



National Unit Specification: general information

UNIT Energy: Oil/Gas Extraction (Intermediate 2)

CODE F3FW 11

COURSE Energy (Intermediate 2)

SUMMARY

This is an optional Unit of the Intermediate 2 Skills for Work Energy Course. It can also be taken as a stand-alone Unit.

The purpose of this Unit is to give candidates an understanding of how oil/gas fields are formed, how they are extracted, and the equipment used in controlling the flow process. Candidates will be introduced to the types of platform used on off-shore installations, the methods used to drill and extract oil and gas, including fluid control, and also the methods used to transport the oil and gas to the mainland.

This Unit has been designed with secondary school candidates in mind, but is also suitable for a wide range of candidate groups.

OUTCOMES

- 1 Investigate and determine the formation and sustainability of oil and gas fields to a given brief.
- 2 Investigate off-shore oil and gas installations and extraction in accordance with a given brief.
- 3 Present findings on formation, extraction, platform types, and fluid control of oil and gas from off-shore installations.

RECOMMENDED ENTRY

Entry is at the discretion of the centre.

Administrative Information

Superclass: YB

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National Unit Specification: general information (cont)

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CREDIT VALUE

0.5 credit at Intermediate 2 (3 SCQF credit points at SCQF level 5*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

CORE SKILLS

There is no automatic certification of Core Skills in this Unit.

Opportunities for developing aspects of Core Skills are highlighted in *Guidance on Learning and Teaching Approaches for this Unit*.

National Unit Specification: statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME 1

Investigate and determine the formation and sustainability of oil and gas fields to a given brief.

Performance Criteria

- (a) Gather relevant information from a variety of sources according to the given brief.
- (b) Gather information on the formation and geological structure of oil and gas fields.
- (c) Gather information on the sustainability of offshore oil and gas production.
- (d) Organise information gathered to produce clear summary information of the formation of oil and gas fields and an evaluation of its sustainability.
- (e) Check that all steps have been completed in accordance with the given brief, including completing the work to the agreed timescale.

OUTCOME 2

Investigate off-shore oil and gas installations and extraction in accordance with a given brief.

Performance Criteria

- (a) Gather relevant information from a variety of sources according to the given brief.
- (b) Gather information on the purpose and the layout of platforms/rigs.
- (c) Gather information on the equipment and methods used in extracting oil and gas.
- (d) Organise information gathered to produce clear summaries on oil and gas platforms/rigs and extraction, equipment, and methods.
- (e) Check that all steps have been completed in accordance with the given brief, including completing the work to the agreed timescale.

OUTCOME 3

Present findings on formation, extraction, platform types, and fluid control of oil and gas from off-shore installations.

Performance Criteria

- (a) Present clear summary information on the formation and structure of oil/gas fields.
- (b) Present clear summary information on platforms used on off-shore installations.
- (c) Present clear summary information on the extraction of oil/gas.
- (d) Present clear summary information on the sustainability of oil/gas fields in the UK.

National Unit Specification: statement of standards (cont)

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EVIDENCE REQUIREMENTS FOR THIS UNIT

Evidence is required to demonstrate the candidates have achieved all Outcomes and Performance Criteria.

Performance and product evidence is required for this Unit. The evidence should be gathered at appropriate points throughout the Unit, in open-book conditions, in response to a given brief.

Performance and product evidence

Candidates will carry out an individual investigation according to the instructions in a given brief which covers all Outcomes and Performance Criteria. Findings will be gathered in a folio which the assessor will discuss with the candidate to check that all steps have been carried out as specified. The assessor will then complete and retain a checklist for each candidate as evidence that all steps have been carried out as specified in the brief.

Product evidence

Each candidate will produce a presentation which meets the Performance Criteria in Outcome 3. The method of communication in the presentation may be chosen by the candidate — written/oral, diagrammatic, graphical, and electronic — are all acceptable. The candidate may also choose different forms of communication — poster, leaflet, short talk, PowerPoint presentation — are all acceptable provided the Performance Criteria are met.

An assessor checklist identifying the critical aspects of the presentation regardless of form should be completed and retained for each candidate. The critical aspects are:

- ◆ summary information must be clear
- ◆ summary information must cover both the formation and structure of oil/gas fields
- ◆ summary information must cover the purpose of oil/gas platforms, including mobile and fixed platforms
- ◆ summary information must cover the equipment used in drilling and natural and forced extraction methods
- ◆ impact of the sustainability of oil/gas extraction in the UK

The National Assessment Bank (NAB) item for this Unit contains an appropriate brief which covers the investigation and presentation requirements of the Unit and an assessor observation checklist. Centres wishing to devise their own assessments must refer to the NAB to ensure a comparable standard.

National Unit Specification: support notes

UNIT Energy: Oil/Gas Extraction (Intermediate 2)

This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 20 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

Evidence is required to demonstrate the candidates have achieved all Outcomes and Performance Criteria.

The *Energy: Oil/Gas Extraction* Unit has been designed to provide candidates with an in-depth understanding of an energy source which is important to the UK economy. It introduces the history of how the raw fuel is formed, the equipment required to extract it, and how it is controlled from the platform into the pipelines. The focus of this Unit is on the investigation skills that the candidate will use to access and organise relevant information, and finally, to present their findings in a clear format.

This Unit will provide candidates with an understanding of the oil and gas extraction industry. It will introduce candidates to the formation of and geological formation of oil/gas fields and the sustainability of oil/gas production.

Candidates will investigate the types of platforms or rigs used in the North Sea. They will gain an understanding of the systems used on a platform, and the function they perform.

They will gain an understanding of how oil and gas is extracted using natural and pressurised methods and the equipment used to control its flow.

The following information gives an indication of what should be involved in this Unit:

- ◆ oil and gas field formation — plants/animals, converted into carbon rich compounds, pressure and heat — crude oil and gas
- ◆ oil and gas field geology — porous and impermeable rock, reservoir
- ◆ sustainability of oil and gas — reduction of available UK oil and gas
- ◆ platform types and uses — drilling, mobile (semi submersible, jack up, drill ship), and fixed
- ◆ drilling — drill, sleeves, mud
- ◆ extraction methods — natural and forced
- ◆ control — casing and Christmas tree

National Unit Specification: support notes (cont)

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The generic employability skills which are developed in this Unit are:

- ◆ maintaining good timekeeping and attendance
- ◆ seeking feedback and advice
- ◆ checking quality of work
- ◆ working to agreed deadlines
- ◆ organising work effectively
- ◆ working confidently
- ◆ working independently
- ◆ developing investigation skills
- ◆ developing presentation skills
- ◆ developing creativity skills

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

It is recommended that a thorough induction is given to candidates at the start of this Unit so that they understand that the main learning approach will be candidate-centred. Candidates should work independently on a given investigation brief and should develop and use skills in accessing and organising information from a variety of sources. Sources might include:

- ◆ family and friends
- ◆ manufacturer's instructions
- ◆ internet
- ◆ reference books
- ◆ visiting speakers

It is envisaged that some tutor support is given to candidates in the initial stages and at regular intervals throughout this Unit. However, the intention is to encourage candidates to work as independently as possible.

Candidates will be given responsibility, following lecturer/teacher support, for making choices on the format and style of the presentation of their key findings.

The candidate will be central to the learning and teaching of this Unit. They should be proactive in detailing the role of a major energy sector within the UK. They should investigate how the raw fuel is formed and extracted and transported, the platforms used and the methods used, to extract the oil and gas from oil and gas fields using various techniques to ensure the maximum fuel removal.

When candidates are presenting their findings in this Unit, there are good learning opportunities for the whole class group. The sharing of information and the different methods used for presentations provide useful opportunities for reflection and discussion. The assessment process itself can be used as a valuable part of the learning in the Unit.

Where this Unit is delivered as part of the Intermediate 2 Energy Course, there are good opportunities to integrate the practical skills with the development and assessment of generic employability skills in the *Energy: Employability and Careers* Unit. The candidate's review of progress in employability skills could be based on the practical activities carried out in this Unit.

National Unit Specification: support notes (cont)

UNIT Energy: Oil/Gas Extraction (Intermediate 2)

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

In this Unit there are good opportunities for candidates to develop the Core Skill of *Information Technology*:

- ◆ in the investigation of the formation and extraction of oil and gas
- ◆ in the use of ICT to present findings

There are opportunities to develop aspects of the Core Skill of *Communication* both in the investigation and presentation of findings.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by information and communications technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

Formative assessment exercises involving candidates in identifying how oil and gas fields are formed and the geological structure they have, the platforms and the systems used to extract the raw fuel, will play an important part in building up the candidate's knowledge, understanding, and confidence in relation to this Unit.

The recommended approach to summative assessment in this Unit is as follows:

Outcomes 1 and 2

Candidates will carry out an investigation according to a given brief. In doing this, they will gather their findings in a folio which will be used as the basis for a discussion between the assessor and the candidate. The assessment evidence will be the completed signed assessor checklist which will detail the essential steps in the process as expressed in the Performance Criteria.

Outcome 3

The assessment is based on the end product of the Outcome which will be a presentation in a form of the candidate's choosing. Forms of presentation might include, for example, a short talk, poster, leaflet, diagram, or PowerPoint presentation.

An assessor checklist identifying the critical aspects of the presentation, regardless of form, should be completed and retained for each candidate.

National Unit Specification: support notes (cont)

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CANDIDATES WITH DISABILITIES AND/OR ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (www.sqa.org.uk).