GQA PAA\VQSET Level 3 Diploma for a Bulk Storage Operator (Technician)

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Centre Qualification Handbook

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INTRODUCTION TO THE HANDBOOK

This qualification sits within the Regulated Qualifications Framework (RQF).

This Qualification Handbook has been developed to ensure that GQA Centres understand the requirements of the qualification. The Handbook contains the following information:

- Qualification Structure
- Assessment Requirements
- Assessment Methods
- Glossary
- Qualification Units

This Qualification Handbook has been developed to provide support in the implementation of the qualification as well as giving information to ensure that the assessment and quality assurance is consistent, robust and reliable within each centre and nationally. The handbook also contains details of the skills and/or knowledge the learner must obtain to achieve the units and qualification.

Qualification Structure

This section of the handbook summarises the content of the qualification and the skills and/or knowledge learners that achieve it can be expected to gain. It also outlines the units required to achieve the qualification and will give the learner an idea of how long the qualification will take to achieve through the Total Qualification Time (TQT) and how much contact time they can expect through the Guided Learning Hours (GLH). It also provides information about possible progression opportunities once the qualification has been achieved.

Assessment Requirements

The assessment requirements for the qualification will cover any specific information about how the qualification may be assessed, such as whether assessors require specific qualifications or occupational competence and whether simulation is permitted in the achievement process.

Assessment Methods

This section summarises the different assessment methods and types of evidence that support assessment; these may be used to demonstrate competence or the achievement of knowledge and understanding.

Qualification Units

The unit overview summarises the content of the unit and the skills and/or knowledge the learner will have gained on achievement of the unit. The units may also contain additional information in the assessment context which will describe the areas to be covered and any appropriate assessment guidance and evidence requirements which will outline additional assessment requirements and should be built into assessment plans and included on assessment records. The unit detail will also confirm whether simulation is permitted for that particular unit.

Qualification Assessment and Support Materials

Centres will be sent the following qualification assessment and support materials:
- Assessment Forms – it is not mandatory to use these forms. Centres may wish to use their own assessment documentation – these should be approved by the External Verifier prior to use.
- Declaration of Validation – must be included in all completed learner portfolios
- Learner Guide
- Qualification Handbook
- Registration Spreadsheet & Certification Claim Forms

LEVEL 3 DIPLOMA FOR A BULK STORAGE OPERATOR (TECHNICIAN)

Qualification Summary

This qualification has been designed to provide recognition of the technical / supervisory knowledge, understanding and performance of those working at Technician level within a Bulk Storage Operations Environment.

Total Qualification Time (TQT) and Guided Learning Hours (GLH)

Guided Learning Hours (GLH)

Guided Learning Hours are the time the learner is under the immediate supervision or guidance of a lecturer, supervisor, tutor or other appropriate provider or education or training.

The GLH for this qualification is 368.

Total Qualification Time (TQT)

Total Qualification Time is comprised of 2 elements:
1. GLH
   plus
2. an estimate of the number of hours a learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by (but not under the immediate supervision of) a lecturer, supervisor, tutor or other appropriate provider or education or training

The TQT for this qualification is 776.

Achieving the Qualification

To achieve this qualification learners must complete 24 Mandatory Units. Additional Units may be taken but are not required for the qualification.

Mandatory Units

Unit No.	Unit Name
BSOT 1k	How to Start-Up Plant and Equipment within a Bulk Storage Operations Environment
BSOT 1c	Start-Up Plant and Equipment within a Bulk Storage Operations Environment
BSOT 2k	How to Operate Plant and Equipment within a Bulk Storage Operations Environment
BSOT 2c	Operate Plant and Equipment within a Bulk Storage Operations Environment
BSOT 3k	How to Shut-down and Prepare Plant and Equipment within a Bulk Storage Operations Environment
BSOT 3c	Shut-down and Prepare Plant and Equipment within a Bulk Storage Operations Environment
BSOT 4k	How to Work Safely within a Bulk Storage Operations Environment
BSOT 4c	Work Safely within a Bulk Storage Operations Environment
BSOT 5k	How to Manage and Control Quality within a Bulk Storage Operations Environment

BSOT 5c	Manage and Control Quality within a Bulk Storage Operations Environment
BSOT 6k	How to Comply with External and Internal Obligations within a Bulk Storage Operations Environment
BSOT 6c	Comply with External and Internal Obligations within a Bulk Storage Operations Environment
BSOT 7k	How to Monitor, Check and Resolve Abnormal Conditions within a Bulk Storage Operations Environment
BSOT 7c	Monitor, Check and Resolve Abnormal Conditions within a Bulk Storage Operations Environment
BSOT 8k	How to Manage Product Transfer Information within a Bulk Storage Operations Environment
BSOT 8c	Manage Product Transfer Information within a Bulk Storage Operations Environment
BSOT 9k	How to Respond to Business and Role Requirements within a Bulk Storage Operations Environment
BSOT 9c	Respond to Business and Role Requirements within a Bulk Storage Operations Environment
BSOT 10k	How to achieve Continuous Improvement and Control Effectiveness within a Bulk Storage Operations Environment
BSOT 10c	Continuous Improvement and Control Effectiveness within a Bulk Storage Operations Environment
BSOT 11k	Understand Personal Skills and Communication within a Bulk Storage Operations Environment
BSOT 11c	Personal Skills and Communication within a Bulk Storage Operations Environment
BSOT 12k	Understand Emergency Response within a Bulk Storage Operations Environment
BSOT 12c	Emergency Response within a Bulk Storage Operations Environment

Additional Units

Unit No.	Unit Name
BSOT 13k	How to Carry Out Jetty Operations and Mooring within a Bulk Storage Operations Environment
BSOT 13c	Jetty Operations and Mooring within a Bulk Storage Operations Environment

Progression

Learners who achieve this qualification have attained and demonstrated the current optimum level of knowledge, understanding and performance of competence for complex operations within the Bulk Storage Downstream sector at Technician Level. Progression from this qualification promotes further development and advancement into both supervisory and management roles / responsibilities.

Further information can be found on the GQA website www.GQAQualifications.com or on the Register of Regulated Qualifications website http://register.ofqual.gov.uk

ASSESSMENT REQUIREMENTS

Assessors must ensure that, when assessing the skills, knowledge and/or understanding, the evidence produced by learners is:

- Valid – does evidence meet the requirements described in the unit?

- Authentic – has the learner produced the evidence?

- Current – has the evidence been produced recently and does it demonstrate current competence?

- Sufficient – is there enough evidence to demonstrate competence?

to enable reliable and consistent judgements to be made about the achievement of all the requirements of the unit(s) and qualification.

GQA Centres must ensure that people involved in the assessment process have the appropriate expertise and are adequately informed and supported to fulfil their responsibilities.

ASSESSMENT STRATEGY

Below is the information to support the assessment requirements of the qualification:

- Mandatory use of evidence from workplace performance
- Use of Simulation
- Occupational competence of assessors and verifiers

Mandatory use of evidence from workplace performance

a. Unless the use of simulation is expressly permitted within the qualification or unit specific evidence requirements, evidence must demonstrate the learner's competence in a real working environment.

b. Knowledge and Understanding will be assessed via (pre-set and/or free form) questions, or by inference from performance, which cover three primary types of knowledge:

- Knowledge of facts and procedures
- Understanding of principles, concepts and underpinning procedures
- How to apply principles and procedures in specific contexts

    All questions must be asked by the assessor at appropriate moments throughout the assessment process, preferably linked to observed activity and/or review of documentary evidence. The questions asked of, and answers provided by, the learner must be recorded.

Use of Simulation

c. The qualification or unit specific assessment requirements will define where evidence from simulation is acceptable, and in which contexts.

    Simulation should be used only where direct evidence of learner performance cannot be obtained. Under these circumstances simulation may be used for summative assessment. Reasons for the use of simulation should be made clear to and agreed by the external verifier and should include the following details:

- which competence (and standards) the simulation was designed to assess;
- the kind of equipment, facilities and physical environment proposed for the simulation of performance. It is unlikely that the External Verifier will approve a simulation if it does not involve real plant and equipment;
- how the simulated activity relates to the learner's normal work context in terms of the pressures of time, access to resources and access to information, and the communication media; and

- how the simulation was set up and conducted, preferably supported by physical evidence such as photographs or inspection of a test rig.

  Assessors, internal verifiers and external verifiers should monitor the proportion of evidence generated via simulations to ensure that it is not the primary source of a learner's claim to competence.

d. Under these circumstances simulations are reserved for aspects of competence illustrated by the following contexts:

- where demonstration of emergency shutdown and related safety procedures would be; **dangerous and/or disruptive** to plant/environment/individuals; **too costly** such as total plant shutdown or dealing with spillage of dangerous substances; where **issues of confidentiality** restrict access to real work opportunities;
- demonstrating specific aspects of the operation which rarely or never occur due to effective quality assurance systems;
- the capacity to integrate disparate knowledge to cope with unforeseen events and to solve problems; or
- aspects of working relationships and communications for which no opportunity has presented for the use of naturally occurring workplace evidence of learner performance.

e. Simulation must enable the individual to demonstrate competence in a real or realistic work environment. In this context this means in specialist centres which replicate the workplace in terms of equipment and environment, reflect normal working situations and use relevant industrial or commercial standards and procedures. Short work placements or non-realistic work environments which do not replicate the pressures and requirements of normal commercial or industrial activities will not be acceptable. The bulk of the learner's evidence should be drawn from their normal working activity and not consist of artificially contrived opportunities for one-off demonstration of competence. Similarly equipment must be that used in current commercial and industrial contexts. Procedures and standards used should be those which are nationally or internationally recognised or devised by specific companies as standard operating procedure.

f. Simulation must enable the individual to acquire his/her skills and knowledge in a realistic work environment. In this context this means in specialist centres which replicate the workplace in terms of equipment and environment, it reflects normal working situations and uses relevant industrial or commercial standards and procedures. Where possible providers should attempt to replicate the pressures and requirements of normal commercial or industrial activities. Equipment must be that used in current commercial and industrial contexts. Procedures and standards used should be those which are nationally or internationally recognised or devised by specific companies as standard operating procedure.

g. Circumstances outside of those listed in Section D above may also be considered suitable for the use of simulation with the agreement of the External Verifier and GQA. Under these circumstances simulation may be used for formative assessment only.

Occupational competence of Assessor and Verifiers

h. Assessors:

- must be competent in the units they are assessing. This is shown through the assessor having achieved the award they are assessing OR providing quality evidence to the external verifier that they are able to make valid judgements of the competence of learners. This could be done through a combination of a) personal interview, b) review of employment histories and/or c) examination of the assessor's judgement during assessments.
- must have a working knowledge of awards and a full understanding of that part of the award for which they have responsibility.
- should hold or be working towards suitable qualifications for assessment, as defined by PAA\VQ-SET.

i.   Internal verifiers:

- must be either working in the appropriate sector itself OR they must be able to demonstrate they possess practical and up-to-date knowledge of current working practices appropriate to the sector in which they are carrying out verification practices; and
- must be appointed by a GQA recognised centre
- must have a working knowledge of the awards they are internally verifying
- should hold or be working towards suitable qualifications for verification, as defined by PAA\VQ-SET.

ASSESSMENT METHODS AND TYPES OF EVIDENCE

The following section gives information on the different assessment methods/types of evidence that support assessment. The following assessment methods/types of evidence may be used to demonstrate competence or that the learner has achieved the required level of knowledge and understanding.

Observation of Performance

Observation allows the assessor to see learners carrying out their work activities. It will take place primarily in the workplace but can also be undertaken in a training scheme. Natural discussion should take place where possible during observation, allowing the assessor to ask questions relating to what they are observing at the time. Assessors must capture their observations either by a written report and/or other methods (e.g. video, audio recording).

Questioning

This method of assessment can be used to ensure that the learner has knowledge and understanding to support their skills. Questions can be used to check knowledge - these questions can either be verbal during or at the end of an observation, or they can be set in a written format in formal or informal conditions. As some units may focus entirely on learners' knowledge, assessors may encourage a variety of evidence to meet the requirements of the unit – use of verbal and/or written questions, learner statements and professional discussion (see below). Verbal questioning or professional discussion should be captured, either by written notes or audio recording.

Products

Work product evidence may be generated as a result of work activities undertaken by learners, and could include reports, letters, or records of work carried out.

Witness Statement or Testimony

A Witness Statement or Testimony is confirmation by others that the learner carried out an activity or series of activities relevant to the requirements of the unit. It could be written by the learner and signed by the witness to confirm that it did take place, or the witness may write the statement. Alternatively, the assessor could speak to the witness and record the discussion. The statement can then be used as evidence within an assessment.

There may be occasions when an Expert Witness may be required to contribute to the assessment process. GQA's definition of an Expert Witness is 'an experienced employee who works in partnership with the assessor, by observing the learner carrying out their duties and recording their observations in line with the assessment procedures'. It should be noted that while the Expert Witness makes a valued contribution to the assessment process, it is the assessor who makes the assessment decision.

Simulation

Simulations are a source of performance evidence showing how an activity is carried out. Simulations require careful planning to ensure that they reflect as near as possible "real life" conditions and the requirements of the qualification(s). As a result of this the costs to set up a simulation may be considerable. Simulations are likely to be used in the following situations:

- they occur infrequently (e.g. dealing with emergencies)
- they involve unusual working conditions (e.g. working in isolation, outside the workplace)
- the work is hazardous
- it is not cost effective

Any use of simulation should be discussed and agreed with the GQA External Verifier and approved prior to implementation.

Recognition of Prior Learning (RPL)

This is the process whereby credit is given to experienced individuals for their previous achievements. It requires careful mapping of the individual's experience to the unit(s) to ensure that it meets the requirements. This exercise must be referred to the External Verifier to ensure that all the evidence presented is acceptable.

Professional Discussion

A Professional Discussion gives the learner the opportunity to tell their assessor what they are doing and why they are doing it in a particular way. The discussion should be supported by appropriate evidence – an observation report, work product or witness testimony.   Professional Discussions should be planned to give the learner the chance to prepare, and should be recorded.

Learner Statements

A Learner Statement is an account of an activity that took place, described by the learner. A detailed statement could demonstrate skill, and also provides evidence of knowledge and understanding. Learner statements should be authenticated by an appropriate person.

Photographs and use of other media

Photographs and use of other media, e.g. video and audio, can provide detail of work activities carried out and questioning. Photographs are more effective when used with supporting statements. Video and audio evidence should be effectively referenced to allow specific activities or questioning to be found easily. It is important to note that if photographs and other media are to be used, the learner and assessor should ensure that permission is gained from all people who may be involved.

GLOSSARY

Term	Definition
Access Arrangements	Arrangements that are approved in advance of an examination or assessment to allow achievement to be demonstrated by learners with a disability, special learning needs (including where the learner's first language is not English, Welsh or Irish) or to avoid unlawful discrimination
Appeal	The process through which an awarding organisation may be challenged on the outcome of an enquiry about results or, where appropriate, other procedural decisions affecting a centre or an individual learner
Assessment	The process of making judgements about the extent to which a learner's work meets the requirements of a unit, or any additional assessment requirements of a qualification
Assessor	A person who assesses a learner's work
Award of Qualifications	A certificate (electronic or paper-based) issued to an individual that recognises their achievement
Award	A qualification with a TQT value between 10 and 129
Awarding Organisation	A body recognised by the qualifications regulators to award qualifications
Centre	An organisation accountable to an awarding organisation for assessment arrangements leading to the award of qualifications
Centre Recognition	A process through which a centre wishing to offer an award or awards is confirmed as being able to maintain the required quality and consistency of assessment, and comply with other requirements of the awarding organisation
Certificate (1) for a Unit or Qualification	A record of attainment of a qualification issued by an awarding organisation
Certificate (2)	A qualification with a TQT value between 130 and 369
Credit	An award that may be made to a learner in recognition of the achievement of a unit or qualification
Credit Value	The number of credits that may be awarded to a learner for the successful achievement of a unit or qualification
Diploma	A qualification with a TQT value of 370 or above
Guided Learning Hours	The number of hours of teacher-supervised or directed study time required to teach a qualification or unit of a qualification
Learning Time	The amount of time a learner at the level of the unit is expected to take, on average, to complete the unit to the standard required
Level	An indication of the relative demand, complexity and/or depth of achievement, and/or the autonomy of the learner in demonstrating that achievement

Term	Definition
Mandatory Units	Units that must be achieved for the qualification to be awarded
National Occupational Standards (NOS)	Describe what a person needs to do, know and understand in a job to carry out the role in a consistent and competent way
Optional Unit	A unit that a learner may choose to complete to achieve the required number of units for award of the qualification
Pathway	A route to the achievement of a qualification that requires particular units to be achieved and is identified by an endorsement to a qualification title
Qualification	An award made to a Learner for the achievement of the required units or other components for that qualification
Qualification Level	An indication of the relative demand, complexity and/or depth of achievement, and/or the autonomy of the learner, represented by a qualification
Qualifications Regulators	Government-designated statutory organisations required to establish national standards for qualifications and secure consistent compliance with them
Recognition of Prior Learning (RPL)	A method of assessment that considers whether a learner can demonstrate that they can meet the assessment requirements for a unit through knowledge, understanding or skills they already possess and do not need to develop through a course of learning
Sector Skills Council	A body responsible for formulating and reviewing occupational standards for a specific sector across the UK, and for supporting the development of units and qualifications based on these standards. Each SSC is an employer-led, independent organisation and is licensed by government
Standardisation Of Assessment	A process to ensure that assessment leading to the award of qualifications is applied consistently by individuals, centres and awarding organisations
Unique Learner Number (ULN)	The unique number that is used to identify an individual learner
Unit	A component of a qualification

LEVEL 3 DIPLOMA FOR A BULK STORAGE OPERATOR (TECHNICIAN)

CONTENT OF THE QUALIFICATION

MANDATORY UNITS

UNIT BSOT 1K   HOW TO START-UP PLANT AND EQUIPMENT WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **16**

Unit Overview

This unit is designed to encompass, both independently and within an operational team, knowledge of how to start-up manufacturing batch or continuous process plant equipment in line with appropriate standard operating procedures, operational regimes, bulk transfer methodologies and industry best practice, ensuring safe, efficient and correct principles of technical operation within the Bulk Storage Operations Environment.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

During these operational work activities, the learner must take account of the relevant operational working practices and safety critical requirements, as they apply to the learner.

Operational prerequisites could include:
- Line walk
- Checking resource availability
- Site preparedness and current running regime or security level
- Checking for simultaneous operations

Safety critical checks and tests could include:
- Visual inspection
- Equipment integrity tests
- Line-up
- Valve stroking
- SIS functionality
- Gas/atmosphere testing

Communication could include:
- Face to face
- Telephone
- Radio
- Written
- Email

Operational documentation could include:
• Policies
• Procedures
• Operating Instructions
• Codes of practice
• Standards
• Schedules
• Transfer/package information

Plant and equipment could include:
• Pumps
• Pipelines
• Valves
• Tanks
• Strainers/filters
• Supply/service systems (Air, electricity, nitrogen, gas, etc)

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Know the 'start-up' principles of operation for all bulk transfer methodologies	1.1. Explain the principles of operation for the relevant plant and equipment
	1.2. Explain how the plant and equipment is to be started-up, covering the following operations: • Bulk transfer to/from ship • Bulk transfer via pipeline • Bulk transfer to/from road tanker • Bulk transfer to/from rail tanker • Bulk transfer tank to tank
	1.3. Produce a process plant drawing/line diagram, identifying the related plant and equipment within that system and check it against the site's related/authorised Plant and Instrument Drawing (P and ID)
	1.4. Provide and explain the purpose of the relevant operator training records and assessments of competence for the operation being undertaken
	1.5. Provide and explain the purpose of an operator role description/job role
2. Know and correctly interpret related start-up 'Standard Operating Instructions' and associated operational regimes/methodologies	2.1. Explain the various operational regimes/ methodologies for the relevant plant and equipment
	2.2. Explain how the corresponding start-up procedure/ Instruction relates to the physical plant and equipment
	2.3. Explain each of the procedural/systematic steps for the start-up of the relevant plant and equipment and their relevance to 'safe start-up' operations
	2.4. Explain the importance of operational personnel participating in the review of the Standard Operating Procedures/Instructions
3. Know the appropriate operational / safety related pre-requisites and checks essential during start-up operations	3.1. Identify the plant pre-requisites prior to start-up operations
	3.2. Explain the requirements for a valve routing sheet and it's safety relevance for operations
	3.3. Explain why it is important that operational personnel confirm that all safety pre-requisites are in place prior to start-up

UNIT BSOT 1C   START-UP PLANT AND EQUIPMENT WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   3

GUIDED LEARNING HOURS   **16**

Unit Overview

This unit is designed to encompass, both independently and within an operational team, starting-up manufacturing batch or continuous process plant equipment in line with appropriate standard operating procedures, operational regimes, bulk transfer methodologies and industry best practice, ensuring safe, efficient and correct principles of technical operation within the Bulk Storage Operations Environment.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should, for all bulk liquid transfer operation types (Listed in the Assessment Criteria. *For example - Bulk transfer to/from ship*) and for two separate occasions:
- Demonstrate how to perform operational prerequisites, obtain permission to start the equipment and liaise with the operations team / client / supplier to identify any relevant emergency isolation valves and re-set systems, ensuring all systems correspond with the required line up, valve routing and plant drawings.
- Demonstrate the correct and appropriate start-up checks to ensure / achieve safe operating conditions, including communication requirements, remote control functionality, safety critical devices / systems / equipment and documentation.

Assessment Guidance

- Workplace performance evidence is required for this unit however simulation, under exceptional circumstances may be acceptable. Please see the Assessment Requirements on Page 7 of this handbook. This must be agreed with the External Verifier.
- This unit should not be undertaken prior to completing Unit BSOT 1k – How to Start-up Plant and Equipment within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

During these operational work activities, the learner must take account of the relevant operational working practices and safety critical requirements, as they apply to the learner.

Operational prerequisites could include:
- Line walk
- Checking resource availability
- Site preparedness and current running regime or security level
- Checking for simultaneous operations

Safety critical checks and tests could include:
- Visual inspection
- Equipment integrity tests
- Line-up
- Valve stroking
- SIS functionality
- Gas / atmosphere testing

Communication could include:
- Face to face
- Telephone
- Radio
- Written
- Email

Operational documentation could include:
- Policies
- Procedures
- Operating Instructions
- Codes of practice
- Standards
- Schedules
- Transfer / package information

Plant and equipment could include:
- Pumps
- Pipelines
- Valves
- Tanks
- Strainers / filters
- Supply / service systems (Air, electricity, nitrogen, gas, etc)

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Safely and correctly perform the start-up of relevant units of operation, plant and associated equipment	1.1. Conduct a pre-work brief / tool box talk, explaining the operational and safety requirements to the operations team, prior to commencement of the transfer
	1.2. Start-up the relevant plant and equipment (appropriate for their site), covering the following bulk liquid transfer operation types: • Bulk transfer to/from ship • Bulk transfer via pipeline • Bulk transfer to/from road tanker • Bulk transfer to/from rail tanker • Bulk transfer tank to tank
2. In the correct order, follow and perform the operational activities identified in the procedural steps detailed in the associated Standard Operating Instructions	2.1. Undertake the procedural steps as identified in the Standard Operating Procedure / Instruction
	2.2. Annotate with operator comments / findings and complete the Standard Operating Procedure / Instruction during start-up operations
3. Conduct the appropriate operational / safety related pre-requisites and checks essential during start-up operations	3.1. Conduct the plant pre-requisites prior to start-up operations
	3.2. Prepare plant and equipment for start-up operations (line walking and valve routing)
4. Ensure currency and continued effectiveness of controls	4.1. Review Standard Operating Procedure / Instruction and confirm currency with operations

UNIT BSOT 2K   **HOW TO OPERATE PLANT AND EQUIPMENT WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT**

LEVEL **3**

GUIDED LEARNING HOURS **16**

Unit Overview

This unit is designed to encompass, both independently and within an operational team, knowledge of how to operate manufacturing batch or continuous process plant equipment in line with appropriate standard operating procedures, operational regimes, bulk transfer methodologies and industry best practice, ensuring safe, efficient and correct principles of technical operation within the Bulk Storage Operations Environment.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

During these operational work activities, the learner must take account of the relevant operational working practices and safety critical requirements, as they apply to the learner.

Responsibilities for work area could include:
- Plant steady (Inside 'safe operating envelope')
- Plant unsteady (Outside 'safe operating envelope')
- In grade product
- Out of grade product
- Change to work environment (Simultaneous operations, emergencies, adverse weather, etc)

Information to record and pass on could include:
- Log books
- Readings sheets
- Measurements outside acceptable tolerances
- Adjustments made
- Adverse events
- Resource changes/alterations

Documentation could include:
- Handover logs
- Operator routine logs
- Other specified recording documentation

Statutory and operational requirements could include:
- Site rules
- Policies
- Procedures
- Operating Instructions
- Codes of practice
- Standards
- Schedules
- Regulations/regulatory guidance
- Industry best practice
- Transfer/package information

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Know the principles of operation for the relevant units of operation, plant and associated equipment	1.1. Explain the principles of operation for the relevant plant and equipment 1.2. Explain how the plant and equipment is to be operated, covering the following operations: • Bulk transfer to/from ship • Bulk transfer via pipeline • Bulk transfer to/from road tanker • Bulk transfer to/from rail tanker • Bulk transfer tank to tank 1.3. Explain the operational parameters that ensure the plant and equipment is kept within its design limits 1.4. Explain the requirement of relevant operator training records and assessments of competence for the operation being undertaken
2. Know the related Standard Operating Instructions associated with operational regimes/methodologies	2.1. Explain the various operational regimes / methodologies for the relevant plant and equipment 2.2. Explain the corresponding plant operation procedure/Instruction 2.3. Explain the procedural steps for the standard operation of the relevant plant and equipment 2.4. Explain the importance of operator intervention during standard operating conditions
3. Know the appropriate operational/safety related monitoring and checks essential during standard operations	3.1. Describe the plant operational / safety related monitoring and essential checks during standard operations 3.2. Describe process plant operational tolerances permitted during standard operations 3.3. Explain why it is important that operational personnel confirm that all process parameters are within design limits during standard operation

UNIT BSOT 2C   OPERATE PLANT AND EQUIPMENT WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   3

GUIDED LEARNING HOURS 16

Unit Overview

This unit is designed to encompass, both independently and within an operational team, operating a manufacturing batch or continuous process plant equipment in line with appropriate standard operating procedures, operational regimes, bulk transfer methodologies and industry best practice, ensuring safe, efficient and correct principles of technical operation within the Bulk Storage Operations Environment.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should, for all bulk liquid transfer operation types (Listed in the Assessment Criteria. *For example - Bulk transfer to / from ship*) and for two separate occasions:
- Demonstrate how to perform operational fundamentals during bulk liquid transfer and periodically liaise with the operations team / client / supplier to confirm transfer is progressing as anticipated and without issue (highlight and communicate issues should they arise), ensuring all systems continue to correspond correct transfer operations and requirements.
- Demonstrate the correct and appropriate operational checks to ensure / achieve ongoing safe operating conditions, including communication requirements, remote control functionality, safety critical devices / systems / equipment and documentation logging.

Assessment Guidance

- Workplace performance evidence is required for this unit however simulation, under exceptional circumstances may be acceptable. Please see the Assessment Requirements on Page 7 of this handbook. This must be agreed with the External Verifier.
- This unit should not be undertaken prior to completing Unit BSOT 2k – How to Operate Plant and Equipment within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

During these operational work activities, the learner must take account of the relevant operational working practices and safety critical requirements, as they apply to the learner.

Operational fundamentals for work area could include:
- Plant steady (Inside 'safe operating envelope')
- Plant unsteady (Outside 'safe operating envelope')
- In grade product
- Out of grade product
- Change to work environment (Simultaneous operations, emergencies, adverse weather, etc)
- Routine observations / checks:
  - Flow rates
  - Pressure
  - Level/s
  - Sampling
  - Gas monitoring
  - Visual

Information to record and pass on could include:
- Log books
- Readings sheets
- Measurements outside acceptable tolerances
- Adjustments made
- Adverse events
- Resource changes / alterations

Documentation could include:
- Handover logs
- Operator routine logs
- Other specified recording documentation

Statutory and operational requirements could include:
- Site rules
- Policies
- Procedures
- Operating Instructions
- Codes of practice
- Standards
- Schedules
- Regulations / regulatory guidance
- Industry best practice
- Transfer / package information

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Perform standard operation of relevant units of operation, plant and associated equipment	1.1. Conduct required operational communications, including: • Ship to shore communication • Control communication • Communication checks • Communication of operational anomalies 1.2. Operate the relevant plant and equipment (appropriate for their site), covering the following operations: • Bulk transfer to/from ship • Bulk transfer via pipeline • Bulk transfer to/from road tanker • Bulk transfer to/from rail tanker • Bulk transfer tank to tank
2. Follow the systematic procedural steps detailed in the associated Standard Operating Instructions	2.1. Undertake the procedural steps as identified in the Standard Operating Procedure / Instruction 2.2. Annotate with operator comments / findings and complete the Standard Operating Procedure / Instruction during standard operation
3. Conduct the appropriate operational / safety related monitoring and checks essential during standard operations	3.1. Conduct the appropriate operational / safety related monitoring and checks essential during standard operations, relevant to specific bulk liquid transfer types / method, to cover: • Flow rates • Pressures and pressure surges • Levels • Condition changes (adverse weather, tide, operational changes, etc) • Volumes • Temperatures
4. Ensure currency and continued effectiveness of controls	4.1. Review Standard Operating Procedure / Instruction and confirm currency with operations

UNIT BSOT 3K   HOW TO SHUT-DOWN AND PREPARE PLANT AND EQUIPMENT WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **16**

Unit Overview

This unit is designed to encompass, both independently and within an operational team, knowledge of how to shut-down and prepare manufacturing batch or continuous process plant equipment for maintenance, in line with appropriate standard operating procedures, operational regimes, bulk transfer methodologies and industry best practice, ensuring safe, efficient and correct principles of technical operation within the Bulk Storage Operations Environment.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

During these operational work activities, the learner must take account of the relevant operational working practices and safety critical requirements, as they apply to the learner.

Operational shut-down fundamentals could include:
- Final line walk
- Checking resource availability ready for shut-down and disconnection
- Site preparedness and current running regime or security level
- Checking for simultaneous operations, prior to shut-down operations

Safety critical checks and tests could include:
- Visual inspection
- Gas/atmosphere testing

Communication could include:
- Face to face
- Telephone
- Radio
- Written
- Email

Operational documentation could include:
- Policies
- Procedures
- Operating Instructions
- Codes of practice
- Standards
- Schedules
- Transfer/package information

Plant and equipment could include:
- Pumps
- Pipelines
- Valves
- Tanks

- Strainers/filters
- Supply/service systems (Air, electricity, nitrogen, gas, etc)

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Know the 'shut-down' principles of operation for all bulk transfer methodologies	1.1. Explain the principles of operation for the relevant plant and equipment
	1.2. Explain how the plant and equipment is to be shut-down, covering the following operations:
	• Bulk transfer to/from ship
	• Bulk transfer via pipeline
	• Bulk transfer to/from road tanker
	• Bulk transfer to/from rail tanker
	• Bulk transfer tank to tank
	1.3. Explain the operational parameters that need to be achieved / maintained prior to shut-down
	1.4. Explain the requirement for relevant operator training records and assessments of competence for the operation being undertaken
2. Know and correctly interpret the related shut-down 'Standard Operating Instructions' and associated operational regimes / methodologies	2.1. Explain the various operational regimes / methodologies for the relevant plant and equipment
	2.2. Explain the corresponding shut-down procedure / Instruction
	2.3. Explain the importance of the procedural steps for the shut-down of the relevant plant and equipment
	2.4. Explain the importance of operational personnel confirmation of correct shut-down
3. Know the appropriate operational / safety related monitoring and checks essential during shut-down operations	3.1. Explain the process plant parameters that need to be confirmed subsequent to shut-down operations
	3.2. Explain why it is important that operational personnel confirm that all process parameters are within tolerances subsequent to shut-down operations
4. Know how to perform required maintenance preparation, clearing, cleaning and isolations of plant and equipment	4.1. Explain maintenance preparation and isolation requirements for all of the below:
	• Mechanical Isolation
	• Electrical Isolation
	• Stored energy
	• Breaking containment
	• Degassing
	• Venting
	• Purging
	• Draining
	• Pigging
	• Clearing/Cleaning/Washing

UNIT BSOT 3C   SHUT-DOWN AND PREPARE PLANT AND EQUIPMENT WITHIN A BULK STORAGE OPERATIONS
ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **16**

Unit Overview

This unit is designed to encompass, both independently and within an operational team, shutting-down and preparing manufacturing batch or continuous process plant equipment for maintenance, in line with appropriate standard operating procedures, operational regimes, bulk transfer methodologies and industry best practice, ensuring safe, efficient and correct principles of technical operation within the Bulk Storage Operations Environment.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should, for all bulk liquid transfer operation types (Listed in the Assessment Criteria. *For example - Bulk transfer to / from ship*) and for two separate occasions:
- Demonstrate how to perform operational prerequisites, obtain permission to stop the equipment and liaise with the operations team / client / supplier to identify any relevant requirements prior to shutting down the equipment, ensuring all systems / resources are in a state of readiness.
- Demonstrate the correct preparation and appropriate shut-down checks to ensure / achieve safe operating conditions, including communication requirements, remote control functionality, safety critical devices / systems / equipment and documentation.

Assessment Guidance

- Workplace performance evidence is required for this unit however simulation, under exceptional circumstances may be acceptable. Please see the Assessment Requirements on Page 7 of this handbook. This must be agreed with the External Verifier.
- This unit should not be undertaken prior to completing Unit BSOT 3k – How to Shut-down and Prepare Plant and Equipment within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

During these operational work activities, the learner must take account of the relevant operational working practices and safety critical requirements, as they apply to the learner.

Operational prerequisites could include:
- Line walk
- Checking resource availability
- Site preparedness and current running regime or security level
- Checking for simultaneous operations

Shut-down isolations and preparation:
- Draining
- Venting
- Purging
- Pigging
- De-energising
- Mechanical Isolation
- Electrical Isolation
- Stored energy

- Breaking containment
- Degassing
- Clearing/Cleaning/Washing

Safety critical checks and tests could include:
- Visual inspection
- Gas/atmosphere testing

Communication could include:
- Face to face
- Telephone
- Radio
- Written
- Email

Operational documentation could include:
- Policies
- Procedures
- Operating Instructions
- Codes of practice
- Standards
- Schedules
- Transfer/package information

Plant and equipment could include:
- Pumps
- Pipelines
- Valves
- Tanks
- Strainers/filters
- Supply/service systems (Air, electricity, nitrogen, gas, etc)

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Perform the shut-down of relevant units of operation, plant and associated equipment	1.1. Conduct a post-work debrief, summarising all points during transfer operations and any issues encountered, such as: • Flow/pressure variations • Leaks/loss of containment • Failure of communications • Equipment malfunction • Routing issues 1.2. Provide solution/s to prevent recurrence 1.3. Shut-down the relevant plant and equipment (appropriate for their own site), covering the following operations: • Bulk transfer to/from ship • Bulk transfer via pipeline • Bulk transfer to/from road tanker • Bulk transfer to/from rail tanker • Bulk transfer tank to tank
2. Undertake the procedural steps detailed in the associated Standard Operating Instructions	2.1. Undertake the procedural steps as identified in the Standard Operating Procedure / Instruction 2.2. Annotate with operator comments / findings and complete the Standard Operating Procedure / Instruction during shut-down operations
3. Carry out the appropriate operational / safety related monitoring and checks essential during shut-down operations	3.1. Conduct the plant final checks subsequent to shut-down operations 3.2. Close down / turn off plant and equipment during shut-down operations
4. Perform maintenance preparation and isolation requirements	4.1. Conduct required maintenance preparation, clearing, cleaning and isolations of plant and equipment
5. Ensure currency and continued effectiveness of controls	5.1. Review Standard Operating Procedure / Instruction and confirm currency with operations

UNIT BSOT 4K   HOW TO WORK SAFELY WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **40**

Unit Overview

This unit is designed to outline safety working requirements in a Bulk Storage Operations Environment, understanding personal responsibility for Health, Safety, Environment and principles of risk management. The unit encompasses knowledge of safe working environments, recognising / identifying hazards and associated risks. Types and response to both personal and process incidents are discussed and assessed to allow the learner to demonstrate knowledge, understanding and performance in controlling the impact to health and safety through role responsibility, effective communication and procedural adherence for safety requirements / essentials.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

During this work the individual must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

The scope of the work is such that within the limits of the individual's responsibility they must be able to demonstrate that they know and understand:

- How to select, use and care for PPE (e.g. sight/hearing protection, gloves, footwear, hard hats)
- The implications of statutory (e.g. HASAWA and COSHH) and organisational requirements
- How to interpret operational requirements (e.g. policies, procedures, instructions)

- Site emergency procedures. For example:
    o Personal Injury
    o Process Incident
    o Flood
    o Bomb threat
    o Adverse weather
    o Road Traffic Incident
    o Gas/toxic release
    o Loss of containment
    o Explosion/fire

- The site layout and working area (emergency exits, muster points and emergency equipment)
- The potential hazards associated with the working area and the appropriate procedural actions required. For example:
    o Rectification of hazard
    o Prompt reporting
    o Discontinuation of work
    o Making affected others, including contractors, company personnel and visitors, aware of the hazard
    o Directing affected others to a safe area

- The types of activity occurring, and possible hazards, in adjacent areas
- Their own responsibilities and duties
- The reasons for use of safety equipment and devices and protective clothing
- The procedures for obtaining medical assistance
- The safety roles of others
- The appropriate responses to alarms (e.g. fire, gas)
- The potential hazards associated with work procedures and the safety precautions required
- The relevance of risk assessment in the workplace
- Their duties under current environmental legislation
- The information to communicate (e.g. written, verbal, electronic) and to whom
- Appropriate responses to alarms, e.g. fire, gas
- Written, verbal and electronic communication
- Site environmental plans

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Know how to maintain a safe working area and the required responsibilities	1.1. Describe how to keep the working area in adherence with relevant site rules, legislation, policies / procedures and work practices
	1.2. Explain the potential incidents within their area of responsibility, ramifications and impacts on both personal / process safety and the remedial actions required, both immediately and longer term
	1.3. Describe and explain the types of activity occurring in the work area, the potential hazards inherent within these work activities and the potential impacts on adjacent works / simultaneous operations
	1.4. For each hazard, explain the necessary safety precautions / controls required to reduce the risk to a tolerable level
	1.5. Explain their specific responsibilities related to the local work area
2. Understand how to deal with a safety hazard	2.1. Describe the appropriate actions to take on identification of safety hazards, for example: • Categorisation of hazard • Risk assessment • Prioritisation • Control/s implementation
	2.2. Explain the effect of an emergency (e.g. on personnel, equipment, site, environment)
3. Know the types of incident to report	3.1. Identify and explain the types of incidents which should be reported, both locally and to the regulatory authority - HSE (RIDDOR - Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013)
4. Know the first response to an incident	4.1. Describe the procedure for responding at an early stage of an incident
	4.2. Explain how the alarm should be raised for each type of incident
	4.3. Explain the procedures for obtaining medical assistance
	4.4. Describe the appropriate first response to casualties
	4.5. Explain the appropriate responses to alarms (e.g. fire, gas)
5. Know the information to communicate in order to operate safely	5.1. Identify and explain the information that should be communicated (e.g. written, verbal, electronic) and to whom
6. Know how the site layout impacts on safety	6.1. Describe the site layout and working area (to include the location and position of emergency exits, muster points and emergency equipment)
	6.2. Explain the site emergency procedures
	6.3. Explain how to access, interpret and implement site emergency plans and procedures (e.g. environmental)

7. Know the roles of self and others when there is a safety issue	7.1.	Describe their own responsibilities during emergencies
	7.2.	Describe the safety roles of others
8. Understand the importance of having emergency equipment in good order and how it adds to the safety of the work environment	8.1.	Explain how to identify and report defects in safety equipment and approved tools
	8.2.	Describe the need for and use of specified emergency equipment
	8.3.	Explain the reasons for use of safety equipment and devices and protective clothing
	8.4.	Explain how the emergency equipment mitigates and reduces the potential risk/s within the work environment
9. Know the operational procedures in relation to contributing to the safety of a Bulk Storage operations environment	9.1.	Describe the procedures for dealing with unauthorised people in the work area
	9.2.	Explain how to select, use and care for PPE
	9.3.	Explain the implications of statutory and organisational requirements
	9.4.	Describe how to interpret operational requirements
	9.5.	Explain the relevance of risk assessment in the workplace
	9.6.	Explain their duties under current environmental legislation

UNIT BSOT 4C   WORK SAFELY WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **40**

Unit Overview

This unit is designed to outline safety working requirements in a Bulk Storage Operations Environment, understanding personal responsibility for Health, Safety, Environment and principles of risk management. The unit encompasses safe working environments, recognising / identifying hazards and associated risks. Types and response to both personal and process incidents are discussed and assessed to allow the learner to demonstrate knowledge, understanding and performance in controlling the impact to health and safety through role responsibility, effective communication and procedural adherence for safety requirements / essentials.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should for three different situations:

- Demonstrate the ability to correctly identify and sufficiently control a safety hazard and associated risks using relevant safety procedures, protocols, systems, communications and equipment, if required.
- Demonstrate how to ensure substances / waste are discharged according to the appropriate regulatory limits including any appropriate restrictions.
- Demonstrate the ability to effectively manage the work area, resources and services in terms of health, safety and environmental protection.

Assessment Guidance

- Workplace performance evidence is required for this unit however simulation, under exceptional circumstances may be acceptable. Please see the Assessment Requirements on Page 7 of this handbook. This must be agreed with the External Verifier.
- This unit should not be undertaken prior to completing Unit BSOT 4k – How to Work Safely within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

During this work the individual must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

Within the limits of their own responsibility the learner must show that they can:

Obtain and use all relevant safety equipment/approved tools, to include all the following:
- Safety showers
- Eye baths
- Gas detection equipment
- Firefighting equipment

Identify safety hazards in own area to include:
- Housekeeping
- Trip and fall hazard
- Open access

- Gas/toxic release
- Source of ignition
- Slip hazard

Take appropriate action to include at least one of the following:
- Rectification of hazard
- Prompt reporting
- Discontinuation of work
- Making affected others aware
- Directing affected others to a safe area

Ensure that all relevant security procedures are followed. This may include:
- Watch keeping
- Security permits
- Swiped access – ID
- Visitor pass

Establish and maintain working relationships in own working environment. Including:
- Colleagues in the same work group
- Colleagues in other work groups
- Immediate supervisors
- Those for whom the learner has responsibility
- Personnel in other departments
- External contacts/contractors

Ensure all relevant communication methods are used in a clear and efficient manner:
- Radio protocol
- Telephone calls
- Shift handover logs
- Record sheets
- Written/typed documentation

Identify and confirm the location of key personnel.

Follow emergency plans and procedures to cover all of the following:
- Safety
- Fire
- Occupational health
- Pollution control
- Security
- Liquid/Gas/toxic release

Verify the nature, location and scope of the incident. Incident to include at least one of the following:
- Fire
- Flood
- Uncontrolled release/spillage of product(s)
- Explosion
- Hazardous vapours
- Discovery of package/bomb threat
- Discovery of injured person
- Accident - person/equipment
- Major services failure
- Liquid/Gas/toxic release

Raise the appropriate alarm by the appropriate method to include all the following:
- Mechanical / electrical means

- Notifying someone else
- Verbal
- Audio
- Visual

Follow appropriate site emergency plans, environmental procedures, plant emergency procedures in the event of one of the following situations taking place:
- Flood
- Uncontrolled release/spillage of product(s)
- Explosion
- Hazardous vapours
- Discovery of suspect package/bomb threat
- Discovery of injured person
- Accident involving person/equipment
- Major services failure

Identify products, materials and/or equipment that are hazardous to the environment. This may include:
- Air contamination
- Water contamination
- Ground contamination

Follow prescribed procedure for dealing with products, materials and/or equipment. To include, prescribed procedures covering all of the following:
- Up to date legal requirements
- Environmental Protection Act
- Specific environmental procedures
- Workplace instructions
- Supplier's instructions
- Manufacturer's instructions

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Demonstrate how to maintain a safe working area	1.1. Ensure that clear access to and egress from working area is maintained at all times
	1.2. Keep working area clean and tidy in accordance with requirements
	1.3. Keep clear all escape routes and access to emergency and safety equipment
	1.4. Maintain control measures designed to reduce the risk/s posed by their working environment
2. Report incidents, hazardous conditions and emergencies	2.1. Accurately verify the nature, location and scope of incident
	2.2. Effectively raise the appropriate alarms
	2.3. Report the incident to the appropriate people in accordance with site reporting procedures
3. Communicate relevant information, as appropriate	3.1. Provide accurate and unambiguous information to the appropriate people
	3.2. Effectively inform appropriate people as actions are taken
4. Manage the remedial actions required in the correction of incidents, hazardous conditions and emergencies	4.1. Take the correct actions, in accordance with procedures, to deal with the incident
	4.2. Effectively minimise the incident, hazard or emergency
	4.3. Effectively minimise waste and loss
	4.4. Correctly modify actions in response to changing conditions
5. Demonstrate the correct use and adherence to operational procedures in relation to contributing to the safety of Bulk Storage Operations	5.1. Manage safely in accordance with operational and procedural requirements
	5.2. Conduct hazard identification and risk assessment of the situation
	5.3. Control the access of authorised people that are permitted entry to the work area
	5.4. Control the use of safety equipment and tools and return them to designated areas after use and report any defects

UNIT BSOT 5K   **HOW TO MANAGE AND CONTROL QUALITY WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT**

LEVEL   **3**

GUIDED LEARNING HOURS   **16**

Unit Overview

This unit is designed to outline the quality procedures and processes to meet the requirements of quality standards relevant to the workplace. It encompasses knowledge of the importance of managing asset integrity through an effective quality management system, thus maintaining the key elements of quality control from product sampling / analysis through to final client distribution, systematic analysis and product assurance / specification.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

During this work the individual must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

The scope of the work is such that within the limits of the individual's responsibility they must be able to demonstrate that they know and understand:

- The range of qualitative requirements and analysis / procedural activities relevant to the workplace, control and products
- How the quality management system interacts and is incorporated within the organisation and work site
- The tangible applications of quality management regarding product control, analysis, procedural / standard adherence, work practices and waste streams
- How to interpret operational requirements (e.g. policies, procedures, instructions, codes of practice, standards, schedules)
- The correct information to communicate (e.g. written, verbal, electronic) and to whom
- The actions to be taken in terms of quality 'non-compliance'

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Know the relevant quality standards and specification parameters within their organisation	1.1. Describe and explain the quality standards, limits and procedures for their site
	1.2. Describe and explain the product specification parameters, waste stream controls and quality assurance work practices for their site
2. Know the quality and asset integrity management systems within their organisation	2.1. Explain the structure of the organisation's quality and asset integrity management systems
	2.2. Identify the roles/s and describe their responsibilities for the implementation and management of the quality and asset integrity management system
3. Know the key elements of quality control and the associated documentation, procedures and requirements	3.1. Explain how product quality control is managed within the organisation
	3.2. Explain the procedures / documentation utilised to record and communicate quality control requirements
	3.3. Explain the responsibilities of the parties / bodies that quality control information needs to be communicated with and what information is required

UNIT BSOT 5C   MANAGE AND CONTROL QUALITY WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   3

GUIDED LEARNING HOURS   8

Unit Overview

This unit is designed to outline the quality procedures and processes to meet the requirements of quality standards relevant to the workplace. It encompasses the importance of managing asset integrity through an effective quality management system, thus maintaining the key elements of quality control from product sampling / analysis through to final client distribution, systematic analysis and product assurance / specification.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should:

- Demonstrate the ability to manage the requirements of quality assurance through the full range of products controlled on site, qualitative work activities, assurance systems / processes, limits and procedural adherence.
- Demonstrate how the quality assurance processes are practiced in the work environment and provide demonstration of performance in these work activities / analyses.
- Demonstrate the ability to effectively manage all aspects of quality control, in their area of responsibility, and provide clear demonstrable control of products / waste entering, being processed and leaving the work area.

Assessment Guidance

- The use of simulation is not acceptable in the assessment of this unit.
- Workplace performance evidence is mandatory for this unit.
- This unit should not be undertaken prior to completing Unit BSOT 5k – How to Manage and Control Quality within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

During this work the individual must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

Within the limits of their own responsibility the learner must show that they can:
- Prepare for and take samples within own working environment. These may include: bottom, lower, middle, upper, composite, running and skimming.
- Take samples from own working environment. Sample sources may include: tanks, containers, pipelines and ship tanks.

Take measurements, conduct analysis and perform calculations using direct and meter measurement:
- Product quantities
- Pressure
- Ullage
- Additive concentrate
- Product density
- Product temperature

- Vapour space content
- Flash point
- Waste/effluent permitted limits

Context of measurements may include:
- Between transfers
- During transfers (receipt of product at task)
- For stock records
- For client or another agency

Control work activities pertaining to quality control and assurance for their area of responsibility
- Utilising procedures
- Abiding by limits/controls
- Minimising wastes
- Controlling 'others' on the assurance of control parameters
- Managing quality in aspects of work practices

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Manage and control the maintenance of product quality and quality assurance work practices	1.1. Control product quality management activities
	1.2. Manage quality assurance work practices
	1.3. Perform quality assurance observations, inspections and audits
2. Undertake product quality control work activities	2.1. Perform product quality sampling, calibration, testing and analysis
	2.2. Record quality analysis, perform calculations and complete associated documentation, including calibration records
	2.3. Communicate required information to the correct parties / bodies
3. Oversee and manage work activities that affect quality control, including waste stream, limits and requirements	3.1. Ensure adherence to regulatory, procedural and work practices standards
	3.2. Report breaches of quality control limits and guidelines to the appropriate bodies
	3.3. Complete relevant documentation for each control breach and input into shift log for communication / awareness
	3.4. Conduct work brief outlining the importance of quality assurance and control, including products / wastes, examples of breaches, causes and remedial actions
4. Undertake operator routines, specifically for - plant sampling / dipping and quality analysis	4.1. Perform plant quality sampling analysis to confirm correct product or potential contamination and complete paperwork
	4.2. Perform tank dipping to confirm correct product movement / destination and complete paperwork

UNIT BSOT 6K	HOW TO COMPLY WITH EXTERNAL AND INTERNAL OBLIGATIONS WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT
LEVEL	**3**
GUIDED LEARNING HOURS	**16**

Unit Overview

This unit is designed to outline the internal and external regulatory environment pertinent to the sector and the employer, ensuring compliance with relevant regulations / legislation. The unit encompasses knowledge of legal and moral obligations placed on both the employer and employee alike, through regulation, and further expanding on internal responsibilities dictated through policies, procedures, health and safety policy, safety managements system, environmental arrangements and compliance management.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

The scope of the work is such that within the limits of the individual's responsibility they must be able to demonstrate that they know and understand:

The implications of relevant statutory (e.g. HASAWA and COSHH) and organisational requirements
- How to interpret operational requirements (e.g. policies, procedures, instructions, codes of practice, standards, schedules, Safety Management System, Health, Safety and Environment Policy, Health and Safety Objectives and the Environmental arrangements)
- The implications of the relevant fiscal and Excise requirements
- The implications of poor communication
- The need for good relationships
- The need for proper handover and the impact of inadequate handover
- The means to ensure information given has been effectively received
- The information to communicate (e.g. written, verbal, electronic) and to whom

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Know the external regulatory requirements / obligations placed on the Sector, Industry, organisation and the employer	1.1. Explain the regulatory obligations and requirements relevant to their organisation / site 1.2. Describe the implications of external statutory and organisational requirements including environmental impact assessments
2. Know the organisation's major health, safety and environmental management systems and policies	2.1. Explain the organisation's: • Safety Management System • Health and Safety Policy • Health and Safety Objectives • Health and Safety Arrangements • Waste and resource management system
3. Know the relevant fiscal and excise requirements for their site and its products	3.1. Explain the requirement of the site being a 'bonded warehouse' 3.2. Explain the importance of compliance controls applicable to the site for both fiscal and excise control
4. Know the correct types and content of communications with the relevant parties and the importance of effective relationships, handover and control of information	4.1. Explain the impacts and implications of poor communications with the relevant parties 4.2. Explain the need for robust and effective relationships with relevant parties 4.3. Explain how the handover of critical information is managed and vetted correctly 4.4. Describe the types and content of information that is required

UNIT BSOT 6C   COMPLY WITH EXTERNAL AND INTERNAL OBLIGATIONS WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **8**

Unit Overview

This unit is designed to outline the internal and external regulatory environment pertinent to the sector and the employer, ensuring compliance with relevant regulations / legislation. The unit encompasses legal obligations placed on both the employer and employee alike and further expanding on internal responsibilities dictated through policies, procedures, health and safety policy, safety managements system, environmental arrangements and compliance management.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should:
- Demonstrate how external, legal, fiscal, internal and moral compliance is achieved through recognition, awareness, performance and adherence to regulatory, procedural and industry best practice obligations.
- Demonstrate management and control of the systems and processes designed to ensure compliance with the obligations placed on the learner, within their area of responsibility.
- Demonstrate how the compliance of the obligations and requirements are communicated, reviewed and audited.
- Perform the associated work activities and processes essential for compliance and in-line with the organisations 'Safe Systems of Work'; within their area of responsibility for two operational and two hazardous work activities.
- Review a minimum of three operating procedures.
- Perform a minimum of two SOP observational assessments.
- Conduct two of the following processes:
  - Hazard and Operability Study (HAZOP)
  - Bow Tie Analysis
  - Process Hazard Review (PHR)
  - Layers of Protection Analysis (LOPA)

Assessment Guidance

- The use of simulation is not acceptable in the assessment of this unit.
- Workplace performance evidence is mandatory for this unit.
- This unit should not be undertaken prior to completing Unit BSOT 6k – How to Comply with External and Internal Obligations within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

During this work the individual must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

Within the limits of their own responsibility the learner must show that they can:

- Use a style of communication (language and terminology) that is clear, concise and accurate and suited to the workplace and the situation
- Follow procedures and acted promptly, when dealing with communications
- Follow regulatory requirements

- Undertake both operational / procedural and hazardous work activities through the relevant 'Safe Systems of Work'
- Promptly seek clarification, if experiencing difficulties in interpreting communications
- Record relevant information accurately and legibly
- Relay information (that is accurate and complete) about current operational status, to and from relevant personnel at handover stage, leaving the work area clean and free of hazards
- Treat others in a manner which promotes and maintains goodwill and is appropriate to the situation
- Promptly and willingly meet reasonable requests and queries from others
- Provide prompt, clear and accurate information to others
- Offer additional support when others have difficulties and seek help where necessary
- Promptly report unresolved breakdowns in working relationships to an appropriate person
- Work safely in accordance with operational requirements and associated safe systems of work
- Review and audit systems and procedures to ensure ongoing compliance
- Identify areas for improvement
- Clearly recognise failures of fiscal / excise regulatory compliance
- Follow correct procedural requirements in the reporting and rectification of breaches

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Perform internal audits, inspections and conduct workplace safety sampling and reporting	1.1. Perform internal audits and suggest recommendations for improvements
	1.2. Participate in workplace inspections and suggest recommendations for improvements
	1.3. Participate in workplace safety sampling and generate a localised report for their area of responsibility, identifying all non-compliances and further improvements
	1.4. Conduct a workplace risk assessment for personal, process and regulatory / procedural compliance risks
	1.5. Conduct workplace hazard analysis using appropriate processes
2. Perform work activities in-line with the organisation's 'Safe Systems of Work	2.1. Conduct operational work activities in-line with task risk assessments and procedural control
	2.2. Undertake hazardous work activities controlled through a 'Permit to Work' system
3. Control the systems designed to ensure fiscal / excise regulatory compliance	3.1. Perform correct additive / dye operations to ensure that the correct amount is added (e.g. Red diesel)
	3.2. Undertake operational activities relevant to fiscal / excise compliance
4. Review and improve standard operating procedures (SOPs)	4.1. Review standard operating procedures and explain recommendations for both current compliance and improvements
	4.2. Conduct SOP review meeting with work area colleagues
	4.3. Perform observational assessments and questioning of new SOP for their work area colleagues

UNIT BSOT 7K	HOW TO MONITOR, CHECK AND RESOLVE ABNORMAL CONDITIONS WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL **3**

GUIDED LEARNING HOURS **16**

Unit Overview

This unit is designed to outline how to control and monitor a process or plant and equipment, effectively, efficiently and securely, and resolve problems or correct abnormal conditions. This unit encompasses knowledge of the safe and efficient control, both locally and remotely, of process plant and equipment. It outlines the use and need for distribution control systems (DCS) to maintain a 'safe operating envelope' through the use of process parameters control, system functionality and the use of embedded safety critical equipment and systems to ensure sufficient mitigation protection in the event of abnormal conditions.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

During this work, the learner must take account of the relevant operational working practices, as they apply to the learner.

Information could be accessed from:
- Plant and instrumentation drawings
- Plant and equipment operating procedures
- Plant operating manuals
- Distribution control systems (DCS)
- Alarm schedules
- Manufacturers manuals

Abnormal conditions could include:
- Operating outside of normal setpoints or design limits
- Running out of specification
- Operating outside of procedural requirements
- Running equipment with fault/s
- Operating with equipment in alarm
- Integrity failure or equipment damage

Safety critical systems and equipment could include:
- Safety Instrumented Systems (SIS)
- Remotely Operated Shut Off Valves (ROSOV)
- Functional safety, including Safety Critical Operations and human factors
- Pressure relief systems
- Equipment / system redundancy
- Duty / stand-by equipment
- Emergency Shut Down (ESD) systems
- Alarms

Sources of information could include:
- Appropriate people
- Readings
- Surveys

- Records
- Reports
- Field observation
- Trends

Statutory and Operational Requirements could include:
- Policies
- Procedures
- Instructions
- Codes of practice
- Standards
- Schedules
- Operating regimes
- Work practices
- Industry best practice guidance

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Know the principles of a 'Safe Operating Envelope'	1.1. Explain the term 'Safe Operating Envelope'
	1.2. Describe the importance of maintaining the operation of plant and equipment within it's 'Safe Operating Envelope'
	1.3. Explain why inspections of the plant and equipment need to be carried out and their purpose
	1.4. List and detail the types of inspections and checks undertaken on plant and equipment
	1.5. Identify and describe signs of distress, damage and poor functioning of plant and equipment
2. Know the design, use and functionality of a 'Distribution Control System (DCS)'	2.1. Describe the five-main operational process control parameters and explain their significance with the Bulk Storage Operations environment
	2.2. Described the basic functionality of a 'Distribution Control System'
	2.3. Explain and illustrate how functional process plant control loops work, including the associated equipment and instrumentation
3. Identify abnormal plant conditions / operations	3.1. Explain how to access a range of information from different sources, for example: • DCS • Operational parameters • Operational manuals • Procedures and instructions • Personnel
	3.2. Explain how to identify, gather and understand information which is relevant to abnormal operational conditions
	3.3. Describe the most likely cause of the abnormal operational conditions and the appropriate actions to be implemented
	3.4. Explain the potential consequences of not correctly or sufficiently resolving abnormal conditions and the additional controls required should those conditions persist
4. Understand the operational principles of 'Functional Safety'	4.1. Define and explain the following terms: • Functional Safety • Human factors
5. Understand the terms 'Safety Critical Equipment' and 'Safety Critical Operations' and provide examples from site	5.1. List and explain two of each of the following for the site: • Safety Critical Equipment • Safety Critical Operations
	5.2. List and explain three of the following for the site: • Safety Instrumented Systems (SIS)

6. Understand emergency plant shut-down systems and their functionality	6.1. Described the site's 'Emergency Shut-Down' systems
	6.2. Identify where these 'Emergency Shut-Down' systems are located on the site
	6.3. Explain their functionality in each case
7. Understand the requirements for operator routine checks	7.1. Explain the operator routine plant checks that are conducted periodically
	7.2. Explain the requirements of these activities and describe the actions to be taken in the event of discovering abnormalities in plant operations / equipment
8. Understand redundancy / contingency systems	8.1. Explain the requirement of redundancy systems and equipment for plant operations
	8.2. Explain the term 'Duty / Stand-by'
	8.3. List examples of the redundancy systems at the site

UNIT BSOT 7C   MONITOR, CHECK AND RESOLVE ABNORMAL CONDITIONS WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **16**

Unit Overview

This unit is designed to outline how to control and monitor a process or plant and equipment, effectively, efficiently and securely, and resolve problems or correct abnormal conditions. This unit encompasses the safe and efficient control, both locally and remotely, of process plant and equipment. It outlines the use and need for distribution control systems (DCS) to maintain a 'safe operating envelope' through the use of process parameters control, system functionality and the use of embedded safety critical equipment and systems to ensure sufficient mitigation protection in the event of abnormal conditions.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should for two different systems / abnormal conditions:
- Demonstrate how to safely and efficiently control / monitor process plant and equipment in-line with procedural and efficient operational practices, whilst maintaining the 'safe operating envelope'.
- Demonstrate operator routine checks and inspections to ensure correct functionality of the systems/s.
- Demonstrate correct recognition and assessment of plant and equipment 'abnormal operations' and perform practical resolution to return the systems to within it's 'safe operating envelope' and/or conduct a controlled and / or emergency shut-down (ESD) of the system.
- Demonstrate 'safety critical' testing regimes and 'trip checks' of the system's mitigation controls for both passive and active protection.
- Conduct two 'Safety Critical Operations' and complete the associated paperwork.

Assessment Guidance

- Workplace performance evidence is required for this unit however simulation, under exceptional circumstances may be acceptable. Please see the Assessment Requirements on Page 7 of this handbook. This must be agreed with the External Verifier.
- This unit should not be undertaken prior to completing Unit BSOT 7k – How to Monitor, Check and Resolve Abnormal Conditions within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

The learner should be able to:
- Demonstrate how to record and communicate information on abnormal plant conditions
- Demonstrate how to interpret information identifying abnormal plant conditions and be able to interpret this information and provide solutions
- Demonstrate functional testing of safety critical equipment and systems
- Demonstrate the maintenance of 'safe operating envelope' for plant systems and equipment
- Demonstrate taking the plant to a 'safe state' in the event of abnormal conditions

Information could be accessed from:
- Plant and instrumentation drawings
- Plant and equipment operating procedures
- Plant operating manuals
- Distribution control systems (DCS)
- Alarm schedules
- Manufacturers manuals

Abnormal conditions could include:
- Operating outside of normal setpoints or design limits
- Running out of specification
- Operating outside of procedural requirements
- Running equipment with fault/s
- Operating with equipment in alarm
- Integrity failure or equipment damage

Safety critical systems and equipment could include:
- Safety Instrumented Systems (SIS)
- Remotely Operated Shut Off Valves (ROSOV)
- Functional safety, including Safety Critical Operations and human factors
- Pressure relief systems
- Equipment / system redundancy
- Duty / stand-by equipment
- Emergency Shut Down (ESD) systems
- Alarms

Sources of information could include:
- Appropriate people
- Readings
- Surveys
- Records
- Reports
- Field observation
- Trends

Statutory and Operational Requirements could include:
- Policies
- Procedures
- Instructions
- Codes of practice
- Standards
- Schedules
- Operating regimes
- Work practices
- Industry best practice guidance

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Monitor and control plant / equipment within its design parameters, ensuring safe site operations	1.1. Monitor and maintain product storage conditions
	1.2. Carry out inspections at the appropriate frequency
	1.3. Work safely in accordance with operational requirements
	1.4. Maintain the correct level and concentration of products
	1.5. Maintain the specified conditions within given tolerances for each piece of equipment
	1.6. Carry out all relevant adjustments and inform the relevant people as appropriate
2. Resolve abnormal plant conditions / operations utilising appropriate problem-solving methods	2.1. Record the appropriate information and actions required to solve the problem
	2.2. Prepare accurate, clear records and documentation after taking readings, within an appropriate timescale
	2.3. Provide prompt, accurate and clear information on plant status to the appropriate people
	2.4. Analyse the problem in a systematic and effective manner
	2.5. Fit any additional monitoring equipment correctly
	2.6. Take appropriate actions to resolve the abnormal conditions
	2.7. Pass records to the appropriate people where / when no further action is required
3. Undertake 'Safety Critical Equipment' and 'Safety Critical Operations' testing and review	3.1. Perform functional testing of 'Safety Critical Equipment'
	3.2. Conduct 'Safety Critical Operations' and complete the associated paperwork (Safety Critical Operational Instruction – Check sheet)
4. Undertake testing of controlled and emergency plant shut-down systems	4.1. Conduct a controlled shut-down of plant systems and equipment
	4.2. Conduct testing of 'Emergency Shut-Down (ESD)' systems
	4.3. Perform a review of both shut-down scenarios and identify any failures / abnormalities
5. Undertake operator routines / plant checks	5.1. Complete all routine checks of plant and equipment
	5.2. Maintain the specified conditions within given tolerances for each piece of equipment
	5.3. Carry out all relevant adjustments and inform the relevant people as appropriate
	5.4. Ensure, through timely and appropriate adjustments, that the process is operating within the given tolerances
	5.5. Complete relevant paperwork to record the findings from the operator routine inspections

UNIT BSOT 8K   **HOW TO MANAGE PRODUCT TRANSFER INFORMATION WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT**

LEVEL   **3**

GUIDED LEARNING HOURS   **16**

Unit Overview

This unit is designed to outline how to manage information and complete documentation relevant to the manufacturing process, including relevant calculations. This unit encompasses knowledge of a range of essential information transfer that must take place prior, during and post bulk liquid transfer operations. It also outlines the fundamental information that must be communicated between all parties responsible for 'safe product transfer'.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

During this work, the learner must take account of the relevant operational working practices, as they apply to the learner.

Information could be accessed from:
- Pre-movement instructions
- Procedures
- Relevant logs
- Handover documentation
- Ship to Shore checklists
- Delivery notes
- 'Product on board' notification
- Client / supplier and manufacturers

<u>Learning Outcome and Assessment Criteria</u>

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Know how to complete product transfer paperwork and associated documentation	1.1. Explain how to access a range of product transfer information from different sources
	1.2. Explain how to identify, gather and understand information which is relevant
	1.3. List and explain the documentation used during product transfer operations, covering the following operations: • Bulk transfer to/from ship • Bulk transfer via pipeline • Bulk transfer to/from road tanker • Bulk transfer to/from rail tanker • Bulk transfer tank to tank
2. Know how to perform an effective handover and the key elements / information that must be communicated	2.1. List and explain the key elements / information that must be communicated during handover activities
	2.2. Explain the importance of why the information exchanged, during handover, is current, concise and complete
	2.3. Explain the environment conducive to an effective handover and communication
	2.4. Describe how the handover log relates to the overall safety and status of plant, equipment and operations
	2.5. Explain the need for a correctly managed and formalised handover and the impact of inadequate handover

UNIT BSOT 8C	MANAGE PRODUCT TRANSFER INFORMATION WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT
LEVEL	3

GUIDED LEARNING HOURS **8**

Unit Overview

This unit is designed to outline how to manage information and complete documentation relevant to the manufacturing process, including relevant calculations. This unit encompasses a range of essential information transfer that must take place prior, during and post bulk liquid transfer operations. It also outlines the fundamental information that must be communicated between all parties responsible for 'safe product transfer'.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should for all five types of product transfer operations:
- Demonstrate the product transfer pre-requisites undertaken to ensure sufficient preparation and assurance of 'safe site operations'.
- Demonstrate effective communications with all responsible parties involved in the product transfer operations.
- Collate, organise and complete all required information relevant to product transfer operations.
- Demonstrate correct recognition, assessment and amendments / correction of information inaccuracies.
- Demonstrate effective handover activities and log books entries.

Assessment Guidance

- Workplace performance evidence is required for this unit however simulation, under exceptional circumstances may be acceptable. Please see the Assessment Requirements on Page 7 of this handbook. This must be agreed with the External Verifier.
- This unit should not be undertaken prior to completing Unit BSOT 8k – How to Manage Product Transfer Information within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

During this work, the learner must take account of the relevant operational working practices, as they apply to the learner, and demonstrate the accurate completion of all documentation use within product movement.

Information could be accessed from:
- Pre-movement instructions
- Procedures
- Relevant logs
- Handover documentation
- Ship to Shore checklists
- Delivery notes
- 'Product on board' notification
- Client / supplier

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Complete documentation proficiently, including the use of related calculations	1.1. Complete the documentation used during product transfer operations, covering the following operations: • Bulk transfer to/from ship • Bulk transfer via pipeline • Bulk transfer to/from road tanker • Bulk transfer to/from rail tanker • Bulk transfer tank to tank 1.2. Prepare accurate and clear records and documentation after taking readings within an appropriate timescale, including any calculations
2. Conduct shift handovers effectively and efficiently	2.1. Clarify and confirm any information that is unclear or conflicting BEFORE acceptance 2.2. Carry out the handover with appropriate people, at the designated time and location 2.3. Compile a shift log in preparation for effective handover

UNIT BSOT 9K   HOW TO RESPOND TO BUSINESS AND ROLE REQUIREMENTS WITHIN A BULK STORAGE OPERATIONS
ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **16**

Unit Overview

This unit is designed to outline knowledge of how to respond to the business environment in which the company operates, including personal role within the organisation, organisational infrastructure, ethical practice and codes of conduct.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

During this work the individual must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

The scope of the work is such that within the limits of the individual's responsibility they must be able to demonstrate that they know and understand:
- How to interpret operational requirements (e.g. policies, procedures, instructions, codes of practice, standards, schedules)
- The roles of Individuals within the organisation
- Business Infrastructure
- Supply chain
- Business / industry impacts
- Corporate and moral responsibility
- The information to communicate (e.g. written, verbal, electronic) and to whom

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Understand the organisation's business environment in which the company operates	1.1. Explain the sector and industry environment in which the business operates 1.2. Describe and illustrate where the business resides within the fuel / product supply chain
2. Understand their organisation's infrastructure	2.1. Describe the organisation's and local site's infrastructure, explain how 'organograms' are used for both
3. Understand their personal role and responsibilities and that of others within the organisation	3.1. Describe and explain their own personal / job role within the organisation 3.2. Identify and describe the roles and responsibilities of others at their own site, to include: • Supervisor • Operation/production manager • Terminal manager • Authorised person (AP) • Engineer • Maintenance technician
4. Understand the organisation's components of administrative control within the business environment	3.3. Explain each of the following and the associated company documentation: • Codes of conduct • Ethical practice • Business practice • Corporate responsibility

UNIT BSOT 9C   RESPOND TO BUSINESS AND ROLE REQUIREMENTS WITHIN A BULK STORAGE OPERATIONS
ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **8**

Unit Overview

This unit is designed to outline how to respond to the business environment in which the company operates, including personal role within the organisation, organisational infrastructure, ethical practice and codes of conduct.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should:
- Demonstrate how to develop an organogram for their company's infrastructure, identifying each level of responsibility and accountability regarding business and operations requirements.
- Develop a personal role description and competency review against current role requirements.
- Demonstrate correct recognition, assessment and amendments / correction of information inaccuracies.
- Prepare and deliver a brief presentation / tool box talk on the components of administrative control within the business environment for their organisation.

Assessment Guidance

- The use of simulation is not acceptable in the assessment of this unit.
- Workplace performance evidence is mandatory for this unit.
- This unit should not be undertaken prior to completing Unit BSOT 9k – How to Respond to Business and Role Requirements within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

During this work the individual must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

The scope of the work is such that within the limits of the individual's responsibility they must be able to demonstrate:

- How to interpret operational requirements (e.g. policies, procedures, instructions, codes of practice, standards, schedules)
- The roles of Individuals within the organisation
- How to interpret and illustrate business Infrastructure
- How to interpret and illustrate the supply chain
- Business / industry impacts
- Corporate and moral responsibility
- The implications of role profile inaccuracies
- How to effectively communicate business / role requirements to others
- How to deliver a presentation / toolbox talk covering:
  o Codes of conduct
  o Ethical practice
  o Business practice
  o Corporate responsibility
- The information to communicate (e.g. written, verbal, electronic) and to whom

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Create supply chain diagram	1.1. Produce a supply chain diagram, encompassing the whole supply chain, detailing where their organisation resides and their business responsibilities to others in the supply chain
2. Generate and develop company infrastructure information	2.1. Create company infrastructure diagram and develop the related organogram, identifying job roles
	2.2. Develop basic role profiles for all levels of workforce, identifying main responsibilities and accountabilities
3. Develop own role and job profile	3.1. Create new / develop existing personal job role profile, detailing all responsibilities and accountabilities, including operational, safety and key attributes required for current occupational role
	3.2. Perform competency review of current job role and identify omissions / failures of demonstrable competency elements
4. Deliver presentation / toolbox talk	4.1. Create and develop a brief presentation or tool box talk on the components of administrative control within the business environment for their organisation
	4.2. Deliver / present to work colleagues within their area of responsibility / work area / shift

UNIT BSOT 10K   HOW TO ACHIEVE CONTINUOUS IMPROVEMENT AND CONTROL EFFECTIVENESS WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **24**

Unit Overview

This unit is designed to outline how to promote and conduct continuous performance improvement within the organisation. This unit encompasses knowledge of the industry / business tools, processes and planning techniques required to ensure 'continued control effectiveness' within an organisation and the 'process safety performance indicators' utilised to provide indicative information of 'process safety performance' and positive safety culture.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

During this work the individual must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

The scope of the work is such that within the limits of the individual's responsibility they must be able to demonstrate that they know and understand:
- The role of continuous improvement within the business
- The significance of process safety performance measurement and how this impacts on continuous improvement
- The tools used by business to aid continuous improvement
- The importance of a positive safety culture and how this impacts control effectiveness
- The importance of 'continued control effectiveness'
- Leading and lagging process safety performance indicators
- Process safety barriers:
  - Preventative
  - Control
  - Mitigation
- Multiple layers of protection (The three P's)
  - Plant
  - Process
  - People
- Process safety performance analysis
- Human factors

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Understand how to ensure continuous performance improvement	1.1. Explain what is meant by 'Continuous Performance Improvement'
	1.2. List and explain the controls and business / process tools used in ensuring 'Continuous Performance Improvement'
2. Understand and identify the key processes involved in the assurance of both continuous performance improvement and continued effectiveness	2.1. Explain the key processes in a 'Continuous Improvement Plan'
	2.2. Explain the key processes in maintaining 'Continued Effectiveness' for their occupational risk control measures and 'Process Safety Barriers'
	2.3. Explain the importance of ensuring 'Continued Effectiveness' and 'Continuous Improvement' for their organisation / site
	2.4. Explain the term 'multi layered protection'
3. Understand performance Indicators' for their organisation and review	3.1. Describe 'Key Performance Indicators' and 'Process Safety Performance Indicators'
	3.2. Explain the terms 'leading' and 'lagging' indicators
	3.3. Identify and analyse 'Key Performance Indicators' and 'Process Safety Performance Indicators' for their organisation / site
4. Understand human factors and the effects on their organisation	4.1. Explain the term 'human factors'
	4.2. Explain how human factors are influenced and describe 'performance influencing factors'
	4.3. List and explain the indicators of both a poor safety culture and a positive safety culture
	4.4. Explain how safety culture affects risk and continued effectiveness of controls

UNIT BSOT 10C   CONTINUOUS IMPROVEMENT AND CONTROL EFFECTIVENESS WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **8**

Unit Overview

This unit is designed to outline how to promote and conduct continuous performance improvement within the organisation. This unit encompasses the industry / business tools, processes and planning techniques required to ensure 'continued control effectiveness' within an organisation and the 'process safety performance indicators' utilised to provide indicative information of 'process safety performance' and positive safety culture.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should:
- Demonstrate the use of continuous improvement tools / processes within their area of responsibility.
- Develop a continuous improvement and process safety improvement plan for their area of responsibility.
- Demonstrate the ability to implement and use multiple layers of protection through the correct process safety barriers.
- Develop and implement appropriate leading and lagging process safety performance indicators for their area of responsibility.
- Demonstrate correct recognition, assessment of human factors for work activities within there are of responsibility.
- Actively promote a good safety culture.
- Conduct a 'human factors' risk assessment on two work activities within their area of responsibility.

Assessment Guidance

- The use of simulation is not acceptable in the assessment of this unit.
- Workplace performance evidence is mandatory for this unit.
- This unit should not be undertaken prior to completing Unit BSOT 10k – How to Achieve Continuous Improvement and Control Effectiveness within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

During this work, the learner must be able to demonstrate the relevant operational working practices, as they apply to the learner.

- Promote continuous improvement within the business
- Review of performance measurement and how this impacts on continuous improvement
- Use the tools used by business to aid continuous improvement
- Conduct process safety performance measurement
- Promote a positive safety culture
- Maintain 'continued control effectiveness'
- Utilise leading and lagging process safety performance indicators
- Implement and maintain process safety barriers
  - o Preventative
  - o Control
  - o Mitigation

- Utilise multiple layers of protection (The three P's)
  - o Plant
  - o Process
  - o People
- Perform process safety performance analysis
- Consider human factors in all task analysis

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Use continuous improvement tools / processes	1.1. Review continuous improvement targets for their area of responsibility 1.2. Provide critical report of performance and suggest improvement recommendations 1.3. Create a continuous improvement and process safety performance improvement plan and submit to management
2. Implement and use effective process safety barriers and adopt multiple layers of protection	2.1. Review existing process safety barriers, identifying preventative, control and mitigation barriers 2.2. Review multiple layers of protection and identify which are Plant, Process or People biased 2.3. Implement / recommend new or amended process safety barriers (controls) for their area of responsibility
3. Implement and use process safety performance indicators	3.1. Review existing process safety performance indicators for their area of responsibility and identify both leading and lagging types 3.2. Implement / recommend new or amended leading and lagging process safety performance indicators
4. Promote good safety culture using human factors	4.1. Conduct a human factors risk assessment on work activities within their area of responsibility 4.2. Report findings from the risk assessment and implement / recommend improvements

UNIT BSOT 11K   UNDERSTAND PERSONAL SKILLS AND COMMUNICATION WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **24**

Unit Overview

This unit is designed to outline knowledge of how to apply and manage the required attitudes, attributes, behaviours and interpersonal skills associated with the professional workplace. This unit encompasses an understanding of essential communication skills, workplace awareness, people management, human factors, acceptable behaviours, mutual collaboration and work ethics.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

During this work the individual must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

The scope of the work is such that within the limits of the individual's responsibility they must be able to demonstrate that they know and understand:
- The appropriate style and type of communication required / acceptable (language and terminology)
- The importance of following procedures and acting promptly, when dealing with communications
- The correct channels to take if experiencing difficulties in interpreting communications
- The level and type of relevant information required and the need to accurately and legibly record the information
- How to relay information (that is accurate and complete) about current operational status, operational requirements and company needs
- How to treat others in a manner which promotes and maintains goodwill and is appropriate to the situation
- How to promptly and willingly deal with reasonable requests and queries from others
- How to offer additional support when others have difficulties and seek help where necessary
- How work safely in accordance with operational requirements and associated Safe Systems of Work
- How human factors influence attitudes within the work place
- Time management
- Management of change
- Equality, Inclusion and diversity

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Understand the effective means of communication	1.1. Summarise the advantages and disadvantages of the following types of communication: • Verbal • Written • Signs/notices/forms • Body language • Alarms/alerts • Electronic 1.2. Explain what actions to take if there are difficulties in interpreting communications 1.3. Explain why prompt, controlled action is sometimes required during communications
2. Understand the importance of procedural adherence	2.1. Explain why it is important to follow operating procedures and the potential consequences if procedures are not followed 2.2. Explain how inaccuracies or omissions within operating procedures are managed and rectified
3. Understand operational and safety critical information	3.1. Summarise and explain the types of information that should be communicated during operational hand-over 3.2. Explain why this information should be concise, legible and current
4. Understand the importance of diversity and equality in the work place	4.1. Explain what it meant by diversity and how it applies to the work place 4.2. Explain what it meant by equality / inclusion and how it applies to the work place
5. Understand workplace behaviours	5.1. Explain what is meant by the term 'acceptable behaviour' in relation to the workplace 5.2. Explain what is meant by the term 'reasonable request' in relation to the workplace 5.3. Explain why it is importance to maintain good / professional working relationships
6. Understand time management and the importance of working to a schedule	6.1. Explain the importance of time management and the adherence to a work schedule / shift pattern 6.2. Summarise the advantages and disadvantages of working shift patterns / rotas, covering the following areas: • Personal • Company/Employer • Health, Safety and Welfare
7. Understand change management and the processes involved	7.1. Describe the concept of 'Change Management' 7.2. Explain the importance of responding to both organisational and technological change

UNIT BSOT 11C   PERSONAL SKILLS AND COMMUNICATION WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **16**

Unit Overview

This unit is designed to outline how to apply and manage the required attitudes, attributes, behaviours and interpersonal skills associated with the professional workplace. This unit encompasses essential communication skills, workplace awareness, people management, human factors, acceptable behaviours, mutual collaboration and work ethics.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should for two separate occasions:
- Demonstrate effective communication that is appropriate to the work place and activity being undertaken.
- Demonstrate how to deal with inaccuracies / misinterpretation of communications and / or information.
- Demonstrate the correct behaviours in the workplace and adopt the correct attitude towards work practices / goals.
- Provide support to others and seek guidance when required / necessary.
- Demonstrate good time management / working to a schedule or time frame.
- Implement management of change and follow procedures / processes.
- Promote equality, Inclusion and diversity in the workplace.

Assessment Guidance

- The use of simulation is not acceptable in the assessment of this unit.
- Workplace performance evidence is mandatory for this unit.
- This unit should not be undertaken prior to completing Unit BSOT 11k – Understand Personal Skills and Communication within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

During this work the individual must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

- Communicate in the required / acceptable way (language and terminology)
- Follow procedures and act promptly, when dealing with communications
- Follow the correct channels to take if experiencing difficulties in interpreting communications
- Communicate with the correct / appropriate level and type of relevant information required and accurately and legibly record the information
- Relay information (that is accurate and complete) about current operational status, operational requirements and company needs
- Treat others in a manner which promotes and maintains goodwill and is appropriate to the situation
- Promptly and willingly deal with reasonable requests and queries from others
- Offer additional support when others have difficulties and seek help where necessary
- Work safely in accordance with operational requirements and associated Safe Systems of Work
- Promote awareness of how human factors influence attitudes within the work place and adopt correct approach
- Demonstrate good time management
- Apply management of change procedures and processes
- Ensure and promote equality, Inclusion and diversity in the workplace

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Communicate effectively with others	1.1. Communicate effectively using a full range of skills, including: • Speaking • Listening • Writing • Body language • Presentation • Electronic 1.2. Take appropriate actions when there are difficulties in interpreting communications 1.3. Act promptly and in a controlled fashion when required during urgent communications
2. Follow procedures	2.1. Follow operating procedures and identify any inaccuracies 2.2. Manage the process of required authority and formally amend the operating procedure
3. Communicate operational and safety critical information	3.1. Provide essential operational and safety critical information during hand-over of responsibilities that is concise legible and current
4. Work and interact effectively as an individual and within a team	4.1. Work and interact as part of a team, demonstrating mutual responsibility 4.2. Work independently and take responsibility for initiating and completing tasks
5. Demonstrate good time management	5.1. Conduct work activities within a given time frame and complete to a schedule
6. Implement / follow management of change	6.1. Perform management of change processes using the management of change procedure

UNIT BSOT 12K   UNDERSTAND EMERGENCY RESPONSE WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   3

GUIDED LEARNING HOURS   16

Unit Overview

This unit is designed to outline the essential knowledge and understanding required to control emergencies and critical situations within Bulk Storage Operations environments.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

The following terms have a specific meaning in this unit:

Emergency: Emergencies could include, but are not limited to:
• Fire
• Flood
• Toxic vapour and/or liquid release
• Uncontrolled release of product
• Loss of containment
• Explosions
• Injured personnel
• Major plant or service failure
• Bomb threat
• Civil disturbance
• Road traffic accident
• Adverse weather

Raising the alarm: This could be done by:
• Mechanical/electrical means
• Notifying someone else by radio, phone, etc
• Shouting

Action/operational requirements and information: Other actions to be taken could include:
• Plant status
  o Detection
  o Protection
  o Communications
  o Evacuation
• Remote process control
  o Instrumentation
  o Logic
• Composition and properties of produced fluids and gases:
  o Toxicity
  o Flammability
  o Specific gravity (SG)
  o Temperature

- Methods of emergency response:
  - Make safe
  - Isolate
  - Shutdown
  - Evacuate the work area
  - Informing connecting installations and others
  - Do nothing
  - Activate internal emergency response teams
  - Inform duty personnel
  - Inform adjacent facilities
  - Activate Emergency Shut Down
  - Account for people
- Selection of PPE:
  - Sight/hearing protection
  - Gloves
  - Footwear
  - Hard hats
  - Respirators
- Operational information:
  - Policies
  - Procedures
  - Instructions
  - Codes of practice
  - Standards
  - Schedules
- Emergency shut down of the plant
- Evacuation of the plant
- Notifying other people (Emergency services, port authority, other sites, etc)
- Assessing risk
- Emergency first aid

Communication/Communicate - To include spoken, written and/or electronic

Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Know how to access, interpret and take account of information about plant and equipment	1.1. Describe plant layout and its integration with other processes and systems
	1.2. Explain the internals of equipment and their function and operation
	1.3. Describe how to access and interpret drawings and manuals regarding the plant
	1.4. Describe the effects of changes in ambient conditions on plant operation
	1.5. Describe how to access and interpret the status of the appropriate equipment and systems
2. Know the processes involved and how they influence the response to emergencies and critical situations	2.1. Describe methods and consequences of isolation and depressurisation
	2.2. Describe the functioning of remote process control
	2.3. Identify normal operating parameters and their tolerances
	2.4. Explain the composition and properties of produced fluids and gases
	2.5. Describe the reactions taking place and the effect of changes to the physical and chemical properties
	2.6. Identify the principles and effect of hydrocarbon hydrate formation, prevention and dispersion, where applicable
	2.7. Explain how to access and interpret the status of operations and simultaneous operations
3. Know how to operate and the implications of control systems	3.1. Describe the methods of operating emergency shutdown, and fire and gas control systems
	3.2. Explain the potential implications of the emergency shutdown, and fire and gas control systems
4. Know the consequences of emergencies and critical situations	4.1. Describe the effect and potential implications of loss of any system and its reinstatement
	4.2. Explain the consequences of emissions to the environment
5. Know how to access and interpret information about external factors relevant to the control of emergencies and critical situations	5.1. Explain how to access and interpret information on weather conditions
	5.2. Explain how to access and interpret information on the availability of key emergency response personnel
6. Know the methods of responding to emergencies and critical situations and how to select the appropriate method in the circumstances	6.1. Describe the methods of response and the circumstances in which it would be appropriate to use each one
	6.2. Identify any other personnel that must be contacted and describe how to contact them

7. Know how to follow organisational requirements, regulations and legislation	7.1. Describe how to select, use and care for PPE
	7.2. Explain the implications of statutory (e.g. HASAWA and COSHH) and organisational requirements
	7.3. Describe how to interpret operational requirements / information
	7.4. Describe the emergency procedures for the installation
8. Know and understand all the site's emergency response roles	8.1. Describe and explain all relevant site emergency response roles and responsibilities
	8.2. Explain how they should interact / communicate during and emergency situation

UNIT BSOT 12C   EMERGENCY RESPONSE WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **16**

Unit Overview

This unit is designed to outline the required performance essential to control emergencies and critical situations within Bulk Storage Operations environments.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should for two different situations / emergencies:
- Demonstrate the ability to correctly identify and sufficiently control an emergency situation and associated risks using relevant procedures, protocols, systems, communications and equipment, if required.
- Demonstrate the ability to effectively manage the work area, resources and services in terms of health, safety and environmental protection.

Assessment Guidance

- Workplace performance evidence is required for this unit however simulation, under exceptional circumstances may be acceptable. Please see the Assessment Requirements on Page 7 of this handbook. This must be agreed with the External Verifier.
- This unit should not be undertaken prior to completing Unit BSOT 12k – Understand Emergency Response within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

The following terms have a specific meaning in this unit:

Emergency: Emergencies could include, but are not limited to:
- Fire
- Flood
- Toxic vapour and/or liquid release
- Uncontrolled release of product
- Loss of containment
- Explosions
- Injured personnel
- Major plant or service failure
- Bomb threat
- Civil disturbance
- Road traffic accident
- Adverse weather

Raising the alarm: This could be done by:
- Mechanical/electrical means
- Notifying someone else by radio, phone, etc
- Shouting

Action/operational requirements and information: Other actions to be taken could include:

- Plant status
  - Detection
  - Protection
  - Communications
  - Evacuation

- Remote process control
  - Instrumentation
  - Logic

- Composition and properties of produced fluids and gases:
  - Toxicity
  - Flammability
  - Specific gravity (SG)
  - Temperature

- Methods of emergency response:
  - Make safe
  - Isolate
  - Shutdown
  - Evacuate the work area
  - Informing connecting installations and others
  - Do nothing
  - Activate internal emergency response teams
  - Inform duty personnel
  - Inform adjacent facilities
  - Activate Emergency Shut Down
  - Account for people

- Selection of PPE:
  - Sight/hearing protection
  - Gloves
  - Footwear
  - Hard hats
  - Respirators

- Operational information:
  - Policies
  - Procedures
  - Instructions
  - Codes of practice
  - Standards
  - Schedules

- Emergency shut down of the plant
- Evacuation of the plant
- Notifying other people (Emergency services, port authority, other sites, etc)
- Assessing risk
- Emergency first aid

Communication/Communicate - To include spoken, written and/or electronic

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Be able to maintain a state of readiness in order to respond to an emergency or critical situation	1.1. Access current emergency procedures and report all anomalies
	1.2. Hand over all safety critical information effectively
	1.3. Take part in drills and exercises correctly
2. Be able to control emergencies and critical situations	2.1. Identify and manage developing / escalating and existing critical situations
	2.2. Identify all conditions which may affect the emergency response
	2.3. Activate all relevant alarms and take appropriate action to the situation
	2.4. Monitor the situation effectively and minimise risks to personnel, process, plant and equipment
	2.5. Identify and immediately take the actions required to make the situation safe
3. Be able to communicate and act on information when controlling emergencies and critical situations	3.1. Communicate all relevant information and instructions
	3.2. Clarify and act upon information received
4. Be able to follow organisational and operational procedures when controlling emergencies and critical situations	4.1. Report and record the critical situation correctly
	4.2. Work safely in accordance with operational requirements
5. Be able to 'stand down' the emergency and return to normal operations	5.1. Identify and confirm the closure of an emergency situation
	5.2. Stand down all necessary resources from the emergency
	5.3. Return resources, plant and equipment to operational readiness where possible / safe
	5.4. Conduct initial emergency situation review / debrief

ADDITIONAL UNITS

UNIT BSOT 13K   HOW TO CARRY OUT JETTY OPERATIONS AND MOORING WITHIN A BULK STORAGE OPERATIONS
ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **16**

Unit Overview

This unit is designed to outline the knowledge and understanding required to carry out jetty operations and mooring within the Bulk Storage Operations environment.

Assessment Guidance and Evidence Requirements

The learner should provide evidence to meet all the required knowledge and understanding within the assessment context shown below. This could be provided through different types of evidence and assessment methods, for example learner statements, questioning and professional discussion which should be recorded for verification.

Assessment Context

The learner will be involved in activities such as:
- Operating mooring equipment
- Ensuring correct positioning of vessel
- Ensuring that agreed mooring plan is implemented
- Implementing ship / shore safety checklist
- Evaluating results of ship / shore safety checklist and take appropriate action

During this work the learner must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

Within the limits of own responsibility, the learner must show that they know how to:

Recognise that vessel's mooring equipment is correctly applied according to agreed mooring scheme, taking account of all of the following factors:
- Tensions
- Winch forces
- External factors including tide, weather, waves and passing vessels
- Brake holding power

Obtain relevant information from vessel to include all of the following:
- Vessel freeboard
- Bow to centre manifold

Meet the prescribed mooring plan, following principles of safe mooring, taking into account all of the following factors:
- Angle of rope horizontal
- Angle of rope from fore/aft axis of ship
- Length of rope
- Unacceptable use of mixed moorings

Check and confirm that the vessel and shore / terminal have been inspected according to the prescribed checklist. The prescribed checklist will include relevant sections from all of the following:

- International Safety Guide for Oil Tankers and Terminals (ISGOTT) Ship Shore Safety Checklist
- International Maritime Organisation (IMO) Conventions
- National, local legislation and guidelines
- Terminal requirements

Evaluate the information using the appropriate methods. Information to include policies, procedures, instructions, codes of practice, standards and schedules

Risks and hazards associated with the activity could include but are not limited to:

- Mixing mooring material types and sizes when intended for the same application
- Incorrect assessment of mooring materials and equipment
- Incorrect equipment operation

Learning Outcome and Assessment Criteria

Learning outcomes	Assessment criteria
The learner will:	**The learner can:**
1. Know how to operate mooring equipment correctly	1.1. Explain how to complete pre-use safety checks
	1.2. Describe how to recognise that the vessel's mooring equipment is correctly applied
	1.3. Demonstrate how to monitor the vessel's mooring equipment
	1.4. State how to ensure that mooring equipment is operated within agreed parameters
	1.5. Identify the effects external factors have on mooring
	1.6. Identify how to obtain relevant information from vessel and why it is important to obtain correct information
2. Know how to ensure correct positioning of vessel	2.1. Identify what units of measurement and terminology to use
	2.2. Identify what methods to use to analyse dimensions of vessel
	2.3. Explain which springs to use for fore and aft restraint
	2.4. Explain what types of connecting equipment should be used
	2.5. Describe the prescribed procedures
	2.6. Explain the principles of safe mooring
3. Know how to ensure that agreed mooring plan is implemented	3.1. Explain how to interpret information in mooring plans and schemes
	3.2. Describe how to ensure that the mooring pattern meets the prescribed mooring plan
	3.3. Identify what the limitations of mooring patterns are
	3.4. State the factors that can affect the use of the mooring equipment
	3.5. Explain how to assess the condition of the mooring equipment
	3.6. Describe how to ensure that emergency plans and procedures are defined and agreed
4. Know how to implement vessel and shore safety checklist	4.1. Explain how to check that the vessel, shore and terminal have been inspected according to prescribed safety checklist
	4.2. Indicate how to ensure that hazards associated with repetitive inspections are minimised
	4.3. Outline the methods to be used to confirm that the prescribed inspections have been completed
	4.4. Identify what documentation and notices need to be provided to the vessel and how to obtain them
	4.5. State how to ensure that the vessel receives the relevant documentation and notices
	4.6. Explain how to ensure that inspections take place at prescribed intervals and why this is important

		4.7.	Describe why it is important to record all information accurately
5.	Know how to evaluate results of ship / shore safety checklist and take appropriate action	5.1.	Explain how to obtain the results of the safety checks
		5.2.	Describe how to recognise and record any deficiencies and / or violations
		5.3.	Explain how to evaluate the information gained
		5.4.	Describe how to ensure that all resources required are available and appropriate
6.	Know how to deal with problems effectively	6.1.	Identify what problems may occur and how to deal with them
		6.2.	Identify who to refer to with problems that are not own responsibility and / or cannot be solved
7.	Know how to follow organisational policies and procedures	7.1.	Describe the appropriate methods of communication and documentation to use
		7.2.	Explain how and when to use the appropriate Personal Protective Equipment (PPE) and how to select, use and care for PPE, including sight / hearing protection, gloves, footwear, hard hats and respirators
		7.3.	Identify the implications of statutory and organisational requirements and how to interpret operational requirements
		7.4.	Assess the risks and hazards associated with the activity
		7.5.	Identify all relevant rules, regulations and guidelines
		7.6.	Explain own responsibilities and duties under current environmental legislation

UNIT BSOT 13C   JETTY OPERATIONS AND MOORING WITHIN A BULK STORAGE OPERATIONS ENVIRONMENT

LEVEL   **3**

GUIDED LEARNING HOURS   **8**

Unit Overview

This unit is designed to outline the performance / skills required to carry out mooring operations within the Bulk Storage Operations environment.

Assessment Guidance and Evidence Requirements

Evidence Requirements

The learner should for two separate situations / mooring operations:
- Demonstrate the ability to correctly plan the operation, position the ship, operate associated equipment, implement and maintain safety, evaluate / monitor operation / changes and adhere to procedural requirements.
- Demonstrate the ability to control operations throughout the mooring operation and complete all associated documentation to ensure safe transfer operations, thus protecting health, safety and the environment.

Assessment Guidance

- Workplace performance evidence is required for this unit however simulation, under exceptional circumstances may be acceptable. Please see the Assessment Requirements on Page 7 of this handbook. This must be agreed with the External Verifier.
- This unit should not be undertaken prior to completing Unit BSOT 13k – How to Carry Out Jetty Operations and Mooring within a Bulk Storage Operations Environment.
- The assumption is made that the learner undertaking this unit will be an apprentice or experienced operator seeking progression.

Assessment Context

The learner will be involved in activities such as:
- Operating mooring equipment
- Ensuring correct positioning of vessel
- Ensuring that agreed mooring plan is implemented
- Implementing ship / shore safety checklist
- Evaluating results of ship / shore safety checklist and take appropriate action

During this work the learner must take account of the relevant operational requirements and safe working practices, as they apply to the learner.

Within the limits of own responsibility, the learner must demonstrate that they can:

Recognise that vessel's mooring equipment is correctly applied according to agreed mooring scheme, taking account of all of the following factors:
- Tensions
- Winch forces
- External factors including tide, weather, waves and passing vessels
- Brake holding power

Obtain relevant information from vessel to include all of the following:
- Vessel freeboard
- Bow to centre manifold

Meet the prescribed mooring plan, following principles of safe mooring, taking into account all of the following factors:

- Angle of rope horizontal
- Angle of rope from fore/aft axis of ship
- Length of rope
- Unacceptable use of mixed moorings

Check and confirm that the vessel and shore / terminal have been inspected according to the prescribed checklist. The prescribed checklist will include relevant sections from all of the following:

- International Safety Guide for Oil Tankers and Terminals (ISGOTT) Ship Shore Safety Checklist
- International Maritime Organisation (IMO) Conventions
- National, local legislation and guidelines
- Terminal requirements

Evaluate the information using the appropriate methods.

Risks and hazards associated with the activity could include but are not limited to:

- Mixing mooring material types and sizes when intended for the same application
- Incorrect assessment of mooring materials and equipment
- Incorrect equipment operation

 Learning Outcome and Assessment Criteria

Learning outcomes The learner will:	Assessment criteria The learner can:
1. Be able to operate mooring equipment correctly	1.1. Complete pre-use safety checks before using shore mooring equipment 1.2. Ensure that shore mooring equipment is operating correctly according to agreed mooring schemes 1.3. Monitor the vessel's mooring operation 1.4. Obtain all relevant information from vessel
2. Be able to ensure correct positioning of vessel	2.1. Analyse information and ensure that the vessel is positioned within prescribed parameters 2.2. Ensure the vessel is positioned alongside, and cargo transfer equipment connections can be safely made 2.3. Take the appropriate action if the vessel moves out of prescribed parameters
3. Be able to ensure that agreed mooring plan is implemented	3.1. Ensure the vessels mooring pattern meets the prescribed plan for the vessel and berth 3.2. Ensure that the correct equipment is used in accordance with the mooring scheme 3.3. Ensure that the agreed mooring plan is implemented 3.4. Ensure that vessel and shore's emergency plans and procedures are defined and agreed
4. Be able to implement vessel and shore safety checklist	4.1. Check and confirm that the vessel has been inspected according to prescribed checklist 4.2. Check and confirm that the shore / terminal has been inspected according to prescribed checklist 4.3. Ensure that the vessel has been provided with relevant documentation and notices 4.4. Ensure prescribed checks take place at the prescribed intervals 4.5. Obtain and check results of the vessel and shore / terminal prescribed checks 4.6. Record all information accurately
5. Be able to evaluate results of ship / shore safety checklist and take appropriate action	5.1. Recognise and record any deficiencies and / or violations 5.2. Evaluate the seriousness of any deficiencies and / or violations 5.3. Decide on the appropriate action to take within the limits of own responsibility 5.4. Determine who will take the appropriate action 5.5. Ensure that the action is taken, and monitor results 5.6. Decide on further action if required, if remedial action is not effective or not possible

6. Be able to follow organisational policies and procedures	6.1.	Work safely in accordance with operational procedures
	6.2.	Communicate all relevant information to the appropriate people
	6.3.	Deal promptly and effectively with problems that are own responsibility, and report those that cannot be solved and / or are not own responsibility to the relevant person