Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Facility Management

Specification

Competence-based qualifications

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Issue 1

Edexcel, BTEC and LCCI qualifications

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Welcome

With a track record built over 40 years of learner success, our BTEC International qualifications are recognised internationally by governments, industry and higher education.

What are BTEC International Specialist and Professional qualifications?

These BTEC qualifications are available at Levels 1–3 (Specialist) and at Levels 4–7 (Professional). The qualifications are designed to have one of two different purposes: some aim to give learners the knowledge and/or skills that they need to prepare for employment in a sector or job role; others are competence-based qualifications.

What are competence-based qualifications?

Competence-based qualifications are work-based qualifications that allow learners to develop and demonstrate their competence in the area of work or job role to which the qualification relates. Completing the qualification therefore provides evidence that learners are fully competent in the job role.

Learners will work towards their qualification in the workplace or (if permitted by the assessment requirements) in settings that replicate the working environment. Colleges, training centres and/or employers can offer these qualifications as long as they have access to appropriate physical and human resources and have the necessary quality assurance systems in place.

Sizes of qualification

Pearson estimates the number of guided learning hours (GLH) that will be needed for centre staff to deliver the qualification. This includes all training that involves centre staff in teaching and supervising learners, as well as all assessment activities.

BTEC Specialist and Professional qualifications are available in the following sizes:

Award – a qualification with a GLH value of 10–120 hours

Certificate – a qualification with a GLH value of 121–369 hours

Diploma – a qualification with a GLH value of 370 or above.

Collaborative development

These qualifications have been developed with input from industry experts. We are grateful to all the individuals and organisations who generously shared their time and expertise to help us develop these new qualifications.

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Introduction to BTEC International competence qualifications for the oil and gas sector

This specification contains all the information you need to deliver the Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Facility Management.

This qualification is part of a suite of oil and gas qualifications offered by Pearson.

What other qualifications are available?

The suite of oil and gas frontline production operations qualifications has been developed in collaboration with industry experts. The qualifications are designed to cover the minimum competence standards to meet the job requirements for key health, safety and environmental (HSE)-critical roles in the oil and gas industries.

In the oil and gas sector, the other qualifications are:

- Pearson BTEC International Level 2 Specialist Diploma for Process Technicians in Oil and Gas Facilities
- Pearson BTEC International Level 2 Specialist Diploma for Electrical Technicians in Oil and Gas Facilities
- Pearson BTEC International Level 2 Specialist Diploma for Instrument Technicians in Oil and Gas Facilities
- Pearson BTEC International Level 2 Specialist Diploma for Mechanical Technicians in Oil and Gas Facilities
- Pearson BTEC International Level 3 Specialist Diploma in Control Room Operations in Oil and Gas Facilities
- Pearson BTEC International Level 3 Specialist Diploma in Electrical Engineering Operations in Oil and Gas Facilities
- Pearson BTEC International Level 3 Specialist Diploma in Instrument Engineering Operations in Oil and Gas Facilities
- Pearson BTEC International Level 3 Specialist Diploma in Mechanical Engineering Operations in Oil and Gas Facilities
- Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Installation Management.

These qualifications are not regulated in England.

What else does this specification contain?

This specification signposts the other essential documents and support that you need as a centre in order to deliver, assess and administer the Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Facility Management, including the staff development required. A summary of all essential documents is given in *Section 6 Administrative arrangements*.

The information in this specification is correct at the time of publication.

Overview of qualification sizes and purposes in the oil and gas suite

Level 2 qualifications

Title	Size and structure	Summary purpose
Pearson BTEC International Level 2 Specialist Diploma for Process Technicians in Oil and Gas Facilities	605 GLH. Six mandatory units.	This qualification allows learners to demonstrate their occupational competence as a process technician.
Pearson BTEC International Level 2 Specialist Diploma for Electrical Technicians in Oil and Gas Facilities	540 GLH. Six mandatory units.	This qualification allows learners to demonstrate their occupational competence as an electrical technician.
Pearson BTEC International Level 2 Specialist Diploma for Instrument Technicians in Oil and Gas Facilities	550 GLH. Six mandatory units.	This qualification allows learners to demonstrate their occupational competence as an instrument technician.
Pearson BTEC International Level 2 Specialist Diploma for Mechanical Technicians in Oil and Gas Facilities	610 GLH. Six mandatory units.	This qualification allows learners to demonstrate their occupational competence as a mechanical technician.

Level 3 qualifications

Title	Size and structure	Summary purpose
Pearson BTEC International Level 3 Specialist Diploma in Control Room Operations in Oil and Gas Facilities	630 GLH. Three mandatory units plus optional units worth at least 280 GLH.	This qualification allows learners to demonstrate their occupational competence as a control room operator.
Pearson BTEC International Level 3 Specialist Diploma in Electrical Engineering Operations in Oil and Gas Facilities	500 GLH. Five mandatory units.	This qualification allows learners to demonstrate their occupational competence as an electrical technician engineer.
Pearson BTEC International Level 3 Specialist Diploma in Instrument Engineering Operations in Oil and Gas Facilities	460 GLH. Four mandatory units.	This qualification allows learners to demonstrate their occupational competence as an instrument technician engineer.
Pearson BTEC International Level 3 Specialist Diploma in Mechanical Engineering Operations in Oil and Gas Facilities	480 GLH. Four mandatory units.	This qualification allows learners to demonstrate their occupational as a mechanical technician engineer.

Level 4 qualifications

Title	Size and structure	Summary purpose
Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Facility Management	**At least 810 GLH.** **Four mandatory and two optional units.**	**This qualification allows learners to demonstrate their occupational competence when managing oil and gas production facilities. It also prepares them to deputise for the installation manager in emergencies.**
Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Installation Management	1020 GLH. Seven mandatory units.	This qualification allows learners to demonstrate their occupational competence as the manager of oil and gas installations. This includes managing production facilities on-site and any supporting facilities on- and off-site.

An overview of the structures of these qualifications can be found in *Appendix B: Structures of the qualification suite at a glance*.

1 Qualification purpose and progression

Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Facility Management

Who is this qualification for?

This qualification is for learners who work as production, maintenance, marine or terminal supervisors in oil and gas installations.

Completing Units 1–3 (see the structure on page 6) will fulfil the minimum requirements for an individual to stand in as acting operations installation manager (OIM) if the OIM is absent. These units also fulfil the minimum requirements for an individual to assume the roles of site emergency coordinator (SEC) or on-scene commander (OSC) in the event of major emergencies, for example if the OIM is injured during an incident.

There is a choice of optional units, which are designed for different roles:

- Units 5–6 are for maintenance supervisors
- Units 7–8 are for production supervisors (upstream)
- Units 9–10 are for marine supervisors
- Units 11–12 are for terminal supervisors.

What could this qualification lead to?

This qualification supports career progression. Learners who have completed the qualification will be ready to progress on to the role of operations installation manager and to qualifications aimed at this job role, for example the Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Installation Management.

2 Qualification summary and key information

Qualification title	Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Facility Management
Operational start date	1 April 2020
Entry requirements	Learners must be employed in a role that allows them to demonstrate the knowledge and skills as part of their normal work activities. Learners must also have: • an undergraduate engineering degree (BSc/BEng or equivalent) with a minimum of three years' experience working in the oil and gas sector OR • an engineering diploma (Level 3 or equivalent) with a minimum of 10 years' experience working in the oil and gas sector.
Guided Learning Hours (GLH)	A minimum of 810*
Assessment	Portfolio of evidence (internal assessment)
Grading information	The qualification and units are graded pass/fail.

*The GLH will depend on which optional units are chosen.

3 Structure

Qualification structure

Learners will need to meet the requirements outlined in the table below before the qualification can be awarded.

Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Facility Management		
Unit number	**Unit title**	**GLH**
Mandatory units – learners must achieve all four units		
1	Manage Emergency Responses	150
2	Manage Health, Safety, Environment and Security	150
3	Manage Information and Decision Making	140
4	Manage Operations and Asset Integrity	140
Optional units – learners must achieve two units		
5	Manage Maintenance Activities	140
6	Manage Turnaround and Project Implementation	160
7	Manage Process Plant and Well Integrity	120
8	Manage Upstream Production and Operations Optimisation	140
9	Manage Marine Operations	130
10	Manage Marine Export Operations	140
11	Manage Onshore Terminal Plant, Storage and Export Facilities	110
12	Manage Onshore Terminal Process Optimisation and Export Operations	140

4 Units

Understanding your units

The units in this specification set out our expectations of assessment in a way that helps you to prepare your learners for assessment. The units help you to undertake assessment and quality assurance effectively.

Each unit in the specification is set out in a similar way. This section explains how the units work. It is important that all teachers, assessors, internal verifiers and other staff responsible for the programme review this section.

Section	Explanation
Unit number	The number is in a sequence in the specification. Where a specification has more than one qualification, numbers may not be sequential for an individual qualification.
Unit title	This is the formal title that we always use, and it will appear on learners' certificates.
Level	All units and qualifications have a level assigned to them. The levels correspond with the levels used in the UK's Regulated Qualification Framework.
Unit type	This says if the unit is mandatory or optional for the qualification.
Guided Learning Hours (GLH)	Guided Learning Hours (GLH) is an estimate of the number of hours that will be needed for a typical learner to achieve the unit. GLH include all training involving centre staff in teaching and supervising learners, as well as all assessment activities.
Unit summary	This summarises the purpose of the unit.
Unit assessment requirements	This section outlines any requirements for the assessment of the unit.
Range statements	Range statements specify the scope and contexts to which the assessment criteria apply. All items in the range must be covered, except for items that follow an 'e.g.'
Learning outcomes	The learning outcomes set out what a learner must know, understand or be able to do as the result of a process of learning.
Assessment criteria	The assessment criteria specify the standard the learner is required to meet to achieve a learning outcome. Space is provided to record the date and type of evidence when the assessment criteria have been evidenced.
Declarations	This section is signed and dated by the learner and assessor after all the assessment criteria have been evidenced. If sampled, it must be signed and dated by the internal verifier.

Index of units

This section contains all the units developed for these qualifications. Please refer to *page 6* to check which units are available.

Unit 1: Manage Emergency Responses 11

Unit 2: Manage Health, Safety, Environment and Security 19

Unit 3: Manage Information and Decision Making 29

Unit 4: Manage Operations and Asset Integrity 35

Unit 5: Manage Maintenance Activities 41

Unit 6: Manage Turnaround and Project Implementation 49

Unit 7: Manage Process Plant and Well Integrity 55

Unit 8: Manage Upstream Production and Operations Optimisation 63

Unit 9: Manage Marine Operations 69

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Unit 12: Manage Onshore Terminal Process Optimisation and Export Operations 87

Unit 1: Manage Emergency Responses

Level: 4

Unit type: Mandatory

Guided learning hours: 150

Unit summary

Oil and gas installation managers may, from time to time, be faced with situations where an emergency response is required, and, as the most senior member of staff in the facility, it will be their responsibility to manage the response.

The complex products, processes and technologies used within the oil and gas industry will affect the nature of emergencies and the type of response that is required. Oil and gas installation managers must be able to assess situations accurately and respond accordingly. They also need to ensure the effectiveness of others who have specific responsibilities to provide emergency responses. By managing emergency responses successfully, oil and gas installation managers can control situations and minimise the problems that arise.

Unit assessment requirements

All learning outcomes

For all assessment criteria, evidence must relate to at least **three** of the following:

- fire
- explosion
- high-pressure release of hydrocarbons
- structural failure
- adverse weather conditions
- helicopter incidents
- vessel collisions
- well blowout and well control failures
- failure of safety-critical equipment/systems.

Learning outcomes 2, 3, 4 and 5

Simulation is permitted in learning outcomes 2, 3, 4 and 5, but it must be carried out in a realistic working environment in line with the requirements of Section 2 of the *Assessment Rules* (see *Appendix A*).

Learners must be assessed on **three** types of scenario in each of these learning outcomes, defined as follows:

- Type A: major incidents
- Type B: escalating major incidents
- Type C: incidents that lead to prepare-to-abandon platform.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Be able to manage emergency response preparations in an oil and gas production facility

1.1 Supply information to personnel:

- accurate description of incidents
- summary of actions taken by self
- clear expectations of actions required by personnel, both emergency team members and staff.

1.2 Perform drills:

- to test the readiness of emergency response team members
- ensure effective communication during emergency drills
- maintained and up-to-date competence records
- conducted emergency responses regularly to ensure staff are prepared for worst case scenario.

1.3 Assess personnel during drills:

- all search and rescue team (SERT) members, including muster checkers, coxswain, radio operator, first aiders, first aid firefighters and medics.

1.4 Action plan for potential emergencies:

- major emergencies
- readiness of action plans to be tested during emergency drills as part of assessment criteria 1.2 and 1.3.

*(Note: The action plan must cover a combination of at least **three** types of the emergency. For the other types of emergency, learners must explain what the action plan would contain.)*

1.5 Assess readiness of equipment for emergency responses:

- first aid firefighting facilities
- breathing apparatus (BA) sets, including emergency back ups
- liferaft
- liftboat
- escape rope
- first aid facilities.

2 Be able to communicate effectively during an emergency situation in an oil and gas production facility

2.1 Issue information:

- clear at point of issuing
- respond quickly and efficiently.

2.2 Respond to information received:

- initiate platform alarm in a timely manner
- provide regular updates to relevant people, including emergency supports.

2.3 Use suitable tools:

- public address (PA) system
- radios
- satellite phones.

2.4 Barriers to effective communication:

- information overload
- stressed staff
- alarms (noises)
- taking time out during emergencies.

2.5 Report critical events:

- clear and concise updates of incident
- to personnel on board (POB)
- to emergency coordinator at the control centre
- in accordance with company policies and guidelines.

3 Be able to maintain an understanding of emergency situations in an oil and gas production facility

3.1 Emergencies and potential escalations:

- recognise changes to emergency situations
- recognise escalations to emergency situations, e.g. from Type A to Type B, or Type B to Type C
- evaluate impact of changes on personnel, environment and facilities.

3.2 Impact of changes on critical situations:

- location, e.g. process areas, wellheads vs living accommodation modules
- effects on personnel movement, e.g. escape routes
- actions required of emergency response personnel.

3.3 Assessment of casualties:

- number
- location
- condition.

3.4 Assess evacuations:

- potential escape routes
- choice of alternative mustering point for evacuation
- best methods, e.g. lifeboat or standby boat.

3.5 Records:

- accurate record of incidents
- up-to-date status of emergency support, e.g. availability of helicopter, specialist supports.

4 Be able to implement an effective response to an emergency situation in an oil and gas production facility

4.1 Critical situations:

- actual
- developing
- potential.

4.2 Activate alarms:

- in a timely manner
- clear and concise instructions via public address (PA) system.

4.3 Instructions to control emergency situations:

- response to emergencies
- response accordance to emergency response and contingency plan
- clear understanding of own role and priorities during emergencies to protect lives, environment and facilities.

4.4 Monitor emergencies to minimise further risks:

- personnel
- facility
- environment.

4.5 Direct personnel to handle emergency situation:

- clear strategy to control the situation
- command and control mode with instructions
- utilise resources effectively within the team.

5 Be able to maintain own effectiveness and that of others when dealing with an emergency situation in an oil and gas production facility

5.1 Communicate authoritatively to personnel:

- communicate confidently
- use a clear strategy and plan to deal with situation
- adopt a command-and-control approach when communicating.

5.2 Take action to deal with impaired function of team members:

- recognise issues with team members with impaired capacity, e.g. stressed or panic responses
- take immediate action to remove individuals with impaired capacity
- replace emergency response roles using back up.

5.3 Control factors that reduce the capacity of individuals:

- stress management of self and others
- recognition of sources of stress in others, e.g. fear and other factors that might jeopardise the emergency situation
- isolation of sources of stress to the individual by reassigning roles.

5.4 Demonstrate leadership:

- demonstrate a clear understanding of emergency situation
- communicate the strategy and plan to deal with emergencies effectively
- remove non-essential personnel from high risk areas, e.g. to safe haven at facility
- exercise command-and-control strategy for effective execution of instructions
- display effective demeanour throughout the emergency to instil confidence in others.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to manage emergency response preparations in an oil and gas production facility	1.1	Supply information to relevant personnel for the preparation of emergency responses			
		1.2	Perform drills and exercises regularly in accordance with oil and gas site-specific emergency procedures			
		1.3	Assess personnel that have been coached in emergency responses during drills and exercises			
		1.4	Action plan for potential emergencies for relevant personnel			
		1.5	Assess readiness of equipment for emergency responses in accordance with relevant procedures			
2	Be able to communicate effectively during an emergency situation in an oil and gas production facility	2.1	Issue information and instructions to relevant personnel during an emergency situation			
		2.2	Respond to information received in an emergency situation			
		2.3	Communicate authoritatively using suitable tools in an emergency situation			
		2.4	Resolve barriers to effective communication in an emergency situation			
		2.5	Report critical events in accordance with oil and gas company policies			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to maintain an understanding of emergency situations in an oil and gas production facility	3.1	Recognise emerging emergencies and signs that situations are escalating			
		3.2	Monitor changes to critical situations and their impact during emergency			
		3.3	Assess casualties in emergency situations			
		3.4	Assess evacuation options in emergency situations			
		3.5	Maintain an accurate record of events during emergency situations			
4	Be able to implement an effective response to an emergency situation in an oil and gas production facility	4.1	Identify critical situations in an emergency response			
		4.2	Activate alarms in relevant areas within the facility			
		4.3	Issue instructions to control the emergency in accordance with operating and contingency plan requirements			
		4.4	Monitor emergencies to minimise further risk			
		4.5	Direct personnel to handle an emergency situation in an effective manner			
5	Be able to maintain own effectiveness and that of others when dealing with an emergency situation in an oil and gas production facility	5.1	Communicate authoritatively to emergency response personnel in an emergency situation			
		5.2	Take action when the capacity of individuals to function in an emergency is impaired			
		5.3	Control factors that reduce the capacity of individuals to function in an emergency			
		5.4	Demonstrate leadership and instil confidence in others during emergencies			

Declarations

I confirm that the evidence for this unit is authentic and a true representation of my own work.

Learner name: _____

Learner signature: _____ Date: _____

I confirm that the evidence for this unit is authentically that of the learner whose name and signature appears above. The assessment has been carried out in accordance with any specified assessment requirements for the unit and qualification.

Assessor name: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 2: Manage Health, Safety, Environment and Security

Level: 4

Unit type: Mandatory

Guided learning hours: 150

Unit summary

The unit allows learners to develop the knowledge, understanding and skills that a manager needs to deal effectively with health, safety, environment and security.

Oil and gas facilities are hazardous environments and need to function safely and securely. Policies and procedures in relation to health and safety need to be implemented rigorously. Oil and gas production facilities use equipment that needs to be secured against accidental and malicious damage. Procedures must be enforced to ensure that only authorised personnel are allowed in the facilities or specific areas within the facilities.

Managers may find that they are the most senior member of staff in the facility and need to understand the arrangements for dealing with incidents and accidents that may occur. By managing health, safety and security in the environment, managers will be able to promote efficient oil and gas facility production operations.

Unit assessment requirements

This unit must be assessed using evidence from real work activities. For further details, please refer to *Appendix A: Assessment rules*.

Simulation is **not** permitted for this unit.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Be able to manage safety within an oil and gas production environment

1.1 Safe working practices:

- apply company safety management systems at work, including:
  - hazards and effects management procedure (HEMP)
  - job hazards analysis
  - Permit to Work system
  - frontline barrier management (FLBM)
  - HSE procedures and guidelines
- conduct inspections, reviews and safety audits of own installation.

1.2 Hazard elimination:

- apply job hazards analysis
- ensure effectiveness of toolbox meetings
- ensure location of HSE safety cases are updated and applied
- strict compliance with Permit to Work system.

1.3 Lead safety inspection, reviews and audits:

- comply with company HSE audit plan for own installation
- lead inspections, reviews and safety audits of own installation
- share outcomes of lessons learnt from inspections, reviews and audits.

1.4 Close action points arising from inspection, reviews and audits:

- allocate resources to ensure the close up of all action items arising from inspections, reviews and audits
- monitor action items based on agreed priorities.

1.5 Promote contractor safety:

- ensure the same standards of safety standard for contractors working in own installation
- actively promote safety management systems and culture in contractor teams through regular safety talks, sharing of safety news, alerts and updates
- ensure visible management involvement through regular walkabouts among contractor teams.

1.6 Application of hazard management during simultaneous operations (SIMOPS) planning:

- operations input into SIMOPS plan
- formal endorsement of SIMOPS by operations installation manager prior to implementation
- in accordance with company guidelines for SIMOPS activities.

1.7 Check that facility HSE case is:

- up to date
- used by staff.

2 Be able to manage occupational health in an oil and gas production environment

2.1 Instructions to comply with company occupational health standards:

- engage staff with organisational health standards
- set clear individual targets to achieve health standards, e.g. BMI, noise compliance
- display support and guidance materials.

2.2 Promoting health awareness:

- regular personal medical health checks for all staff working in fields
- regular exercise and organise team sport events
- body mass index (BMI) target for individuals
- exposure to noises
- exposure to hydrocarbon gases and solvents.

2.3 Lead occupational health inspections:

- allocate resources to monitor occupational health standards at the installation
- lead audit to evaluate hygiene in living quarters, kitchen and food storage areas
- regular training to ensure staff are aware of potential health and occupational health hazards.

2.4 Assess noise levels on-site:

- allocate resource to map noise levels on-site
- share findings of noise mapping.

2.5 Handling of toxic chemicals:

- store chemicals according to MSDS standards
- ensure toxic chemicals are clearly and visibly marked with warning signs.

2.6 Awareness of occupational health hazards:

- implementation of occupational health programmes
- share company occupational health standards and requirements.

2.7 Occupational health audits and follow-up:

- allocate resources for location occupational health audit
- identify follow-up actions and ensure timely close-up
- share findings with staff.

3 Be able to manage environmental quality processes within an oil and gas production site

3.1 Report unplanned discharges:

- spills
- sludges
- gases.

3.2 Verify controlled discharges:

- track controlled discharges from own installation against agreed limits
- report non-compliance in relation to controlled discharges.

3.3 Execute agreed environmental quality procedures:

- communicate agreed environmental quality procedures to staff
- manage operations in strict compliance with agreed procedures
- report compliance and monitor deviations.

3.4 Segregation of materials for disposal on-site:

- in accordance with company requirements
- compliance with any regulatory requirements.

3.5 Lead environment audits:

- allocate resources for environment audits of own installation
- identify areas for improvement and follow-up actions
- monitor audit follow-up until all action items are resolved
- share learning from audits.

3.6 Report all environmental issues:

- in a timely manner
- via company environment focal points.

4 Be able to investigate incidents and accidents within an oil and gas production environment

4.1 Incident classifications:

- evaluate incidents at own location based on risk matrix
- determine classification of incident (class 1, 2, 3, or 4)
- incident types (loss of personnel, assets, environment or near misses)
- classification of injury (fatality, permanent or partial disability, lost time, restricted or medical treatment case or first aid cases)
- determine individual involvement, e.g. report only, lead or participate in investigation.

4.2 Notify relevant parties of incidents:

- notify relevant parties based on incident classification
- within timeframe stipulated in Incident reporting guidelines, e.g. within 24 hours for level 1 incidents and 14 days for level 2 incidents
- in accordance with company policy and procedures for incident and accident investigation and reporting guidelines.

4.3 Conduct preliminary investigations:

- allocate resources for preliminary investigation
- lead and conduct site investigations and obtain first-hand site evidence
- compile initial report and submit to relevant parties based on incident classification.

4.4 Incidents investigated as per company guidelines:

- all incidents are investigated
- reported
- follow through
- shared.

4.5 Report near misses:

- ensure all near misses are reported
- near miss incidents are tracked and monitored
- high potential (HIPO) near miss incidents investigated as per company guidelines.

4.6 Lead incident investigation:

- within area of own responsibility
- attended formal training on how to lead incident investigation.

5 Be able to manage the security of assets within the facility

5.1 Verify the passage of personnel on board:

- appoint focal point to check passage of all personnel to own installations
- track and maintain up-to-date information about personnel on board (POB)
- manage records of all personnel on board in accordance with company policy and guidelines.

5.2 Monitor movement of personnel between and within facilities:

- monitor movement of personnel between main facility and satellite facilities
- control journey management of personnel in transit between facilities.

5.3–5.4 Maintain security measures:

- maintain high alert
- monitor illegal trespassing by third parties
- ensure all fishing and other unauthorised vessels are prevented from encroaching within approved limits of all facilities.

5.5 Report all security matters:

- report breaches in accordance with company guidelines.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to manage safety within an oil and gas production environment	1.1	Ensure personnel use safe working practices in compliance with company policies			
		1.2	Take action to eliminate hazards to ensure safety			
		1.3	Lead on safety inspections, reviews and audits, in accordance with organisational plans			
		1.4	Close action points resulting from inspections, reviews and audits with minimum delay			
		1.5	Promote contractor safety within the production facility			
		1.6	Apply principles of hazard management in a structured manner during the planning of simultaneous operations			
		1.7	Check that the facility safety case is up to date with relevant information			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Be able to manage occupational health in an oil and gas production environment	2.1	Instruct personnel in how to comply with company occupational health standards			
		2.2	Promote personal health awareness			
		2.3	Lead on occupational health inspections			
		2.4	Assess noise levels against accepted levels for safe working			
		2.5	Ensure toxic chemicals are handled appropriately			
		2.6	Raise awareness with personnel of hazards that are injurious to health			
		2.7	Complete occupational health audits on a regular, scheduled basis identifying any follow-up actions			
3	Be able to manage environmental quality processes within an oil and gas production site	3.1	Report unplanned discharges in accordance with operational requirements			
		3.2	Verify that controlled discharges from the production site are achieved within prescribed limits			
		3.3	Carry out agreed environmental quality procedures in accordance with company policy			
		3.4	Ensure compliance with the requirements for the segregation of materials for disposal on-site			
		3.5	Lead on environmental audits on a regular, scheduled basis identifying any follow-up actions			
		3.6	Report all matters relating to environmental issues			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to investigate incidents and accidents within an oil and gas production environment	4.1	Classify incidents for investigation in accordance with company procedures			
		4.2	Notify relevant parties of incidents in accordance with company procedures			
		4.3	Complete preliminary investigations of incidents			
		4.4	Ensure all incidents are investigated, reports submitted to management and all action items are completed			
		4.5	Check that all near misses relating to incidents and accidents are reported			
		4.6	Lead incident investigations			
5	Be able to manage the security of assets within facility	5.1	Verify that the passage of personnel to facilities is in line with company policy			
		5.2	Monitor the movement of personnel between and within facilities			
		5.3	Maintain security measures to prevent trespassing to the facilities			
		5.4	Control fishing and other unauthorised vessels from encroaching within approved limits of all facilities			
		5.5	Report all security matters according to company procedures			

Declarations

I confirm that the evidence for this unit is authentic and a true representation of my own work.

Learner name: _____

Learner signature: _____ Date: _____

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Assessor name: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 3: Manage Information and Decision Making

Level: 4

Unit type: Mandatory

Guided learning hours: 140

Unit summary

This unit gives learners the knowledge, understanding and skills that a manager in the oil and gas industry needs to exchange, use and manage information to support decision making and solve problems.

Oil and gas production activities are complex and generate a significant amount of information. Managers must deal with a large quantity of information and assess the quality of the information to support the decisions they make. Work is generally planned using information from different teams. This information needs to be communicated to appropriate personnel in a clear, timely and efficient manner to ensure continuity of operations.

Unit assessment requirements

This unit must be assessed using evidence from real work activities. For further details, please refer to *Appendix A: Assessment rules*.

Simulation is **not** permitted for this unit.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Be able to lead meetings on oil and gas production activities

1.1 Organise meetings:

- plan a clear agenda and invite attendees
- allocate resources to ensure successful meeting outcomes
- distribute materials before the meeting to avoid information download during meeting.

1.2 Purpose of meeting:

- identify issues for group discussion leading to problem solving.

1.3 Chair meetings:

- ensure sufficient time for discussion
- consider inputs from all parties
- invite contributions from all personnel
- allocate time for discussing topics in accordance with importance, urgency and complexity.

1.4 Leadership style:

- able to adapt leadership approach to address different issues, e.g. dominant versus consensus styles
- open to different views on issues
- good listening skills
- able to control time appropriately.

1.5 Communicate location work plans:

- clearly and in a timely manner
- secure commitment from all action parties to achieve plan.

1.6 Resolve problems:

- focus on meeting agenda for problem solving
- allow issue owners to explain causes of problem
- lead on problem solving to address issues
- identify action parties and follow-up.

1.7 Ensure appropriate recording:

- allocate resources to record notes/minutes
- ensure accurate and concise record of agreed action parties and timeline
- issue notes/minutes of meeting in a timely manner.

2 Be able to manage information to aid decision making for oil and gas production activities

2.1 Obtain accurate information relating to:

- future business operations, e.g. planned turnaround or simultaneous operations in own installation
- existing production operations, including issues and limitations, e.g. bottlenecks, availability of hardware and resources.

2.2 Interpret complex information:

- consider all options related to technical, engineering or production operations
- facilitate brainstorming of options to address issues
- prioritise options.

2.3 Decision making:

- establish selection criteria for possible options
- select and decide on options
- confirm choice and get commitment of all action parties to follow up
- allocate action parties with clear deadlines.

3 Be able to communicate information relating to oil and gas production decisions to relevant personnel

3.1 Share information with staff on production decisions from meetings:

- orally to staff affected for urgent action items
- written – the timely issue of meeting notes/minutes.

3.2 Advice to staff:

- in a timely manner
- current, relevant and accurate
- aligned to business requirements
- consistent with company policy, cost and resource constraints.

3.3 Share lessons learnt and best practice:

- lessons learnt from audits and reviews
- share HSE incidents, e.g. HSE alerts
- best practice from industry including competitors, e.g. production and maintenance practices, HSE performance
- presented in a manner, level and pace that is appropriate to the receiver.

4 Be able to use information technology to improve business operations

4.1 Use of information technology systems:

- recognise availability of IT data affecting own work
- analyse data trending
- use available IT systems to generate reports and analysis
- use of available IT resources, e.g. IT hardware and staff.

4.2 Use of computerised control system:

- extract appropriate reports from the computerised control system
- analyse process trends to identify plant process bottlenecks
- improve plant process operations by de-bottlenecking identified process issues.

4.3 Use of network systems:

- be fully aware of company approved network tools and systems
- use network tools to improve own and staff productivity, e.g. meetings, reports, information sharing.

4.4 Computer issues:

- awareness of IT capability and its associated IT security and data privacy issues
- timely recognition of IT breaches
- report and allocate resources to resolve IT issues.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to lead meetings on oil and gas production activities	1.1	Organise meetings with personnel who have a stake in the content of the meeting			
		1.2	Establish the purpose of meetings in relation to oil and gas production activities with other personnel			
		1.3	Chair meetings by controlling the focus of discussions			
		1.4	Demonstrate a leadership style that is appropriate for meetings			
		1.5	Communicate location work plans relating to oil and gas production activities			
		1.6	Resolve problems relating to oil and gas production activities in the meeting			
		1.7	Ensure appropriate recording of meeting outcomes			
2	Be able to manage information to aid decision making for oil and gas production activities	2.1	Obtain accurate information on factors affecting current and future business oil and gas production operations			
		2.2	Interpret complex information from all aspects affecting its production operations			
		2.3	Evaluate the validity and reliability of oil and gas production activity information to enable effective decision making			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to communicate information relating to oil and gas production decisions to relevant personnel	3.1	Disseminate information to staff based on oil and gas production decisions agreed at meetings			
		3.2	Provide advice to staff that is consistent with business requirements			
		3.3	Share lessons learnt and best practice with peers and senior management			
4	Be able to use information technology to improve business operations	4.1	Use information technology systems for planning future work			
		4.2	Use computerised control systems within the oil and gas facility process control to enhance data acquisition			
		4.3	Use network systems for reporting and communication purposes			
		4.4	Direct all computer issues through the appropriate personnel			

Declarations

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Learner name: _____

Learner signature: _____ Date: _____

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Assessor name: _____

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(*if sampled*)

Unit 4: Manage Operations and Asset Integrity

Level: 4

Unit type: Mandatory

Guided learning hours: 140

Unit summary

This unit gives learners the knowledge, understanding and skills that a supervisor needs to manage the technical integrity and safety of oil and gas producing or processing facilities.

Supervisors working in oil and gas installations need to constantly manage hazard barriers and controls whilst balancing production priorities. Supervisors must ensure the availability of process plant and equipment in accordance with company operating practices and procedures. This requires the plant to be operated according to up-to-date operating envelopes for alarms and overrides, Permit to Work systems, and efficient and effective handovers. Supervisors must also ensure there are sufficient numbers of appropriately qualified and experienced personnel in all HSSE critical roles.

Unit assessment requirements

This unit must be assessed using evidence from real work activities. For further details, please refer to *Appendix A: Assessment rules*.

Simulation is **not** permitted for this unit.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Be able to manage process operations of oil and gas facilities

1.1 Asset integrity and process safety requirements:

- organisational standards, procedures, manuals and data sheets for all equipment and processes
- manufacturer and technical information for facility equipment on board and at site
- up-to-date design and safe operational envelope of facility process and equipment.

1.2 Assurance for safety barriers:

- safety-critical elements (SCE): types and functions
- performance standards of SCE: actual versus design
- test criteria for SCE
- up-to-date test records of all SCE in own facility.

1.3 Permit to Work system:

- principles of permitry
- Permit to Work management (roles of parties)
- control and reviews.

1.4 Information technology (IT) security:

- level of access
- users control.

1.5 Manage alarm systems:

- in accordance with company alarm management guidelines
- manage alarm functions, settings and limits of all facility protective equipment, including SCE
- make proposals to rationalise, e.g. instrument protective function (IPF) reviews
- apply prudential control (actions to respond).

1.6 Process operations:

- control overrides
- temporary repairs and equipment
- passing valves
- lock open and lock close registers
- risk assessments.

1.7 Handover of facility:

- shifts
- maintenance
- communication of activities and responsibilities.

2 Be able to develop personnel working in HSSE roles

2.1 HSSE training requirements:

- competence requirements for all HSSE roles
- legislative requirements.

2.2 Competency certification checks:

- track validity
- dates for recertification
- development plan to maintain requirements.

2.3 Monitoring of contractors:

- competency requirements (define and communicate)
- competency assessment
- review and feedback.

2.4 Non-compliance with HSSE critical requirements:

- notify deviations in line with management of change guidelines.

3 Be able to manage resources, plant process and equipment

3.1 Technical expertise:

- technical authorities (internal and external)
- company guidelines
- design engineering practice, international engineering standards, e.g. API, BS Standards.

3.2 Equipment inspection:

- major critical static equipment, e.g. boilers, pressure vessels, ball valves
- major rotating equipment
- follow company guidelines for inspection and audit management.

3.3 Maintaining equipment – equipment basic care (EBC):

- including temporary and standby equipment
- follow manufacturers' routine maintenance guidelines.

3.4 Risk assessment:

- equipment and system analysis to ensure fitness for purpose
- level of approval for deviation beyond design.

3.5–3.6 Facility change requests:

- monitoring and implementation of all changes (within safe design limits)
- hazardous operation (HAZOP) and hazard identification (HAZID) activities
- provision of operations inputs to new facilities
- follow-up documentation on changes to facilities.

3.7 Maintenance management:

- in line with company maintenance philosophy and strategy
- compliance with maintenance schedules and standards
- execution of corrective and preventive maintenance
- root cause failure analysis (RCFA)
- potential problem analysis and sharing of lessons learned.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to manage process operations of oil and gas facilities	1.1	Explain asset integrity, including wells and process safety requirements			
		1.2	Describe the assurance tasks that ensure all safety-critical elements of facility safety barriers are operated and maintained			
		1.3	Manage the Permit to Work (PTW) system effectively to ensure safe working practices			
		1.4	Demonstrate appropriate actions to ensure information technology (IT) security of process control domains			
		1.5	Demonstrate appropriate management of alarm systems			
		1.6	Conduct process operations in accordance with company procedures and guidelines			
		1.7	Conduct appropriate handover of facilities and equipment			
2	Be able to develop personnel working in HSSE roles	2.1	Describe the HSSE training requirements for own facility			
		2.2	Carry out appropriate competency certification checks for staff in all HSSE critical roles			
		2.3	Demonstrate appropriate monitoring of HSSE competences of contractors			
		2.4	Demonstrate appropriate actions for non-compliance with HSSE critical requirements			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to manage resources, plant process and equipment	3.1	Explain the expertise required for asset integrity and operational safety			
		3.2	Perform routine equipment inspections and audits in accordance with organisational requirements			
		3.3	Demonstrate appropriate management of equipment basic care in accordance with the manufacturer's design			
		3.4	Carry out appropriate risk assessment on functionally degraded equipment and/or systems			
		3.5	Implement approved facility changes, recording all changes			
		3.6	Provide suitable operational inputs to new projects to ensure safety and operability of new facilities			
		3.7	Manage first-line maintenance to ensure compliance with facility maintenance management			

Declarations

I confirm that the evidence for this unit is authentic and a true representation of my own work.

Learner name: _____

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Assessor name: _____

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(*if sampled*)

Unit 5: Manage Maintenance Activities

Level: 4

Unit type: Optional

Guided learning hours: 140

Unit summary

This unit gives learners the knowledge, understanding and skills to manage various maintenance activities and to ensure operational availability of oil and gas installations. These include the leading, planning, coordinating, executing and closing of all maintenance activities.

Proper planning and coordination of maintenance activities are critical to ensure the safe and efficient operations of oil and gas installations. Maintenance supervisors are responsible for ensuring that all planned and corrective maintenance activities, facilities and equipment, are being executed safely and in accordance with the company maintenance plan.

Learners will continuously review and identify improvements to increase the availability of all equipment and to improve overall continuity of production. Learners are expected to use the computer maintenance management system as an analysis and management tool. Learners are also expected to develop the people under their supervision in the areas of maintenance and troubleshooting skills

Unit assessment requirements

This unit must be assessed using evidence from real work activities. For further details, please refer to *Appendix A: Assessment rules*.

Simulation is **not** permitted for this unit.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Be able to manage planned maintenance (PM) activities

1.1 Plan and allocate resources for medium-term maintenance activities:

- to cover immediate to full roster cycles, e.g. 14-day lookahead for a two-week roster
- medium term: 3-6-month lookahead
- manpower, logistics and materials
- make use of maintenance opportunities, e.g. shutdown windows, operational constraints.

1.2 Plan and allocate resources for short-term maintenance activities:

- short term (maintenance tasks that take place at least once every three months)
- computer maintenance management system (CMMS) jobs
- job hazard analysis, including toolbox meetings
- distribution of tasks that incorporate staff competence development.

1.3 Procedures for isolating and de-isolating equipment:

- HSSE guidelines and standards, including job hazard analysis, toolbox meetings and Permit to Work system
- company procedures and standards
- communication with staff involved.

1.4 Verify and validate maintenance works:

- preventive tasks completed in accordance with company specifications and manufacturers' manuals
- potential problem analysis and communication.

1.5 Mange maintenance data reports:

- use CMMS
- monitor key maintenance reporting data for improvement
- follow maintenance strategy and key maintenance tracking indicators.

1.6 Monitor effectiveness of maintenance:

- key maintenance parameters, including
  - maintenance backlog
  - equipment availability
  - corrective maintenance versus preventive maintenance (CM/PM) ratio
  - equipment availability
  - average time between failures.

1.7 Improve maintenance effectiveness:

- maintenance analysis methodologies, including reliability-centred maintenance (failure mode and effect analysis, failure characteristics analysis)
- make recommendations to achieve optimum maintenance tasks and frequency.

2 Be able to manage corrective maintenance (CM) activities

2.1 Plan and allocate resources for corrective maintenance:

- evaluate criticality of faults and their impact on existing operations
- organise resources to rectify faults
- raise vendor work orders (if required) including inputs to work pack, job method statement, cost, and other relevant information.

2.2 Fault analysis:

- analysis of reasons for underperformance
- compliance with HSSE and operational guidelines and standards
- maintenance strategy and guidelines
- techniques for root cause fault analysis
- planning and coordination of third-party vendors for major maintenance
- potential problem analysis and sharing of lessons learned.

2.3–2.4 Initiate and coordinate back-up maintenance requests:

- liaise with maintenance specialist in office and vendors
- evaluate if additional request for maintenance specialists is required to resolve potential causes that exceed frontline maintenance capabilities
- raise work order to obtain additional specialist supports, if required
- liaise with company specialist support (and vendors, if required) to resolve issue.

2.5 Analyse equipment failure reports to identify problems:

- joint analysis of under-performance equipment with specialist support to identify root causes
- ensure compliance with HSSE and operational guidelines and standards
- in accordance with maintenance strategy and guidelines.

2.6 Management of change:

- for non-compliance maintenance activities or work scope beyond frontline capabilities
- organisational guidelines and standards for change control.

3 Be able to manage maintenance materials

3.1 Manage critical spares:

- follow material stocking guidelines for site stores
- ensure minimum stock levels.

3.2 Preservation considerations of stock materials:

- mechanical
- electronics/electrical
- chemicals/hazardous materials.

3.3 Analyse stocks in site stores:

- review minimum spares required on-site, including fuels, lubricants and chemicals
- identify opportunities for sharing of spares
- review purchasing process and logistics to acquire materials
- review special requirements for materials storage including legislative and company requirements.

4 Be able to develop maintenance capability of staff

4.1 Staff maintenance capability requirements:

- functional maintenance capability (numbers and skills)
- HSE capability.

4.2 Competence development plans for staff:

- staff
  - direct reports
  - non-maintenance staff
  - contractors
- development planning
  - short term to meet immediate job needs
  - long term to meet staff personal development and future business needs.

4.3 Monitor and review development plans:

- carry out formal discussions with individual staff about development.

4.4 Mentoring and coaching staff:

- appoint coaches and mentors to staff within teams
- encourage sharing of knowledge through internal coaching and mentoring amongst staff
- carry out informal mentoring and coaching, e.g. make use of coachable moments at worksites.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to manage planned maintenance (PM) activities	1.1	Plan and allocate resources for medium-term planned maintenance activities			
		1.2	Plan and allocate resources for short-term planned maintenance activities			
		1.3	Ensure that correct procedures are followed to isolate and de-isolate equipment for maintenance tasks			
		1.4	Demonstrate appropriate verification and validation of all maintenance works			
		1.5	Manage maintenance data records to ensure the timely and accurate reporting of all completed tasks			
		1.6	Monitor maintenance effectiveness, referring to key maintenance parameters			
		1.7	Recommend actions to improve maintenance effectiveness			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Be able to manage corrective maintenance (CM) activities	2.1	Plan and allocate resources for corrective maintenance activities			
		2.2	Lead root cause fault analysis to ensure timely execution of first-line corrective maintenance			
		2.3	Demonstrate appropriate actions to initiate a back-up (office support) maintenance request			
		2.4	Coordinate third-party maintenance activity to ensure full compliance with the work order			
		2.5	Analyse equipment failure reports and trends to identify problems			
		2.6	Apply management of change procedures for non-compliance maintenance work			
3	Be able to manage maintenance materials	3.1	Manage critical spares stock on-site			
		3.2	Apply appropriate preservation methods for all maintenance materials held in stock			
		3.3	Analyse site stores to track consumables			
4	Be able to develop the maintenance capability of staff	4.1	Identify maintenance capability requirements of staff on-site			
		4.2	Produce competence development plans for staff			
		4.3	Monitor and review development plans to ensure that all critical maintenance competences are being met			
		4.4	Provide mentoring and coaching to staff			

Declarations

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(*if sampled*)

Unit 6: Manage Turnaround and Project Implementation

Level: 4

Unit type: Optional

Guided learning hours: 160

Unit summary

This unit gives learners the knowledge, understanding and skills to lead turnaround and projects in accordance with company guidelines. These activities are critical for the effective operation of oil and gas installation during simultaneous operations.

Maintenance supervisors must ensure the effective execution of projects during simultaneous operations involving production, engineering and major maintenance. During this complex activity, the maintenance supervisor needs to prepare the initial work pack, including maintenance works that cannot be executed during normal operations. This requires planning and allocating resources, preparation of the facility and review of the works on completion of the project. These projects will involve their own staff and other project teams, including contractors who may not be familiar with the installation.

Unit assessment requirements

This unit must be assessed using evidence from real work activities. For further details, please refer to *Appendix A: Assessment rules*.

Simulation is **not** permitted for this unit.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Be able to plan the operation activities during turnaround, engineering and major maintenance projects

1.1 Project management and company guidelines:

- project management guidelines for engineering
- company guidelines on turnaround management of the facility.

1.2 Plan work pack:

- estimation of project materials, including contingencies and basis for estimation
- development of project schedule, e.g. Gantt chart with key milestones
- turnaround and project activities for ongoing maintenance activities.

1.3 Plan for implementation of turnaround and projects:

- schedule with milestones
- allocation of resources (manpower and materials)
- health, safety and environment (HSE) considerations to cover overlaps and gaps
- communication with turnaround project teams.

1.4 Shutdown and start-up readiness review:

- HSE considerations and safety-critical elements
- approved spading list
- readiness of emergency responses
- system and equipment isolation, hazardous materials handling
- shutdown and start-up procedures.

1.5 Close-up of issues arising from peer-assist reviews:

- allocate resources to close up outstanding issues
- validate closed up actions
- communicate to staff and project teams.

2 Be able to prepare the facility for pre-mobilisation of project execution

2.1 Pre-activity safety process:

- equipment, process and resources readiness
- emergency shutdown
- isolation and spading requirements
- functional tests of all equipment, e.g. valid equipment passport.

2.2–2.3 Prioritise and communicate joint turnaround and project activities:

- integrate activity planning to ensure no conflict in roles between parties
- hold regular reviews between turnaround and project teams
- communicate to staff and contractors.

3 Be able to coordinate site teams during projects

3.1 Isolation and de-isolation of equipment for project tasks:

- Permit to Work system
- isolation and de-isolation procedures
- spading list
- turnaround management guidelines, standards and procedures, e.g. hot bolting and lead grouting of the flanges joint integrity inspection during the turnaround
- compliance with SIMOPS requirements.

3.2 Job hazard analysis:

- toolbox meetings and talks prior to start of the work
- joint inspection
- site safety case.

3.3 Handover of equipment and facility:

- between teams, assets to project or maintenance teams
- maintenance or facility changes
- company guidelines for handover, including Permit to Work management.

3.4 Manage work teams:

- compliance with project work scope and company requirements
- in accordance with company HSSE guidelines and procedures
- ongoing maintenance and project activities.

4 Be able to manage the takeover of facilities on completion of turnaround and/or project

4.1 Review completed works:

- in accordance with agreed scope
- as part of a joint post-activity verification team
- sign off certificate of fitness on satisfactory verification.

4.2 Facilities start-up:

- prepare start-up of facilities in accordance with post-activity start-up procedures and guidelines
- gas test and leak check
- allocate resources for start-up
- support start-up of facilities.

4.3 Documentation of facility changes:

- liaise with appropriate persons to update as-built drawings
- keep marked-up drawings on-site.

4.4 Post-implementation review:

- share lessons learned
- make suggestions for improvement.

4.5 Demobilise materials and resources on completion of turnaround or other projects:

- demobilise project teams in a timely manner
- demobilise contractors in a timely manner
- relocate surplus materials.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to plan the operation activities during turnaround, engineering and major maintenance projects	1.1	Explain project management and company guidelines for project activities, including turnaround of the facility			
		1.2	Plan work pack to ensure turnaround and project activities incorporate all maintenance activities			
		1.3	Develop a suitable plan to ensure successful implementation of turnaround and projects for own team			
		1.4	Carry out a readiness review of start-up and shutdown			
		1.5	Follow up action plan to close all issues identified during peer assist review sessions			
2	Be able to prepare the facility for pre-mobilisation of project execution	2.1	Carry out appropriate pre-activity safety procedures			
		2.2	Prioritise ongoing maintenance activities to ensure safe and smooth execution of the project			
		2.3	Disseminate reprioritised activities and site-specific procedures to relevant parties			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to coordinate site teams during projects	3.1	Ensure equipment is correctly Isolated and de-isolated for project tasks			
		3.2	Conduct a site job hazard analysis to allow concurrent execution of turnaround and project works			
		3.3	Demonstrate correct handover procedures for equipment and facility			
		3.4	Explain how to manage work teams to ensure successful maintenance and engineering project activities			
4	Be able to manage the takeover of facilities on completion of turnaround and / or project	4.1	Review completed works to ensure they are in accordance with agreed standards and requirements			
		4.2	Demonstrate appropriate coordination and support during facility start-up			
		4.3	Ensure appropriate mark-up of drawings to document facility changes			
		4.4	Demonstrate effective contribution to a post-project implementation review			
		4.5	Carry out effective demobilisation of materials and resources on completion of turnaround or other projects			

Declarations

I confirm that the evidence for this unit is authentic and a true representation of my own work.

Learner name: _____

Learner signature: _____ Date: _____

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Assessor name: _____

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Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 7: Manage Process Plant and Well Integrity

Level: 4

Unit type: Optional

Guided learning hours: 120

Unit summary

This unit gives learners the knowledge, understanding and skills that a production supervisor needs to deal with process facility and well integrity in an oil and gas environment to ensure optimal production operations.

Production supervisors oversee the process to ensure well integrity in oil and gas production facilities. Oil and gas facilities, including oil and gas wells, are hazardous environments that need to function safely in accordance with their design limits. Policies and procedures in relation to safe operations need to be implemented rigorously.

Oil and gas production facilities use equipment that needs to be secured against accidental and malicious damage. Procedures must be enforced to ensure that only authorised personnel are allowed in the facilities or specific areas within the facilities.

The production supervisor needs to ensure that all facility processes and wells operate in accordance with the design limits and in compliance with company guidelines and procedures.

Unit assessment requirements

This unit must be assessed using evidence from real work activities. For further details, please refer to *Appendix A: Assessment rules*.

Simulation is **not** permitted for this unit.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Understand the function and operation of oil and gas processes

1.1 Surface process operations:

- single line piping and instrument drawings
- wellhead system
- oil and gas processing (oil and gas separation, dehydration and compression systems)
- utility systems.

1.2 Downhole completion:

- well completion drawing of own facility
- different types of well completion.

1.3 Hazardous area classification of facility:

- zone classification of facility
- risks involved.

1.4 Sub-surface reservoir:

- oil and gas reservoir layout and characteristics
- impact of characteristics on well behaviour and production (produced sand, water).

1.5 Operation of wells and wellbore:

- model inflow and outflow performance of well
- down hole completion status
- problematic wells
- wellhead maintenance programme.

1.6 Use of chemicals:

- purpose
- types of chemical
- consequences of chemical injection for production operations.

1.7 By-products from site:

- produced water
- sand
- H2S
- emulsion.

1.8 Piping layout:

- within own facility
- inter-fields of neighbouring facilities and terminals.

1.9 Pipeline maintenance:

- comply with all company inspection requirements
- apply correct inspection techniques
- ensure safe pigging operations.

2 Be able to operate and maintain wells

2.1 Wellbore risk management:

- obtain annulus pressure report
- conduct sub-surface safety valve cycling test.

2.2 Recommendations to optimise well operations:

- operational-suspension actions for problematic wells
- provide optimisation of sub-surface well stimulation of own facility.

2.3 Organise well tests:

- plan well tests in accordance with production programme
- allocate resources for well tests
- isolate and de-isolate wells and handover to well test team
- ensure strict compliance with company HSE and operational requirements
- take over wells after test.

2.4 Optimise sub-surface reservoir:

- use well stimulation and technologies, including chemical injection (chemical inhibitor, oxy scavenger)
- manage sand and contaminants (H2S, CO2)
- carry out water or gas or mixture injection.

2.5 Coordinate wire-line operations:

- plan wire-line operations in own facility
- allocate resources to carry out workover
- isolate and de-isolate well for wire-line operations
- hand over wells to wire-line crews
- ensure strict compliance with company HSE and operational requirements
- take over wells after wire-line operations.

2.6 Start up and shut down wells:

- to include allied facilities
- ensure all shutdown wells are depressurised, cooled, removed of hazardous substances, process fluids and purged
- ensure safe disposal of residue in accordance with company guidelines
- start up wells in accordance with company standard operating procedures (SOP).

3 Be able to maximise facility operations

3.1 Facility operations:

- facility processes and equipment
- associated utilities (water, compressed air and electricity).

3.2 Facility processes and equipment operational limits:

- company technical integrity and process safety standards
- within design limits/envelope
- deviation control if exceeded.

3.3 Certify facility:

- ensure strict compliance with company technical integrity standards
- comply with statutory requirements
- all safety-critical elements, including vessel, pipes, lifting equipment, safety relief valves
- maintenance of test certificates/documentation.

3.4 Validate and certify metering and provers:

- to cover all meters and provers used in own locations
- ensure maintenance is executed as per scheduled maintenance plan
- organise regular metering and prover tests and certification by third party
- maintain up-to-date test records of metering and provers.

3.5 Logistics for inter-station and inter-facility movement:

- scheduled and unscheduled visits
- company standards for sea/air transfers during bad weather
- transfer of dangerous goods, e.g. flammable fluids and chemicals.

3.6 Monitoring and tracking of operational consumable stock:

- hardware consumables, including pig discs, sampling bottles, spare parts and tools
- fuels, lubricants, diesel and drinking water
- chemicals, such as glycol and corrosion inhibitors
- storage of stock, including safe handling of chemicals and dangerous goods
- preservation of stock
- use of operational spares.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the function and operation of oil and gas processes	1.1	Explain the overall surface process operations from wellheads to export point			
		1.2	Explain downhole completion status and requirements			
		1.3	Explain hazardous area classification of facility and processes			
		1.4	Describe the basic sub-surface reservoir for a given field			
		1.5	Explain the operation of wells and wellbores associated with the facility			
		1.6	Explain the uses of chemicals in oil extraction			
		1.7	Identify the by-products of oil extraction			
		1.8	Explain piping layout of own facility in relation to the shore and its neighbouring installations			
		1.9	Explain the pipeline maintenance requirements, including pigging operations			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
2	Be able to operate and maintain wells	2.1	Carry out appropriate wellbore risk management procedures			
		2.2	Make suitable recommendations to optimise well operations			
		2.3	Organise well tests in accordance with plans and company procedures			
		2.4	Optimise the sub-surface reservoir through the use of appropriate well stimulation and technologies			
		2.5	Coordinate appropriate wire-line operations			
		2.6	Demonstrate the correct start-up and shutdown of wells			
3	Be able to maximise facility operations	3.1	Carry out checks to ensure all facility processes, equipment and associated utilities are operational			
		3.2	Carry out checks to ensure all facility processes and equipment operate within the design envelope and comply with statutory requirements			
		3.3	Carry out appropriate checks to certify the facility, ensuring compliance with asset integrity and legislative safety requirements			
		3.4	Carry out appropriate checks to validate and certify all metering and provers			
		3.5	Manage logistics effectively for inter-station and inter-facility movement			
		3.6	Demonstrate effective monitoring and tracking of operational consumable stocks			

Declarations

I confirm that the evidence for this unit is authentic and a true representation of my own work.

Learner name: _____

Learner signature: _____ Date: _____

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Assessor name: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 8: Manage Upstream Production and Operations Optimisation

Level: 4

Unit type: Optional

Guided learning hours: 140

Unit summary

Production supervisors manage the production of oil and gas. In this unit, learners will learn how to optimise and enhance the operations of oil and gas facilities. They will learn to adopt various production techniques to increase oil and gas recovery, and hence its production capacity. This unit also covers the protection of oil and gas reservoirs and production facilities, including wells, pipes and equipment.

Learners will develop the skills to be a production supervisor, to manage operations and production optimisation of oil and gas installations within design limits and in accordance with company guidelines. Learners will ensure that all facilities are managed professionally and safely, including transfer of facilities for maintenance and between shifts.

Unit assessment requirements

This unit must be assessed using evidence from real work activities. For further details, please refer to *Appendix A: Assessment rules*.

Simulation is **not** permitted for this unit.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Be able to organise wells, piping and disposal operations

1.1 Well test programmes:

- comply with approved production programmes
- in accordance with company guidelines for production operations
- in accordance with national and international standards for upstream activity.

1.2–1.4 Analyse and manage well operations:

- track well performance and produce well ranking and well analysis report
- identify problematic wells and produce a problematic well advice report for own location
- recommend and replace wells to ensure continued production rates.

1.5 Subsea surface safety valve functional test:

- perform function tests of SSSV and SSV and report
- in accordance with company procedures.

1.6 Organise pigging operations:

- monitor piping conditions
- select pigging tools
- supervise operations and report outcomes.

1.7 Disposal and vent discharges:

- follow national guidelines and standards, e.g. technically enhanced naturally-occurring radioactive material (TENORM)
- manage sand, oil and water composition discharge
- manage gas venting
- report deviation from standards and guidelines.

2 Be able to optimise oil and gas production

2.1 At least **four** of the following enhanced oil recovery techniques:

- artificial lift using water or gas
- water injection
- acidizing
- chemical injection
- chokes
- work-over of wells
- back pressure controls.

*(For any recovery techniques that are **not** evidenced, learners must explain how and when they are used.)*

2.2 Protect wells, pipes and process equipment:

- protection from scale formation, hydrate, wax and corrosion
- controlled use of appropriate chemicals and water injections
- control of sand from wells
- to ensure an optimal balance of production against corrosion of surface equipment.

2.3 Plan production operations:

- to ensure improved reservoir management
- avoid flooding of slug-catcher
- avoid tank tops and tank bottoms.

3 Be able to manage offshore production process operations

3.1 Compliance with all HSSE guidelines and procedures during production:

- Permit to Work
- job hazard analysis
- up-to-date location safety case
- safety-critical elements, including safety overrides, lock out, tag out.

3.2 Control of facility shutdown and start-up:

- unit shutdown and start-up
- total facility shutdown and start-up (black start-up)
- unplanned and planned
- compliance with company operational guidelines and procedures.

3.3 Handover of offshore production facilities:

- maintenance
- facility changes
- shift changes.

3.4 Optimisation of process controls:

- management of topside back pressure
- optimal controller tunings.

3.5 Manage process upsets and irregularities:

- uncontrolled release of gases
- discharge of oil and chemicals to the environment
- loss of process controls and unplanned shutdown.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to organise wells, piping and disposal operations	1.1	Coordinate well test programmes, ensuring full compliance with standards and guidelines			
		1.2	Analyse and manage the performance of wells to resolve problems			
		1.3	Organise well tests in accordance with company guidelines			
		1.4	Propose actions to address problematic wells			
		1.5	Demonstrate correct testing procedures for the subsea surface valve			
		1.6	Organise pigging operations in accordance with company guidelines			
		1.7	Manage disposal and vent discharges in accordance with national standards and guidelines			
2	Be able to optimise oil and gas production	2.1	Increase the production capability of wells through enhanced oil recovery techniques			
		2.2	Use appropriate techniques to protect wells, pipes and process equipment			
		2.3	Plan effective production operations through the use of appropriate well bean sizes			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to manage offshore production process operations	3.1	Carry out effective offshore production in accordance with HSSE guidelines and procedures			
		3.2	Control facility shutdown and start-up processes in accordance with company guidelines and procedures			
		3.3	Demonstrate appropriate handover processes for offshore production facilities			
		3.4	Optimise process controls to increase production capacity			
		3.5	Manage process upsets and irregularities appropriately to ensure safe operations			

Declarations

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Learner name: _____

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Assessor name: _____

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Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 9: Manage Marine Operations

Level: 4

Unit type: Optional

Guided learning hours: 130

Unit summary

Marine supervisors manage floating storage and offloading (FSO) and floating production and offloading (FPSO) facilities to optimise oil and gas production operations. Learners will follow national and international marine security standards, and manage FSO/FPSO stability operations.

Learners will develop the skills as a marine supervisor on board the FSO/FPSO to manage and monitor all marine operations within design limits and in accordance with company, national and international guidelines. Learners will ensure that all FSO/FPSO operations are managed professionally and safely, including interface with the production and maintenance crews of oil and gas production facilities.

Unit assessment requirements

This unit must be assessed using evidence from real work activities. For further details, please refer to *Appendix A: Assessment rules*.

Simulation is **not** permitted for this unit.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Be able to carry out FSO or FPSO marine operations

1.1 Types of marine classification:

- allocation to class
- maintenance of class
- suspension of class as a result of non-compliance
- withdrawal of class as a result of major issues.

1.2 Different types of marine requirement:

- flag state
- local port authority requirements.

1.3 Safety of life at sea (SOLAS) emergency drills:

- emergency drills to include the following scenarios:
  - fire and explosion
  - man overboard, including search and rescue
  - ship integrity issues arising from, e.g., bunkering or product offloading operations
  - abandon ship
  - ship collisions
  - power failures
- follow the required reporting relationship with the installation manager during emergencies.

1.4 Oil spill drills:

- requirements of International Convention for the Prevention of Pollution from Ships (MARPOL)
- location of MARPOL locker.

1.5 Ship oil pollution emergency plan (SOPEP):

- requirements during oil spills
- explain the SOPEP plan
- describe the location of SOPEP boxes
- SOPEP compliance surveys.

2 Be able to monitor and apply trim and stability of FSO or FPSO facilities

2.1 Trim and stability computer program:

- effect of trim and stability on the stress of the vessel
- analysis of vessel stress and its effect on quantity of cargo.

2.2 Bending moments:

- effects of cargo movement on vessel stress.

2.3 Control facilities during cargo movement:

- to ensure proper cargo offloading
- control ballast of FSO or FPSO.

2.4 Manage forces during operations:

- shear forces.

2.5 Control of storage ullages during operations:

- loading
- offloading.

2.6 Free surface effects:

- on vessel stability
- distribution of load (partially loaded cargo tanks).

2.7 Loading plan:

- forward plan to avoid stress on vessel.

3 Be able to apply security standards to FSO or FPSO facilities

3.1 Impact of the international ship and port facility security (ISPS) codes in oil and gas operations:

- which operations on FSO or FPSO are covered by ISPS codes
- the requirements of these codes.

3.2 Plan and implement the development and training of staff:

- for ship security officers (SSO) and marine facility security officers (MFSO
- maintain up-to-date training records for SSO and MFSO
- ensure planned training for SSO and MFSO relates to competency levels of security.

3.3 Designated person ashore (DPA):

- link between vessel and management
- safety and pollution prevention
- relationship with shore-based supports.

3.4 On-board security procedures:

- control movement of personnel on board, including inter-facility movement and reporting of any trespassing of unauthorised personnel
- comply with company and legislative requirements
- check and monitor security devices.

4 Be able to inspect cargo oil tanks (COT)

4.1 Purpose of COT inspection:

- compliance with legislative requirements
- company requirements for technical integrity of COT.

4.2 Oversee COT entry and inspection:

- follow company and legislative requirements for vessel entry
- take precautions and carry out pre-entry preparations.

4.3 Return COT to service:

- verify all COT inspections meet company and legislative requirements
- take over COT as per company procedures
- complete documentation.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to carry out FSO or FPSO marine operations	1.1	Describe the different types of marine classification used in the industry			
		1.2	Identify requirements relating to marine operations that are imposed by the flag state and local port authority			
		1.3	Conduct effective drills for saving of life at sea (SOLAS)			
		1.4	Conduct effective oil spill drills			
		1.5	Explain the requirements of ship oil pollution emergency plans (SOPEP)			
2	Be able to monitor and apply trim and stability of FSO or FPSO facilities	2.1	Control FSO or FPSO trim and stability using an appropriate computer program			
		2.2	Explain bending moments of FSO or FPSO facilities during cargo movements			
		2.3	Demonstrate effective control of FSO or FPSO facilities during cargo movement			
		2.4	Manage forces during FSO or FPSO operations			
		2.5	Demonstrate effective control of storage ullages during operations			
		2.6	Explain the free surface effects of liquids in a cargo tank			
		2.7	Prepare a loading plan in accordance with company standards and procedures			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Be able to apply security standards to FSO or FPSO facilities	3.1	Explain the impact of the international ship and port facility security (ISPS) codes in oil and gas operations			
		3.2	Plan and implement development and training to ensure staff are fully aware of their responsibilities and requirements			
		3.3	Describe the roles and responsibilities of the designated person ashore (DPA)			
		3.4	Coordinate security procedures on-board, complying with company and legislative requirements			
4	Be able to inspect cargo oil tanks (COT)	4.1	Explain the purpose of COT inspections			
		4.2	Oversee COT entry and inspection to ensure safe operations in accordance with company and legislative requirements			
		4.3	Organise the return of the COT back to service in accordance with company and legislative requirements			

Declarations

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Assessor name: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

Unit 10: Manage Marine Export Operations

Level: 4

Unit type: Optional

Guided learning hours: 140

Unit summary

Export supervisors manage the oil and gas export operations on board FSO/FPSO facilities. Learners will apply and enforce various national and international standards, ensuring safe and efficient loading operations.

Learners will develop the skills as an export supervisor on board FSO/FPSO facilities to manage and monitor all oil and gas offloading operations. These operations will be conducted within the appropriate design parameters (accuracies and tolerances) and in accordance with company, national and international guidelines. Learners will ensure that all FSO/FPSO export operations are managed professionally and safely, including liaison with the receiving tanker crews.

Unit assessment requirements

This unit must be assessed using evidence from real work activities. For further details, please refer to *Appendix A: Assessment rules*.

Simulation is **not** permitted for this unit.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Be able to manage batching operations

1.1 Batching operations of FSO/FPSO facilities:

- ship stop
- FSO or FPSO stop
- batch operations and their significance.

1.2 Manage export batch operations:

- batching procedures (stop, start/restart)
- HSE considerations and compliance
- endorsed offtake record.

1.4 Manage activities during batching operations:

- sampling for product quality
- manage ullages of tanks in the FSO or FPSO facility
- take necessary precautions to avoid any safety issues.

2 Be able to manage meter proving and documentation of FSO or FPSO facilities

2.1 Principles of meter proving and their significance:

- principles of operations for various meter provers used for custody transfer in own facility
- legislative requirements including national oil company, partner and customer requirements.

2.2 Monitor the calibration of meters on board FSO/FPSO facility:

- plan for calibration of meters with vendors and authorities
- isolate and de-isolate facility for calibration
- ensure strict compliance with company HSE and operating requirements
- take over meters after calibration
- compile documents and records.

2.3 Accurate recording of meter calibration:

- record readings
- sign-off by relevant parties/witness.

2.4 COT sampling:

- perform tests on samples: pre- and post-tanker loadings
- calculate cargo quantity based on sample test results.

3 Be able to manage mooring operations of FSO or FPSO facilities and the tanker during loading and unloading

3.1 Mooring requirements during loading and unloading operations:

- mooring limits, e.g. strain on mooring hawser.

3.2 Coordinate mooring operations:

- allocate resources for mooring operations
- communicate with tanker for details to ensure safe mooring operations
- prepare own facility for loading operations.

3.3 Manage ongoing conditions during loading operations:

- prepare loading plan based on cargo oil tank (COT) product information and customer's requirement
- ensure execution of loading operations based on agreed plan
- prompt actions if conditions deviate from acceptable safety limits.

4 Be able to deploy the export hose in preparation for loading

4.1 Preparations to deploy export hose:

- secure all clearance to deploy the export hose
- ensure all safety precautions are taken.

4.2–4.4 Deploy and secure export hose:

- close liaison with the receiving tanker
- perform pressure test prior to offloading
- consideration of all HSE risks.

4.5 Oil Company International Marine Forum (OCIMF):

- content and operation of tests for export hoses
- frequency of tests.

5 Be able to manage all documentation of export activities

5.1–5.2 Documents associated with export operations:

- bill of lading
- notice of readiness
- protest letter.

5.3 Early departure:

- grant (when appropriate)
- proper authorisation
- full HSE compliance.

6 Understand the inert gas (IG) system

6.1–6.2 Inert gas (IG) system:

- significance of inert gas for FSO and FPSO operations
- key components of IG system and its operating parameters.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to manage batching operations	1.1	Explain batching operations for offloading of FSO or FPSO facilities			
		1.2	Manage export batch operations, including coordination to restart a batch			
		1.3	Develop a suitable discharge plan for batching operations			
		1.4	Manage ongoing activities effectively during batching operations			
2	Be able to manage meter proving and documentation of FSO or FPSO facilities	2.1	Explain the principles of meter proving and their significance			
		2.2	Monitor the calibration of meters on board FSO or FPSO facilities in accordance with company and legislative requirements			
		2.3	Carry out accurate recording for meter calibration and proving runs			
		2.4	Implement pre- and post-export COT sampling			
3	Be able to manage mooring operations of FSO or FPSO and the tanker during loading and unloading	3.1	Explain the mooring requirements during loading and unloading operations			
		3.2	Coordinate mooring operations to ensure safe and efficient operations in preparation for loading operations			
		3.3	Manage ongoing conditions effectively during loading operations			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
4	Be able to deploy the export hose in preparation for loading	4.1	Carry out correct preparations to deploy the export hose			
		4.2	Deploy the export hose in accordance with company procedures and standards			
		4.3	Secure the export hose in accordance with company guidelines			
		4.4	Carry out correct pressure testing of the export hose and connections prior to offloading			
		4.5	Explain the requirements for Oil Company International Marine Forum (OCIMF) tests for export hoses			
5	Be able to manage all documentation of export activities	5.1	Explain the types and purpose of various documents associated with export operations			
		5.2	Prepare key documents for export activities			
		5.3	Demonstrate the correct procedures for early departure			
6	Understand the inert gas (IG) system	6.1	Explain the significance of the IG system			
		6.2	Describe the IG system, including operational parameters			

Declarations

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Assessor name: _____

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(*if sampled*)

Unit 11: Manage Onshore Terminal Plant, Storage and Export Facilities

Level: 4

Unit type: Optional

Guided learning hours: 110

Unit summary

Production supervisors operate oil and gas terminal facilities to enable the processing of oil and gas from its upstream operations and the storage of liquids and associated products. Production supervisors also ensure the exporting of these products to customers. All these roles need to be executed safely and effectively in accordance with company policies and procedures, and also ensure compliance with national and international legislative requirements.

Production supervisors need to ensure that all terminal facilities are operated in accordance with design parameters and in compliance with company guidelines and procedures.

Unit assessment requirements

This unit must be assessed using evidence from real work activities. For further details, please refer to *Appendix A: Assessment rules*.

Simulation is **not** permitted for this unit.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Understand the function and operation of an oil and gas terminal

1.1 Overall plant process of an oil and gas terminal:

- the plant process flow, using piping and instrument drawings
- process controls and safeguarding systems, including layout of safety critical equipment
- oil and gas stabilisation and/or separation
- emulsion water treatment
- tank farm (storage facilities)
- export facilities, including single buoy mooring
- metering
- loading pump facilities.

1.2 Hazardous area classification:

- hazardous areas (terminal facility, tank farm and export facilities)
- considerations and precautions during operations.

1.3 Safe use of chemicals in terminal operations:

- safe handling and storage of chemicals used for de-emulsification, anti-corrosion and inhibitors.

1.4 Protection for terminal vessels, tanks and structures:

- cathodic protection
- earthing
- lightning arrestors
- pressure safety valve (PSV) and relief valve (RV)
- active fire protection.

2 Be able to organise oil and gas terminal facilities and utilities

2.1 Performance tests for key terminal equipment and systems:

- fire water pump and auxiliaries
- shutdown valve (SDV)
- emulsion water treatment
- meter prover
- export pumps
- standby generators
- compressed air system.

2.2 Produced water facilities:

- statutory requirements, such as Department of Environment
- company guidelines.

2.3 Scheduled waste and disposal programme:

- store and dispose waste in accordance with company guidelines
- proactively plan to dispose of waste to avoid excessive storage
- comply with statutory requirements.

2.4 Manage stock to ensure minimum levels of operational spares:

- hardware consumables, e.g. pig disc and sampling bottles
- fuels and lubricants
- drinking water
- chemicals, e.g. glycol and corrosion inhibitors.

3 Be able to organise certification of all terminal equipment

3.1 Check facility equipment:

- inspection and certification of vessels and pipes
- certification of rigging and lifting equipment
- certification of safety relief valves
- testing and inspection of all safety-critical equipment.

3.2 Certification of all metering and prover systems:

- in accordance with company guidelines and national standards
- up-to-date documentation for all meter and prover validations.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the function and operation of an oil and gas terminal	1.1	Explain the operations and plant processes of an oil and gas terminal			
		1.2	Explain hazardous areas classification of an oil and gas terminal			
		1.3	Explain the safe use of chemicals in terminal operations			
		1.4	Explain the protection methods for terminal vessels, tanks and structures			
2	Be able to organise oil and gas terminal facilities and utilities	2.1	Coordinate appropriate performance tests for key terminal equipment and systems			
		2.2	Manage produced water facilities to ensure effluent discharge quality meets regulatory and company guidelines			
		2.3	Plan a scheduled waste (SW) disposal programme in accordance with company guidelines and statutory requirements			
		2.4	Manage stock and operational spares on-site			
3	Be able to organise certification of all terminal equipment	3.1	Check all facility equipment operates within the design envelope and complies with company and statutory requirements			
		3.2	Coordinate the certification of all metering and prover systems			

Declarations

I confirm that the evidence for this unit is authentic and a true representation of my own work.

Learner name: _____

Learner signature: _____ Date: _____

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Assessor name: _____

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(*if sampled*)

Unit 12: Manage Onshore Terminal Process Optimisation and Export Operations

Level: 4

Unit type: Optional

Guided learning hours: 140

Unit summary

Production supervisors manage terminal process optimisation and export operations. Learners will learn various techniques used to optimise the operations of oil and gas terminal facilities, while protecting the interest of the company through correct management of its export activities.

Learners will develop skills to manage terminal process optimisation and export operations in accordance with company guidelines. Learners will also ensure that all facilities are managed professionally and safely, including transference for maintenance and between shifts.

Unit assessment requirements

This unit must be assessed using evidence from real work activities. For further details, please refer to *Appendix A: Assessment rules*.

Simulation is **not** permitted for this unit.

Range statements

The range statements must be read in conjunction with the assessment criteria to which they relate. All items in the range must be covered, except for items that follow an 'e.g.'

1 Be able to optimise terminal oil and gas processing capacity

1.1 Optimise oil and gas processing capability:

- gas stabilisation
- gas recovery system
- basic sediment and water (BS&W) quality
- American Petroleum Institute (API) gravity for oil.

1.2 Effluent discharge quality (EDQ):

- appropriate chemical injection (either at upstream or terminal)
- emulsion waste treatment processing.

1.3 Optimise process controls:

- proper process of control tuning
- management of upstream back pressure
- emulsion water treatment plant (EWTP)
- venting limit
- flaring limits.

1.4 Process upsets and irregularities:

- avoid uncontrolled release of gases, flare smoke or oils into the environment
- bad actor management (BAM)
- root cause failure analysis (RCFA).

2 Be able to organise storage and export facilities

2.1 Manage crude oil inventory:

- condensate if appropriate
- ensure stock level adequacy to avoid demurrage of tanker
- avoid 'tank top' situation.

2.2 Manage crude oil export quality:

- understand customer requirements
- take regular samplings to determine specifications meet requirements
- take appropriate actions to correct deviations.

2.3 Analysis of crude oil and tank gauging data:

- tank gauging data
- export crude computation
- sampling data.

2.4 Manage terminal oil stock inventory:

- track oil inventory of the terminal
- plan oil movement of storage tanks
- complete a tanker slating programme report.

3 Be able to manage production process operations safely

3.1 Compliance with HSSE guidelines and procedures:

- up-to-date HSE case
- Permit to Work management, including job hazard analysis and toolbox meetings
- safety critical elements, including management of safety overrides and lock out, tag out
- alarm management in accordance with company guidelines.

3.2 Control shutdown and start-up processes:

- planned
- unplanned
- in accordance with company procedures and guidelines.

3.3 Handover of process and facility:

- during shifts
- for maintenance
- turnaround and projects.

Learning outcomes and assessment criteria

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Be able to optimise terminal oil and gas processing capacity	1.1	Demonstrate effective optimisation of terminal oil and gas processing capacity			
		1.2	Manage the oil terminal process to achieve satisfactory effluent discharge quality (EDQ)			
		1.3	Optimise process controls using various techniques, meeting regulatory and statutory requirements			
		1.4	Manage process upsets and irregularities appropriately to ensure safe operations			
2	Be able to organise storage and export facilities	2.1	Manage crude oil inventory effectively			
		2.2	Manage crude oil export quality to meet customer requirements			
		2.3	Analyse crude oil and tank storage data to safeguard company interests			
		2.4	Analyse terminal oil stock inventory data for accurate planning and reporting			
3	Be able to manage production process operations safely	3.1	Carry out production process operations, ensuring compliance with all HSSE guidelines and procedures			
		3.2	Control onshore shutdown and start-up processes in accordance with company guidelines and procedures			
		3.3	Manage the effective handover of process and facility			

Declarations

I confirm that the evidence for this unit is authentic and a true representation of my own work.

Learner name: _____

Learner signature: _____ Date: _____

I confirm that the evidence for this unit is authentically that of the learner whose name and signature appears above. The assessment has been carried out in accordance with any specified assessment requirements for the unit and qualification.

Assessor name: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)

5 Assessment

To achieve a pass for qualifications in this suite, the learner must achieve all the units required in the qualification structure.

Internal assessment

The units are assessed through an internally- and externally quality-assured Portfolio of Evidence, consisting of evidence gathered during the course.

Each unit has learning outcomes and assessment criteria. To pass each unit, learners must:

- achieve **all** the learning outcomes
- satisfy **all** the assessment criteria by providing sufficient and valid evidence for each criterion, including meeting any range statements
- prove that the evidence is their own.

The learner must have an assessment record that identifies the assessment criteria that have been met. The assessment record should be cross-referenced to the evidence provided. The assessment record should include details of the type of evidence and the date of assessment. Suitable centre documentation should be used to form an assessment record.

Valid	is relevant to the standards for which competence is claimed
Authentic	is produced by the learner
Current	is sufficiently recent to create confidence that the same skill, understanding or knowledge persists at the time of the claim
Reliable	indicates that the learner can consistently perform at this level
Sufficient	fully meets the requirements of the assessment criteria, including any range statements

Learners can provide evidence of occupational competence from:

- **current practice** – where evidence is generated from a current job role
- a **programme of development** – where evidence comes from assessment opportunities built into a learning programme. The evidence provided must meet the assessment requirements for the qualification and reflect current practice in the sector
- the **Recognition of Prior Learning (RPL)** – where a learner can demonstrate that they can meet a unit's assessment criteria through knowledge, understanding or skills they already possess. The assessor must be confident that the same level of skill, understanding and knowledge exists at the time of the claim as existed at the time the evidence was produced. RPL is acceptable for accrediting part of a unit, one or more units, or a whole qualification

  Further guidance is available in our *Recognition of Prior Learning Policy and Process* document, available on our website.
- a combination of the above.

Assessment rules

The assessment rules for the qualifications in this sector are included in *Appendix A*. They set out the principles for assessing the units to ensure that the qualifications remain valid and reliable.

Types of evidence

To achieve a unit, the learner must gather evidence that shows that they have met the required standard specified in the assessment criteria, Pearson's quality assurance arrangements (please see *Section 7 Quality assurance*) and the requirements of the assessment rules given in *Appendix A*.

In line with the assessment rules, evidence for internally-assessed units can take a variety of forms as indicated below:

- direct observation of the learner's performance by their assessor (O)
- outcomes from oral or written questioning (Q&A)
- products of the learner's work (P)
- personal statements and/or reflective accounts (RA)
- outcomes from simulation (S)
- professional discussion (PD)
- witness testimony (WT)
- expert witness testimony (EWT)
- evidence of Recognition of Prior Learning (RPL).

Learners can use the abbreviations in their portfolios for cross-referencing purposes.

Learners can also use one piece of evidence to prove their knowledge, skills and understanding across different assessment criteria and/or across different units. One piece of evidence may be used to demonstrate achievement of several assessment criteria in the same or different units.

Any specific evidence requirements for a unit are given in the *Unit assessment requirements* section of the unit.

Further guidance on centre quality assurance and internal verification processes can be found in *Section 7 Quality Assurance*.

Assessment of knowledge and understanding

Knowledge and understanding are key components of competent performance, but it is unlikely that performance evidence alone will provide sufficient evidence for knowledge-based learning outcomes and assessment criteria. Where the learner's knowledge and understanding is not apparent from performance evidence, it must be assessed through other valid methods, listed above.

6 Administrative arrangements

Introduction

This section focuses on the administrative requirements for delivering a BTEC qualification. It is of particular value to Quality Nominees, Lead IVs and Programme Leaders.

Learner registration and entry

Shortly after learners start the programme of learning, you need to make sure that they are registered for the qualification. You need to refer to the *International Information Manual* for information on making registrations for the qualification.

Learners can be formally assessed only for a qualification on which they are registered. If learners' intended qualifications change, for example if a learner decides to choose a different pathway specialism, then the centre must transfer the learner appropriately.

Access to assessment

Assessments need to be administered carefully to ensure that all learners are treated fairly, and that results and certification are issued on time to allow learners to progress to their chosen progression opportunities.

Pearson's *Equality Policy* requires that all learners should have equal opportunity to access our qualifications and assessments, and that our qualifications are awarded in a way that is fair to every learner. We are committed to making sure that:

- learners with a protected characteristic are not, when they are undertaking one of our qualifications, disadvantaged in comparison to learners who do not share that characteristic
- all learners achieve the recognition they deserve for undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers.

Further information on access arrangements can be found in the Joint Council for Qualifications (JCQ) document *Access Arrangements, Reasonable Adjustments and Special Consideration for General and Vocational Qualifications*.

Administrative arrangements for assessment

Records

You are required to retain records of assessment for each learner. Records should include decisions reached and any adjustments or appeals. Further information can be found in the *International Information Manual*. We may ask to audit your records, so they must be retained as specified.

Reasonable adjustments to assessment

To ensure that learners have fair access to demonstrate the requirements of the assessments, a reasonable adjustment is one that is made before a learner is assessed. You are able to make adjustments to internal assessments to take account of the needs of individual learners. In most cases, this can be achieved through allowing the use of assistive technology or adjusting the format of evidence. Any reasonable adjustment must reflect the normal learning or working practice of a learner in a centre or working within the occupational area. We can advise you if you are uncertain as to whether an adjustment is fair and reasonable. You need to plan for time to make adjustments if necessary.

Further details on how to make adjustments for learners with protected characteristics are given on our website, in the document *Supplementary guidance for reasonable adjustment and special consideration in vocational internally-assessed units*.

Appeals against assessment

Your centre must have a policy for dealing with appeals from learners. These appeals may relate to assessment decisions being incorrect or assessment not being conducted fairly. The first step in such a policy could be a consideration of the evidence by a Lead IV or other member of the programme team. The assessment plan should allow time for potential appeals after assessment decisions have been given to learners. If there is an appeal by a learner, you must document the appeal and its resolution. Learners have a final right of appeal to Pearson but only if the procedures that you have put in place have not been followed. Further details are given in the document *Enquiries and appeals about Pearson vocational qualifications and end point assessment policy*.

Dealing with malpractice in assessment

Malpractice means acts that undermine the integrity and validity of assessment, the certification of qualifications and/or may damage the authority of those responsible for delivering the assessment and certification.

Pearson does not tolerate actual or attempted actions of malpractice by learners, centre staff or centres in connection with Pearson qualifications. Pearson may impose penalties and/or sanctions on learners, centre staff or centres where malpractice or attempted malpractice has been proven.

Malpractice may occur or be suspected in relation to any unit or type of assessment within a qualification. For further details on malpractice and advice on preventing malpractice by learners, please see Pearson's *Centre Guidance: Dealing with Malpractice*, available on our website.

The procedures we ask you to adopt vary between units that are internally assessed and those that are externally assessed.

Centres are required to take steps to prevent malpractice and to investigate instances of suspected malpractice. Learners must be given information that explains what malpractice is for internal assessment and how suspected incidents will be dealt with by the centre. The *Centre Guidance: Dealing with Malpractice* document gives full information on the actions we expect you to take.

Pearson may conduct investigations if we believe a centre is failing to conduct internal assessment according to our policies. The above document gives further information and examples, and details the penalties and sanctions that may be imposed.

In the interests of learners and centre staff, centres need to respond effectively and openly to all requests relating to an investigation into an incident of suspected malpractice.

Learner malpractice

The head of centre is required to report incidents of suspected learner malpractice that occur during Pearson qualifications. We ask centres to complete JCQ Form M1 (www.jcq.org.uk/malpractice) and email it with any accompanying documents (signed statements from the learner, invigilator, copies of evidence, etc.) to the Investigations Processing team at candidatemalpractice@pearson.com. The responsibility for determining appropriate sanctions or penalties to be imposed on learners lies with Pearson.

Learners must be informed at the earliest opportunity of the specific allegation and the centre's malpractice policy, including the right of appeal. Learners found guilty of malpractice may be disqualified from the qualification for which they have been entered with Pearson.

Failure to report malpractice constitutes staff or centre malpractice.

Teacher/centre malpractice

The head of centre is required to inform Pearson's Investigations team of any incident of suspected malpractice (which includes maladministration) by centre staff, before any investigation is undertaken. The head of centre is requested to inform the Investigations team by submitting a JCQ M2 Form (downloadable from www.jcq.org.uk/malpractice) with supporting documentation to pqsmalpractice@pearson.com. Where Pearson receives

allegations of malpractice from other sources (for example Pearson staff, anonymous informants), the Investigations team will conduct the investigation directly or may ask the head of centre to assist.

Pearson reserves the right in cases of suspected malpractice to withhold the issuing of results/certificates while an investigation is in progress. Depending on the outcome of the investigation, results and/or certificates may not be released or they may be withheld.

We reserve the right to withhold certification when undertaking investigations, audits and quality assurance processes. You will be notified within a reasonable period of time if this occurs.

Sanctions and appeals

Where malpractice is proven, we may impose sanctions or penalties, such as:

- mark reduction for affected external assessments
- disqualification from the qualification
- debarment from registration for Pearson qualifications for a period of time.

If we are concerned about your centre's quality procedures we may impose sanctions such as:

- working with centres to create an improvement action plan
- requiring staff members to receive further training
- placing temporary blocks on the centre's certificates
- placing temporary blocks on registration of learners
- debarring staff members or the centre from delivering Pearson qualifications
- suspending or withdrawing centre approval status.

The centre will be notified if any of these apply.

Pearson has established procedures for centres that are considering appeals against penalties and sanctions arising from malpractice. Appeals against a decision made by Pearson will normally be accepted only from the head of centre (on behalf of learners and/or members or staff) and from individual members (in respect of a decision taken against them personally). Further information on appeals can be found in the JCQ Appeals booklet (https://www.jcq.org.uk/exams-office/appeals).

Certification and results

Once a learner has completed all the required components for a qualification, the centre can claim certification for the learner, provided that quality assurance has been successfully completed. For the relevant procedures, please refer to our *International Information Manual*. You can use the information provided on qualification grading to check overall qualification grades.

Additional documents to support centre administration

As an approved centre, you must ensure that all staff delivering, assessing and administering the qualifications have access to the following documentation. These documents are reviewed annually and are reissued if updates are required.

- *Pearson International Quality Assurance Handbook*: this sets out how we will carry out quality assurance of standards and how you need to work with us to achieve successful outcomes.
- *International Information Manual*: this gives procedures for registering learners for qualifications, transferring registrations and claiming certificates.
- *Regulatory policies*: our regulatory policies are integral to our approach and explain how we meet internal and regulatory requirements. We review the regulated policies annually to ensure that they remain fit for purpose. Policies related to this qualification include:
    - adjustments for candidates with disabilities and learning difficulties, access arrangements and reasonable adjustments for general and vocational qualifications
    - age of learners
    - centre guidance for dealing with malpractice
    - recognition of prior learning and process.

This list is not exhaustive and a full list of our regulatory policies can be found on our website.

7 Quality assurance

Centre and qualification approval

As part of the approval process, your centre must make sure that the resource requirements listed below are in place before offering the qualification.

- Centres must have access to appropriate physical resources (for example equipment, IT, learning materials, teaching rooms) to support the delivery and assessment of the qualification. This may include a workplace in line with industry standards and/or a Realistic Working Environment (RWE) where this is permitted in the units. This must comply with the requirements specified in the assessment rules in *Appendix A*.
- Staff involved in the assessment process must have relevant expertise and/or occupational experience specified in the assessment rules.
- There must be systems in place to ensure continuing professional development for staff delivering the qualification.
- Centres must have in place appropriate health and safety policies relating to the use of equipment by learners.
- Centres must deliver the qualification in accordance with current equality and diversity legislation and/or regulations.

Continuing quality assurance and standards verification

On an annual basis, we produce the *Pearson International Quality Assurance Handbook*. It contains detailed guidance on the quality processes required to underpin robust assessment and internal verification.

The key principles of quality assurance are that:

- a centre delivering BTEC programmes must be an approved centre, and must have approval for the programmes or groups of programmes that it is delivering
- the centre agrees, as part of gaining approval, to abide by specific terms and conditions around the effective delivery and quality assurance of assessment; the centre must abide by these conditions throughout the period of delivery
- an approved centre must follow agreed protocols for standardisation of assessors and verifiers, for the planning, monitoring and recording of assessment processes, and for dealing with special circumstances, appeals and malpractice.

The approach of quality-assured assessment is through a partnership between an approved centre and Pearson. We will make sure that each centre follows best practice and employs appropriate technology to support quality-assurance processes, where practicable. We work to support centres and seek to make sure that our quality-assurance processes do not place undue bureaucratic processes on centres. We monitor and support centres in the effective operation of assessment and quality assurance.

The methods we use to do this include:

- making sure that all centres complete appropriate declarations at the time of approval
- undertaking approval visits to centres
- making sure that centres have effective teams of assessors and verifiers who are trained to undertake assessment
- assessment sampling and verification, through requested samples of assessments, completed assessed learner work and associated documentation
- an overarching review and assessment of a centre's strategy for delivering and quality assuring its BTEC programmes, for example making sure that synoptic units are placed appropriately in the order of delivery of the programme.

Centres that do not fully address and maintain rigorous approaches to delivering, assessing and quality assurance cannot seek certification for individual programmes or for all BTEC programmes. An approved centre must make certification claims only when authorised by us and strictly in accordance with requirements for reporting.

Centres that do not comply with remedial action plans may have their approval to deliver qualifications removed.

Appendix A: Assessment rules

The purpose of these assessment rules is to ensure that this suite of qualifications is assessed in a valid and reliable manner.

It covers:

1. Approaches to assessment
2. Simulation
3. Requirements for assessors and internal verifiers
4. Requirements for expert witnesses.

1 Approaches to assessment

1.1 Within the learning outcomes for the units, there may be a mix of assessment criteria that relate to **performance** and those that relate to **knowledge and understanding**. Assessment criteria relating to knowledge/understanding typically use words such as *identify, describe* and *explain*.

1.2 Most of the evidence for assessment criteria that relate to *performance* must derive from real work activities carried out in the workplace. In some circumstances, evidence may come from simulation in a realistic working environment (see section 2 below). For these assessment criteria, the preferred types of evidence are:

- observation by the assessor of learner performance in the workplace
- expert witness testimony relating to learner performance in the workplace. This is particularly useful for evidence that occurs when the assessor is not present. To be considered an expert witness, they must meet the definition outlined in section 4.
- products of work done in the workplace, e.g. written records.

1.3 Assessment criteria that relate to knowledge and understanding can be assessed inside or outside the workplace, but the learner must relate their knowledge and understanding to the work environment. For these assessment criteria, evidence is likely to come mainly from:

- learner reflective accounts
- oral or written questioning, with questions and answers recorded by the assessor or candidate
- professional discussion.

2 Simulation

2.1 Where simulation is permitted, this is identified within the relevant unit.

2.2 Simulation is allowed only in situations where learners are required to respond to a situation that rarely occurs, for example emergencies or situations that would require a complete shutdown of production.

2.3 Where simulation is allowed, it must take place in a realistic working environment (RWE). In other words, the conditions should match those that would be normally found in the workplace, including:

- facilities, equipment and materials
- relationships with colleagues
- pressures
- relevant legislation, regulations and codes of practice.

2.4 Individuals involved in the simulation should be assigned roles, and, where appropriate, visual and sound effects should be used, e.g. to simulate explosions. To show their ability to shut down a facility, it is recommended that computer-based simulations can be used.

2.5 All simulations must be planned, delivered and documented by the centre in a way that ensures the simulation accurately reflects what the unit seeks to assess.

3 Requirements for assessors and internal verifiers

3.1 Assessors and internal verifiers (IVs) must be occupationally competent. This means that each assessor/IV must be competent in the functions covered by the units they are assessing/verifying. This competence must be current and verifiable, and must be sufficient to be effective and reliable when judging the learner's competence. This can be confirmed in various ways, for example through:

- CV and references
- possession of relevant qualification(s).

3.2 Assessors and IVs must provide evidence of maintaining their occupational competence, for example by maintaining a CPD log.

3.3 Assessors and IVs must:

- understand the structure of the qualification
- recognise acceptable sources of evidence for the qualification
- implement the required assessment recording procedures
- understand and comply with the quality assurance and administrative requirements for the qualification.

3.5 Assessors must have sufficient expertise in the internal verification of competence-based assessment. To evidence this, they must have, or be working towards, one of the following:

- Level 3 Award in Assessing Competence in the Work Environment
- Level 3 Certificate in Assessing Vocational Achievement
- relevant units from predecessor qualifications: D32 and D33; or A1, A2
- qualifications or training that can be demonstrated to be equivalent to one or more of the above.

3.6 Internal verifiers must have sufficient expertise in the internal verification of competence-based assessment. To evidence this, they must have, or be working towards, one of the following:

- Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practice
- relevant units from predecessor qualifications: D34; or V1
- qualifications or training that can be demonstrated to be equivalent to one or more of the above.

4 Expert witnesses

4.1 Pearson supports the use of expert witness testimony as a natural and effective way of contributing to evidence of learners' competence. Nonetheless, the quality of this type of evidence will be affected by the witness's knowledge of the qualification and their own occupational competence. As a minimum, the expert witness must be:

- familiar with the part(s) of the qualification for which they are providing testimony
- occupationally competent – this means that they must be competent in the functions covered by the units they are witnessing
- fully briefed and clear about the purpose and use of the testimony.

Appendix B: Structures of the oil and gas qualification suite at a glance

The tables below show the units and the qualifications to which they contribute in this suite of oil and gas qualifications.

M **Mandatory units** **O** **Optional units**

Pearson BTEC International Level 2 Specialist Diplomas for Process, Electrical, Instrument and Mechanical Technicians in Oil and Gas Facilities	Unit size (GLH)	Pathway			
		Process	Electrical	Instrument	Mechanical
1 Control Frontline Barriers in Oil and Gas Operations	120	M	M	M	M
2 Respond and Recover in Emergencies and Incidents	60	M	M	M	M
3 Implement Process Safety	130	M	M	M	M
4 Operate and Monitor Oil Production Processes and Associated Systems	135	M			
5 Operate and Monitor Gas Processes and Dehydration Systems	110	M			
6 Operate and Monitor the Gas Condensate Process and System	50	M			
7 Perform Routine Operations and Maintenance of Electrical Drives and the Motor-control Centre	80		M		
8 Perform Routine Operations and Maintenance of Power Generation and Control Equipment	80		M		
9 Perform Routine Operations and Maintenance of Power Supplies and Lighting Systems	70		M		
10 Perform Routine Operations and Maintenance of Process Measuring and Analyser Devices	70			M	

Pearson BTEC International Level 2 Specialist Diplomas for Process, Electrical, Instrument and Mechanical Technicians in Oil and Gas Facilities	Unit size (GLH)	Pathway			
		Process	Electrical	Instrument	Mechanical
11 Perform Routine Operations and Maintenance of Current-to-Pneumatic Converters	60			**M**	
12 Perform Routine Operations and Maintenance of Process Controllers and Control Valves	110			**M**	
13 Perform Routine Operations and Maintenance of Static Equipment	120				**M**
14 Perform Routine Operations and Maintenance of Reciprocating Engines and Pumps	90				**M**
15 Perform Routine Operations and Maintenance of Compressors and Turbines	90				**M**

Pearson BTEC International Level 3 Specialist Diploma in Control Room Operations in Oil and Gas Facilities	Unit size (GLH)	Mandatory or optional
1 Perform Functional Testing of Integrated Process Systems and Remote Control Operations	110	**M**
2 Perform Central Control Room Operations	120	**M**
3 Coordinate the Response to Emergencies and Critical Process Situations	120	**M**
4 Supervise Frontline Safety Barriers	60	**O**
5 Supervise Process Safety Within Own Area of Work	90	**O**
6 Supervise Materials Acquisition and Supply Chain Processes for Process-related Frontline Activities	60	**O**
7 Perform Constituents Testing of Process Fluids	70	**O**
8 Maintain Flow Assurance on Subsea Wells	150	**O**
9 Operate and Maintain Subsea Systems	150	**O**

Pearson BTEC International Level 3 Specialist Diploma in Electrical Engineering Operations in Oil and Gas Facilities	Unit size (GLH)	Mandatory or optional
1 Inspect and Test Installations, Cables and Conductors	100	**M**
2 Inspect and Test Power Distribution and Protection Systems	100	**M**
3 Perform Corrective Maintenance of Electrical Equipment and Distribution Systems	100	**M**
4 Perform Corrective Maintenance of Auxiliary Power and Utilities Systems	100	**M**
5 Perform Corrective Maintenance of Power Generation and Protection Systems	100	**M**

Pearson BTEC International Level 3 Specialist Diploma in Instrument Engineering Operations in Oil and Gas Facilities	Unit size (GLH)	Mandatory or optional
1 Perform Corrective Maintenance of Control Systems and Safeguarding Systems	100	**M**
2 Perform Corrective Maintenance of Distributed Control Systems	120	**M**
3 Perform Corrective Maintenance of Instrumented Protective Devices and Systems	120	**M**
4 Perform Corrective Maintenance of Fire and Gas Detection Devices and Systems	120	**M**

Pearson BTEC International Level 3 Specialist Diploma in Mechanical Engineering Operations in Oil and Gas Facilities	Unit size (GLH)	Mandatory or optional
1 Perform Corrective Maintenance of Reciprocating Engines	120	**M**
2 Perform Corrective Maintenance of Pumps	120	**M**
3 Perform Corrective Maintenance of Gas Turbines	120	**M**
4 Perform Corrective Maintenance of Compressors	120	**M**

Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Facility Management	Unit size (GLH)	Mandatory or optional
1 Manage Emergency Responses	150	**M**
2 Manage Health, Safety, Environment and Security	150	**M**
3 Manage Information and Decision Making	140	**M**
4 Manage Operations and Asset Integrity	140	**M**
5 Manage Maintenance Activities	140	**O**
6 Manage Turnaround and Project Implementation	160	**O**
7 Manage Process Plant and Well Integrity	120	**O**
8 Manage Upstream Production and Operations Optimisation	140	**O**
9 Manage Marine Operations	130	**O**
10 Manage Marine Export Operations	140	**O**
11 Manage Onshore Terminal Plant, Storage and Export Facilities	110	**O**
12 Manage Onshore Terminal Process Optimisation and Export Operations	140	**O**

Pearson BTEC International Level 4 Professional Diploma in Oil and Gas Installation Management	Unit size (GLH)	Mandatory or optional
1 Manage Emergency Responses	150	**M**
2 Manage Health, Safety, Environment and Security	150	**M**
3 Manage Information and Decision Making	140	**M**
4 Manage Production and Maintenance Operations	150	**M**
5 Manage Simultaneous Operations	150	**M**
6 Manage Finance and Human Resources	130	**M**
7 Manage Operations and Production Plans	150	**M**

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