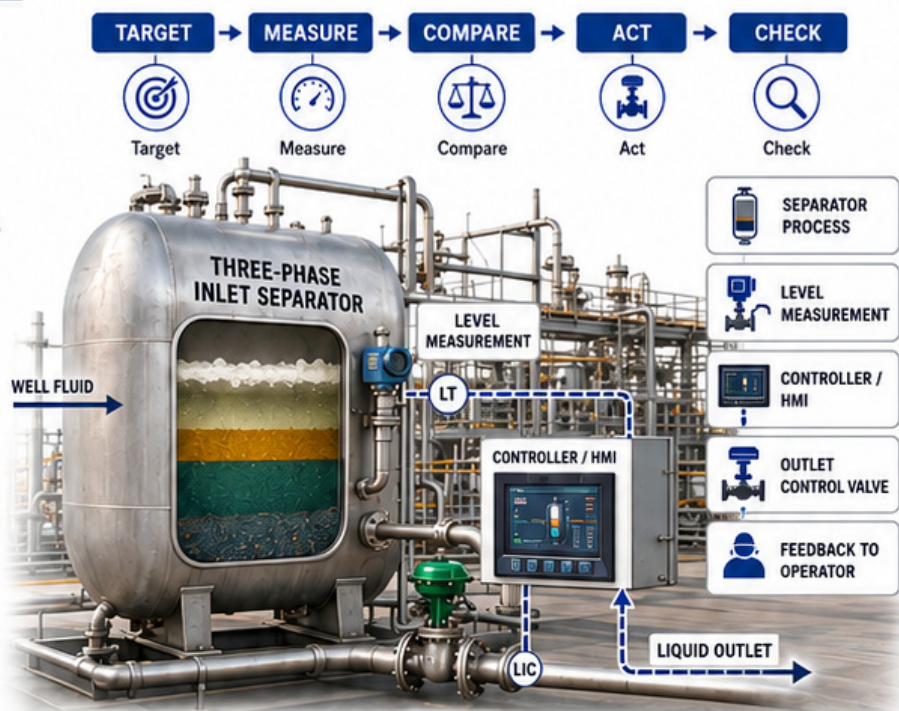
PROCESS CONTROL WITHOUT THE MATHEMATICS

Instrumentation and Process Control for Beginners

A beginner short course for understanding how a control loop measures, decides and acts — and how to recognise when the information or response cannot be trusted.

Trace the loop, predict the response and challenge the evidence.

This practical short course helps mixed technical teams follow one separator control loop from process condition through measurement, comparison and final action. Participants learn to use beginner control language, predict qualitative responses in manual and automatic modes, and recognise when instrument information or final-element behaviour may be unreliable and should be escalated.



DURATION

Three hours



DELIVERY

Face-to-face or live online



FORMAT

Instructor-led short course



PARTICIPATION

Guided exercises and practical control-loop interpretation



MATERIALS

Learner workbook, activity sheets and TRACE job aid



CUSTOMISATION

Client-specific examples may be incorporated

1 SEE THE LOOP

- Pressure, level, flow and temperature as control targets
- Actual condition versus measured PV
- Sensor, transmitter, controller, HMI and final element
- Feedback, disturbance and basic loop language
- A correct beginner mental model of feedback control

2 PREDICT THE RESPONSE

- Manual versus automatic mode
- Qualitative valve movement and process direction
- Setpoint, PV and controller output
- Fail-open, fail-closed and fail-in-place awareness
- Cascade and ratio concepts without mathematics
- A repeatable TRACE reasoning method

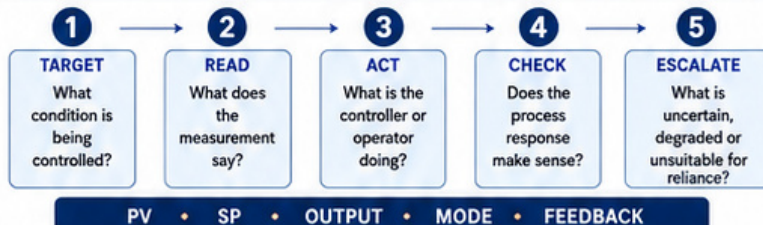
3 CHALLENGE THE INFORMATION

- Alarm, trip, DCS, PLC, BPCS and SIS distinctions
- Bias, drift, noise, freeze and bad instrument information
- Conflicting evidence and what can or cannot be concluded
- BP Texas City as a respectful case example
- Final separator TRACE review scenario
- Escalation statements for beginner-level decisions

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- ✓ Trace a basic feedback control loop from process condition through measurement, controller and final control element.
- ✓ Predict the intended qualitative response of pressure, level, flow and temperature loops in manual and automatic modes.
- ✓ Recognise the effect of control-valve movement and selected fail position at a beginner level.
- ✓ Distinguish alarms, trips and control-system roles, and identify evidence that a measurement or final response may not be trustworthy.

THE TRACE METHOD



WHO SHOULD ATTEND



- Operators and production personnel
- Graduate and junior process, mechanical, project, inspection, maintenance and safety engineers
- Maintenance planners and asset-integrity personnel
- Supervisors and HAZOP or incident-review participants
- Commercial, procurement and management personnel working with instrumentation and controls specialists

TRAINING BOUNDARY



Introductory training only. This course does not qualify participants to perform tuning calculations, size control valves, select or calibrate instruments, program PLC or DCS logic, approve alarm setpoints, determine SIL, verify SIS performance, or issue maintenance, commissioning or operational authorisations. Controlled project documents and competent specialists remain essential.

Bring clearer process-control thinking into your next review.

Contact EIE to discuss in-house delivery, live online sessions or client-specific beginner training for your workforce.



Dr Martin Bardsley
PhD (Chemical Engineering), CAMTAB
Enhance Integration Engineering Pty Ltd
Phone: +61 450 302 750
Email: Martin.Bardsley@eieng.com.au
Website: staging.eieng.com.au

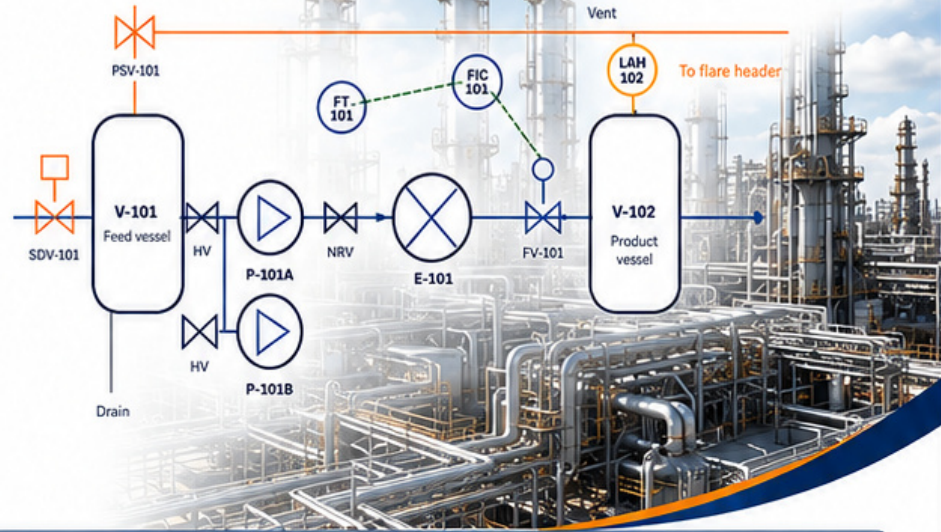
READING PROCESS DRAWINGS

PFDs and P&IDs for Beginners

A beginner short course for turning dense process drawings into a reliable reading sequence.

Read the process story and ask better verification questions.

This practical short course helps learners move from seeing an inaccessible page of symbols to tracing one process route, explaining the broad purpose of its main equipment and controls, and identifying what must be verified against the project legend, controlled drawing set and specialist documentation.



DURATION
Three hours



DELIVERY
Face-to-face or
live online



FORMAT
Instructor-led
short course



PARTICIPATION
Guided exercises and
practical drawing
interpretation



MATERIALS
Learner workbook
and training
drawings



CUSTOMISATION
Client-specific
drawing conventions
may be incorporated

1 BLOCK 1 – FOUNDATION

- BFD, PFD and P&ID purposes and limitations
- Title block, revision, status, legend and notes
- Drawing hierarchy and supporting documents
- The six-step reading method
- Guided first route trace

2 BLOCK 2 – METHOD

- Equipment tags, lines and flow direction
- Pumps, vessels, heat exchangers and compressors
- Isolation, control, check and shutdown valves
- Pressure, temperature, flow and level instruments
- One basic feedback control loop
- Read function from symbol, tag, connections and context

3 BLOCK 3 – APPLICATION

- Alarm, trip, relief, vent and drain information
- Candidate-isolation questions and maintenance boundary
- Worked drawing with shown / inferred / verify
- Supported application on a variant P&ID
- Final scenario and escalation boundary
- Workplace job-aid for drawing review



BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- ✓ Identify the purpose, information level and limitations of BFDs, PFDs and P&IDs
- ✓ Trace a simple process route across equipment, lines and valves
- ✓ Explain the broad function of common equipment, instruments and one basic control loop
- ✓ Interpret a controlled-complexity P&ID and state what must be verified or escalated



WHO SHOULD ATTEND

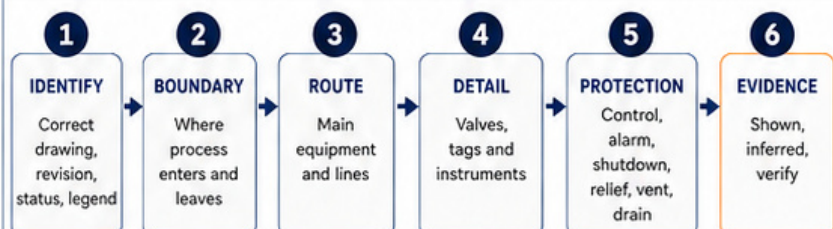
- Graduate and early-career engineers
- Operations, maintenance, inspection and reliability personnel
- Instrument, electrical, mechanical and piping personnel
- HSE, process-safety, project, procurement and technical-sales personnel
- New employees and contractors



TRAINING BOUNDARY

Guided document interpretation only. This course does not authorise design, operation, isolation, safeguard verification or approval decisions. Current controlled documents, field verification, company procedures and competent discipline review remain essential.

THE SIX-STEP METHOD



Bring clearer drawing literacy into your next review.

Contact EIE to discuss in-house delivery, live online sessions or client-specific drawing examples for your facility context.



Dr Martin Bardsley



PhD (Chemical Engineering), CAMTAB



Enhance Integration Engineering Pty Ltd



Phone: +61 450 302 750



Email: Martin.Bardsley@eieng.com.au



Website: staging.eieng.com.au

FROM WELLHEAD TO PRODUCT

How Oil and Gas Facilities Work

Follow one wellstream. Understand the whole facility.

This practical beginner course helps technical adults follow a mixed reservoir fluid from the wellhead through gathering, separation, treatment, storage and export. Participants build a clear mental model for tracing streams, explaining system purpose and identifying where specialist clarification is required.



DURATION

Three hours
including two
10-minute breaks



DELIVERY

Instructor-led
classroom
training



FORMAT

Beginner
awareness
short course



PARTICIPATION

Guided activities
and facility-
interpretation
exercises



MATERIALS

Workbook,
job aid and
activity sheets



CUSTOMISATION

Client terminology
and examples
may be adapted
where suitable

1 FOUNDATION

- Upstream, midstream and downstream context
- Reservoir fluid, wellstream and direction of flow
- Wells, wellheads, flowlines, manifolds and gathering
- Common facility arrangements and development concepts
- The first question: what is the facility doing to the material from the wells?

2 METHOD

- Inlet handling and three-phase separation
- Oil, gas and produced-water routes
- Treatment and stabilisation at awareness level
- Utilities, control and protection functions
- Tracing major streams and explaining system purpose

3 APPLICATION

- Storage, export and downstream destinations
- Interpreting a simplified offshore facility or FPSO
- Distinguishing process, support and protection systems
- Guided facility-review activities
- Recording specialist questions and clarification needs

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- 1 Trace the journey of reservoir fluids from the wellhead through separation, treatment, storage and export.
- 2 Explain the purpose of the principal oil, gas, produced-water, utility and protection systems in a typical facility.
- 3 Compare common facility arrangements including onshore facilities, fixed platforms, subsea tiebacks and FPSOs.
- 4 Interpret a simplified facility flowsheet to identify major streams, equipment functions and destinations.
- 5 Identify questions and uncertainties that require specialist clarification.

WHO SHOULD ATTEND

- ✓ Engineers and early-career technical personnel
- ✓ Operations and maintenance personnel
- ✓ HSE and process-safety personnel
- ✓ Project personnel
- ✓ Technical supervisors, coordinators and managers
- Commercial or support personnel who are beginners in oil and gas facilities

THE FACILITY JOURNEY



TRAINING BOUNDARY

This introductory course develops awareness, tracing and guided interpretation skills. It does not qualify participants to design, size, approve or independently operate oil and gas process systems.

BUILD STRONGER FACILITY-INTERPRETATION SKILLS ACROSS YOUR TEAM

Contact EIE to discuss public delivery, in-house training or a course adapted to your facility and operating context.



Dr Martin Bardsley
PhD (Chemical Engineering), CAMTAB



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Engineering Pty Ltd



+61 450 302 750



Martin.Bardsley@eieng.com.au



staging.eieng.com.au

HOW ONSHORE GAS PLANTS WORK

From variable well fluids to sales gas and controlled side streams

A practical three-hour course that takes you from inlet reception to sales-gas export, tracing every major side stream, utility dependency and safety pathway in a conventional onshore gas processing plant.



DURATION

180 minutes
including two
10-minute breaks



AUDIENCE

Project and technical
personnel new to
onshore gas processing



LEVEL

Beginner to
intermediate



COMPETENCE BOUNDARY

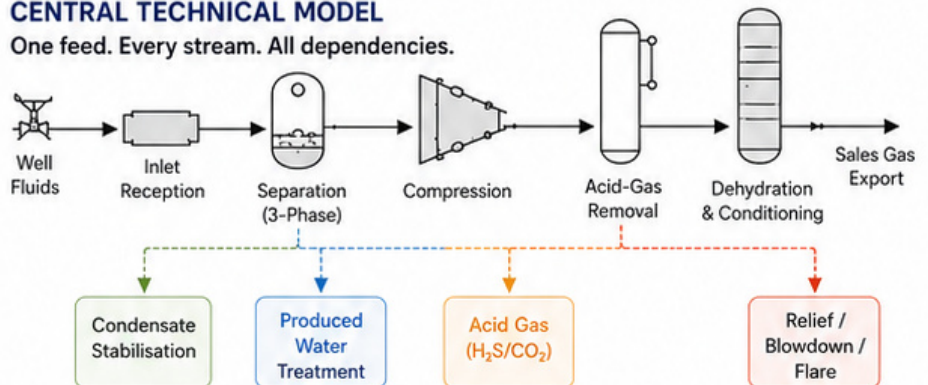
Awareness, system
tracing and informed
escalation only

WHAT YOU WILL LEARN

- 1 Describe the function and relationship of the principal systems in a conventional onshore natural-gas processing plant.
- 2 Trace gas, condensate, produced-water, acid-gas, utility and relief pathways through a simplified plant arrangement.
- 3 Review a simplified gas-plant process diagram, recognise major hazards and dependencies, and identify matters requiring specialist verification or authorised decisions.

CENTRAL TECHNICAL MODEL

One feed. Every stream. All dependencies.



COURSE CONTENT BLOCKS



1. Receive & Separate

Inlet reception,
separation,
compression



2. Treat, Dehydrate & Condition

Acid-gas removal,
dehydration,
NGL recovery



3. Manage Liquids & Side Streams

Condensate,
produced water,
acid gas



4. Protect & Control

Relief, flare,
utilities, controls,
hazards



5. Review & Apply

Plant review,
integrated
scenario



Instructor-led classroom
for 13-24 participants



Workbook, A3 plant
maps and activities



Paired diagram tasks
and guided practice



Integrated final scenario
and debrief



COMPETENCE & AUTHORITY BOUNDARY

Learners may recognise, trace, question and escalate.

They may not design, operate, set limits, credit safeguards, approve risk or authorise startup.



IMPORTANT LIMITATION

This course provides engineering and facility awareness only. It does not confer process-design authority, operator competency, control-room qualification, HAZOP or SIL competency, equipment-selection authority, startup approval or operational authorisation.

HOW OFFSHORE OIL AND GAS FACILITIES WORK

A beginner short course on the reservoir-to-export journey, offshore systems and personnel-protection interfaces

Build a clear system-level picture of how offshore facilities work.

Learners follow reservoir fluids from wells and subsea equipment to risers, topsides processing, storage and export, and supporting utilities. The course then connects that journey to offshore hazards, protection systems and emergency interfaces.

The emphasis is awareness, orientation and recognising when specialist or mandatory training is required.



 COURSE DURATION Three hours	 DELIVERY Face-to-face or live online	 FORMAT Instructor-led short course	 PARTICIPATION Guided exercises, facility maps and low-pressure interaction	 MATERIALS Learner workbook, facility map and activity cards	 CUSTOMISATION Client-specific examples may be incorporated where suitable
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1 BLOCK 1 — FIELD TO FACILITY

- Course orientation and competence boundary
- Development concepts: fixed, floating and subsea tieback
- Generic FPSO layout, deck and hull zones
- The connected system journey from reservoir to export



2 BLOCK 2 — FLUIDS AND SYSTEMS

- Wells, subsea systems, umbilicals and risers
- Separation and oil / gas processing
- Produced-water treatment, water injection and flare
- Utilities: power, fuel gas, air, nitrogen, seawater and chemicals

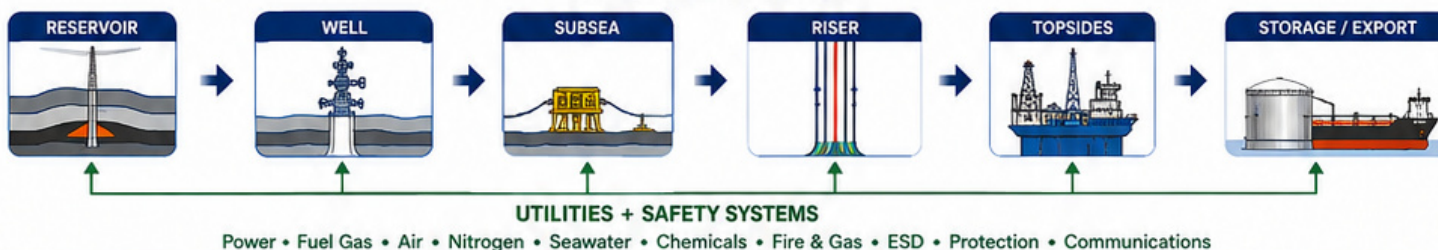


3 BLOCK 3 — MARINE, HAZARDS AND PEOPLE

- Cargo, ballast, mooring and offloading interfaces
- Major hazards and barrier thinking
- Detection, ESD, passive and active protection
- Temporary refuge, muster, escape, evacuation and rescue overview
- Integrated FPSO orientation scenario



THE SYSTEM JOURNEY



BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- 
 Describe the principal offshore development types and explain why fixed, floating, FPSO or subsea tieback concepts may be selected.
- 
 Trace a simplified production stream from reservoir and wells through subsea systems, risers, separation, gas compression, produced-water treatment, storage and export, and supporting utilities.
- 
 Identify the main offshore hazard areas, personnel-protection and emergency-system interfaces, and state when specialist or mandatory competency training is required.

WHO SHOULD ATTEND

- New offshore personnel
- Graduate and early-career engineers
- Technicians and contractors
- Project personnel and managers
- Support staff and non-process specialists
- Personnel needing a clearer awareness of offshore facilities and system interfaces

TRAINING BOUNDARY

This short course develops engineering and facility awareness only. It does not provide BOSIET, MIST/IMIST, HUET, offshore-survival certification, OPITO approval, process-operator competency, marine certification, emergency-response competency or design authority.

BUILD STRONGER OFFSHORE FACILITY-AWARENESS ACROSS YOUR TEAM

Contact EIE to discuss public delivery, in-house training or a course adapted to your offshore assets and operating context.

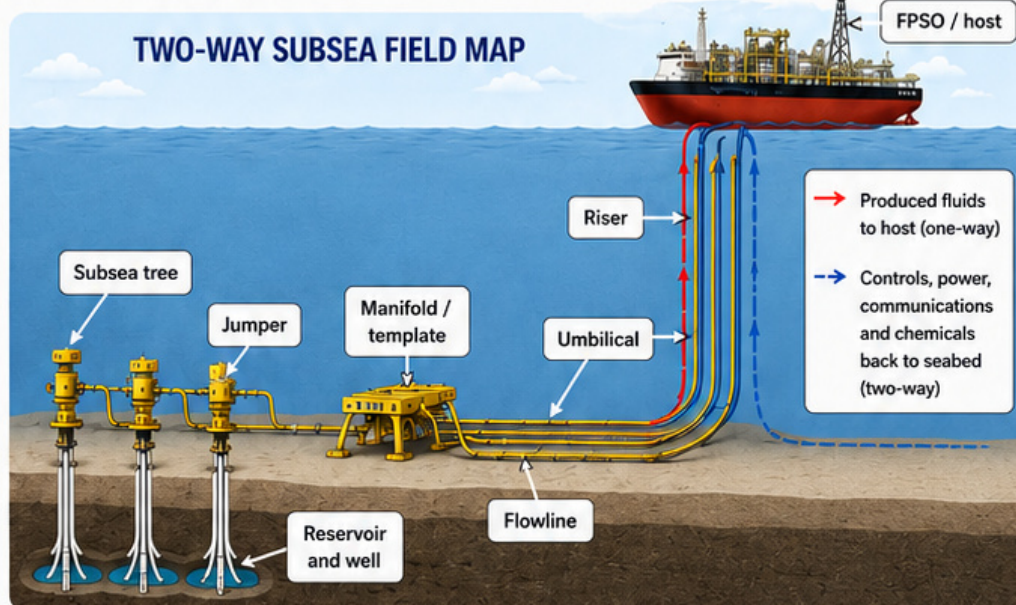
INTRODUCTION TO OFFSHORE SUBSEA SYSTEMS

Architecture, pathways, interfaces and integrity for beginners

A three-hour beginner-to-intermediate awareness course for understanding how a conventional deepwater subsea tieback works, how production and support pathways move between the reservoir and host facility, and which interface or integrity questions require specialist review.

Follow one deepwater field map from reservoir to FPSO—then trace controls, power, communications and chemicals back toward the seabed.

This practical course helps mixed technical teams describe principal subsea components, trace production and support paths, recognise shared dependencies and credible threats, and escalate matters that require project drawings, controlled standards, vendor data or specialist judgement.



DURATION
Three hours



DELIVERY
Instructor-led classroom



FORMAT
Awareness short course



PARTICIPATION
Guided exercises and field-map review



MATERIALS
Workbook, printed field maps, component cards and job aid



BOUNDARY
Technical and project awareness only

1 UNDERSTAND THE ARCHITECTURE

- Conventional multiwell subsea tieback to an FPSO
- Wells, wellheads and subsea trees
- Jumpers, manifolds, flowlines and risers
- Umbilicals, SCM and host support systems
- Architecture and vocabulary at awareness level

2 TRACE THE PATHWAYS

- Production and injection paths
- Control, power and communication routes
- Chemical distribution and support services
- Two-way flow across the field
- Shared dependencies and host interfaces

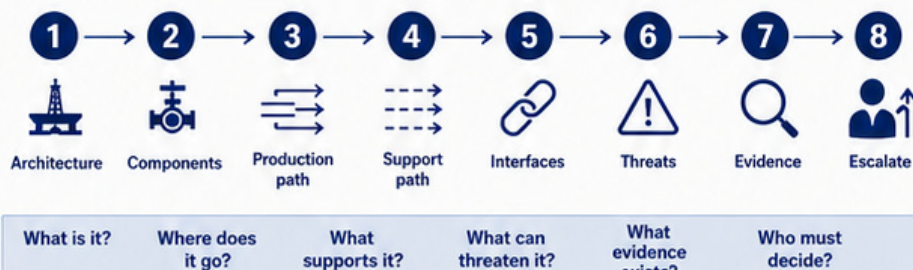
3 REVIEW THREATS AND INTERFACES

- Flow assurance and containment threats
- Control, structural and external threats
- Integrity evidence and lifecycle questions
- GC 248 jumper leak as a respectful case example
- Specialist questions rather than design approval

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- ✓ Describe the function and relationship of the main components in a conventional offshore subsea production system.
- ✓ Trace production, injection, control, chemical and communication paths between the reservoir, subsea equipment and host facility.
- ✓ Review a simplified subsea field layout and recognise key interfaces and credible threats.
- ✓ Identify matters requiring specialist input, controlled project information or authorised decisions.

THE SUBSEA REVIEW MODEL



WHO SHOULD ATTEND



- Project engineers and graduates
- Process and mechanical engineers
- Operations and maintenance personnel
- HSE, planners, commercial and technical support staff
- Anyone needing subsea system awareness without specialist authority



TRAINING BOUNDARY

Technical and project awareness only. This course does not confer subsea design authority, equipment-selection competency, installation approval, diving or ROV qualification, well-control certification, or operational authorisation. Generic training architecture only. Real work must be governed by project drawings, controlled standards, vendor data and specialist approval.

Out of scope: detailed well barriers, hydraulic / thermal / structural calculations, equipment specification, SIL verification, installation approval and operational authorisation.

Bring clearer subsea-system understanding into your next review.

Contact EIE to discuss in-house delivery and practical awareness training for mixed technical teams.



Dr Martin Bardsley
PhD (Chemical Engineering), CAMTAB
Enhance Integration Engineering Pty Ltd



Email: Martin.Bardsley@eieng.com.au



Phone: +61 450 302 750



Website: staging.eieng.com.au

LEARNING FROM OFFSHORE PROCESS ACCIDENTS

A beginner short course for understanding how offshore accidents develop, escalate and can be interrupted.

Recognise weak signals, reconstruct event chains and ask better barrier questions.

This practical short course uses real offshore accident cases to help mixed technical teams recognise early warning signs, trace loss of control through escalation and consequences, and identify the barriers, evidence gaps and escalation decisions that matter most.

ACCIDENT-DEVELOPMENT CHAIN



DURATION
Three hours



DELIVERY
Face-to-face or live online



FORMAT
Instructor-led short course



PARTICIPATION
Real accident cases and guided group review



MATERIALS
Learner workbook and workplace job aid



CUSTOMISATION
Client-relevant offshore examples may be incorporated

1 RECOGNISE

- Facility context, operating mode and offshore systems
- Weak signals and degraded conditions
- Fires, explosions, gas releases and well-control events
- Accident-development chain basics
- Fact, finding, inference and unknown

2 RECONSTRUCT

- Piper Alpha as a progressive reconstruction case
- Comparison cases: Macondo, Montara, Mumbai High North, P-36 and FPSO events
- Loss of control, escalation and consequence pathways
- Distinguishing established evidence from assumptions
- People, plant, environment and business consequences

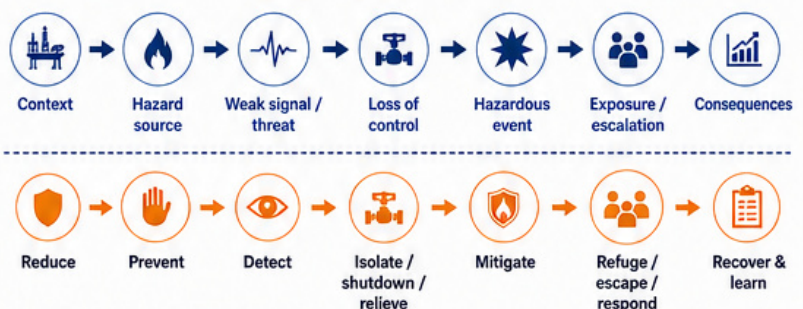
3 INTERRUPT AND LEARN

- Integrity, permits, SIMOPS and temporary change
- Alarm, trip, shutdown and utility dependencies
- Residual inventory and escalation pathways offshore
- Barrier status, evidence gaps and escalation questions
- Final FPSO restart review scenario
- Workplace job-aid for offshore learning review

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- ✓ Identify initiating conditions, weak signals and principal offshore process-accident event types.
- ✓ Trace an accident from hazard source and loss of control through event, escalation and consequences.
- ✓ Distinguish facts, findings, inferences and unknowns in accident-learning discussions.
- ✓ Complete a simplified Offshore Accident Learning Review and state the barrier evidence or specialist escalation required.

THE ACCIDENT-LEARNING CHAIN



WHO SHOULD ATTEND



- Offshore operators and control-room personnel
- Maintenance and inspection personnel
- Drilling and well personnel
- FPSO and marine personnel
- Contractors, project personnel and engineers
- HSE advisers, supervisors and managers

TRAINING BOUNDARY



Recognition, reconstruction and guided learning review only. This course does not qualify participants to conduct or approve a formal accident investigation, declare legally defensible root cause, calculate fire, explosion or toxic effects, design well or safety systems, approve refuge or evacuation survivability, command an emergency, or approve a safety case or restart decision.

Bring clearer offshore accident learning into your next review.

Contact EIE to discuss in-house delivery, live online sessions or offshore-specific examples for your workforce.



Dr Martin Bardsley
PhD (Chemical Engineering), CAMTAB
Enhance Integration Engineering Pty Ltd



Phone: +61 450 302 750



Email: Martin.Bardsley@eieng.com.au



Website: staging.eieng.com.au

FIRE AND EXPLOSION FUNDAMENTALS

Recognising scenarios and control layers in onshore and offshore process facilities

**Recognise credible scenarios.
Trace the event chain.
Know when to escalate.**

This practical beginner course helps multidisciplinary technical personnel distinguish key fire and explosion event types, follow a simplified scenario from loss of control to consequence, and identify the controls, evidence gaps and specialist escalation points that matter in real facilities.



DURATION

Three hours
(including two
10-minute breaks)



DELIVERY

Face-to-face
or live online



FORMAT

Instructor-led
beginner
technical course



PARTICIPATION

Guided exercises,
paired application
and realistic
industrial scenarios



MATERIALS

Learner workbook,
scenario diagrams
and practical
job aid



CUSTOMISATION

Client-specific
examples may be
incorporated where
suitable

BLOCK 1 — FOUNDATION

- Fire triangle and essential terminology
- Loss of control, release forms and flammable range
- Pool, jet and flash fires
- Vapour-cloud explosion, BLEVE/fireball, dust and runaway reaction
- Six-stage event chain and influencing factors

BLOCK 2 — METHOD

- The seven-question beginner workflow
- Release, dispersion and pressure development
- Ignition timing, congestion and confinement
- Control layers: prevent, detect, isolate, mitigate and respond
- Distinguishing evidence, assumptions and limitations
- Recognising when specialist review is required

BLOCK 3 — APPLICATION

- Onshore versus offshore comparison
- Buncefield case study with concise comparison cases
- Guided scenario classification and barrier placement
- Partial example and supported final review
- Identifying evidence gaps and escalation points
- Preliminary screening-level conclusions

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- 1 Differentiate the principal fire and explosion event types relevant to onshore and offshore process facilities.
- 2 Trace a simplified hazardous scenario from initiating event through release, dispersion or reaction, ignition, consequence and escalation, identifying the principal influencing factors and control layers.
- 3 Review a simplified facility scenario, identify missing evidence or safeguards, and state when specialist assessment is required.

THE SEVEN-QUESTION BEGINNER WORKFLOW



This workflow is a preliminary conversation and evidence check to build understanding. It is not a formal assessment or quantitative analysis.



WHO SHOULD ATTEND

- Engineers and early-career technical personnel
- Operations and maintenance personnel
- HSE and process-safety staff
- Supervisors, technical coordinators and managers
- Personnel who review hazard studies or safety cases
- Personnel who need beginner-level fire and explosion awareness



TRAINING BOUNDARY

This introductory course supports awareness, guided screening and informed participation. It does not qualify participants to conduct or approve quantitative fire and explosion analysis, hazardous-area classification, relief or depressuring design, fire-protection design, structural blast design or emergency-response strategy.



BUILD STRONGER FIRE AND EXPLOSION AWARENESS ACROSS YOUR TEAM

Contact EIE to discuss public delivery, in-house training or a course adapted to your facility and operating context.

INTRODUCTION TO FIRE AND EXPLOSION ASSESSMENT

A practical beginner course for tracing releases, ignition outcomes, physical effects, impairment and evidence

Learn how to follow a credible offshore release from inventory and loss of containment through dispersion, ignition, fire or explosion effects, impairment and decision evidence.

RECOGNISE. TRACE. INTERPRET. QUESTION.



DURATION

Three hours
(incl. two
10-minute
breaks)



DELIVERY

Face-to-face
or live online



FORMAT

Instructor-led
beginner
short course



PARTICIPATION

Guided exercises
and practical
offshore scenarios



MATERIALS

Learner workbook
and practical
job aid



CUSTOMISATION

Client-specific
examples may be
incorporated



BLOCK 1 — FOUNDATION

- FEA purpose and scope
- Release behaviour and inventory
- Dispersion and accumulation
- Ignition timing and mechanisms
- Fire types and effects
- Explosion types and effects
- Common terms and misconceptions



BLOCK 2 — METHOD

- Trace the event from source to outcome using the seven-step method
- Identify receptors and exposure
- Map escalation pathways
- Understand barrier roles and impairment
- Distinguish assumptions, limitations and evidence
- Know when to escalate to a specialist



BLOCK 3 — APPLICATION

- Work through complete scenario cases in small groups
- Interpret results and time behaviour
- Challenge evidence and assumptions
- Use simplified FEA screening worksheets
- Identify information gaps and critical questions
- Prepare a preliminary summary for specialist review

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- ✓ Describe the main stages, terminology and outputs of a Fire and Explosion Assessment.
- ✓ Distinguish credible fire and explosion pathways by tracing a hazardous release through dispersion, ignition, effects, escalation and barriers.
- ✓ Interpret a simplified FEA scenario, identify exposed receptors and possible barrier impairment, and record missing information and questions requiring specialist verification.

THE SEVEN-STEP FEA AWARENESS METHOD



WHO SHOULD ATTEND

- Graduate and project engineers
- Process, mechanical, electrical, instrument and control personnel
- Operations, maintenance and integrity staff
- HSE, technical safety advisers and supervisors
- HAZOP and risk-study participants
- Anyone new to FEA or process safety assessment



TRAINING BOUNDARY

This course develops awareness, recognition and guided-application skills in Fire and Explosion Assessment. It does not by itself provide certification, professional authorisation or authority to make formal design, legal, operational or risk-acceptance decisions. These decisions require competent and authorised personnel.

Examples outside this training boundary include:



Quantitative modelling and CFD



Design accidental load selection



Fire protection design



Barrier credit and ALARP



Safety case acceptance



Operational authorisation

BUILD CONFIDENCE IN ASSESSMENT. ASK BETTER QUESTIONS. PROTECT PEOPLE.

Contact EIE to discuss public delivery, in-house training or a course adapted to your facility and operating context.

Dr Martin Bardsley

PhD (Chemical Engineering), CAMTAB
Enhance Integration Engineering Pty Ltd

+61 450 302 750

Martin.Bardsley@eieng.com.au

staging.eieng.com.au

Consequences of Major Hazard Events

What fires, explosions, toxic releases and other events can do to people, facilities and the environment

**See the potential. Understand the impact.
Ask the right questions.**

This short course builds the visual and practical awareness to recognise how major hazard events can escalate and affect people, assets, buildings, escape routes, utilities and the environment. You will learn the key consequence types, the factors that change outcomes and where specialist review and evidence are required.



 DURATION Three hours	 DELIVERY Face-to-face or live online	 FORMAT Instructor-led short course	 PARTICIPATION Guided exercises and practical industrial scenarios	 MATERIALS Learner workbook and practical job aid	 CUSTOMISATION Client-specific examples may be incorporated
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 BLOCK 1 — FOUNDATION	 BLOCK 2 — METHOD	 BLOCK 3 — APPLICATION
- Why process safety is different from personal safety - Texas City case: what happened and why it matters - Elements of a major-accident scenario and event-chain thinking - Consequence types: fire, explosion, toxic, cryogenic, corrosive/reactive, environmental - How hazards escalate and safeguards prevent or limit outcomes - Common reasoning errors and missing elements	- Build the scenario: hazard, cause, event and consequence - Apply the seven-step awareness method throughout the scenario - Identify safeguards across the lifecycle and interfaces - Recognise escalation pathways and what can change outcomes - Know when to escalate for specialist or authorised review - Document a traceable preliminary view and key evidence needs	- Guided exercises using onshore and offshore scenarios - Classify events and select credible consequence outcomes - Map effects on people, assets, buildings, routes, utilities and the environment - Evaluate escalation and barrier adequacy - Identify information gaps and specialist verification questions - End-of-course scenario task comparing four outcomes from one release

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- Identify the principal consequence types associated with fires, explosions, toxic releases, asphyxiants, cryogenic releases and reactive or corrosive events.
- Describe qualitatively how release behaviour, ignition timing, congestion, confinement, distance, exposure duration, weather and receptor vulnerability change the consequence.
- Interpret a simplified major-hazard scenario to identify affected receptors, escalation pathways, consequence-reduction barriers and specialist verification questions.

THE SEVEN-STEP AWARENESS METHOD



WHO SHOULD ATTEND

- Graduate and early-career engineers
- Operations and maintenance personnel
- Project and design personnel
- HSE and process-safety personnel
- Technical supervisors and managers
- Personnel who contribute to engineering, safety, risk, assurance or operational reviews

TRAINING BOUNDARY

This short course develops awareness, recognition and guided-participation skills in consequence interpretation. It does not by itself provide certification, professional authorisation or authority to make formal technical, legal, design, operational or risk-acceptance decisions. These decisions require competent and authorised personnel working under applicable company and jurisdictional requirements.

Examples outside this training boundary include:

- Consequence modelling
- Structural or fire design
- Building/TR or refuge approval
- Emergency strategy approval
- Legal or compliance assessment

BUILD STRONGER AWARENESS OF MAJOR HAZARD CONSEQUENCES ACROSS YOUR TEAM

Contact EIE to discuss public delivery, in-house training or a course adapted to your facility and operating context.

Dr Martin Bardsley

PhD (Chemical Engineering), CAMTAB
Enhance Integration Engineering Pty Ltd

- +61 450 302 750
- Martin.Bardsley@eieng.com.au
- staging.eieng.com.au

Emergency Protection Systems in Oil and Gas Facilities

ESD, Isolation, Blowdown, Flare, Fire-and-Gas and Firewater Systems

Understand how emergency systems work together to protect people, assets and the environment.

Follow one integrated scenario from detection to mitigation and disposal. Learn how each system contributes, where dependencies exist, how performance is confirmed and what questions require specialist evidence and escalation.



DURATION

Three hours
(incl. two
10-minute
breaks)



DELIVERY

Face-to-face
or live online



FORMAT

Instructor-led
short course



PARTICIPATION

Guided exercises
and practical
industrial scenarios



MATERIALS

Learner workbook
and practical
job aid



CUSTOMISATION

Client-specific
examples may be
incorporated



BLOCK 1 — FOUNDATION

- Purpose and role of emergency protection systems
- The integrated protection chain overview
- ESD concepts and system architecture
- Fire-and-gas detection and voting
- Key terminology and common misunderstandings
- Activation versus achieved protection (command → action → outcome)



BLOCK 2 — METHOD

- Step through the integrated scenario using the seven-step method
- Understand system interfaces and dependencies
- Isolation philosophy and valve performance
- Blowdown and depressurisation considerations
- Flare systems and safe disposal principles
- Firewater and deluge system functions
- Verify performance and reset



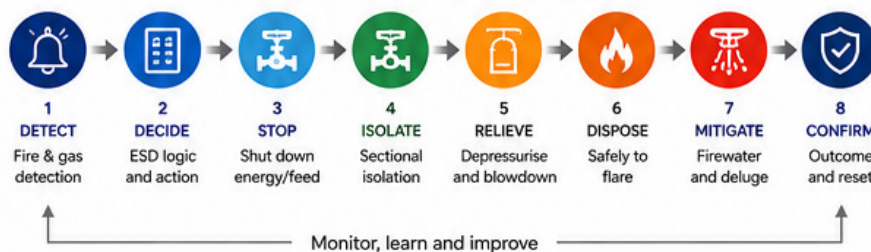
BLOCK 3 — APPLICATION

- Work complete scenario cases in small groups
- Identify threats, barriers and failure modes
- Challenge status indications and assumptions
- Use simplified EER screening worksheets
- Identify evidence gaps and specialist review needs
- Prepare a preliminary summary and recommendations

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- ✓ Trace a hazardous event through detection, shutdown, isolation, depressurisation, flare disposal and fire protection.
- ✓ Explain the purpose and interaction of ESD, isolation, blowdown, flare, fire-and-gas and firewater systems.
- ✓ Identify credible dependencies, degradation mechanisms and evidence gaps that could prevent a protection system from performing.

THE INTEGRATED PROTECTION MODEL



WHO SHOULD ATTEND

- Graduate and junior process engineers
- Operations, maintenance and inspection personnel
- Instrument, control and electrical personnel
- Project engineers and HAZOP participants
- HSE, technical safety and supervisors
- Anyone new to emergency-protection systems



TRAINING BOUNDARY

This short course develops awareness, interpretation and guided challenge skills in emergency-protection systems. It does not by itself provide certification, professional authorisation or authority to approve designs, SIL claims, relief or flare sizing, firewater design, barrier credit, ALARP conclusions or safety-case acceptance.

Examples outside this training boundary include:



SIL verification
and validation



Relief valve
sizing



Flare system
hydraulics



Barrier credit
and ALARP



Safety case
acceptance

BUILD STRONGER EMERGENCY-PROTECTION AWARENESS ACROSS YOUR TEAM

Contact EIE to discuss public delivery, in-house training or a course adapted to your facility and operating context.

Dr Martin Bardsley

PhD (Chemical Engineering), CAMTAB
Enhance Integration Engineering Pty Ltd

+61 450 302 750

Martin.Bardsley@eieng.com.au

staging.eieng.com.au

INTRODUCTION TO NON-FLAMMABLE HAZARDS ASSESSMENT

A beginner short course for recognising silent major-accident pathways, challenging barrier evidence and escalating specialist decisions.

Recognise silent major-accident pathways and ask better technical questions.

This practical short course helps mixed technical teams turn non-flammable hazards into clear, traceable scenarios. Using a structured pathway from context to consequence, participants learn to identify barriers, question evidence, recognise uncertainty and escalate specialist decisions without exceeding an introductory competence boundary.



DURATION

Three hours



DELIVERY

Face-to-face or
live online



FORMAT

Instructor-led
short course



PARTICIPATION

Guided exercises and
practical industrial
scenarios



MATERIALS

Learner workbook
and practical job aid



CUSTOMISATION

Client-specific
examples may be
incorporated

1 BLOCK 1 — FOUNDATION

- Major-accident scope and competence boundary
- NFHA hazard families and operating modes
- Threat, top event and consequence
- Prevention, mitigation and shared dependencies
- Worked toxic-service example

2 BLOCK 2 — METHOD

- Controlled study basis and scope boundaries
- Use the real facility and preserve traceability
- Hazard guidewords and scenario building
- Mechanism-specific consequence thinking
- Barrier performance claims, time-to-impairment and uncertainty
- Evidence-focused actions and auditable follow-up

3 BLOCK 3 — APPLICATION

- Screen credible, representative and bounding scenarios
- Heavy-lift interaction with toxic service and escape routes
- Vessel impact near a utility riser and evacuation station
- ALARP thinking and safety-case connections
- Final integrated scenario with temporary work and degraded barriers
- Job-aid questions and escalation points



BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- ✓ Describe the purpose, boundary, hazard families and workflow of NFHA
- ✓ Trace a non-flammable major-accident pathway from context to consequences
- ✓ Complete a guided NFHA screening worksheet
- ✓ Identify evidence gaps, barrier weaknesses and the questions that must be escalated

THE PRACTICAL METHOD



WHO SHOULD ATTEND

- Graduate and early-career engineers
- Operations and maintenance personnel
- Project and design personnel
- HSE and process-safety personnel
- Technical supervisors and managers
- Personnel who contribute to engineering, safety, risk, assurance or operational reviews



TRAINING BOUNDARY

Recognition, basic interpretation and guided screening only. This course does not qualify participants to select toxic or structural criteria, perform consequence or frequency modelling, approve lifting or marine operations, credit barriers formally, demonstrate ALARP, validate a safety case, or authorise design, startup, operation or emergency arrangements.



Bring clearer NFHA thinking into your next review.

Contact EIE to discuss in-house delivery, live online sessions or client-specific examples for your facility context.



Dr Martin Bardsley
PhD (Chemical Engineering), CAMTAB
Enhance Integration Engineering Pty Ltd



Phone: +61 450 302 750
Email: Martin.Bardsley@eieng.com.au
Website: staging.eieng.com.au

Introduction to Escape, Evacuation, Rescue and Temporary Refuge Assessment

Interpreting offshore people-protection performance during major accidents

**See the risk. Understand the impact.
Protect people. Ask the right questions.**

This short course builds visual and practical awareness of how major-accident effects challenge escape, muster, temporary refuge, evacuation and rescue systems on offshore installations—and how to identify evidence gaps and specialist review needs.



DURATION

Three hours



DELIVERY

Face-to-face or
live online



FORMAT

Instructor-led
short course



PARTICIPATION

Guided exercises
and practical
offshore scenarios



MATERIALS

Learner workbook
and practical
job aid



CUSTOMISATION

Client-specific
examples may be
incorporated



BLOCK 1 — FOUNDATION

- Purpose and structure of EERATR
- Major-accident scenario logic
- How releases and effects challenge people-protection functions
- Escape routes, wayfinding and travel considerations
- Muster points and accountability
- Temporary refuge: functions and performance basics
- Evidence chain and escalation needs



BLOCK 2 — METHOD

- Apply the seven-step awareness method to a scenario
- Identify impairments to escape, muster, refuge, evacuation and rescue
- Map barrier dependencies and escalation pathways
- Compare time available vs time required
- Identify information gaps and assumptions
- Recognise decisions requiring specialist or authorised review



BLOCK 3 — APPLICATION

- Work through complete scenario cases
- Evaluate effects on people, routes, refuge and recovery
- Use simplified EERATR screening worksheet
- Identify critical evidence questions
- Prepare a preliminary summary for specialist review and decision

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- ✓ Describe the purpose, principal functions and evidence chain of an EERATR.
- ✓ Trace a credible major-accident scenario through time-dependent impairment of escape routes, muster, temporary refuge, evacuation and rescue functions.
- ✓ Complete a guided EERATR screening sheet, identify barrier dependencies and evidence gaps, and escalate decisions requiring competent specialist or authorised review.

THE SEVEN-STEP AWARENESS METHOD



WHO SHOULD ATTEND

- Graduate and early-career engineers
- Operations and maintenance personnel
- Project and design personnel
- HSE and process-safety personnel
- Technical supervisors and managers
- Personnel who contribute to engineering, safety, risk, assurance or operational reviews



TRAINING BOUNDARY

This short course develops awareness, recognition and guided-participation skills in EERATR interpretation. It does not by itself provide certification, professional authorisation or authority to make formal technical, legal, design, operational or risk-acceptance decisions. These decisions require competent and authorised personnel working under applicable company and jurisdictional requirements.

Examples outside this training boundary include:



Consequence
modelling



Temporary refuge
survival time
analysis



Evacuation
strategy
approval



Barrier adequacy
and ALARP
decisions



Safety case
acceptance and
authorisation

BUILD STRONGER PEOPLE-PROTECTION AWARENESS ACROSS YOUR TEAM

Contact EIE to discuss public delivery,
in-house training or a course adapted to
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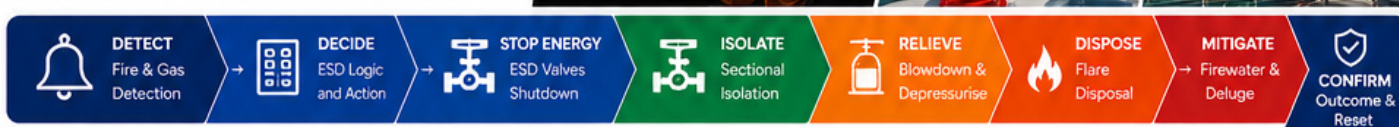
Introduction to Emergency Systems Survivability Assessment

ESSA within the Formal Safety
Assessment and Safety Case

Understand what must still work
when prevention has failed.

Trace. Test. Evidence.

This three-hour short course introduces ESSA concepts, methods and evidence needs using a realistic FPSO scenario. Learn how emergency systems must remain effective during major accidents and how to demonstrate it.



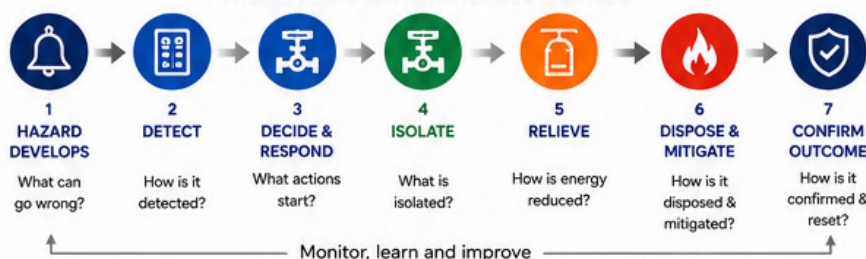
 DURATION Three hours (incl. two 10-minute breaks)	 DELIVERY Face-to-face or live online	 FORMAT Instructor-led short course	 PARTICIPATION Guided exercises and practical industrial scenarios	 MATERIALS Learner workbook and practical job aid	 CUSTOMISATION Client-specific examples may be incorporated
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 BLOCK 1 — FOUNDATION	 BLOCK 2 — METHOD	 BLOCK 3 — APPLICATION
- Purpose and role of ESSA within the FSA and safety case - Major accident events and impairment of emergency functions - Emergency functions: ESD, isolation, blowdown, flare, fire & gas, firewater, TR, lifeboats and rescue - Dependencies, survivability time and performance standards - Evidence requirements and common misunderstandings	- Seven-step ESSA awareness method - Build the scenario: hazard, cause, event and consequences - Trace impairments to functions and interfaces - Map dependencies and escalation pathways - Compare time available vs. time required - Identify gaps and evidence needs - Escalate to competent specialist or authority	- Work through complete scenario cases in small groups - Evaluate barriers, threats and degradation mechanisms - Use simplified ESSA screening worksheets - Identify critical evidence questions and assumptions - Prepare a preliminary summary for specialist review

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- Describe the purpose, terminology and place of ESSA in the Formal Safety Assessment and safety case.
- Trace a major accident through impairment of emergency functions and dependencies.
- Use a guided ESSA screening sheet to identify risks, dependencies, evidence gaps and escalation needs.

THE SEVEN-STEP AWARENESS METHOD



WHO SHOULD ATTEND

- Graduate and project engineers
- Process, mechanical, electrical, instrument and control personnel
- Operations, maintenance and integrity staff
- HSE, technical-safety advisers and supervisors
- HAZOP and risk-study participants
- Anyone new to ESSA or people-protection systems



TRAINING BOUNDARY

This short course develops awareness, interpretation and guided screening skills in ESSA. It does not by itself provide certification, professional authorisation or authority to make formal technical, legal, design, operational or risk-acceptance decisions. These decisions require competent and authorised personnel.

Examples outside this training boundary include:

- Consequence modelling
- Performance standard selection
- Structural / thermal analysis
- Lifeboat / TR design approval
- Safety case acceptance
- Operational authorisation

**IMPROVE SYSTEM RESILIENCE.
PROTECT PEOPLE. STRENGTHEN SAFETY CASES.**

Contact EIE to discuss public delivery,
in-house training or a course adapted to
your facility and operating context.

Dr Martin Bardsley
PhD (Chemical Engineering), CAMTAB
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staging.eieng.com.au

INTRODUCTION TO PERFORMANCE STANDARDS IN THE FORMAL SAFETY ASSESSMENT PROCESS

Writing measurable requirements for safety-critical elements
in onshore, offshore and chemical process facilities



Turn barrier claims into measurable and reviewable requirements.

This practical three-hour introductory course shows how Formal Safety Assessment findings become barrier requirements, safety-critical elements and performance standards. Participants learn to trace scenario-to-barrier logic, define SCE boundaries, review essential criteria, check assurance evidence and recognise when uncertainty or impairment requires specialist escalation.

 COURSE DURATION Three hours	 DELIVERY Instructor-led classroom course	 FORMAT Introductory technical short course	 PARTICIPATION Reflection, pair work and facilitated group tasks	 MATERIALS Workbook, standard template and fictional case pack	 CUSTOMISATION Client-specific examples may be incorporated where suitable
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WHO SHOULD ATTEND

- Graduate and project engineers
- Process, mechanical, electrical, control and technical-safety personnel
- Operations, maintenance, integrity and HSE personnel
- Personnel experienced in industry but new to performance standards
- Personnel involved in barrier, assurance or safety-case-related reviews

 No previous performance-standard experience is assumed.

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- 1 Explain how Formal Safety Assessment findings become barrier requirements, safety-critical elements and performance standards.
- 2 Distinguish barrier roles, SCE boundaries, essential attributes and lifecycle evidence needs.
- 3 Trace a simplified performance-standard workflow from scenario through criteria, verification and review.
- 4 Complete a guided review of a simplified performance standard and identify gaps, uncertainty and specialist escalation needs.

1 BLOCK 1 — FOUNDATION

- MAEs, FSA, barrier categories and SCE selection
- Safety-case and SMS relationship
- Design specifications versus performance standards
- Seven essential attributes and acceptance criteria
- Traceability from scenario to barrier requirement

2 BLOCK 2 — METHOD

- Define the scenario, top event and barrier role
- Define the SCE boundary and function chain
- Set the objective and F/A/R/S/I/C/M criteria
- Define verification, acceptance and review intervals
- Address impairment, ownership and MOC/review triggers
- Record evidence, assumptions, gaps and escalation needs

3 BLOCK 3 — APPLICATION

- Onshore, offshore and chemical-process contexts
- Guided ESD-valve and firewater-style examples
- Hidden dependencies and degraded modes
- Review of a simplified output pack
- Assurance evidence and specialist review boundaries
- Integrated guided scenario and debrief

THE TECHNICAL WORKFLOW



 Seven attributes: F Functionality, A Availability, R Reliability, S Survivability, I Interdependency, C Compatibility, M Maintainability.



TRAINING BOUNDARY

This introductory course develops awareness, recognition and guided-review skills in performance standards within the FSA process. It does not qualify participants to independently set or approve safety-critical criteria, reliability targets, proof-test intervals, fire ratings, design loads or legal conclusions. These decisions require verified facility information and competent, authorised specialist judgement.



BUILD STRONGER PERFORMANCE-STANDARD REVIEW CAPABILITY ACROSS YOUR TEAM

Contact EIE to discuss public delivery, in-house training or a course adapted to your facility and operating context.



Dr Martin Bardsley

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+61 450 302 750



Martin.Bardsley@eieng.com.au



<https://staging.eieng.com.au/>

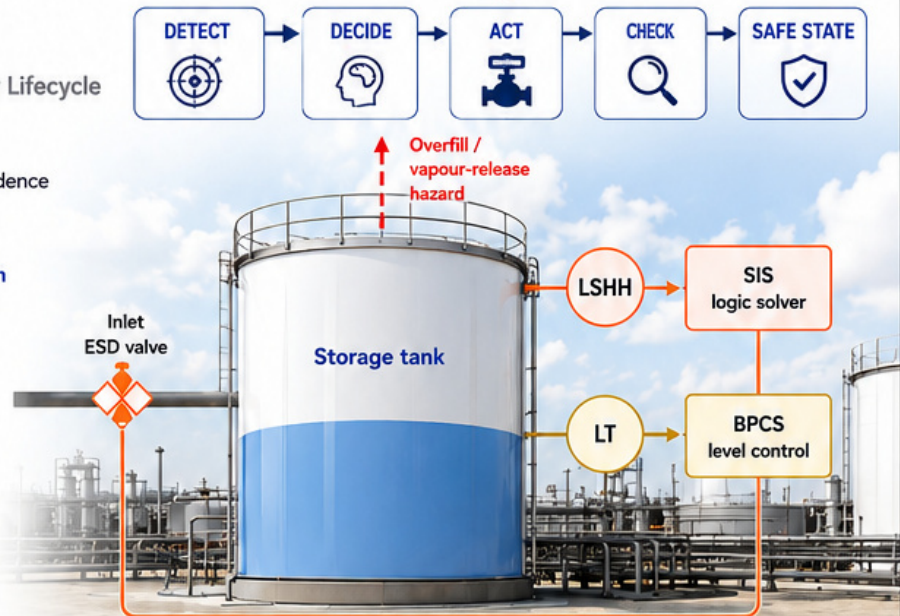
SAFETY INTEGRITY LEVEL FUNDAMENTALS

Understanding SIFs, SIS and the Functional-Safety Lifecycle

A beginner short course for understanding how automatic protective functions detect, decide and act—and how confidence is maintained throughout the operating life.

Follow one hazardous scenario from SIF definition through risk reduction, specification, assurance, proof testing and controlled change.

This practical three-hour course helps technical personnel understand complete SIFs, distinguish SIL selection from verification, and complete a guided RRF-to-SIL exercise with clear assumptions, limitations and escalation boundaries.



DURATION

Three hours



DELIVERY

Face-to-face
or live online



FORMAT

Instructor-led
short course



PARTICIPATION

Guided exercises
and practical
discussion



MATERIALS

Workbook, activity
cards and calculator
exercise



CUSTOMISATION

Client terminology
and examples may be
incorporated

1 UNDERSTAND THE SIF

- Functional safety, SIS, SIF and SIL
- Detect → Decide → Act → Safe state
- Distinguish control from protection
- Protection layers and independence
- Tank-overfill central case



2 FOLLOW THE LIFECYCLE

- Hazardous scenario and risk gap
- RRF and low-demand SIL bands
- Selection versus verification
- SRS and lifecycle responsibilities
- Validation, proof testing and modification



3 GUIDED APPLICATION

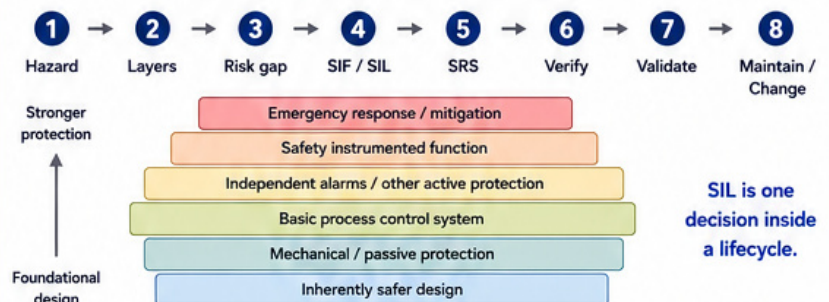
- Simplified RRF-to-SIL exercise
- Supported tank-overfill task
- Buncefield learning points
- Bypass and change control
- Final reactor transfer scenario
- Specialist escalation boundary



BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- ✓ Identify and describe a complete SIF, including hazardous condition, sensor, logic solver, final element and safe state.
- ✓ Explain how SIL determination, SRS, verification, validation, proof testing and modification fit within the IEC 61511 lifecycle.
- ✓ Complete a simplified guided RRF-to-SIL exercise and state assumptions, limitations and specialist escalation requirements.
- ✓ Distinguish selection of the SIL target from verification of the design.

THE FUNCTIONAL-SAFETY JOURNEY



WHO SHOULD ATTEND

- Process, process-safety, instrument and control personnel
- Operations, maintenance and reliability personnel
- Project and engineering personnel
- Industry professionals experienced in process plants but new to IEC 61511 concepts



TRAINING BOUNDARY

This course supports awareness, informed participation and one guided screening calculation. It does not qualify participants to lead a SIL determination, perform SIL verification, approve an SRS or design, conduct a Functional Safety Assessment, or certify an SIS/SIF.

International IEC basis. Controlled copies of IEC 61511 and local legal or company requirements must be checked before issue.



Bring clearer functional-safety understanding into your next review.

Contact EIE to discuss in-house delivery, live online sessions or client-specific beginner training for your workforce.



Dr Martin Bardsley
PhD (Chemical Engineering), CAMTAB
Enhance Integration Engineering Pty Ltd



Phone: +61 450 302 750



Email: Martin.Bardsley@eieing.com.au



Website: staging.eieing.com.au

DOWNLOAD COURSE
OUTLINE & WORKBOOK PREVIEW



SCAN ME

INTRODUCTION TO QUANTITATIVE RISK ASSESSMENT (QRA)

A practical short course for understanding how major accident scenarios become risk-informed safety decisions

Turn major accident scenarios into clearer, more defensible risk decisions.

This course introduces the QRA evidence chain and shows how scope, scenario selection, initiating frequency, outcomes, consequences, occupancy, vulnerability and criteria combine to support bounded safety decisions. Participants learn how to interpret simplified QRA outputs, recognise dominant contributors and uncertainty, and identify when specialist review or authority is required.



COURSE DURATION
Three hours



DELIVERY
Face-to-face or live online



FORMAT
Instructor-led short course



PARTICIPATION
Guided exercises and practical industrial scenarios



MATERIALS
Learner workbook and simplified output pack



CUSTOMISATION
Client-specific examples may be incorporated where suitable

1 BLOCK 1 — FOUNDATION

- Purpose and role of QRA
- Major accident scenarios and study scope
- Essential terminology and risk concepts
- Scenario selection and traceability
- Why consequence alone is not enough

2 BLOCK 2 — METHOD

- Study basis and data hierarchy
- Initiating frequency and event-tree logic
- Consequence, occupancy and vulnerability concepts
- Risk integration and key metrics
- Uncertainty, assumptions and traceability
- Building a controlled QRA workflow

3 BLOCK 3 — APPLICATION

- Reading risk plots, contours and F-N information
- Dominant contributors and sensitivity
- Offshore TR/EER and onshore occupied-building interfaces
- Criteria, control credit and ALARP interface
- Reviewing a simplified output pack
- Bounded conclusions, actions and escalation

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- 1 Describe the purpose, essential terminology and main outputs of Quantitative Risk Assessment within a Formal Safety Assessment, safety case or onshore safety-report context.
- 2 Distinguish the key elements of the QRA chain, including scenarios, initiating frequency, event-tree outcomes, consequence, occupancy, vulnerability and risk integration.
- 3 Trace a representative major accident scenario through the QRA workflow from scope and scenario definition to risk results.
- 4 Interpret a simplified QRA output pack and identify dominant contributors, assumptions, uncertainty and evidence gaps.
- 5 Recognise when criteria, ALARP issues and approval decisions require escalation to the appropriate specialist or authority.

THE QRA EVIDENCE CHAIN



WHO SHOULD ATTEND

- Graduate and project engineers
- Process, mechanical, electrical, control and technical-safety personnel
- Operations, maintenance and integrity staff
- HSE advisers
- Supervisors and project managers
- Personnel who are new to formal QRA



TRAINING BOUNDARY

This is an introductory awareness and guided-interpretation course. It does not qualify participants to select or validate models, set failure frequencies or vulnerability criteria, establish risk tolerability limits, approve siting or EER conclusions, perform an ALARP demonstration, accept risk, or authorise design or operation. These decisions require competent and authorised specialist judgement.

BUILD STRONGER QRA LITERACY ACROSS YOUR TEAM

Contact EIE to discuss public delivery, in-house training or a course adapted to your facility and operating context.



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Introduction to ALARP Demonstration

Formal Safety Assessments and Safety Cases
for Onshore and Offshore Facilities

Build clearer, more defensible ALARP decisions.

This short course introduces the ALARP demonstration process and the structured evidence-to-decision pathway used in formal safety assessments and safety cases. You will learn how to recognise what a robust argument includes, what is often missing, and when specialist review is required.



DURATION

Three hours



DELIVERY

Face-to-face or
live online



FORMAT

Instructor-led
short course



PARTICIPATION

Guided exercises
and practical
industrial scenarios



MATERIALS

Learner workbook
and practical
job aid



CUSTOMISATION

Client-specific
examples may be
incorporated



BLOCK 1 — FOUNDATION

- What ALARP means in formal safety assessments and safety cases
- The evidence-to-decision pathway at a high level
- Good practice is the minimum starting point
- Why standards and cost alone do not prove ALARP
- Common reasoning errors and missing elements



BLOCK 2 — METHOD

- Structure the ALARP argument and define the scope
- Identify scenario evidence and credible consequences
- Generate and screen practical risk reduction options
- Compare options proportionately (qualitative and quantitative methods)
- Record assumptions, data quality and uncertainty
- Build the traceable evidence chain and provisional judgement



BLOCK 3 — APPLICATION

- Apply the method to onshore and offshore scenarios
- Guided examples of good and weak ALARP arguments
- Opening diagnostic: select the strongest statement
- Identify gaps and missing evidence
- Know when and how to escalate for specialist or authorised review
- Document and communicate the provisional conclusion

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- ✓ Describe the purpose and scope of an ALARP demonstration.
- ✓ Distinguish between good practice, compliance and further risk reduction.
- ✓ Use the evidence-to-decision pathway to build a traceable argument.
- ✓ Identify common reasoning errors and missing elements in ALARP arguments.
- ✓ Recognise when specialist review and authorised decision are required.

THE EVIDENCE-TO-DECISION MODEL



WHO SHOULD ATTEND

- Graduate and early-career engineers
- Operations and maintenance personnel
- Project and design personnel
- HSE and process-safety personnel
- Technical supervisors and managers
- Personnel who contribute to engineering, safety, risk, assurance or operational reviews



TRAINING BOUNDARY

This short course develops awareness, recognition and guided-participation skills in ALARP demonstration within formal safety assessments and safety cases. It does not by itself provide certification, professional authorisation or authority to make formal technical, legal, design, operational or risk-acceptance decisions. These decisions require competent and authorised personnel working under applicable company and jurisdictional requirements.

Examples outside this training boundary include:

-  Approving designs
-  Selecting formal criteria
-  Accepting risk
-  Signing ALARP demonstrations

BUILD MORE DEFENSIBLE ALARP REVIEWS ACROSS YOUR TEAM

Contact EIE to discuss public delivery, in-house training or a course adapted to your facility and operating context.

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SAFE PLANT INTERVENTION

Permits, Isolation and Reinstatement

A practical short course on permit-to-work, isolation, verification, reinstatement and handback in process facilities.

Turn maintenance work into a disciplined, traceable intervention process.

This three-hour awareness course helps participants understand how maintenance changes the plant state and how permit-to-work, isolation, verification and reinstatement fit together. Learners follow a hydrocarbon-pump intervention, identify hazardous-energy and trapped-inventory concerns, and recognise when they must stop and escalate.



DURATION
Three hours



DELIVERY
Instructor-led
classroom course



FORMAT
Short course



PARTICIPATION
Guided exercises
and practical
industrial scenarios



MATERIALS
Learner workbook
and practical
job aid



INDUSTRY
Oil and gas, LNG,
refining, petrochemical
and chemical
processing

BLOCK 1 — PLAN AND AUTHORISE

- Why maintenance changes the plant state
- Work scope, hazard definition and energy mapping
- Permit purpose, scope, roles and validity
- Communication, handover and SIMOPS interfaces
- Authority limits and when to escalate

BLOCK 2 — ISOLATE AND VERIFY

- Control versus isolation
- Mechanical, process and electrical isolation awareness
- LOTO, DBB, blinds and spades
- Draining, venting, purging and gas-testing purpose
- Verification of the safe state and challenge of reaccumulation

BLOCK 3 — WORK, REINSTATE AND HAND BACK

- Line breaking, stored pressure and line-of-fire concerns
- Confined-space and simultaneous-operations interfaces
- Maintaining conditions during work and handover
- Reinstatement, leak testing and safeguards restoration
- De-isolation, handback and final review of gaps

BY THE END OF THE COURSE, PARTICIPANTS WILL BE ABLE TO:

- 1 Describe the main stages, information and responsibilities in a permit-controlled plant intervention from work definition through handback.
- 2 Identify common hazardous-energy, trapped-inventory, isolation, line-breaking, confined-space and simultaneous-operations concerns associated with maintenance work.
- 3 Review a simplified intervention plan, identify missing controls or verification evidence, arrange the work and reinstatement sequence, and state which decisions require an authorised or competent person.

THE INTERVENTION WORKFLOW



PERMIT —
Communicates
and authorises



ISOLATION —
Creates the
physical boundary



VERIFICATION —
Proves the
intended state



WHO SHOULD ATTEND

- Operators and technicians
- Maintenance personnel and contractors
- Graduate and early-career engineers
- Supervisors and team leaders
- HSE personnel
- Personnel involved in maintenance planning, permits or intervention reviews



TRAINING BOUNDARY

This course provides awareness training only. It does not qualify participants to issue or authorise permits, approve isolation schemes, perform electrical switching, conduct gas testing, enter confined spaces, approve leak-test criteria or authorise reinstatement and startup.

BUILD STRONGER SAFE-INTERVENTION PRACTICE ACROSS YOUR TEAM

Contact EIE to discuss public delivery, in-house training or a course adapted to your facility and operating context.



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