Pearson BTEC International Level 3 Specialist Diploma in Mechanical Engineering Operations in Oil and Gas Facilities

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.

Contents

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

This specification contains the information you need to deliver the Pearson BTEC International Level 3 Specialist Diploma in Mechanical Engineering Operations in Oil and Gas Facilities.

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

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.

What other qualifications are available?

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 2 Specialist Diploma for Operations 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 4 Professional Diploma in Oil and Gas Facility Management
- 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 to deliver, assess and administer the Pearson BTEC International Level 3 Specialist Diploma in Mechanical Engineering Operations in Oil and Gas Facilities, including the staff development required. A summary of 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 onsite 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 3 Specialist Diploma in Mechanical Engineering Operations in Oil and Gas Facilities

Who is this qualification for?

This qualification is for learners who are working as mechanical technician engineers involved in the planned and corrective maintenance of rotating equipment in oil and gas facilities, and who want to work towards becoming senior mechanical technician engineers.

Learners will develop the necessary knowledge and skills to maintain reciprocating engines, pumps, gas turbines, and compressors.

What could this qualification lead to?

This qualification supports the career progression of learners working in oil and gas facilities. Learners who have completed the qualification will be ready to progress on to more senior roles, for example senior mechanical technician engineers or to develop to become maintenance supervisors.

Learners wishing to become a maintenance supervisor can progress on to qualifications at higher levels, such as the Pearson BTEC International Level 4 Diploma in Oil and Gas Facility Management.

2 Qualification summaries and key information

Qualification title	Pearson BTEC International Level 3 Specialist Diploma in Mechanical Engineering Operations in Oil and Gas Facilities
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 have completed a diploma (Level 3 or equivalent) in a relevant engineering discipline. They must also EITHER have completed **one** of the following qualifications: • Pearson BTEC International Level 2 Specialist Diploma for Mechanical Technicians in Oil and Gas Facilities • Pearson SRF BTEC Level 2 Intermediate Diploma for Operations Technicians in Oil and Gas Facilities (Mechanical) OR • have a minimum of five years' experience working as mechanical technicians in the oil and gas sector.
Guided Learning Hours (GLH)	480
Assessment	Portfolio of evidence (internal assessment)
Grading information	The qualification and units are graded pass/fail.

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 3 Specialist Diploma in Mechanical Engineering Operations in Oil and Gas Facilities		
Unit number	**Unit title**	**GLH**
Mandatory units – learners must achieve all four units		
1	Perform Corrective Maintenance of Reciprocating Engines	**120**
2	Perform Corrective Maintenance of Pumps	**120**
3	Perform Corrective Maintenance of Gas Turbines	**120**
4	Perform Corrective Maintenance of Compressors	**120**

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: Perform Corrective Maintenance of Reciprocating Engines

Level: 3

Unit type: Mandatory

Guided learning hours: 120

Unit summary

This unit gives learners the knowledge and skills they need to inspect and service engines that are used in their facility. Learners will plan for service and repair, including planning for the required resources and tools and to retrieve maintenance data. They will service and repair defective components and learn how to carry out troubleshooting to identify problems with equipment.

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 coordinate and plan for the service and repair of a reciprocating engine

1.1 Plan resources:

- estimate manpower
- estimate time needed to complete tasks
- obtain plan approval from an authorised person
- critical spares.

1.2 Tools and equipment, e.g.:

- lifting tools:
  - crane
  - chain block
- hand tools:
  - spanners
  - screwdrivers
  - ratchet and sockets
  - torque wrench
- consumables:
  - grease
  - lube oil
  - rags
  - filters
  - spare parts
- special tools:
  - feeler gauge
  - alignment kit
  - belting tension meter
  - barring tool
  - vibration pickup tool
  - engine compression test kit
  - piston ring compressor
  - other special toolkits for specific jobs provided by engine manufacturers.

1.3 Maintenance data:

- manufacturer operation and maintenance manuals
- company maintenance procedure
- SAP work order.

1.4 Comply with safety procedures:

- comply with Permit to Work requirements
- use personal protective equipment (PPE)
- conduct a toolbox talk
- perform safety isolation on the engine and ensure it is safe for maintenance.

2 Be able to service, repair and adjust a defective engine.

2.1 Service and repair:

- identify defective engine components and their faults
- repair engine component or replace with new component
- communicate with team members on maintenance tasks in accordance with company maintenance procedure or manufacturer's manual.

2.2 Adjust components:

- identify parts and components or areas of the engine that require adjustments
- carry out adjustment of the engine, including:
  - alignment of engine to driven load
  - belt tensioning
  - governor adjustment
  - valve timing adjustment
  - valve clearance adjustment.

2.3 Demonstrate that defects are rectified:

- perform test run on the engine.

3 Be able to carry out engine troubleshooting

3.1 Troubleshoot:

- identify the possible causes of the engine defect, e.g.:
  - unable to start
  - irregular firing
  - excessive smoke
  - engine overheating
  - low power output
  - engine trip when put on load

(For those defects that do not occur, learners must be able to explain possible causes.)

- identify the root cause of the engine defect
- identify the correct remedial/rectification action.

3.2 Record the outcomes:

- keep clear maintenance records that are current and accessible
- report on work done and task outcome to an authorised person
- record in the equipment logbook and computerised maintenance system.

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 coordinate and plan for the service and repair of a reciprocating engine	1.1	Plan resources for the task to be completed			
		1.2	Identify the correct tools and equipment for service and repair			
		1.3	Retrieve and select relevant maintenance data			
		1.4	Demonstrate compliance with safety procedures			
2	Be able to service, repair, adjust a defective engine	2.1	Carry out work to service and repair defective components			
		2.2	Carry out work to adjust components			
		2.3	Demonstrate that defects are rectified			
3	Be able to carry out engine troubleshooting	3.1	Carry out work to troubleshoot problems with equipment			
		3.2	Record the outcome of the troubleshooting			

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: Perform Corrective Maintenance of Pumps

Level: 3

Unit type: Mandatory

Guided learning hours: 120

Unit summary

This unit gives learners the knowledge and skills they need to inspect and service pumps that are used in their facility. Learners will plan for service and repair, including planning for the required resources, and tools and to retrieve maintenance data. They will service and repair defective components and learn how to carry out troubleshooting to identify problems with equipment.

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 coordinate and plan for the service and repair of a pump

1.1 Plan resources:

- estimate manpower
- estimate time needed to complete tasks
- obtain plan approval from an authorised person
- critical spares.

1.2 Tools and equipment, e.g.:

- lifting tools:
  - crane
  - chain block
- hand tools:
  - spanners
  - screwdrivers
  - ratchet and sockets
  - torque wrench
- consumables:
  - grease
  - lube oil
  - rags
  - filters
  - spare parts
- special tools:
  - alignment kit
  - belting tension meter
  - vibration pickup tool
  - bearing puller
  - bearing heater
  - hydraulic jack
  - other special tool kits for specific job provided by pump manufacturer.

1.3 Maintenance data:

- manufacturer operation and maintenance manuals
- company maintenance procedures
- SAP work order.

1.4 Comply with safety procedures:

- comply with Permit to Work requirements
- use personal protective equipment (PPE)
- conduct a toolbox talk
- perform safety isolation on the pump and ensure it is safe for maintenance.

2 Be able to service, repair and adjust a defective pump

2.1 Explain the similarities and differences between positive displacement pumps and centrifugal pumps, including:

- operating principles
- components of pumping systems:
  - pump
  - driver
  - mechanical seals
  - gearbox
  - lubrication system
- maintenance requirements
- common faults, e.g.:
  - misalignment with driver
  - cavitation
  - loss of prime
  - high or loss of discharge pressure
  - insufficient or high suction lift
  - air leaks
  - high temperature or vibration
  - inadequate or contamination of lubricants.

2.2 Service and repair pumps used in own facility:

- identify defective pump components and their faults
- repair pump component or replace with new component
- communicate with team members on maintenance tasks in accordance with company maintenance procedure or manufacturer's manual.

2.3 Adjust components:

- identify parts and components or areas of the pump that require adjustments
- carry out adjustment of the pump, including:
  - alignment of pump to driver
  - alignment of pump gearbox
  - belt tensioning.

2.4 Demonstrate that defects are rectified:

- perform a test run on the pump.

3 Be able to carry out pump troubleshooting

3.1 Troubleshoot:

- identify the possible causes of the defect, e.g.:
  - high vibration
  - low or high suction pressure
  - loss of discharge capacity
  - high bearing temperature
  - pump cavitation

(For those defects that do not occur, learners must be able to explain possible causes.)

- identify the root cause of the pump defect
- identify the correct remedial/rectification action.

3.2 Record the outcomes:

- keep clear maintenance records that are current and accessible
- report on work done and task outcome to an authorised person
- record in the equipment logbook and online electronic maintenance system.

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 coordinate and plan for the service and repair of a pump	1.1	Plan resources for the task to be completed			
		1.2	Identify the correct tools and equipment for service and repair			
		1.3	Retrieve and select relevant maintenance data			
		1.4	Demonstrate compliance with safety procedures			
2	Be able to service, repair and adjust a defective pump	2.1	Explain the differences and similarities between positive displacement and centrifugal pumps			
		2.2	Carry out work to service and repair defective components			
		2.3	Carry out work to adjust components			
		2.4	Demonstrate that defects are rectified			
3	Be able to carry out pump troubleshooting	3.1	Carry out work to troubleshoot problems with pumps			
		3.2	Record the outcome of the troubleshooting			

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 3: Perform Corrective Maintenance of Gas Turbines

Level: 3

Unit type: Mandatory

Guided learning hours: 120

Unit summary

This unit gives learners the knowledge and skills they need to inspect and service gas turbines that are used in their facility. Learners will plan for service and repair, including planning for the required resources and tools and to retrieve maintenance data. They will service and repair defective components and learn how to carry out troubleshooting to identify problems with equipment.

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 coordinate and plan for the service and repair of a gas turbine

1.1 Plan resources:

- estimate manpower
- estimate time needed to complete tasks
- obtain plan approval from an authorised person
- critical spares.

1.2 Tools and equipment, e.g.:

- lifting tools:
  - crane
  - chain block
- hand tools:
  - spanners
  - screwdrivers
  - ratchet and sockets
  - torque wrench
- consumables:
  - grease
  - lube oil
  - rags
  - filters
  - spare parts
- special tools:
  - alignment kit
  - barring and cranking tool
  - vibration pickup tool
  - turbine water or solvent wash equipment
  - other special tool kits for specific job provided by turbine manufacturer.

1.3 Maintenance data:

- manufacturer operation and maintenance manuals
- company maintenance procedure
- SAP work order.

1.4 Comply with safety procedures:

- comply with Permit to Work requirements
- use personal protective equipment (PPE)
- conduct toolbox talk
- perform safety isolation on the equipment and ensure it is safe for maintenance.

2 Be able to service, repair and adjust a defective gas turbine

2.1 Service and repair:

- identify defective turbine components and their faults
- repair or adjust turbine component or replace with new component
- communicate with team members on maintenance tasks in accordance with company maintenance procedure or manufacturer's manual.

2.2 Adjust components:

- identify parts and components and areas of the turbine that require adjustments
- carry out adjustment of the equipment, including:
  - alignment of turbine to driven load or gearbox
  - valve adjustment/calibration.

2.3 Demonstrate that defects are rectified:

- perform a test run on the turbine.

3 Be able to carry out gas turbine troubleshooting

3.1 Troubleshoot:

- identify the possible causes of the turbine defect, e.g.:
  - unable to start
  - failure to spool up to self-sustaining speed
  - low compressor discharge pressure
  - high exhaust gas temperature
  - high vibration
  - high lube oil temperature

(For those defects that do not occur, learners must be able to explain possible causes.)

- identify the root cause of the defect
- identify the correct remedial/rectification action.

3.2 Record the outcomes:

- keep clear maintenance records that are current and accessible
- report on work done and task outcome to an authorised person
- record in the equipment logbook and online electronic maintenance system.

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 coordinate and plan for the service and repair of a gas turbine	1.1	Plan resources for the task to be completed			
		1.2	Identify the correct tools and equipment for service and repair			
		1.3	Retrieve and select relevant maintenance data			
		1.4	Demonstrate compliance with safety procedures			
2	Be able to service, repair and adjust a defective gas turbine	2.1	Carry out work to service and repair defective components			
		2.2	Carry out work to adjust components			
		2.3	Demonstrate that defects are rectified			
3	Be able to carry out gas turbine troubleshooting	3.1	Carry out work to troubleshoot problems with equipment			
		3.2	Record the outcome of the troubleshooting			

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 4: Perform Corrective Maintenance of Compressors

Level: 3

Unit type: Mandatory

Guided learning hours: 120

Unit summary

This unit gives learners the knowledge and skills they need to inspect and service compressors that are used in their facility. Learners will plan for service and repair, including planning for the required resources and tools and to retrieve maintenance data. They will service and repair defective components and learn how to carry out troubleshooting to identify problems with equipment.

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 coordinate and plan for the service and repair of a compressor

1.1 Plan resources:

- estimate manpower
- estimate time to need to complete tasks
- obtain plan approval from an authorised person
- critical spares.

1.2 Tools and equipment, e.g.:

- lifting tools:
  - crane
  - chain block
- hand tools:
  - spanners
  - screwdrivers
  - ratchet and sockets
  - torque wrench
- consumables:
  - grease
  - lube oil
  - rags
  - filters
  - spare parts
- special tools:
  - alignment kit
  - belting tension meter
  - vibration pickup tool
  - bearing puller
  - bearing heater
  - hydraulic jack
  - other special tool kits for specific job provided by compressor manufacturer.

1.3 Maintenance data:

- manufacturer operation and maintenance manuals
- company maintenance procedure
- SAP work order.

1.4 Comply with safety procedures:

- comply with Permit to Work requirements
- use personal protective equipment (PPE)
- conduct toolbox talk
- perform safety isolation on the equipment and ensure it is safe for maintenance.

2 Be able to service, repair and adjust a defective compressor

2.1 Explain the similarities and differences between positive displacement and dynamic/continuous flow compressors, including:

- operating principles, e.g:
  - positive displacement – reciprocating, rotary and diaphragm, and how each of these types function
  - dynamic – centrifugal and axial, and how each of these types function
- components of compression systems:
  - coolers
  - knockout drums
  - drivers
  - lubrication system
  - control system for anti-surge, speed, alarms and shutdown
- maintenance requirements
- common faults, e.g.:
  - surge
  - choke or stonewall
  - high temperatures
  - high noise or vibration
  - loss of discharge pressure
  - leaks.

2.2 Service and repair the compressor used in own facility:

- identify defective compressor components and their faults
- repair component or replace with new component
- communicate with team members on maintenance tasks in accordance with company maintenance procedure or manufacturer's manual.

2.3 Adjust components:

- identify parts and components and areas of the compressor that require adjustments
- carry out adjustment of the equipment including:
  - alignment of compressor to driver and gearbox
  - belt tensioning
  - adjustment of pressure regulating valve.

2.4 Demonstrate that defects are rectified:

- perform a test run on the compressor.

3 Be able to carry out compressor troubleshooting

3.1 Troubleshoot:

- identify the possible causes of the defect, e.g.:
  - high vibration
  - low discharge pressure
  - filter high differential pressure
  - high discharge temperature
  - high bearing temperature
  - compressor surging
  - choke or stonewall

(For those defects that do not occur, learners must be able to explain possible causes.)

- identify the root cause of the defect
- identify the correct remedial/rectification action.

3.2 Record the outcomes:

- keep clear maintenance records that are current and accessible
- report on work done and task outcome to an authorised person
- record in the equipment logbook and online electronic maintenance system.

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 coordinate and plan for the service and repair of a compressor	1.1	Plan resources for the task to be completed			
		1.2	Identify the correct tools and equipment for service and repair			
		1.3	Retrieve and select relevant maintenance data			
		1.4	Demonstrate compliance with safety procedures			
2	Be able to service, repair and adjust a defective compressor	2.1	Explain the similarities and differences between gas and air compressors			
		2.2	Carry out work to service and repair defective components			
		2.3	Carry out work to adjust components			
		2.4	Demonstrate that defects are rectified			
3	Be able to carry out compressor troubleshooting	3.1	Carry out work to troubleshoot problems with equipment			
		3.2	Record the outcome of the troubleshooting			

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 this 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	
11 Perform Routine Operations and Maintenance of Current-to-Pneumatic Converters	60			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
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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