QUALIFICATION HANDBOOK

Level 2 NVQ Certificate in Process Engineering Maintenance (0640-20)

January 2013 Version 1.0

City & Guilds

Qualification at a glance

Subject area	**Process Engineering**
City & Guilds number	0640
Age group approved	16-18, 19+
Entry requirements	Level 2
Assessment	Portfolio of evidence
Support materials	Centre handbook
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	City & Guilds number	Accreditation number
Level 2 NVQ Certificate in Process Engineering Maintenance	0640-20	600/5811/0

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1 Introduction

This document tells you what you need to do to deliver the qualifications:

Area	Description
Who are the qualifications for?	For learners who work or want to work in the oil and gas sector as a Process Operator. They may also be suitable for people with job roles such as electrical, mechanical or chemical engineer, maintenance engineer or technician.
What do the qualifications cover?	They allow learners to learn, develop and practise the skills required for employment and/or career progression in the oil and gas sector. At Level 2, the learner will likely be a process operator carrying out various routine tasks.
What opportunities for progression are there?	Learners may wish to progress into employment or to the following City & Guilds qualifications: • Level 3 Diploma in Process Engineering Maintenance

Structure

To achieve the **Level 2 NVQ Certificate in Process Engineering Maintenance (Electrical)** 0640-20, learners must achieve 14 credits from the mandatory units, 4 credits from mandatory group A, a minimum of 2 credits from 2 units from optional group B and a minimum of 8 credits from optional group C. Knowledge and competence units must be taken in combination.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value
Mandatory			
L/602/0619	253	How to reinstate the work area after completing the maintenance of process plant and equipment	2
J/602/0618	254	Reinstate the work area after completing the maintenance of process plant and equipment	2

F/602/0620	255	How to contribute to handover of process plant and equipment	2
J/602/0781	256	Contribute to handover of process plant and equipment	2
Y/602/0624	257	How to contribute to dealing with hazards within a process engineering environment	2
L/602/0622	258	Contribute to dealing with hazards within a process engineering environment	2
K/602/0627	259	How to maintain effective working relationships within process engineering maintenance	1
H/602/0626	260	Maintain effective working relationships within process engineering maintenance	1
Mandatory group A			
D/602/0639	277	How to contribute to planned maintenance on electrical process plant and equipment	2
Y/602/0638	278	Contribute to planned maintenance on electrical process plant and equipment	2
Optional group B			
L/600/0872	261	How to prepare work areas for the maintenance of process plant and equipment	4
J/600/0871	262	Prepare work areas for the maintenance of process plant and equipment	4
M/602/0631	263	How to prepare loads for moving within a process engineering environment	2
T/602/0629	264	Prepare loads for moving within a process engineering environment	2

J/602/0635	265	How to move loads within a process engineering environment	2
A/602/0633	266	Move loads within a process engineering environment	3
Y/602/0641	267	How to contribute to the preparation of materials for the maintenance of electrical process plant and equipment	1
R/602/0640	268	Contribute to the preparation of materials for the maintenance of electrical process plant and equipment	1
H/602/0643	269	How to contribute to the preparation of process plant and equipment in support of electrical engineering activities	2
D/602/0642	270	Contribute to the preparation of process plant and equipment in support of electrical engineering activities	2
Optional group C			
M/602/0645	271	How to assemble components of electrical process plant and equipment	2
K/602/0644	272	Assemble components of electrical process plant and equipment	2
F/602/0648	273	How to contribute to the removal of components from electrical process plant and equipment	2
A/602/0647	274	Contribute to the removal of components from electrical process plant and equipment	2

J/602/0652	275	How to contribute to the replacement of components from electrical process plant and equipment	2
F/602/0651	276	Contribute to the replacement of components from electrical process plant and equipment	2

To achieve the **Level 2 NVQ Certificate in Process Engineering Maintenance (Instrument and Control)** 0640-20, learners must achieve 14 credits from the mandatory units, 4 credits from mandatory group A, a minimum of 2 credits from 2 units from optional group B and a minimum of 8 credits from optional group C.

Knowledge and competence units must be taken in combination.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value
Mandatory			
L/602/0619	253	How to reinstate the work area after completing the maintenance of process plant and equipment	2
J/602/0618	254	Reinstate the work area after completing the maintenance of process plant and equipment	2
F/602/0620	255	How to contribute to handover of process plant and equipment	2
J/602/0781	256	Contribute to handover of process plant and equipment	2
Y/602/0624	257	How to contribute to dealing with hazards within a process engineering environment	2
L/602/0622	258	Contribute to dealing with hazards within a process engineering environment	2

K/602/0627	259	How to maintain effective working relationships within process engineering maintenance	1
H/602/0626	260	Maintain effective working relationships within process engineering maintenance	1
Mandatory group A			
Y/602/0784	289	How to contribute to planned maintenance on instrument and control plant and equipment	2
Y/602/0655	290	Contribute to planned maintenance on instrument and control plant and equipment	2
Optional group B			
L/600/0872	261	How to prepare work areas for the maintenance of process plant and equipment	4
J/600/0871	262	Prepare work areas for the maintenance of process plant and equipment	4
M/602/0631	263	How to prepare loads for moving within a process engineering environment	2
T/602/0629	264	Prepare loads for moving within a process engineering environment	2
J/602/0635	265	How to move loads within a process engineering environment	2
A/602/0633	266	Move loads within a process engineering environment	3
H/602/0657	279	How to contribute to the preparation of materials for the maintenance of instrument and control process plant and equipment	1

D/602/0656	280	Contribute to the preparation of materials for the maintenance of instrument and control process plant and equipment	1
H/602/0786	281	How to contribute to the preparation of process plant and equipment in support of instrument and control engineering activities	2
K/602/0658	282	Contribute to the preparation of process plant and equipment in support of instrument and control engineering activities	2
Optional group C			
H/602/0660	283	How to assemble components of instrument and control process plant and equipment	2
M/602/0659	284	Assemble components of instrument and control process plant and equipment	2
M/602/0662	285	How to contribute to the removal of components from instrument and control process plant and equipment	2
K/602/0661	286	Contribute to the removal of components from instrument and control process plant and equipment	2
A/602/0664	287	How to contribute to the replacement of components in instrument and control process plant and equipment	2
T/602/0663	288	Contribute to the replacement of components in instrument and control process plant and equipment	2

To achieve the **Level 2 NVQ Certificate in Process Engineering Maintenance (Mechanical)** 0640-20, learners must achieve 14 credits from the mandatory units, 4 credits from mandatory group A, a minimum of 2 credits from 2 units from optional group B and a minimum of 8 credits from optional group C. Knowledge and competence units must be taken in combination.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value
Mandatory			
L/602/0619	253	How to reinstate the work area after completing the maintenance of process plant and equipment	2
J/602/0618	254	Reinstate the work area after completing the maintenance of process plant and equipment	2
F/602/0620	255	How to contribute to handover of process plant and equipment	2
J/602/0781	256	Contribute to handover of process plant and equipment	2
Y/602/0624	257	How to contribute to dealing with hazards within a process engineering environment	2
L/602/0622	258	Contribute to dealing with hazards within a process engineering environment	2
K/602/0627	259	How to maintain effective working relationships within process engineering maintenance	1
H/602/0626	260	Maintain effective working relationships within process engineering maintenance	1
Mandatory group A			
K/602/0787	501	How to contribute to planned maintenance on mechanical process plant and equipment	2
F/602/0665	502	Contribute to planned maintenance on mechanical process plant and equipment	2

Optional group B			
L/600/0872	261	How to prepare work areas for the maintenance of process plant and equipment	4
J/600/0871	262	Prepare work areas for the maintenance of process plant and equipment	4
M/602/0631	263	How to prepare loads for moving within a process engineering environment	2
T/602/0629	264	Prepare loads for moving within a process engineering environment	2
J/602/0635	265	How to move loads within a process engineering environment	2
A/602/0633	266	Move loads within a process engineering environment	3
Y/602/0669	291	How to contribute to the preparation of process plant and equipment in support of mechanical engineering activities	2
R/602/0668	292	Contribute to the preparation of process plant and equipment in support of mechanical engineering activities	2
J/602/0666	293	Contribute to the preparation of materials for the maintenance of mechanical process plant and equipment	1
L/602/0667	298	How to contribute to the preparation of materials for the maintenance of mechanical process plant and equipment	1
Optional group C			
R/602/0671	294	How to assemble components of mechanical process plant and equipment	2
L/602/0670	295	Assemble components of mechanical process plant and equipment	2

T/602/0789	296	How to contribute to the removal of components from mechanical process plant and equipment	2
Y/602/0672	297	Contribute to the removal of components from mechanical process plant and equipment	2
K/602/0675	299	How to contribute to the replacement of components in mechanical process plant and equipment	2
H/602/0674	500	Contribute to the replacement of components in mechanical process plant and equipment	2

2 Centre requirements

Approval

Centres already offering City & Guilds qualifications

Centres that have offered the following qualifications will be automatically approved to deliver Process Engineering Maintenance qualifications:

- 0663-02 Level 2 NVQ in Process Engineering Maintenance

Centres not already offering City & Guilds qualifications

To offer these qualifications, new centres will need to gain both centre and qualification approval. Please refer to the Centre Manual - Supporting Customer Excellence for further information.

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification[s] before designing a course programme.

Resource requirements

Physical resources and site agreements

The assessment methods used to assess the occupational competence of the learners should be valid, reliable, fair and applicable to real work in the normal day to day working environment.

Centre staffing

Staff delivering these qualifications must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be occupationally competent or technically knowledgeable in the area[s] for which they are delivering training and/or have experience of providing training. This knowledge must be above or to the same level as the training being delivered
- hold the Level 2 Qualification in Process Engineering Maintenance
- have recent relevant experience in the specific area they will be assessing
- have credible experience of providing training.

Centre staff may undertake more than one role, eg tutor and assessor or internal quality assurer, but cannot internally verify their own assessments.

Assessors and Internal Quality Assurer

Assessor/Internal Quality Assurer TAQA qualifications are valued as qualifications for centre staff, but they are not currently a requirement for the qualifications.

Continuing professional development (CPD)

Centres must support their staff to ensure that they have current knowledge of the occupational area, that delivery, mentoring, training, assessment and verification is in line with best practice, and that it takes account of any national or legislative developments.

Learner entry requirements

City & Guilds does not set entry requirements for these qualifications. However, centres must ensure that learners have the potential and opportunity to gain the qualifications successfully.

Age restrictions

City & Guilds cannot accept any registrations for learners under 16 as these qualifications are not approved for under 16s.

3 Delivering the qualification

Initial assessment and induction

An initial assessment of each learner should be made before the start of their programme to identify:

- if the learner has any specific training needs,
- support and guidance they may need when working towards their qualification.
- any units they have already completed, or credit they have accumulated which is relevant to the qualification.
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the learner fully understands the requirements of the qualification[s], their responsibilities as a learner, and the responsibilities of the centre. This information can be recorded on a learning contract.

Recording documents

Learners and centres may decide to use a paper-based or electronic method of recording evidence.

City & Guilds endorses several ePortfolio systems, including our own, **Learning Assistant**, an easy-to-use and secure online tool to support and evidence learners' progress towards achieving qualifications. Further details are available at: **www.cityandguilds.com/eportfolios**.

City & Guilds has developed a set of *Recording forms* including examples of completed forms, for new and existing centres to use as appropriate. *Recording forms* are available on the City & Guilds website.

Although new centres are expected to use these forms, centres may devise or customise alternative forms, which must be approved for use by the external verifier, before they are used by learners and assessors at the centre. Amendable (MS Word) versions of the forms are available on the City & Guilds website.

4 Assessment

Assessment of the qualification

Learners must:

- have a completed portfolio of evidence for each unit

Assessment strategy

Assessment strategy

The assessment strategy for these qualifications has been set by Cogent, the Sector Skills Council for Chemicals, Pharmaceuticals, Nuclear, Oil and Gas, Petroleum and Polymers.

Please note: simulation is not always suitable for the qualifications within this sector. The Assessment Strategy defines where evidence from stimulation is acceptable, and in which contexts.

Please refer to the latest version of Cogent's Assessment Strategy. The August 2009 version can be found on the City & Guilds website. (This version is the most recent version at August 2012).

Please contact Cogent for further detail, information and/or latest version:

Cogent SSC Limited
Unit 5
Mandarin Court
Centre Park
Warrington
WA1 1GG
Tel: 01925 515200
Fax: 01925 515240

Time constraints

The following must be applied to the assessment of this qualification:

- Learners must finish their assessment within six months
- Assignments should take no longer than 8 hours. If they do, centres should consider why this is, and make sure that they are not trying to gather too much evidence.

5 Units

Availability of units

The following units can also be obtained from the centre resources section of the City & Guilds website, or are available on
The Register of Regulated Qualifications:
http://register.ofqual.gov.uk/Unit

Structure of units

These units each have the following:

- City & Guilds reference number
- unit accreditation number
- title
- level
- credit value
- endorsement by a sector or other appropriate body
- information on assessment
- learning outcomes which are comprised of a number of assessment criteria
- notes for guidance.

Unit 253 How to reinstate the work area after completing the maintenance of process plant and equipment

UAN:	L/602/0619
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to separate and store equipment and materials.
Assessment criteria
The learner can: 1.1 describe the material and equipment storage procedures and organisational procedures.

Learning outcome
The learner will: 2. Know how to dispose of waste materials correctly.
Assessment criteria
The learner can: 2.1 identify the appropriate waste disposal methods and procedures for different types of waste, in accordance with current health and safety regulations, relevant legislation and organisational practice.

Learning outcome
The learner will: 3. Know how to restore the work area.
Assessment criteria
The learner can: 3.1 state how to restore the work area in line with the relevant health and safety and organisational safe working practices and procedures.

Learning outcome
The learner will: 4. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 4.1 explain what own responsibilities are in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 4.2 state the relevant regulations and the safe working practices and procedures required within own work area 4.3 describe own responsibilities with regard to the reporting lines and procedures.

Unit 253 How to reinstate the work area after completing the maintenance of process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of restoring the work area to a safe condition prior to returning to operations. The learner will be required to identify and separate waste materials for disposal and identify and separate out materials suitable for storage and further use. The learner will be following the organisations safe working practices at all times and working within the work permit procedures.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

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

Scope

The level and extent of responsibility will involve the learner being responsible for ensuring the equipment and work site is safe for others or self to work on by following defined procedures. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The work areas to be restored should relate to chemical manufacturing on onshore sites or offshore installations.

The resources to be stored are materials and equipment for use at sometime in the future and retained either in secure, enclosed containment or unenclosed within a work area or storage facility. Resources could be identified, sorted, protected and evaluated for further use. Appropriate storage facilities should be used where necessary.

Typical resources could include:

- consumables
- assembly/alignment aids
- storing/stacking equipment
- lifting equipment
- safety equipment
- personal protective equipment/shielding equipment
- excess materials

- process and ancillary equipment
- Industrial gas cylinders
- tools/equipment
- protection sheeting
- re-useable components assemblies.

The disposal of hazardous and non-hazardous materials could include:
Non hazardous:

- packaging/protecting materials
- swarf
- material offcuts
- replaced 'lifed' consumables.

Hazardous:

- chemicals and fluids eg solvents and cleaning agents
- sharp objects/offcuts
- asbestos or asbestos based
- oils and greases.

Unit 254 Reinstate the work area after completing the maintenance of process plant and equipment

UAN:	J/602/0618
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to separate and store equipment and materials.
Assessment criteria
The learner can: 1.1 separate equipment, components and materials for re-use from waste items and materials 1.2 store re-useable materials and equipment in an appropriate location.

Learning outcome
The learner will: 2. Be able to dispose of waste materials and restore the work area thereafter.
Assessment criteria
The learner can: 2.1 dispose of waste materials in line with organisational and environmental safety procedures 2.2 restore the work areas to a safe condition in accordance with agreed requirements and schedules.

Learning outcome
The learner will: 3. Be able to deal with problems effectively.
Assessment criteria
The learner can: 3.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 4. Be able to work safely at all times.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 254 Reinstate the work area after completing the maintenance of process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Reinstate the Work Area after Completing the Maintenance of Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in restoring the work area to a safe condition prior to returning to operations. The learner will be required to identify and separate waste materials for disposal and identify and separate out materials suitable for storage and further use. The learner will be following the organisations safe working practices at all times and working within the work permit procedures.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

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

Scope

The level and extent of responsibility will involve the learner being responsible for ensuring the equipment and work site is safe for others or self to work on by following defined procedures. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system. The resources to be stored are materials and equipment for use at sometime in the future and retained either in secure, enclosed containment or unenclosed within a work area or storage facility. Resources could be identified, sorted, protected and evaluated for further use. Appropriate storage facilities should be used where necessary.

Typical resources could include:

- consumables
- assembly/alignment aids
- storing/stacking equipment
- lifting equipment
- safety equipment
- personal protective equipment/shielding equipment
- excess materials
- process and ancillary equipment

- industrial gas cylinders
- tools/equipment
- protection sheeting
- re-useable components assemblies.

The disposal of hazardous and non-hazardous materials could include:
Non hazardous:

- packaging/protecting materials
- swarf
- material offcuts
- replaced 'lifed' consumables.

Hazardous:

- chemicals and fluids e.g. solvents and cleaning agents
- sharp objects/offcuts
- asbestos or asbestos based
- oils and greases.

Unit 255 How to contribute to handover of process plant and equipment

UAN:	F/602/0620
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the handover of process plant and equipment.
Assessment criteria
The learner can: 1.1 explain own contribution to the handover procedures 1.2 explain the handover procedures including when and how handover should occur 1.3 describe the record and documentation systems and procedures 1.4 identify the types of support through working relationships that can be offered to those transferring control.

Learning outcome
The learner will: 2. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 2.1 explain own responsibilities in respect of health, safety and environment, including the limits of own personal responsibility, own legal responsibility for own health and safety and the health and safety of others 2.2 explain the relevant regulations and the safe working practices and procedures required within own work area 2.3 explain own responsibilities with regard to the reporting lines and procedures within working environment and the types of working relationships.

Unit 255 How to contribute to handover of process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of contributing to a safe and effective handover of plant and equipment. It includes contributing to the handover to others and own acceptance and confirmation of responsibility for the control of the plant and equipment.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

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

Scope

The level and extent of responsibility is limited to working within clearly defined specifications for handover situations. In some cases, the learner may still be expected to refer to others for final authorisation, even though the learner remains responsible for identifying and implementing decisions.

The type of products or assets could include:

- systems and sub-systems
- process equipment
- new installations.

The handover procedures and environments may be under operational or non-operational conditions.

A typical example of a handover during operational conditions could be:

- shift changes on continuous process plants.

A typical example of handover under non-operational conditions could be:

- between maintenance and operational teams at the end of an overhaul
- handover of a large on-going maintenance project
- handover from in-house maintenance to outside specialists
- shift to shift.

Record and documentation systems and procedures could include the level of detail on the condition of engineering products/assets as required by different parties.

The parties to handover to could include:

- clients

- production operations
- maintenance engineers
- line supervisors.

The complexity of handovers could include:

- written
- oral
- test documentation.

Unit 256 Contribute to handover of process plant and equipment

UAN:	J/602/0781
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the handover of process plant and equipment.
Assessment criteria
The learner can: 1.1 confirm and define the condition of the engineering products or assets in accordance with specifications 1.2 make sure the information communicated at handover is accurate, up-to-date and complete 1.3 produces and maintain records of the handover in accordance with organisational procedures.

Learning outcome
The learner will: 2. Be able to contribute to taking control of process plant and equipment.
Assessment criteria
The learner can: 2.1 check and define the condition of the engineering products or assets in accordance with specifications 2.2 clearly define and obtain agreement on the moment of transfer of responsibility 2.3 seek additional information if there are any areas of doubt or lack of clarity 2.4 provide proper support and co-ordination to those transferring control 2.5 confirm and record acceptance of responsibility and control in line with agreed procedures.

Learning outcome
The learner will: 3. Be able to work safely at all times.
Assessment criteria
The learner can: 3.1 works safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 256 Contribute to handover of process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to Handover of Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to a safe and effective handover of plant and equipment. It includes contributing to the handover to others and own acceptance and confirmation of responsibility for the control of the plant and equipment.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

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

Scope

The level and extent of responsibility is limited to working within clearly defined specifications for handover situations. In some cases the learner may still be expected to refer to others for final authorisation, even though the learner remains responsible for identifying and implementing decisions.

The type of products or assets could include:

- systems and sub-systems
- process equipment
- new installations.

The handover procedures and environments may be under operational or non-operational conditions.

A typical example of a handover during operational conditions could be:

- shift changes on continuous process plants.

A typical example of handover under non-operational conditions could be:

- between maintenance and operational teams at the end of an overhaul
- handover of a large on-going maintenance project
- handover from in-house maintenance to outside specialists
- shift to shift.

Record and documentation systems and procedures could include the level of detail on the condition of engineering products/assets as required by different parties.

The parties to handover to could include:

- clients
- production operations
- maintenance engineers
- line supervisors.

The complexity of handovers could include:

- written
- oral
- test documentation.

Unit 257 How to contribute to dealing with hazards within a process engineering environment

UAN:	Y/602/0624
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know and understand the procedures to deal with hazards within the scope of authority.
Assessment criteria
The learner can: 1.1 explain how to comply with a risk assessment correctly 1.2 describe the first aid procedures including the locations of the first aid stations and where to find the list of approved staff trained in first aid 1.3 explain the evacuation procedures from the work site to a safe area 1.4 describe the contingency reporting documentation and systems for the work site 1.5 identify the reporting lines and procedures for the work site.

Learning outcome
The learner will: 2. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 2.1 explain what own responsibilities are in respect of health, safety and environment, including the limits of personal responsibility, own legal responsibility for own health and safety and the health and safety of others 2.2 explain the relevant regulations and the safe working practices and procedures required within own work area 2.3 describe how to comply with the Personal Protective Equipment (PPE), Permit to Work (PTW) and required legislation procedures.

Unit 257 How to contribute to dealing with hazards within a process engineering environment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of contributing to minimising risks arising from accidents and incidents by taking the appropriate action within the scope of authority. This will require taking action to minimise risks to personnel and property, calling for help following an incident, following shutdown and evacuation procedures and where possible taking action.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

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

Scope

The level and extent of responsibility is limited to working within agreed specifications and following defined procedures with regard to dealing with hazards and risks arising from incidents and accidents. The learner will be expected to take immediate action appropriate to the circumstances within the scope of authority.

The types of hazards which could be encountered include:

- slips, trips and falls
- hydrocarbon alarm
- hazardous gas alert.

The actions to be taken will be clearly defined and incorporated into company procedures.

Unit 258 Contribute to dealing with hazards within a process engineering environment

UAN:	**L/602/0622**
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to dealing with hazards, within the scope of own authority.
Assessment criteria
The learner can: 1.1 report hazards in a timely manner 1.2 call for expert help in the event of hazards occurring, using warning systems as appropriate 1.3 comply with risk assessments 1.4 take prompt and appropriate action to minimise risk of personal and third party injury as a first priority and then damage to property and equipment 1.5 contribute to shutdown and evacuation procedures promptly and correctly.

Learning outcome
The learner will: 2. Be able to follow organisational policies and procedures.
Assessment criteria
The learner can: 2.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 2.2 deal safely with dangers that can be contained using appropriate equipment and materials, within the scope of own authority 2.3 comply with the Personal Protective Equipment (PPE), Permit to Work (PTW) and required legislation procedures.

Unit 258 Contribute to dealing with hazards within a process engineering environment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to Dealing with Hazards within a Process Engineering Environment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to minimising risks arising from accidents and incidents by taking the appropriate action, within the scope of authority. This will require taking action to minimise risks to personnel and property, calling for help following an incident, following shutdown and evacuation procedures and where possible taking action.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

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

Scope

The level and extent of responsibility is limited to working within agreed specifications and following defined procedures with regard to dealing with hazards and risks arising from incidents and accidents. The learner will be expected to take immediate action appropriate to the circumstances, within the scope of authority.

The types of hazards which could be encountered include:

- slips, trips and falls
- hydrocarbon alarm
- hazardous gas alert.

The actions to be taken will be clearly defined and incorporated into company procedures.

Unit 259 How to maintain effective working relationships within process engineering maintenance

UAN:	K/602/0627
Level:	Level 2
Credit value:	1
GLH:	9
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to create and maintain effective working relationships.
Assessment criteria
The learner can: 1.1 describe how to create and maintain effective working relationships, and why it is important to do so.

Learning outcome
The learner will: 2. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 2.1 describe own and others responsibilities with regards to lines of communication 2.2 identify the types of problems that can affect relationships and what actions can be taken to deal with specific difficulties.

Unit 259 How to maintain effective working relationships within process engineering maintenance

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of developing and maintaining effective working relationships with others. This may include colleagues, supervisors and visitors and may be frequent or infrequent. Both oral and written methods will be used.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

During this work the learner must take account of the relevant worksite operational requirements, procedures and safe working practices.

Scope

The groups of people with which relationships should be maintained include people with whom the learner comes into contact as part of their work role either on a frequent or regular basis, or occasionally only. Typical relationships could be with:

- those for whom the learner has responsibility
- clients
- other disciplines
- security/safety personnel
- those to whom the learner is responsible
- colleagues
- suppliers.

Effective working relationships require communication with others. This could include:

- formal/informal
- oral
- written.

Examples could include:

- tool box talks
- safety feedback
- complaints
- appraisals/performance reviews
- inductions

- production loop
- liaison between training and workplace contacts.

Unit 260 Maintain effective working relationships within process engineering maintenance

UAN:	**H/602/0626**
Level:	Level 2
Credit value:	1
GLH:	4
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to establish and maintain effective working relationships.
Assessment criteria
The learner can: 1.1 establish and maintain effective working relationships.

Learning outcome
The learner will: 2. Be able to maintain effective communication within working relationships.
Assessment criteria
The learner can: 2.1 keep others informed about work plans or activities which affect them 2.2 seek assistance from others in a polite and courteous way without causing undue disruption to normal work activities 2.3 respond in a timely and positive way when others ask for help or information.

Learning outcome
The learner will: 3. Be able to deal with disagreements and problems effectively.
Assessment criteria
The learner can: 3.1 deal with disagreements in an amicable and constructive way so that good relationships are maintained.

Unit 260 Maintain effective working relationships within process engineering maintenance

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Maintain Effective Working Relationships within Process Engineering Maintenance.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in developing and maintaining effective working relationships with others. This may include colleagues, supervisors and visitors and may be frequent or infrequent. Both oral and written methods will be used.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

During this work the learner must take account of the relevant worksite operational requirements, procedures and safe working practices.

Scope

The groups of people with which relationships should be maintained include people with whom the learner comes into contact as part of their work role either on a frequent or regular basis, or occasionally only. Typical relationships could be with:

- those for whom the learner has responsibility
- clients
- other disciplines
- security/safety personnel
- those to whom the learner is responsible
- colleagues
- suppliers.

Effective working relationships require communication with others. This could include:

- formal/informal
- oral
- written.

Examples could include:

- tool box talks
- safety feedback
- complaints
- appraisals/performance reviews
- inductions

- production loop
- liaison between training and workplace contacts.

Unit 261 How to prepare work areas for the maintenance of process plant and equipment

UAN:	L/600/0872
Level:	Level 2
Credit value:	4
GLH:	26
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to assist in maintaining their own and others' safety.
Assessment criteria
The learner can: 1.1 describe their own responsibilities in respect of health and safety and the environment 1.2 state the limits of their personal responsibility 1.3 state their legal responsibilities for their own health and safety and the health and safety of others 1.4 identify the relevant regulations and safe working practices and procedures required within their work area.

Learning outcome
The learner will: 2. Know how to prepare the work area for the maintenance of process plant and equipment, within the limits of their responsibility.
Assessment criteria
The learner can: 2.1 describe the work area preparation requirements and methods. this should include, where appropriate, how to ensure the location and condition of the work environments are appropriate in terms of: • layout • accessibility • isolations • safety • security 2.2 describe the consequences of not preparing work areas correctly 2.3 describe the connection and operation of the applicable supply services and connection procedures related to the equipment relevant to the industry including: • pneumatic tools • electrical tools • hydraulic tools 2.4 identify the appropriate PPE that should be worn.

Learning outcome
The learner will: 3. Know how to respond to problems within the limits of their responsibility.
Assessment criteria
The learner can: 3.1 identify the potential problems and the hazards which may occur when preparing work areas for the maintenance of process plant and equipment.

Learning outcome
The learner will: 4. Know what the reporting lines and procedures are.
Assessment criteria
The learner can: 4.1 identify their responsibilities with regard to the reporting lines and procedures within the working environment.

Unit 261 How to prepare work areas for the maintenance of process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator who needs to gain technical competence.

Assessment Context

This unit is about the learner's knowledge in preparing the work area in order to carry out the maintenance of process plant and equipment. The learner will be involved in activities such as clearing materials and equipment from the worksite, providing service supplies and completing isolations. The learner will be following their organisation's safe working practices and working within the work permit procedures and within the limits of the learner's responsibility.

This unit is common to the Mechanical, Electrical and Instrument & Control disciplines.

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

The level and extent of responsibility will involve the learner being responsible for ensuring the preparations are carried out safely by following company defined procedures, within the limits of the learner's responsibility. The learner will be accountable for the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the Permit to Work system.

The type of work area to be prepared would include:

- chemicals manufacturing and petroleum sites
- controlled operational areas
- offshore installations.

The type of work area preparations could involve ensuring that the location and condition of work environments are appropriate in terms of:

- layout
- security
- safety
- isolations (where relevant)
- accessibility.

The type of work area protection and safety requirements will take into account any hazards due to the particular working conditions that could also include:

- working on access structures (scaffold)
- at height

- inside systems and plant
- adverse weather conditions
- confined spaces
- in shafts.

The Knowledge and Understanding levels expressed indicate the minimum level of knowledge and understanding sufficient to perform the learner's role in a manner that would normally be associated with the minimum acceptable performance of a competent person undertaking the learner's role.

The learner is expected to have an appreciation of:

- the existence, the scope and the background to the content covered by the knowledge and understanding statement
- how and where to find further detail and information that the learner will need
- having obtained the information, how to check their interpretation and then to be able to apply it to their working environment.

Unit 262 Prepare work areas for the maintenance of process plant and equipment

UAN:	J/600/0871
Level:	Level 2
Credit value:	4
GLH:	10
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Assist in maintaining their own and others' safety.
Assessment criteria
The learner can: 1.1 work safely at all times, complying with safety, health and other relevant regulations and guidelines 1.2 ensure that the work environment is suitable for the work activities to be undertaken.

Learning outcome
The learner will: 2. Prepare the work area for the maintenance of process plant and equipment within the limits of their responsibility.
Assessment criteria
The learner can: 2.1 ensure that all necessary service supplies are connected and ready for use 2.2 prepare the work areas so that they are ready for the engineering activities to be carried out 2.3 make sure that required safety arrangements are in place to protect other workers from activities likely to disrupt normal working 2.4 wear appropriate PPE.

Learning outcome
The learner will: 3. Follow organisational procedures.
Assessment criteria
The learner can: 3.1 report completion of preparations in line with organisational procedures.

Learning outcome
The learner will: 4. Respond to problems.
Assessment criteria
The learner can: 4.1 deal promptly and effectively with problems within their control 4.2 report problems that cannot be resolved, according to company reporting lines and procedures.

Unit 262 Prepare work areas for the maintenance of process plant and equipment

Supporting information

Guidance

This unit should be assessed in a work environment and is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Prepare Work Areas for the Maintenance of Process Plant and Equipment'.

The assumed pre-requisite is that the learner will be an operator who needs to gain technical competence.

Assessment Context

This unit is about the learner's competence in preparing the work area in order to carry out the maintenance of process plant and equipment. The learner will be involved in activities such as clearing materials and equipment from the worksite, providing service supplies and completing isolations. The learner will be following their organisation's safe working practices and working within the work permit procedures.

This unit is common to the Mechanical, Electrical and Instrument & Control disciplines.

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

The level and extent of responsibility will involve the learner being responsible for ensuring the preparations are carried out safely by following company defined procedures, within the limits of the learner's responsibility. The learner will be accountable for the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the Permit to Work system.

The type of work area to be prepared would include:

- chemicals manufacturing and petroleum sites
- controlled operational areas
- offshore installations.

The type of work area preparations could involve ensuring that the location and condition of work environments are appropriate in terms of:

- layout
- security
- safety
- isolations (where relevant)
- accessibility.

The type of work area protection and safety requirements will take into account any hazards due to the particular working conditions that could also include:

- working on access structures (scaffold)

- at height
- inside systems and plant
- adverse weather conditions
- confined spaces
- in shafts.

Unit 263 How to prepare loads for moving within a process engineering environment

UAN:	M/602/0631
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to prepare loads for moving.
Assessment criteria
The learner can: 1.1 explain the lifting, moving and handling equipment, methods and techniques to be followed 1.2 explain how to establish the weight of loads 1.3 identify what slings and lifting methods and techniques can be applied 1.4 describe how to care for lifting equipment and what control procedures are in place 1.5 explain the route planning methods and techniques.

Learning outcome
The learner will: 2. Know how to identify possible defects and faults.
Assessment criteria
The learner can: 2.1 identify the types of defects and faults that are possible with lifting equipment.

Learning outcome
The learner will: 3. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 3.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 3.2 identify the relevant regulations and the safe working practices and procedures required within own work area 3.3 describe reporting lines and procedures to be followed as designated by the company procedures.

Unit 263 How to prepare loads for moving within a process engineering environment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of confirming the weight of the load, selecting the appropriate method, selecting and checking the equipment before moving the loads in line with organisational procedures. The learner will be involved in activities such as confirming the weight of the load, selecting slings and shackles, paying particular attention to lifting points and the balance of the load and ensuring safety of the work area. The learner will be following the organisations safe working practices and working within the work permit procedures.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The moving methods and techniques to be used must include safe manual handling techniques as well as power assisted methods.

The type of lifting, moving and handling equipment to be used of which the following are examples:

- hoists
- slings, strops, shackles
- trolleys (powered or manual)
- chain blocks
- winches
- jacks (hydraulic or screw)
- rollers.

The characteristics of load to be moved which will take into account the:

- weight (manufacture details, equipment labels, observation)
- shape
- lifting points
- balance points

The type of location, ie the ease of access and final destination of load, the storage and the colour codes.

The defects and faults which are possible with lifting equipment may include:

- incorrect certification data
- frayed slings.

Route planning methods and techniques may include:

- overhead
- access points
- walkways.

Reporting lines and procedures to be followed as designated by the company procedures could involve the:

- asset owner
- plant supervisor
- permit controller
- work site colleagues
- Operating Instruction Manual (OIM).

Unit 264 Prepare loads for moving within a process engineering environment

UAN:	T/602/0629
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to prepare loads for moving.
Assessment criteria
The learner can: 1.1 establish the weight of the load to be moved 1.2 determine the method and select suitable equipment to move the load 1.3 check that the equipment to be used is capable of moving the load safely.

Learning outcome
The learner will: 2. Be able to determine a suitable route and secure loads successfully.
Assessment criteria
The learner can: 2.1 determine a suitable route for moving the load minimising risk to people and property 2.2 ensure that the load is secured and protected before moving operations start.

Learning outcome
The learner will: 3. Be able to deal with problems effectively.
Assessment criteria
The learner can: 3.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 4. Be able to work safely at all times.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 264 Prepare loads for moving within a process engineering environment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Prepare Loads for Moving within a Process Engineering Environment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in confirming the weight of the load, selecting the appropriate method, selecting and checking the equipment before moving the loads in line with organisational procedures. The learner will be involved in activities such as confirming the weight of the load, selecting slings and shackles, paying particular attention to lifting points and the balance of the load and ensuring safety of the work area. The learner will be following the organisations safe working practices and working within the work permit procedures.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The moving methods and techniques to be used must include safe manual handling techniques as well as power assisted methods.

The type of lifting, moving and handling equipment to be used of which the following are examples:

- hoists
- slings, strops, shackles
- trolleys (powered or manual)
- chain blocks
- winches
- jacks (hydraulic or screw)
- rollers.

The characteristics of load to be moved which will take into account the:

- weight (manufacture details, equipment labels, observation)
- shape
- lifting points
- balance points.

The type of location, ie the ease of access and final destination of load, the storage and the colour codes.

The defects and faults which are possible with lifting equipment may include:

- incorrect certification data
- frayed slings.

Route planning methods and techniques may include:

- overhead
- access points
- walkways.

Reporting lines and procedures to be followed as designated by the company procedures could involve the:

- asset owner
- plant supervisor
- permit controller
- work site colleagues
- Operating Instruction Manual (OIM).

Unit 265 How to move loads within a process engineering environment

UAN:	J/602/0635
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to move loads correctly.
Assessment criteria
The learner can: 1.1 explain the different methods and techniques of moving loads 1.2 explain the appropriate lifting, moving and handling equipment used when moving loads 1.3 describe what methods and techniques can be used to assess the load 1.4 explain how to complete route planning and what techniques to use, taking account of the obstructions and lifting opportunities 1.5 describe how to care for lifting equipment and what control procedures are in place.

Learning outcome
The learner will: 2. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 2.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 2.2 explain the relevant regulations and the safe working practices and procedures required within own work area 2.3 explain which reporting lines and procedures are to be followed as designated by the company procedures.

Unit 265 How to move loads within a process engineering environment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of moving loads using manually or power controlled equipment. The learner will be involved in activities such as positioning the equipment, attaching the lifting equipment, moving the load and positioning the load once it is in its final location. The learner will be following the organisations safe working practices and working within the work permit procedures.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility will involve the learner being responsible for ensuring the equipment and work site is safe for others or self to work in by following defined procedures. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The moving methods and techniques to be used will be as defined by the company and manufacturer.

The type of lifting, moving and handling equipment to be used of which the following are examples:

- hoists
- slings, strops, shackles
- trolleys (powered or manual)
- chain blocks
- winches
- jacks (hydraulic or screw)
- rollers.

The types of methods and equipment used to assess the load could be expected to include:

- manufacture details
- equipment labels and name plates

- observation.

Care for lifting equipment could be expected to include:

- storage
- colour coding
- location.

The type and characteristics of the load to be moved taking into account:

- weight
- shape
- lifting points
- balance points.

The final location of the load could include:

- process modules
- workshops
- containers.

Reporting lines and procedures to be followed as designated by the company procedures could involve the:

- asset owner
- plant supervisor
- permit controller
- work site colleagues
- Operating Instruction Manual (OIM).

Unit 266 Move loads within a process engineering environment

UAN:	A/602/0633
Level:	Level 2
Credit value:	3
GLH:	10
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to position and attach loads.
Assessment criteria
The learner can: 1.1 position the moving equipment so that the weight of the load is evenly distributed 1.2 attach the appropriate handling equipment securely to the load, using approved methods to eliminate slippage.

Learning outcome
The learner will: 2. Be able to confirm, move and release loads.
Assessment criteria
The learner can: 2.1 confirm that the load is secure before moving 2.2 move the load over the selected, suitable route 2.3 position and release the load safely in its intended final location.

Learning outcome
The learner will: 3. Be able to work safely at all times.
Assessment criteria
The learner can: 3.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 266 Move loads within a process engineering environment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Move Loads within a Process Engineering Environment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in moving loads using manually or power controlled equipment. The learner will be involved in activities such as positioning the equipment, attaching the lifting equipment, moving the load and positioning the load once it is in its final location. The learner will be following the organisations safe working practices and working within the work permit procedures.

This unit is common to the Electrical, Mechanical, Instrument and Control disciplines.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility will involve the learner being responsible for ensuring the equipment and work site is safe for others or self to work in by following defined procedures. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The moving methods and techniques to be used will be as defined by the company and manufacturer.

The type of lifting, moving and handling equipment to be used of which the following are examples:

- hoists
- slings, strops, shackles
- trolleys (powered or manual)
- chain blocks
- winches
- jacks (hydraulic or screw)
- rollers.

The types of methods and equipment used to assess the load could be expected to include:

- manufacture details
- equipment labels and name plates
- observation.

Care for lifting equipment could be expected to include:

- storage
- colour coding
- location.

The type and characteristics of the load to be moved taking into account:

- weight
- shape
- lifting points
- balance points.

The final location of the load could include:

- process modules
- workshops
- containers.

Reporting lines and procedures to be followed as designated by the company procedures could involve the:

- asset owner
- plant supervisor
- permit controller
- work site colleagues
- Operating Instruction Manual (OIM).

Unit 267 How to contribute to the preparation of materials for the maintenance of electrical process plant and equipment

UAN:	Y/602/0641
Level:	Level 2
Credit value:	1
GLH:	9
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the preparation of materials for maintenance within scope of authority.
Assessment criteria
The learner can: 1.1 identify the materials to use and recognise defects in the quality of them 1.2 explain the types of handling and preparation methods and techniques needed for different materials 1.3 describe how to deal with problems 1.4 explain how to report the completion of preparations 1.5 describe own responsibilities for ensuring the security of the tools and equipment and their control procedures.

Learning outcome
The learner will: 2. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 2.1 explain own responsibilities in respect of health, safety and environment, including the limits of own personal responsibility, legal responsibility for own health and safety and the health and safety of others 2.2 explain the relevant regulations and safe working practices and procedures required within own work area 2.3 explain own responsibilities with regard to the reporting lines and procedures in working environment.

Unit 267 How to contribute to the preparation of materials for the maintenance of electrical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of contributing to the preparation of the materials in order to carry out the maintenance of plant and equipment. The learner will be required to contribute to the checking of quality and quantity of selected materials, determine how materials should be prepared and report on completion. The learner will be following the organisation's safe working practices at all times and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the preparations are carried safely out by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The type of complexity of material preparations involve standard treatments and/or require taking instrument readings for analysis. Typical preparation could include:

- identification
- storage
- confirming alignment
- setting out
- cleaning
- protecting/preserving
- security
- precision measuring
- checking quality and quantity
- asset/product orientation.

The types of materials could include materials and/or components used in the engineering activity, including:

- conductors
- components
- test equipment
- spare parts.

The responsibilities for ensuring the security of the tools and equipment and control procedures could be expected to include:

- ingress protection ratings
- portable appliance testing
- explosion protection rating equipment
- heating and ventilation
- corrosion
- permit systems.

Unit 268 Contribute to the preparation of materials for the maintenance of electrical process plant and equipment

UAN:	R/602/0640
Level:	Level 2
Credit value:	1
GLH:	2
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparation of materials for maintenance, within own scope of authority.
Assessment criteria
The learner can: 1.1 obtain the required materials and check them for quantity and quality 1.2 determine how the materials need to be prepared 1.3 contribute to the preparations using suitable equipment 1.4 report completion of preparations in line with organisational procedures.

Learning outcome
The learner will: 2. Be able to deal effectively with problems.
Assessment criteria
The learner can: 2.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 3. Be able to work safely at all times.
Assessment criteria
The learner can: 3.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 268 Contribute to the preparation of materials for the maintenance of electrical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to the Preparation of Materials for the Maintenance of Electrical Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to the preparation of the materials in order to carry out the maintenance of plant and equipment. The learner will be required to contribute to the checking of quality and quantity of selected materials, determine how materials should be prepared and report on completion. The learner will be following the organisation's safe working practices at all times and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the preparations are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The type of complexity of material preparations involve standard treatments and/or require taking instrument readings for analysis. Typical preparation could include:

- identification
- storage
- confirming alignment
- setting out
- cleaning
- protecting/preserving
- security
- precision measuring

- checking quality and quantity
- asset/product orientation.

The types of materials could include materials and/or components used in the engineering activity, including:

- conductors
- components
- test equipment
- spare parts.

The responsibilities for ensuring the security of the tools and equipment and control procedures could be expected to include:

- ingress protection ratings
- portable appliance testing
- explosion protection rating equipment
- heating and ventilation
- corrosion
- permit systems.

Unit 269 How to contribute to the preparation of process plant and equipment in support of electrical engineering activities

UAN:	H/602/0643
Level:	Level 2
Credit value:	2
GLH:	13
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the preparation of process plant and equipment correctly, within scope of authority.
Assessment criteria
The learner can: 1.1 explain own contribution to the equipment preparation methods and procedures 1.2 identify the types of equipment which may be used 1.3 identify how to deal with problems 1.4 explain how to report the completion of preparations 1.5 describe own responsibilities for the equipment care and control procedures.

Learning outcome
The learner will: 2. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 2.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 2.2 explain the relevant regulations and safe working practices and procedures required within own work area 2.3 identify own responsibilities with regard to the reporting lines and procedures in working environment.

Unit 269 How to contribute to the preparation of process plant and equipment in support of electrical engineering activities

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the learner's knowledge of contributing to the preparation of electrical equipment in order to carry out the maintenance of plant and equipment. The learner will be required to contribute to obtaining the equipment, ensure it is in a safe condition and advise the appropriate people. The learner will be following the organisations safe working practices and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the preparations are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The equipment safety checks and inspections will be carried out to ensure that there are no obvious faults present, in accordance with company procedures. The types of equipment to be prepared could include:

- protective clothing/equipment
- lifting and handling equipment
- access structures (typically ladders, steps, trestles, Youngman boards, temporary staging, access hoists… "cherry pickers")
- process equipment
- tools
- safety equipment/harness
- temporary electrical supplies.

The types of equipment preparation methods and procedures could be expected to include checking the working condition and operation of standard equipment, including safety checks and inspections.

The type of equipment which may be used could be expected to include:

- fixed (machine)
- portable (hand or machine).

Responsibilities for the equipment care and control procedures could be expected to include:

- ingress protection ratings
- explosion protection rating equipment
- corrosion
- portable appliance testing
- heating and ventilation
- permit systems.

The types of equipment preparation could involve selection, inspection, changing settings or the calibrating as well as routine checks on its condition, operation, suitability and safety, in compliance with company procedures.

Unit 270 Contribute to the preparation of process plant and equipment in support of electrical engineering activities

UAN:	D/602/0642
Level:	Level 2
Credit value:	2
GLH:	3
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparation of process plant and equipment and report completion.
Assessment criteria
The learner can: 1.1 obtain the required equipment and ensure that it is in a safe and usable condition 1.2 contribute to the necessary preparations to equipment in line with work requirements 1.3 report completion of preparations in line with organisational procedures.

Learning outcome
The learner will: 2. Be able to deal effectively with problems.
Assessment criteria
The learner can: 2.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 3. Be able to work safely at all times.
Assessment criteria
The learner can: 3.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 3.2 make sure that required safety arrangements are in place to protect other workers from activities likely to disrupt normal working.

Unit 270 Contribute to the preparation of process plant and equipment in support of electrical engineering activities

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy. This unit should not be taken prior to taking 'How to Contribute to the Preparation of Process Plant and Equipment in Support of Electrical Engineering Activities.' The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to the preparation of electrical equipment in order to carry out the maintenance of plant and equipment. The learner will be required to contribute to obtaining the equipment, ensure it is in a safe condition and advise the appropriate people. The learner will be following the organisations safe working practices and working within the work permit procedures. During this work the learner must take account of the relevant worksite operational requirements, procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the preparations are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The equipment safety checks and inspections will be carried out to ensure that there are no obvious faults present, in accordance with company procedures. The types of equipment to be prepared could include:

- protective clothing/equipment
- lifting and handling equipment
- access structures (typically ladders, steps, trestles, Youngman boards, temporary staging, access hoists… "cherry pickers")
- process equipment
- tools
- safety equipment/harness
- temporary electrical supplies.

The types of equipment preparation methods and procedures could be expected to include checking the working condition and operation of standard equipment, including safety checks and inspections.

The type of equipment which may be used could be expected to include:

- fixed (machine)
- portable (hand or machine).

Responsibilities for the equipment care and control procedures could be expected to include:

- ingress protection ratings
- explosion protection rating equipment
- corrosion
- portable appliance testing
- heating and ventilation
- permit systems.

The types of equipment preparation could involve selection, inspection, changing settings or the calibrating as well as routine checks on its condition, operation, suitability and safety, in compliance with company procedures.

Unit 271 How to assemble components of electrical process plant and equipment

UAN:	M/602/0645
Level:	Level 2
Credit value:	2
GLH:	13
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to correctly fit and assemble components.
Assessment criteria
The learner can: 1.1 identify the assembly drawings and related specifications 1.2 explain which assembly methods and techniques can be used for fitting components together 1.3 explain why the order of fitting components affects efficiency and cost effectiveness and how standard practices can be modified to influence these.

Learning outcome
The learner will: 2. Know what quality control procedures are and when to apply them.
Assessment criteria
The learner can: 2.1 identify when confirmation tests should be undertaken 2.2 explain how to recognise assembly defects 2.3 explain what types of confirmation tests should be undertaken for different assets 2.4 describe how confirmation tests should be applied in line with company procedures.

Learning outcome
The learner will: 3. Know how to handle equipment safely and carefully.
Assessment criteria
The learner can: 3.1 describe the handling equipment and procedures including manual handling methods and procedures 3.2 explain the equipment preparation methods and procedures in relation to checking the working conditions and operation of standard equipment including safety checks and inspection 3.3 identify own responsibilities for ensuring the care and security of tools and equipment used.

Learning outcome
The learner will: 4. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 4.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 4.2 explain the relevant regulations and safe working practices and procedures required within own work area 4.3 identify own responsibilities with regard to the reporting lines and procedures in the working environment.

Unit 271 How to assemble components of electrical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of assembling electrical components. The learner will be required to follow instructions, ensure they have the correct tools and equipment to complete the assembly and deal with problems as they arise. The learner will be following the organisations safe working practices and working within the work permit procedures. During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this standard, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner albeit, the learner will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The type and complexity of the assembly to be produced are of one technology and/or are of a robust nature. There may be a number/variety of connections to be made and these may be easy to access or to achieve.

The assembly methods and techniques to be used may require the application of several different, sequential techniques relevant to the technologies of the asset. Typical techniques could include:

- using threaded fasteners
- clamping
- connecting male/female connectors
- soldering
- sealing
- terminating cables/impulse lines.

The assembly is made by following sequential procedures which do not account for every stage involved and/or need to be modified to achieve the results required.

The typical assets/components could include:

- battery systems
- low voltage rotating equipment
- hand tools
- low voltage electrical distribution systems.

The types of quality control procedures should include when confirmation tests should be undertaken, what the types of confirmation test are that should be undertaken for different assets and how they should be applied in line with company procedures.

Handling equipment and procedures could be expected to include manual handling methods and procedures.

The quality standards and accuracy to be achieved are set down in internal Quality Assurance (QA) and Quality Control (QC) specifications.

Unit 272 Assemble components of electrical process plant and equipment

UAN:	K/602/0644
Level:	Level 2
Credit value:	2
GLH:	5
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to assemble the components correctly.
Assessment criteria
The learner can: 1.1 follow the relevant instructions, assembly drawings and any other specifications 1.2 ensure that the specified components are available and that they are in a useable condition 1.3 use the appropriate methods and techniques to assemble the components in their correct positions.

Learning outcome
The learner will: 2. Be able to secure and check the assembled components.
Assessment criteria
The learner can: 2.1 Secure the components using the specified connectors and securing devices 2.2 Check the completed assembly to ensure that all operations have been completed and the finished assembly meets the required specification.

Learning outcome
The learner will: 3. Be able to deal with problems effectively.
Assessment criteria
The learner can: 3.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 4. Be able to work safely at all times.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 272 Assemble components of electrical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Assemble Components of Electrical Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in assembling electrical components. The learner will be required to follow instructions, ensure they have the correct tools and equipment to complete the assembly and deal with problems as they arise. The learner will be following the organisations safe working practices and working within the work permit procedures. During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this standard, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner albeit, the learner will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The type and complexity of the assembly to be produced are of one technology and/or are of a robust nature. There may be a number/variety of connections to be made and these may be easy to access or to achieve. The assembly methods and techniques to be used may require the application of several different, sequential techniques relevant to the technologies of the asset. Typical techniques could include:

- using threaded fasteners
- clamping
- connecting male/female connectors
- soldering
- sealing
- terminating cables/impulse lines.

The assembly is made by following sequential procedures which do not account for every stage involved and/or need to be modified to achieve the results required.

The typical assets/components could include:

- battery systems
- low voltage rotating equipment
- hand tools
- low voltage electrical distribution systems.

The types of quality control procedures should include when confirmation tests should be undertaken, what the types of confirmation test are that should be undertaken for different assets and how they should be applied in line with company procedures.

Handling equipment and procedures could be expected to include manual handling methods and procedures.

The quality standards and accuracy to be achieved are set down in internal Quality Assurance (QA) and Quality Control (QC) specifications.

Unit 273 How to Contribute to the Removal of Components from Electrical Process Plant and Equipment

UAN:	F/602/0648
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the removal of components including the methods and equipment to use.
Assessment criteria
The learner can: 1.1 describe the engineering drawings and related specifications to work to 1.2 explain the types of component removal methods and techniques, including isolation and connections that have to be made, and which tools, equipment and methods can be used to remove specific components from specific products/assets 1.3 explain how to assess and identify the condition of removed components 1.4 identify own responsibilities for ensuring the care and security of tools and equipment used.

Learning outcome
The learner will: 2. Know how to store and dispose of components.
Assessment criteria
The learner can: 2.1 explain how to label and store components for re-use including the marking systems for specific components and connections 2.2 describe how to dispose of unwanted components and substances.

Learning outcome
The learner will: 3. know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 3.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 3.2 explain the relevant regulations and safe working practices and procedures required within own work area 3.3 identify own responsibilities with regard to the reporting lines and procedures in the working environment.

Unit 273 How to contribute to the removal of components from electrical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of contributing to removing electrical components. The learner will be required to contribute to identification, removal, checking of condition, and mark and store for further use. The learner will be following the organisations safe working practices and working within the work permit procedures.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to working with a detailed specification, varying techniques and activities and applying appropriate methods to achieve the best possible result in the conditions applying. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner albeit, the learner will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The engineering drawings and related specifications to which the learner will be expected to work could include:

- technical drawings (component, assembly, general arrangements, isometric, 1st and 3rd angle projections)
- method statements and product worksheets
- tolerances.

The equipment to be worked on will be operational assets and should include:

- rotating equipment and tools
- protection methods
- electrical distribution systems.

The type of components to be removed may be robust or fragile. Robust components are those which are resistant to most forms of damage or disruption during their working lives. Typical robust components could be:

- components of power/lighting transmission
- motors/components of motors

- components of process control systems
- heat exchangers
- components of electrical back-up systems.

Fragile components are those which are easily disrupted or damaged. Damage or disruption could be due to physical, chemical or other forces (e.g. Electro-magnetic). Typical fragile components could be:

- components of electrical circuit protectors
- electrical meter devices
- circuit boards
- safety/protection devices
- components of electrical panels

The specifications to which a learner would be expected to work to could include:

- product worksheets
- technical drawings (components, assembly, general arrangements, isometrics)
- method statements
- maintenance schedules.

The removal operations will be simple. Simple removal of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The disposing of unwanted components and substances relates to what substances could be released during the removal of components, which risks are associated with the release of substances, and where to access information on the environmental standards, including Control of Substances Hazardous to Health (COSHH), Safety and Emergency Preparedness Analysis (SEPA) and company procedures.

Unit 274 Contribute to the removal of components from electrical process plant and equipment

UAN:	A/602/0647
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparation of components for removal.
Assessment criteria
The learner can: 1.1 establish, and where appropriate, mark component orientation for re-assembly 1.2 ensure that isolations are carried out to enable safe removal.

Learning outcome
The learner will: 2. Be able to contribute to the removal of components correctly.
Assessment criteria
The learner can: 2.1 remove the required components using approved tools and techniques 2.2 take suitable precautions to prevent damage to components, tools and equipment during removal 2.3 check the condition of the removed components and record those that will require replacing.

Learning outcome
The learner will: 3. Be able to contribute to the completion of the removal process.
Assessment criteria
The learner can: 3.1 discard or label and store the removed component in an appropriate location 3.2 maintain documentation in accordance with organisational requirements.

Learning outcome
The learner will: 4. Be able to work safely at all times.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 274 Contribute to the removal of components from electrical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to the Removal of Components from Electrical Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to removing electrical components. The learner will be required to contribute to identification, removal, checking of condition, and mark and store for further use. The learner will be following the organisations safe working practices and working within the work permit procedures.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this standard, extends to working with a detailed specification, varying techniques and activities and applying appropriate methods to achieve the best possible result in the conditions applying. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner albeit, the learner will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The engineering drawings and related specifications to which the learner will be expected to work could include:

- technical drawings (component, assembly, general arrangements, isometric, 1st and 3rd angle projections)
- method statements and product worksheets
- tolerances.

The equipment to be worked on will be operational assets and should include:

- rotating equipment and tools
- protection methods
- electrical distribution systems.

The type of components to be removed may be robust or fragile. Robust components are those which are resistant to most forms of damage or disruption during their working lives. Typical robust components could be:

- components of power/lighting transmission

- motors/components of motors
- components of process control systems
- heat exchangers
- components of electrical back-up systems.

Fragile components are those which are easily disrupted or damaged. Damage or disruption could be due to physical, chemical or other forces (e.g. Electro-magnetic).

Typical fragile components could be:

- components of electrical circuit protectors
- electrical meter devices
- circuit boards
- safety/protection devices
- components of electrical panels.

The specifications to which a learner would be expected to work to could include:

- product worksheets
- technical drawings (components, assembly, general arrangements, isometrics)
- method statements
- maintenance schedules.

The removal operations will be simple. Simple removal of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The disposing of unwanted components and substances relates to what substances could be released during the removal of components, which risks are associated with the release of substances, and where to access information on the environmental standards, including Control of Substances Hazardous to Health (COSHH), Safety and Emergency Preparedness Analysis (SEPA) and company procedures.

Unit 275 How to contribute to the replacement of components from electrical process plant and equipment

UAN:	J/602/0652
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the replacement of components including the methods and equipment to use.
Assessment criteria
The learner can: 1.1 describe the engineering drawings and related specifications to work to 1.2 explain the replacement methods and techniques, including the types of reconnection that have to be made, and which tools, equipment and methods can be used to replace specific components from specific products/assets.

Learning outcome
The learner will: 2. Know and understand own responsibilities when replacing components within scope of authority.
Assessment criteria
The learner can: 2.1 identify own responsibilities for ensuring the care and security of tools and equipment used 2.2 identify own responsibilities with regard to the reporting lines and procedures in working environment.

Learning outcome
The learner will: 3. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 3.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 3.2 explain the relevant regulations and safe working practices and procedures required within own work area.

Unit 275 How to contribute to the replacement of components from electrical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the knowledge required for the learner to replace components in electrical process plant and equipment using the correct methods and techniques. The learner will be following the organisation's safe working practices at all times and working within the organisations work permit procedures.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this standard, extends to working with a detailed specification, varying techniques and activities and applying appropriate methods to achieve the best possible result in the conditions applying. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner albeit, the learner will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The equipment to be worked on could include:

- low voltage rotating equipment
- protection methods
- low voltage electrical distribution systems.

The types of components to be replaced will be robust. Robust components are those which are resistant to most forms of damage or disruption during their working lives.

Typical robust components could be:

- components of power/lighting transmission
- motors/components of motors
- components of process control systems
- heat exchangers
- components of electrical back-up systems

The specifications to which a learner would be expected to work could include:

- product worksheets

- technical drawings (components, assembly, general arrangements, isometrics)
- method statements
- maintenance schedules.

The assembly operations will be simple. Simple replacement of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The quality standards and accuracy to be achieved are set down in the work specifications.

Unit 276 Contribute to the replacement of components from electrical process plant and equipment

UAN:	F/602/0651
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparations needed in order to replace components.
Assessment criteria
The learner can: 1.1 obtain all the required components and ensure that they are in a suitable condition for replacement and fit for purpose 1.2 ensure that any replacement components used meet the required specification.

Learning outcome
The learner will: 2. Be able to contribute to the replacement and adjustment of components correctly.
Assessment criteria
The learner can: 2.1 take adequate precautions to prevent damage to component, tools and equipment during replacement 2.2 replace the components in the correct sequence using appropriate tools and techniques 2.3 make any necessary settings or adjustments to the components to ensure they will function correctly.

Learning outcome
The learner will: 3. Be able to deal with problems effectively.
Assessment criteria
The learner can: 3.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 4. Be able to follow organisational policies and procedures.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 4.2 maintain documentation in accordance with organisational requirements.

Unit 276 Contribute to the replacement of components from electrical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to the Replacement of Components from Electrical Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the competence required for the learner to replace components in electrical process plant and equipment using the correct methods and techniques. The learner will be following the organisation's safe working practices at all times and working within the organisations work permit procedures.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this standard, extends to working with a detailed specification, varying techniques and activities and applying appropriate methods to achieve the best possible result in the conditions applying. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner albeit, the learner will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The equipment to be worked on could include:

- low voltage rotating equipment
- protection methods
- low voltage electrical distribution systems.

The types of components to be replaced will be robust. Robust components are those which are resistant to most forms of damage or disruption during their working lives.

Typical robust components could be:

- components of power/lighting transmission
- motors/components of motors
- components of process control systems
- heat exchangers
- components of electrical back-up systems.

The specifications to which a learner would be expected to work could include:

- product worksheets
- technical drawings (components, assembly, general arrangements, isometrics)
- method statements
- maintenance schedules.

The assembly operations will be simple. Simple replacement of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The quality standards and accuracy to be achieved are set down in the work specifications.

Unit 277 How to contribute to planned maintenance on electrical process plant and equipment

UAN:	D/602/0639
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know and understand the maintenance schedules, methods and records.
Assessment criteria
The learner can: 1.1 identify personal maintenance schedules and related specifications which are required 1.2 describe the maintenance methods and procedures 1.3 identify the maintenance records and documentation procedures.

Learning outcome
The learner will: 2. Know own responsibilities and the limits of them.
Assessment criteria
The learner can: 2.1 explain own responsibilities for the care and control of equipment used 2.2 explain the maintenance authorisation procedures and limits of responsibility and authority in line with the company and manufacturer's procedures 2.3 describe own responsibilities with regard to the reporting lines and procedures in own working environment.

Learning outcome
The learner will: 3. Know how to identify methods for the disposal of waste.
Assessment criteria
The learner can: 3.1 identify appropriate methods and waste disposal procedures in relation to legislation, regulation and procedures for waste segregation.

Learning outcome
The learner will: 4. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 4.1 explain own responsibilities in respect of health, safety and environment, including the limits of own personal responsibility, legal responsibility for own health and safety and the health and safety of others 4.2 explain the relevant regulations and safe working practices and procedures required within own work area.

Unit 277 How to contribute to planned maintenance on electrical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the learner's knowledge of contributing to maintaining electrical equipment in line with the manufacturer's and organisational practices and procedures. The learner will be required to contribute to the maintenance procedures in a timely manner, follow procedures and complete the appropriate documentation. The learner will be following the organisations safe working practices and working within the work permit procedures. During this work the learner must take account of the relevant worksite operational requirements, procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the maintenance procedures are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

Maintenance schedules and related specifications to be followed could be expected to include:

- authorisation procedures
- product worksheets
- tests
- internal maintenance schedules
- safe working practices
- method statements
- records
- timescales.

The plant or equipment to be maintained could include:

- rotating equipment and tools
- protection methods
- electrical distribution systems.

The maintenance procedures and activities to be followed are fully defined within the company maintenance procedures. Typical procedures could include:

- tightening of connections
- checking outputs
- replacement of regularly changed “lifed” components (lamps, bulbs, indicators, etc)
- checking and adjusting movements/components.
- inspection for damage/wear/corrosion movement
- replacement of worn/damaged/corroded components
- cleaning.

The quality standards and accuracy to be achieved are as set down in the Quality Assurance (QA) and Quality Control (QC) specifications

Unit 278 Contribute to planned maintenance on electrical process plant and equipment

UAN:	Y/602/0638
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to planned maintenance.
Assessment criteria
The learner can: 1.1 follow the relevant maintenance schedules to contribute to the required work 1.2 contribute to maintenance activities within the limits of own personal authority 1.3 contribute to the maintenance activities in the specified sequence and in an agreed time scale.

Learning outcome
The learner will: 2. Be able to report defects and record activities accurately.
Assessment criteria
The learner can: 2.1 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule 2.2 complete relevant maintenance records accurately and pass them on to the appropriate person.

Learning outcome
The learner will: 3. Be able to dispose of waste correctly.
Assessment criteria
The learner can: 3.1 dispose of waste materials in accordance with safe working practices and approved procedures.

Learning outcome
The learner will: 4. Be able to work safely at all times.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 278 Contribute to planned maintenance on electrical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to Planned Maintenance on Electrical Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the learner's competence in contributing to maintaining electrical equipment in line with the manufacturer's and organisational practices and procedures. The learner will be required to contribute to the maintenance procedures in a timely manner, follow procedures and complete the appropriate documentation. The learner will be following the organisations safe working practices and working within the work permit procedures. During this work the learner must take account of the relevant worksite operational requirements, procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the maintenance procedures are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

Maintenance schedules and related specifications to be followed could be expected to include:

- authorisation procedures
- product worksheets
- tests
- internal maintenance schedules
- safe working practices
- method statements
- records
- timescales.

The plant or equipment to be maintained could include:

- rotating equipment and tools
- protection methods
- electrical distribution systems.

The maintenance procedures and activities to be followed are fully defined within the company maintenance procedures. Typical procedures could include:

- tightening of connections
- checking outputs
- replacement of regularly changed “lifed” components (lamps, bulbs, indicators, etc)
- checking and adjusting movements/components
- inspection for damage/wear/corrosion movement
- replacement of worn/damaged/corroded components
- cleaning.

The quality standards and accuracy to be achieved are as set down in the Quality Assurance (QA) and Quality Control (QC) specifications.

Unit 279 How to contribute to the preparation of materials for the maintenance of instrument and control process plant and equipment

UAN:	H/602/0657
Level:	Level 2
Credit value:	1
GLH:	9
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the preparation of materials for maintenance within own scope of authority.
Assessment criteria
The learner can: 1.1 identify the materials to use and recognise defects in the quality of them 1.2 explain the types of handling and preparation methods and techniques needed for different materials 1.3 describe own responsibilities for ensuring the security of the tools and equipment and their control procedures used.

Learning outcome
The learner will: 2. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 2.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 2.2 explain the relevant regulations and safe working practices and procedures required within own work area 2.3 explain own responsibilities with regard to the reporting lines and procedures in the working environment.

Unit 279 How to contribute to the preparation of materials for the maintenance of instrument and control process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the learner's knowledge of contributing to the preparation of the materials in order to carry out the maintenance of instrument and control plant and equipment. The learner will be required to contribute to the checking of the quality and quantity of the selected materials, determine how the materials should be prepared and report on completion. The learner will be following the organisations safe working practices at all times and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the preparations are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The type and complexity of material preparations involve standard treatments and/or require taking instrument readings for analysis. Typical preparation could include:

- identification
- storage
- confirming alignment
- setting out
- cleaning
- protecting/preserving
- security
- precision measuring
- checking quality and quantity
- asset/product orientation.

The types of materials could include materials and/or components used in the engineering activity, including:

- final control transmitters
- components
- test equipment
- spare parts.

Unit 280 Contribute to the preparation of materials for the maintenance of instrument and control process plant and equipment

UAN:	D/602/0656
Level:	Level 2
Credit value:	1
GLH:	2
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparation of materials for maintenance, within own scope of authority.
Assessment criteria
The learner can: 1.1 obtain the required materials and check them for quantity and quality 1.2 determine how the materials need to be prepared 1.3 contribute to the preparations using suitable equipment 1.4 report completion of preparations in line with organisational procedures.

Learning outcome
The learner will: 2. Be able to deal effectively with problems.
Assessment criteria
The learner can: 2.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 3. Be able to work safely at all times.
Assessment criteria
The learner can: 3.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 280 Contribute to the preparation of materials for the maintenance of instrument and control process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to the Preparation of Materials for the Maintenance of Instrument and Control Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to the preparation of the materials in order to carry out the maintenance of instrument and control plant and equipment. The learner will be required to contribute to the checking of the quality and quantity of the selected materials, determine how the materials should be prepared and report on completion. The learner will be following the organisations safe working practices at all times and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the preparations are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The type and complexity of material preparations involve standard treatments and/or require taking instrument readings for analysis. Typical preparation could include:

- identification
- storage
- confirming alignment
- setting out
- cleaning
- protecting/preserving
- security
- precision measuring

- checking quality and quantity
- asset/product orientation.

The types of materials could include materials and/or components used in the engineering activity, including:

- final control transmitters
- components
- test equipment
- spare parts.

Unit 281 How to contribute to the preparation of process plant and equipment in support of instrument and control engineering activities

UAN:	H/602/0786
Level:	Level 2
Credit value:	2
GLH:	13
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to prepare process plant and equipment.
Assessment criteria
The learner can: 1.1 explain the equipment preparation methods and procedures 1.2 identify the types of equipment which may be used 1.3 describe own responsibilities with regard to the equipment care and control procedures.

Learning outcome
The learner will: 2. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 2.1 explain own responsibilities in respect of health, safety and environment, including the limits of own personal responsibility, own legal responsibility for own health and safety and the health and safety of others 2.2 explain the relevant regulations and safe working practices and procedures required within own work area 2.3 explain own responsibilities with regard to the reporting lines and procedures in the working environment.

Unit 281 How to contribute to the preparation of process plant and equipment in support of instrument and control engineering activities

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the learner's knowledge of contributing to the preparation of equipment in order to carry out the maintenance of instrument and control plant and equipment. The learner will be required to contribute to the obtaining of the equipment, ensuring it is in a safe condition and advising the appropriate people. The learner will be following the organisations safe working practices and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the preparations are carried out safely by following company procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The equipment safety checks and inspections will be carried out to ensure that there are no obvious faults present, in accordance with company procedures.

The types of equipment to be prepared could include fixed (machine) and/or portable (hand or machine):

- protective clothing/equipment
- lifting and handling equipment
- access structures (typically ladders, steps, trestles, Youngman boards, temporary staging, access hoists… "cherry pickers")
- process equipment
- tools
- safety equipment/harnesses
- temporary electrical supplies.

The types of equipment preparation could involve selection, inspection, safety checks, changing settings or the calibrating as well as routine checks on its condition, operation, suitability and safety, in compliance with company procedures.

Equipment care and control procedures could be expected to include:

- ingress protection ratings
- explosion protection rating equipment
- corrosion
- portable appliance testing
- heating and ventilation
- permit systems.

Unit 282 Contribute to the preparation of process plant and equipment in support of instrument and control engineering activities

UAN:	K/602/0658
Level:	Level 2
Credit value:	2
GLH:	3
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparation of process plant and equipment and report completion.
Assessment criteria
The learner can: 1.1 obtain all the required equipment and ensure that it is in a safe and useable condition 1.2 contribute to the necessary preparations to equipment in line with work requirements 1.3 report completion of preparations in line with organisational procedures.

Learning outcome
The learner will: 2. Be able to deal effectively with problems.
Assessment criteria
The learner can: 2.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 3. Be able to work safely at all times.
Assessment criteria
The learner can: 3.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 3.2 make sure that required safety arrangements are in place to protect other workers from activities likely to disrupt normal working.

Unit 282 Contribute to the preparation of process plant and equipment in support of instrument and control engineering activities

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to the Preparation of Process Plant and Equipment in Support of Instrument and Control Engineering Activities.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the learner's competence in contributing to the preparation of equipment in order to carry out the maintenance of instrument and control plant and equipment. The learner will be required to contribute to the obtaining of the equipment, ensuring it is in a safe condition and advising the appropriate people. The learner will be following the organisations safe working practices and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner being responsible for contributing to ensuring that the preparations are carried out safely by following company procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The equipment safety checks and inspections will be carried out to ensure that there are no obvious faults present, in accordance with company procedures.

The types of equipment to be prepared could include fixed (machine) and/or portable (hand or machine):

- protective clothing/equipment
- lifting and handling equipment
- access structures (typically ladders, steps, trestles, Youngman boards, temporary staging, access hoists… "cherry pickers")
- process equipment
- tools
- safety equipment/harnesses

- temporary electrical supplies.

The types of equipment preparation could involve selection, inspection, safety checks, changing settings or the calibrating as well as routine checks on its condition, operation, suitability and safety, in compliance with company procedures.

Equipment care and control procedures could be expected to include:

- ingress protection ratings
- explosion protection rating equipment
- corrosion
- portable appliance testing
- heating and ventilation
- permit systems.

Unit 283 How to Assemble Components of Instrument and Control Process Plant and Equipment

UAN:	H/602/0660
Level:	Level 2
Credit value:	2
GLH:	13
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to correctly fit and assemble components.
Assessment criteria
The learner can: 1.1 identify the assembly drawings and related specifications 1.2 explain which assembly methods and techniques can be used for fitting components together 1.3 explain why the order of fitting components affects efficiency and cost effectiveness and how standard practices can be modified to influence these.

Learning outcome
The learner will: 2. Know what quality control procedures are and when to apply them.
Assessment criteria
The learner can: 2.1 identify when confirmation tests should be undertaken 2.2 explain how to recognise assembly defects 2.3 explain what types of confirmation tests should be undertaken for different assets 2.4 describe how confirmation tests should be applied in line with company procedures.

Learning outcome
The learner will: 3. Know how to handle equipment safely and carefully.
Assessment criteria
The learner can: 3.1 describe the handling equipment and procedures including manual handling methods and procedures 3.2 explain the equipment preparation methods and procedures in relation to checking the working conditions and operation of standard equipment including safety checks and inspection 3.3 identify own responsibilities for ensuring the care and security of tools and equipment used.

Learning outcome
The learner will: 4. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 4.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 4.2 explain the relevant regulations and safe working practices and procedures required within own work area 4.3 identify own responsibilities with regard to the reporting lines and procedures in the working environment.

Unit 283 How to assemble components of instrument and control process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy. The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the learner's knowledge of assembling instrument and control components. The learner will be required to follow instructions, ensure they have the correct tools and equipment to complete the assembly and deal with problems as they arise. The learner will be following the organisations safe working practices and working within the work permit procedures. During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The type and complexity of the assembly to be produced are of one technology and/or are of a robust nature. There may be a number/variety of connections to be made and these may be easy to access or to achieve. The assembly methods and techniques to be used may require the application of several different, sequential techniques relevant to the technologies of the asset. Typical techniques could include:

- using threaded fasteners
- clamping
- connecting male/female connectors
- soldering
- sealing
- terminating cables/impulse lines.

The assembly is made by following sequential procedures which do not account for every stage involved and/or need to be modified to achieve the results required.

The typical assets/components could include:

- battery systems
- final control elements
- hand tools

- analysers.

The quality standards and accuracy to be achieved are as set down in internal Quality Assurance (QA) and Quality Control (QC) specifications.

Unit 284 Assemble components of instrument and control process plant and equipment

UAN:	M/602/0659
Level:	Level 2
Credit value:	2
GLH:	5
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to assemble the components correctly.
Assessment criteria
The learner can: 1.1 follow the relevant instructions, assembly drawings and any other specifications 1.2 ensure that the specified components are available and that they are in a useable condition 1.3 use the appropriate methods and techniques to assemble the components in their correct positions.

Learning outcome
The learner will: 2. Be able to secure and check the assembled components.
Assessment criteria
The learner can: 2.1 secure the components using the specified connectors and securing devices 2.2 check the completed assembly to ensure that all operations have been completed and the finished assembly meets the required specification.

Learning outcome
The learner will: 3. Be able to deal with problems effectively.
Assessment criteria
The learner can: 3.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 4. Be able to work safely at all times.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 284 Assemble components of instrument and control process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy. This unit should not be taken prior to taking 'How to Assemble Components of Instrument and Control Process Plant and Equipment.' The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the learner's competence in assembling instrument and control components. The learner will be required to follow instructions, ensure they have the correct tools and equipment to complete the assembly and deal with problems as they arise. The learner will be following the organisations safe working practices and working within the work permit procedures. During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The type and complexity of the assembly to be produced are of one technology and/or are of a robust nature. There may be a number/variety of connections to be made and these may be easy to access or to achieve. The assembly methods and techniques to be used may require the application of several different, sequential techniques relevant to the technologies of the asset. Typical techniques could include:

- using threaded fasteners
- clamping
- connecting male/female connectors
- soldering
- sealing
- terminating cables/impulse lines.

The assembly is made by following sequential procedures which do not account for every stage involved and/or need to be modified to achieve the results required.

The typical assets/components could include:

- battery systems
- final control elements
- hand tools
- analysers.

The quality standards and accuracy to be achieved are as set down in internal Quality Assurance (QA) and Quality Control (QC) specifications.

Unit 285 How to contribute to the removal of components from instrument and control process plant and equipment

UAN:	M/602/0662
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the removal of components including the methods and equipment to use.
Assessment criteria
The learner can: 1.1 describe the engineering drawings and related specifications to interpret, including technical drawings 1.2 explain the types of component removal methods and techniques, including isolation and connections that have to be made, and which tools, equipment and methods can be used to remove specific components from specific products/assets 1.3 explain how to assess and identify the condition of removed components 1.4 Identify own responsibilities for ensuring the care and security of tools and equipment used.

Learning outcome
The learner will: 2. Know how to store and dispose of components.
Assessment criteria
The learner can: 2.1 explain how to label and store components for re-use including the marking systems for specific components and connections 2.2 describe how to dispose of unwanted components and substances.

Learning outcome
The learner will: 3. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 3.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 3.2 explain the relevant regulations and safe working practices and procedures required within own work area 3.3 identify own responsibilities with regard to the reporting lines and procedures in the working environment.

Unit 285 How to contribute to the removal of components from instrument and control process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy. The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the learner's knowledge of contributing to the removal of instrument and control components. The learner will be required to contribute to the identification, removal, checking of the condition, and mark and store for further use. The learner will be following the organisations safe working practices and working within the work permit procedures. During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to working with a detailed specification, varying techniques and activities and applying appropriate methods to achieve the best possible result in the conditions applying. The learner will be contributing to the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The engineering drawings and related specifications to which the learner will be expected to work could include:

- technical drawings (component, assembly, general arrangements, isometric, 1st and 3rd angle projections)
- method statements and product worksheets
- tolerances.

The equipment to be worked on will be operational plant and equipment and should include:

- level transmitters
- flow transmitters
- pressure transmitters
- temperature transmitters.

The type of components to be removed may be robust or fragile.

Robust components are those which are resistant to most forms of damage or disruption during their working lives. Typical robust components could be:

- motors

- control panels
- mechanical linkages
- control valves
- metering devices
- instrument piping.

Fragile components are those which are easily disrupted or damaged. Damage or disruption could be due to physical, chemical or other forces (e.g. Electro-magnetic). Typical fragile components could be:

- sub-components
- instrumentation and control metering devices
- circuit boards
- springs
- diaphragms
- components of instrumentation and control panels.

The specifications to which a learner would be expected to work to could include:

- product worksheets
- technical drawings (components, assembly, general arrangement, isometrics)
- method statements
- maintenance schedules.

The removal operations will be simple. Simple removal of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The disposal of unwanted components and substances relates to what substances could be released during the removal of components, which risks are associated with the release of substances, and where to access information on the environmental standards, including Control of Substances Hazardous to Health (COSHH), Safety and Emergency Preparedness Analysis (SEPA) and company procedures.

Unit 286 Contribute to the removal of components from instrument and control process plant and equipment

UAN:	K/602/0661
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparation for the removal of components.
Assessment criteria
The learner can: 1.1 establish, and where appropriate, mark component orientation for re-assembly 1.2 ensure that isolations are carried out to enable safe removal.

Learning outcome
The learner will: 2. Be able to contribute to the removal of components correctly.
Assessment criteria
The learner can: 2.1 remove the required components using approved tools and techniques 2.2 take suitable precautions to prevent damage to components, tools and equipment during removal 2.3 check the condition of the removed components and record those that will require replacing.

Learning outcome
The learner will: 3. Be able to contribute to the completion of the removal process.
Assessment criteria
The learner can: 3.1 discard or label and store the removed component in an appropriate location 3.2 maintain documentation in accordance with organisational requirements.

Learning outcome
The learner will: 4. Be able to work safely at all times.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 286 contribute to the removal of components from instrument and control process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy. This unit should not be taken prior to taking 'How to Contribute to the Removal of Components from Instrument and Control Process Plant and Equipment.' The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to the removal of instrument and control components. The learner will be required to contribute to the identification, removal, checking of the condition, and mark and store for further use. The learner will be following the organisations safe working practices and working within the work permit procedures. During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to working with a detailed specification, varying techniques and activities and applying appropriate methods to achieve the best possible result in the conditions applying. The learner will be contributing to the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The engineering drawings and related specifications expected to work to could include:

- technical drawings (component, assembly, general arrangements, isometric, 1st and 3rd angle projections)
- method statements and product worksheets
- tolerances.

The equipment to be worked on will be operational plant and equipment and should include:

- level transmitters
- flow transmitters
- pressure transmitters
- temperature transmitters.

The type of components to be removed may be robust or fragile.

Robust components are those which are resistant to most forms of damage or disruption during their working lives. Typical robust components could be:

- motors
- control panels
- mechanical linkages
- control valves
- metering devices
- instrument piping.

Fragile components are those which are easily disrupted or damaged. Damage or disruption could be due to physical, chemical or other forces (e.g. Electro-magnetic). Typical fragile components could be:

- sub-components
- instrumentation and control metering devices
- circuit boards
- springs
- diaphragms
- components of instrumentation and control panels.

The specifications to which a learner would be expected to work to could include:

- product worksheets
- technical drawings (components, assembly, general arrangement, isometrics)
- method statements
- maintenance schedules.

The removal operations will be simple. Simple removal of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The disposing of unwanted components and substances relates to what substances could be released during the removal of components, which risks are associated with the release of substances, and where to access information on the environmental standards, including Control of Substances Hazardous to Health (COSHH), Safety and Emergency Preparedness Analysis (SEPA) and company procedures.

Unit 287 How to contribute to the replacement of components in instrument and control process plant and equipment

UAN:	A/602/0664
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the replacement of components including the methods and equipment to use.
Assessment criteria
The learner can: 1.1 describe the engineering drawings and related specifications to work to 1.2 explain the types of component replacement methods and techniques, including the types of reconnection that have to be made, and which tools, equipment and methods can be used to replace specific components from specific products/assets.

Learning outcome
The learner will: 2. Know and understand own responsibilities when replacing components.
Assessment criteria
The learner can: 2.1 identify own responsibilities for ensuring the care and security of tools and equipment used 2.2 identify own responsibilities with regard to the reporting lines and procedures in the working environment.

Learning outcome
The learner will: 3. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 3.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 3.2 explain the relevant regulations and safe working practices and procedures required within own work area.

Unit 287 How to contribute to the replacement of components in instrument and control process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy. The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the knowledge required for the learner to contribute to the replacement of components in instrument and control process plant and equipment using the correct methods and techniques. The learner will be following the organisations safe working practices at all times and working within the organisations work permits procedures. During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be contributing to the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The equipment to be worked on will be simple. This will require the removal/replacement of components and refers to situations where the component is quickly and easily removed from/replaced in its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

Equipment care and control procedures could be expected to include:

- ingress protection ratings
- explosion protection rating equipment
- corrosion
- portable appliance testing
- heating and ventilation
- permit systems.

The type of components to be replaced will be robust. Robust components are those which are resistant to most forms of damage or disruption during their working lives. Typical robust components could be:

- metering devices
- motors
- mechanical linkages

- control panels
- control valves.

The specifications to which a learner would be expected to work to could include:

- product worksheets
- technical drawings (components, assembly, general arrangement, isometrics)
- method statements
- maintenance schedules.

The assembly operations will be simple. Simple replacement of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The quality standards and accuracy to be achieved are as set down in the work specifications.

Unit 288 Contribute to the replacement of components in instrument and control process plant and equipment

UAN:	T/602/0663
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparations needed in order to replace components.
Assessment criteria
The learner can: 1.1 obtain all the required components and ensure that they are in a suitable condition for replacement and fit for purpose 1.2 ensure that any replacement components used meet the required specification.

Learning outcome
The learner will: 2. Be able to contribute to the replacement and adjustment of components correctly.
Assessment criteria
The learner can: 2.1 take adequate precautions to prevent damage to components, tools and equipment during replacement 2.2 replace the components in the correct sequence using appropriate tools and techniques 2.3 make any necessary settings or adjustments to the components to ensure they will function correctly.

Learning outcome
The learner will: 3. Be able to deal with problems effectively.
Assessment criteria
The learner can: 3.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 4. Be able to follow organisational policies and procedures.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 4.2 maintain documentation in accordance with organisational requirements.

Unit 288 Contribute to the replacement of components in instrument and control process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy. This unit should not be taken prior to taking 'How to Contribute to the Replacement of Components in Instrument and Control Process Plant and Equipment.' The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the competence the learner needs to contribute to the replacement of components in instrument and control process plant and equipment using the correct methods and techniques. The learner will be following the organisations safe working practices at all times and working within the organisations work permits procedures. During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be contributing to the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The equipment to be worked on will be simple. This will require the removal/replacement of components and refers to situations where the component is quickly and easily removed from/replaced in its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

Equipment care and control procedures could be expected to include:

- ingress protection ratings
- explosion protection rating equipment
- corrosion
- portable appliance testing
- heating and ventilation
- permit systems.

The type of components to be replaced will be robust. Robust components are those which are resistant to most forms of damage or disruption during their working lives. Typical robust components could be:

- metering devices

- motors
- mechanical linkages
- control panels
- control valves.

The specifications to which a learner would be expected to work to could include:

- product worksheets
- technical drawings (components, assembly, general arrangement, isometrics)
- method statements
- maintenance schedules.

The assembly operations will be simple. Simple replacement of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The quality standards and accuracy to be achieved are as set down in the work specifications.

Unit 289 How to contribute to planned maintenance on instrument and control plant and equipment

UAN:	Y/602/0784
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know and understand the maintenance schedules, methods and records.
Assessment criteria
The learner can: 1.1 identify maintenance schedules and related specifications to work to 1.2 describe the maintenance methods and procedures 1.3 identify the maintenance records and documentation procedures.

Learning outcome
The learner will: 2. Know own responsibilities and the limits of them.
Assessment criteria
The learner can: 2.1 explain own responsibilities for the care and control of equipment used 2.2 explain the maintenance authorisation procedures and limits of responsibility and authority in line with the company and manufacturer's procedures 2.3 describe own responsibilities with regard to the reporting lines and procedures in the working environment.

Learning outcome
The learner will: 3. Know the methods for the disposal of waste.
Assessment criteria
The learner can: 3.1 identify appropriate methods and waste disposal procedures in relation to legislation, regulation and procedures for waste segregation.

Learning outcome
The learner will: 4. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 4.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 4.2 explain the relevant regulations and safe working practices and procedures required within own work area.

Unit 289 How to contribute to planned maintenance on instrument and control plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy. The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence

This unit is about the learner's knowledge of maintaining instrument and control equipment in line with the manufacturer's and organisational practices and procedures. The learner will be required to complete the maintenance procedures in a timely manner, follow procedures and complete the appropriate documentation. The learner will be following the organisations safe working practices and working within the work permit procedures. During this work the learner must take account of the relevant worksite operational requirements, procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the maintenance procedures are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

Maintenance schedules and related specifications to which the learner is expected to work could be expected to include:

- authorisation procedures
- product worksheets
- tests
- internal maintenance schedules
- safe working practices
- method statements
- records
- timescales.

The plant or equipment to be maintained could include:

- level transmitters
- flow transmitters
- pressure transmitters
- temperature transmitters.

The maintenance procedures and activities to be followed are fully defined within the company maintenance procedures. Typical procedures could include:

- tightening of connections
- adjusting to within tolerances
- checking outputs
- replacement of worn/damaged components
- checking and adjusting movements/components
- inspection for damage/wear/corrosion movement
- replacement of worn/damaged/corroded components
- cleaning.

The quality standards and accuracy to be achieved are as set down in the Quality Assurance (QA) and Quality Control (QC) specifications.

Unit 290 Contribute to planned maintenance on instrument and control plant and equipment

UAN:	Y/602/0655
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to planned maintenance.
Assessment criteria
The learner can: 1.1 follow the relevant maintenance schedules to contribute to the required work 1.2 contribute to maintenance activities within the limits of personal authority 1.3 contribute to the maintenance activities in the specified sequence and in an agreed time scale.

Learning outcome
The learner will: 2. Be able to report defects and record activities accurately.
Assessment criteria
The learner can: 2.1 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule 2.2 complete relevant maintenance records accurately and pass them on to the appropriate person.

Learning outcome
The learner will: 3. Be able to dispose of waste correctly.
Assessment criteria
The learner can: 3.1 dispose of waste materials in accordance with safe working practices and approved procedures.

Learning outcome
The learner will: 4. Be able to work safely at all times.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 290 Contribute to planned maintenance on instrument and control plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to Planned Maintenance on Instrument and Control Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to maintaining instrument and control equipment in line with the manufacturer's and organisational practices and procedures. The learner will be required to contribute to the maintenance procedures in a timely manner, follow procedures and complete the appropriate documentation. The learner will be following the organisations safe working practices and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the maintenance procedures are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

Maintenance schedules and related specifications to which the learner is expected to work could be expected to include:

- authorisation procedures
- product worksheets
- tests
- internal maintenance schedules
- safe working practices
- method statements
- records
- timescales.

The plant or equipment to be maintained could include:

- level transmitters

- flow transmitters
- pressure transmitters
- temperature transmitters.

The maintenance procedures and activities to be followed are fully defined within the company maintenance procedures. Typical procedures could include:

- tightening of connections
- adjusting to within tolerances
- checking outputs
- replacement of worn/damaged components
- checking and adjusting movements/components
- inspection for damage/wear/corrosion movement
- replacement of worn/damaged/corroded components
- cleaning.

The quality standards and accuracy to be achieved are as set down in the Quality Assurance (QA) and Quality Control (QC) specifications.

Unit 291 How to contribute to the preparation of process plant and equipment in support of mechanical engineering activities

UAN:	Y/602/0669
Level:	Level 2
Credit value:	2
GLH:	13
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the preparation of process plant and equipment correctly, within own scope of responsibility.
Assessment criteria
The learner can: 1.1 explain own contribution to the equipment preparation methods and procedures 1.2 identify the types of equipment which may be used 1.3 identify how to deal with problems 1.4 explain how to report the completion of preparations 1.5 describe own responsibilities for the equipment care and control procedures.

Learning outcome
The learner will: 2. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 2.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 2.2 explain the relevant regulations and safe working practices and procedures required within own work area 2.3 explain own responsibilities with regard to the reporting lines and procedures in the working environment.

Unit 291 How to contribute to the preparation of process plant and equipment in support of mechanical engineering activities

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of contributing to the preparation of mechanical equipment in order to carry out maintenance of plant and equipment. The learner will be required to contribute to obtaining the equipment, ensure it is in a safe condition and advise the appropriate people. The learner will be following the organisations safe working practices and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the preparations are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The equipment safety checks and inspections will be carried out to ensure that there are no obvious faults present, in accordance with company procedures.

The types of equipment to be prepared could include fixed (machine) and/or portable (hand or machine):

- protective clothing/equipment
- lifting and handling equipment
- access structures (typically ladders, steps, trestles, Youngman boards, temporary staging, access hoists… "cherry pickers")
- process equipment
- tools
- safety equipment/harness.

The types of equipment preparation could involve selection, inspection, safety checks, changing settings or the calibrating as well as routine checks on its condition, operation, suitability and safety, in compliance with company procedures.

Equipment care and control procedures could be expected to include:

- ingress protection ratings
- explosion protection rating equipment
- corrosion
- portable appliance testing
- heating and ventilation
- permit systems.

Unit 292 Contribute to the preparation of process plant and equipment in support of mechanical engineering activities

UAN:	R/602/0668
Level:	Level 2
Credit value:	2
GLH:	3
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparation of process plant and equipment and report completion.
Assessment criteria
The learner can: 1.1 obtain all the required equipment and ensure that it is in a safe and useable condition 1.2 contribute to the necessary preparations to equipment in line with work requirements 1.3 report completion of preparations in line with organisational procedures.

Learning outcome
The learner will: 2. Be able to deal with problems effectively.
Assessment criteria
The learner can: 2.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 3. Be able to work safely at all times.
Assessment criteria
The learner can: 3.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines 3.2 make sure that required safety arrangements are in place to protect other workers from activities likely to disrupt normal working.

Unit 292 Contribute to the preparation of process plant and equipment in support of mechanical engineering activities

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to the Preparation of Process Plant and Equipment in Support of Mechanical Engineering Activities.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to the preparation of mechanical equipment in order to carry out maintenance of plant and equipment. The learner will be required to contribute to obtaining the equipment, ensure it is in a safe condition and advise the appropriate people. The learner will be following the organisations safe working practices and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the preparations are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The equipment safety checks and inspections will be carried out to ensure that there are no obvious faults present, in accordance with company procedures.

The types of equipment to be prepared could include fixed (machine) and/or portable (hand or machine):

- protective clothing/equipment
- lifting and handling equipment
- access structures (typically ladders, steps, trestles, Youngman boards, temporary staging, access hoists… "cherry pickers")
- process equipment
- tools
- safety equipment/harness.

The types of equipment preparation could involve selection, inspection, safety checks, changing settings or the calibrating as well as routine checks on its condition, operation, suitability and safety, in compliance with company procedures.

Equipment care and control procedures could be expected to include:

- ingress protection ratings
- explosion protection rating equipment
- corrosion
- portable appliance testing
- heating and ventilation
- permit systems.

Unit 293 Contribute to the preparation of materials for the maintenance of mechanical process plant and equipment

UAN:	J/602/0666
Level:	Level 2
Credit value:	1
GLH:	2
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparation of materials and report completion, within own scope of authority.
Assessment criteria
The learner can: 1.1 obtain the required materials and check them for quantity and quality 1.2 determine how the materials need to be prepared 1.3 contribute to the preparations using suitable equipment 1.4 report completion of preparations in line with organisational procedures.

Learning outcome
The learner will: 2. Be able to deal effectively with problems.
Assessment criteria
The learner can: 2.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 3. Be able to work safely at all times.
Assessment criteria
The learner can: 3.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 293 Contribute to the preparation of materials for the maintenance of mechanical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to the Preparation of Materials for the Maintenance of Mechanical Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to the preparation of the materials in order to carry out the maintenance of plant and equipment. The learner will be required to contribute to the checking of the quality and quantity of the selected materials, determine how the materials should be prepared and report on completion. The learner will be following the organisations safe working practices at all times and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the preparations are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The type and complexity of material preparations involve standard treatments and/or require taking instrument readings for analysis. Typical preparation could include:

- identification
- storage
- confirming alignment
- setting out
- cleaning
- protecting/preserving
- security
- precision measuring
- weight confirming/assessing

- checking quality and quantity.

The types of materials could include materials and/or components used in the engineering activity, including:

- spare parts
- proprietary items (repair by replacements).

Unit 294 How to assemble components of mechanical process plant and equipment

UAN:	R/602/0671
Level:	Level 2
Credit value:	2
GLH:	13
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to correctly fit and assemble components.
Assessment criteria
The learner can: 1.1 identify the assembly drawings and related specifications 1.2 explain which assembly methods and techniques can be used for fitting components together 1.3 explain why the order of fitting components affects efficiency and cost effectiveness and how standard practices can be modified to influence these.

Learning outcome
The learner will: 2. Know how to identify quality control procedures and assembly defects.
Assessment criteria
The learner can: 2.1 identify when confirmation tests should be undertaken 2.2 explain how to recognise assembly defects 2.3 explain what types of confirmation tests should be undertaken for different assets 2.4 describe how confirmation tests should be applied in line with company procedures.

Learning outcome
The learner will: 3. Know how to handle equipment safely and carefully.
Assessment criteria
The learner can: 3.1 describe the handling equipment and procedures including manual handling methods and procedures 3.2 explain the equipment preparation methods and procedures in relation to checking the working conditions and operation of standard equipment including safety checks and inspection 3.3 identify own responsibilities for ensuring the care and security of tools and equipment that are used.

Learning outcome
The learner will: 4. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 4.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 4.2 explain the relevant regulations and safe working practices and procedures required within own work area 4.3 identify own responsibilities with regard to the reporting lines and procedures in the working environment.

Unit 294 How to assemble components of mechanical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of assembling mechanical components. The learner will be required to follow instructions, ensure they have the correct tools and equipment to complete the assembly and deal with problems as they arise. The learner will be following the organisations safe working practices and working within the work permit procedures.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system. The type and complexity of the assembly to be produced are of one technology and/or are of a robust nature. There may be a number/variety of connections to be made and these may be easy to access or to achieve.

The assembly methods and techniques to be used may require the application of several different, sequential assembly techniques relevant to the technologies of the asset. Typical techniques could include:

- using threaded fasteners
- clamping
- jacking
- flange and clamp assemblies
- connecting male/female connectors
- soldering
- applying pressure
- sealing
- levering.

The assembly is made by following sequential procedures which do not account for every stage involved and/or need to be modified to achieve the results required.

The typical assets/components could include:

- pumps
- process pipework
- hand tools
- valves
- prime movers.

The quality standards and accuracy to be achieved are as set down in internal Quality Assurance (QA) and Quality Control (QC) specifications.

Unit 295 Assemble components of mechanical process plant and equipment

UAN:	L/602/0670
Level:	Level 2
Credit value:	2
GLH:	5
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to assemble the components correctly.
Assessment criteria
The learner can: 1.1 follow the relevant instructions, assembly drawings and any other specifications 1.2 ensure that the specified components are available and that they are in a useable condition 1.3 use the appropriate methods and techniques to assemble the components in their correct positions.

Learning outcome
The learner will: 2. Be able to secure and check the assembled components.
Assessment criteria
The learner can: 2.1 secure the components using the specified connectors and securing devices 2.2 check the completed assembly to ensure that all operations have been completed and the finished assembly meets the required specification.

Learning outcome
The learner will: 3. Be able to deal with problems effectively.
Assessment criteria
The learner can: 3.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 4. Be able to work safely at all times.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 295 Assemble components of mechanical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Assemble Components of Mechanical Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in assembling mechanical components. The learner will be required to follow instructions, ensure they have the correct tools and equipment to complete the assembly and deal with problems as they arise. The learner will be following the organisations safe working practices and working within the work permit procedures.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The type and complexity of the assembly to be produced are of one technology and/or are of a robust nature. There may be a number/variety of connections to be made and these may be easy to access or to achieve.

The assembly methods and techniques to be used may require the application of several different, sequential assembly techniques relevant to the technologies of the asset. Typical techniques could include:

- using threaded fasteners
- clamping
- jacking
- flange and clamp assemblies
- connecting male/female connectors
- soldering
- applying pressure
- sealing
- levering.

The assembly is made by following sequential procedures which do not account for every stage involved and/or need to be modified to achieve the results required.

The typical assets/components could include:

- pumps
- process pipework
- hand tools
- valves
- prime movers.

The quality standards and accuracy to be achieved are as set down in internal Quality Assurance (QA) and Quality Control (QC) specifications.

Unit 296 How to contribute to the removal of components from mechanical process plant and equipment

UAN:	T/602/0789
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the removal of components including the methods and equipment to use.
Assessment criteria
The learner can: 1.1 describe the engineering drawings and related specifications to work to 1.2 explain the types of component removal methods and techniques, ie isolation and connections, that have to be made, and which tools, equipment and methods can be used to remove specific components from specific products/assets 1.3 explain how to assess and identity the condition of removed components 1.4 identify own responsibilities for ensuring the care and security of tools and equipment that are used.

Learning outcome
The learner will: 2. Know how to store and dispose of components.
Assessment criteria
The learner can: 2.1 explain how to label and store components for re-use including the marking systems for specific components and connections 2.2 describe how to dispose of unwanted components and substances.

Learning outcome
The learner will: 3. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 3.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 3.2 explain the relevant regulations and safe working practices and procedures required within own work area 3.3 identify own responsibilities with regard to the reporting lines and procedures in the working environment.

Unit 296 How to contribute to the removal of components from mechanical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of removing mechanical components. The learner will be required to identify, remove, check the condition, mark and store for further use. The learner will be following the organisations safe working practices and working within the work permit procedures.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be contributing to the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system. The engineering drawings and related specifications to which the learner will be expected to work could include:

- technical drawings (component, assembly, general arrangements, isometric, 1st and 3rd angle projections)
- method statements and product worksheets
- tolerances.

The equipment to be worked on will be operational assets and could include:

- heat exchangers
- pumps
- components of process systems.

The type of components to be removed will be robust. Robust components are those which are resistant to most forms of damage or disruption during their working lives.

Typical robust components could be:

- components of engines
- actuators

- valves
- components of pumps.

The removal techniques or procedures to be followed could include:

- percussion
- pressure
- mechanical strip
- thermal techniques
- manual handling
- Lifting Operations and Lifting Equipment Regulations (LOLER).

The removal operations will be simple. Simple removal of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The disposing of unwanted components and substances relates to what substances could be released during the removal of components, which risks are associated with the release of substances, and where to access information on the environmental standards, including Control of Substances Hazardous to Health (COSHH), Safety and Emergency Preparedness Analysis (SEPA) and company procedures.

Unit 297 Contribute to the removal of components from mechanical process plant and equipment

UAN:	Y/602/0672
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparation of components for removal.
Assessment criteria
The learner can: 1.1 establish, and where appropriate, mark component orientation for re-assembly 1.2 ensure that isolations are carried out to enable safe removal.

Learning outcome
The learner will: 2. Be able to contribute to the removal of components correctly.
Assessment criteria
The learner can: 2.1 remove the required components using approved tools and techniques 2.2 take suitable precautions to prevent damage to components, tools and equipment during removal 2.3 check the condition of the removed components and record those that will require replacing.

Learning outcome
The learner will: 3. Be able to contribute to the completion of the removal process.
Assessment criteria
The learner can: 3.1 discard or label and store the removed component in an appropriate location 3.2 maintain documentation in accordance with organisational requirements.

Learning outcome
The learner will: 4. Be able to work safely at all times.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 297 Contribute to the removal of components from mechanical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to the Removal of Components from Mechanical Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in removing mechanical components. The learner will be required to identify, remove, check the condition, mark and store for further use. The learner will be following the organisations safe working practices and working within the work permit procedures.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be contributing to the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The engineering drawings and related specifications to which the learner will be expected to work could include:

- technical drawings (component, assembly, general arrangements, isometric, 1st and 3rd angle projections)
- method statements and product worksheets
- tolerances.

The equipment to be worked on will be operational assets and could include:

- heat exchangers
- pumps
- components of process systems.

The type of components to be removed will be robust. Robust components are those which are resistant to most forms of damage or disruption during their working lives.

Typical robust components could be:

- components of engines
- actuators

- valves
- components of pumps.

The removal techniques or procedures to be followed could include:

- percussion
- pressure
- mechanical strip
- thermal techniques
- manual handling
- Lifting Operations and Lifting Equipment Regulations (LOLER).

The removal operations will be simple. Simple removal of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The disposing of unwanted components and substances relates to what substances could be released during the removal of components, which risks are associated with the release of substances, and where to access information on the environmental standards, including Control of Substances Hazardous to Health (COSHH), Safety and Emergency Preparedness Analysis (SEPA) and company procedures.

Unit 298 How to contribute to the preparation of materials for the maintenance of mechanical process plant and equipment

UAN:	L/602/0667
Level:	Level 2
Credit value:	1
GLH:	9
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the preparation of materials for the maintenance procedures, within own scope of authority.
Assessment criteria
The learner can: 1.1 identify the materials used and recognise defects in quality of them. 1.2 explain the types of handling and preparation methods and techniques needed for different materials. 1.3 identify how to deal with problems. 1.4 explain how to report the completion of preparations. 1.5 explain own responsibilities for ensuring the security of tools and equipment and their control procedures that are used.

Learning outcome
The learner will: 2. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 2.1 explain what own responsibilities are in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 2.2 explain the relevant regulations and safe working practices and procedures required within own work area 2.3 describe own responsibilities with regard to the reporting lines and procedures in the work environment.

Unit 298 How to contribute to the preparation of materials for the maintenance of mechanical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of contributing to the preparation of the materials in order to carry out the maintenance of plant and equipment. The learner will be required to contribute to the checking of the quality and quantity of the selected materials, determine how the materials should be prepared and report on completion. The learner will be following the organisations safe working practices at all times and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the preparations are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The type and complexity of material preparations involve standard treatments and/or require taking instrument readings for analysis.

Typical preparation could include:

- identification
- storage
- confirming alignment
- setting out
- cleaning
- protecting/preserving
- security
- precision measuring
- weight confirming/assessing
- checking quality and quantity.

The types of materials could include materials and / or components used in the engineering activity, including:

- spare parts
- proprietary items (repair by replacements).

Unit 299 How to contribute to the replacement of components in mechanical process plant and equipment

UAN:	K/602/0675
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know how to contribute to the replacement of components including the methods and equipment to use.
Assessment criteria
The learner can: 1.1 describe the engineering drawings and related specifications to work to 1.2 explain the types of component replacement methods and techniques, including the types of reconnection that have to be made, and which tools, equipment and methods can be used to replace specific components from specific products/assets.

Learning outcome
The learner will: 2. Know and understand own responsibilities when replacing components.
Assessment criteria
The learner can: 2.1 identify own responsibilities for ensuring the care and security of tools and equipment that are used.

Learning outcome
The learner will: 3. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 3.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 3.2 explain the relevant regulations and safe working practices and procedures required within own work area 3.3 identify own responsibilities with regard to the reporting lines and procedures in the working environment.

Unit 299 How to contribute to the replacement of components in mechanical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of contributing to the replacement of components in mechanical process plant and equipment using the correct methods and techniques. The learner will be following the organisations safe working practices at all times and working within the organisations work permits procedures.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be contributing to the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others.

Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The engineering drawings and related specifications to which the learner will be expected to work could include:

- technical drawings (component, assembly, general arrangements, isometric, 1st and 3rd angle projections)
- method statements and product worksheets
- tolerances.

The equipment to be worked on could include:

- heat exchangers
- pumps
- engines
- components of process systems.

The type of components to be replaced will be robust. Robust components are those which are resistant to most forms of damage or disruption during their working lives. Typical robust components could be:

- components of mechanical/ pneumatic/hydraulic systems
- gaskets

- actuators/valves
- heat exchangers
- bearings.

Equipment care and control procedures could be expected to include:

- ingress protection ratings
- explosion protection rating equipment
- corrosion
- portable appliance testing
- heating and ventilation
- permit systems.

The complexity of assembly operations will be simple. Simple replacement of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The quality standards and accuracy to be achieved are as set down in the work specifications.

Unit 500 Contribute to the replacement of components in mechanical process plant and equipment

UAN:	H/602/0674
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to the preparations needed in order to replace components.
Assessment criteria
The learner can: 1.1 obtain all the required components and ensure that they are in a suitable condition for replacement and fit for purpose 1.2 ensure that any replacement components used meet the required specification.

Learning outcome
The learner will: 2. Be able to contribute to the replacement and adjustment of components correctly.
Assessment criteria
The learner can: 2.1 take adequate precautions to prevent damage to components, tools and equipment during replacement 2.2 replace the components in the correct sequence using appropriate tools and techniques 2.3 make any necessary settings or adjustments to the components to ensure they will function correctly.

Learning outcome
The learner will: 3. Be able to deal with problems effectively
Assessment criteria
The learner can: 3.1 deal promptly and effectively with problems within own control and report those that cannot be solved.

Learning outcome
The learner will: 4. Be able to follow organisational policies and procedures
Assessment criteria
The learner can: 4.1 Work safely at all times, complying with health and safety and other relevant regulations and guidelines 4.2 Maintain documentation in accordance with organisational requirements.

Unit 500 Contribute to the replacement of components in mechanical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to the Replacement of Components in Mechanical Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to the replacement of components in mechanical process plant and equipment using the correct methods and techniques. The learner will be following the organisations safe working practices at all times and working within the organisations work permits procedures.

During this work the learner must take account of the relevant installation procedures and safe working practices **as they apply to the learner**.

Scope

The level and extent of responsibility in the context of this unit, extends to interpreting a specification, selecting and applying appropriate methods and tests to achieve the best possible result in the conditions applying. The learner will be contributing to the integrity of the work site and ensuring the work is recorded in a formal manner albeit, they will be expected to refer to others. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The engineering drawings and related specifications to which the learner will be expected to work could include:

- technical drawings (component, assembly, general arrangements, isometric, 1st and 3rd angle projections)
- method statements and product worksheets
- tolerances.

The equipment to be worked on could include:

- heat exchangers
- pumps
- engines
- components of process systems.

The type of components to be replaced will be robust. Robust components are those which are resistant to most forms of damage or disruption during their working lives. Typical robust components could be:

- components of mechanical/ pneumatic/hydraulic systems

- gaskets
- actuators/valves
- heat exchangers
- bearings.

Equipment care and control procedures could be expected to include:

- ingress protection ratings
- explosion protection rating equipment
- corrosion
- portable appliance testing
- heating and ventilation
- permit systems.

The complexity of assembly operations will be simple. Simple replacement of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component.

The quality standards and accuracy to be achieved are as set down in the work specifications.

Unit 501 How to contribute to planned maintenance on mechanical process plant and equipment

UAN:	K/602/0787
Level:	Level 2
Credit value:	2
GLH:	18
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Know and understand the maintenance schedules, methods and records.
Assessment criteria
The learner can: 1.1 identify maintenance schedules and related specifications to work to 1.2 describe the maintenance methods and procedures 1.3 identify the maintenance records and documentation.

Learning outcome
The learner will: 2. Know own responsibilities and the limits of them.
Assessment criteria
The learner can: 2.1 explain own responsibilities for the care and control of equipment used 2.2 explain the maintenance authorisation procedures and limits of responsibility and authority in line with the company and manufacturer's procedures 2.3 describe own responsibilities with regard to the reporting lines and procedures in the working environment.

Learning outcome
The learner will: 3. Know how to identify methods for the disposal of waste.
Assessment criteria
The learner can: 3.1 identify appropriate methods and waste disposal procedures in relation to legislation, regulation and procedures for waste segregation.

Learning outcome
The learner will: 4. Know how to follow organisational policies and procedures.
Assessment criteria
The learner can: 4.1 explain own responsibilities in respect of health, safety and environment, including the limits of personal responsibility, legal responsibility for own health and safety and the health and safety of others 4.2 explain the relevant regulations and safe working practices and procedures required within own work area.

Unit 501 How to contribute to planned maintenance on mechanical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's knowledge of contributing to maintaining mechanical equipment in line with the manufacturer's and organisational practices and procedures. The learner will be required to contribute to the maintenance procedures in a timely manner, follow procedures and complete the appropriate documentation. The learner will be following the organisations safe working practices and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the maintenance procedures are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The plant or equipment to be maintained could include:

- pumps
- compressors
- valves
- process piping systems.

Maintenance schedules and related specifications to which the learner is expected to work could be expected to include:

- authorisation procedures
- product worksheets
- tests
- internal maintenance schedules
- safe working practices
- method statements
- records
- timescales.

The maintenance procedures and activities to be followed are fully defined within the company maintenance procedures. Typical procedures could include:

- replenishing/checking levels of consumables
- tightening of fasteners
- checking tensions
- lubricating
- inspection for damage/wear/corrosion movement
- replacement of worn/damaged/corroded components
- cleaning.

The quality standards and accuracy to be achieved are as set down in the Quality Assurance (QA) and Quality Control (QC) specifications

Unit 502 Contribute to planned maintenance on mechanical process plant and equipment

UAN:	F/602/0665
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by Cogent Chemicals, Pharmaceutical, Nuclear, Oil and Gas, Petroleum and Polymers

Learning outcome
The learner will: 1. Be able to contribute to planned maintenance procedures.
Assessment criteria
The learner can: 1.1 follow the relevant maintenance schedules to contribute to the required work 1.2 contribute to maintenance activities within the limits of own personal authority 1.3 contribute to the maintenance activities in the specified sequence and in an agreed time scale.

Learning outcome
The learner will: 2. Be able to report defects and record activities accurately.
Assessment criteria
The learner can: 2.1 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule 2.2 complete relevant maintenance records accurately and pass them on to the appropriate person.

Learning outcome
The learner will: 3. Be able to dispose of waste correctly.
Assessment criteria
The learner can: 3.1 dispose of waste materials in accordance with safe working practices and approved procedures.

Learning outcome
The learner will: 4. Be able to work safely at all times.
Assessment criteria
The learner can: 4.1 work safely at all times, complying with health and safety and other relevant regulations and guidelines.

Unit 502 Contribute to planned maintenance on mechanical process plant and equipment

Supporting information

Guidance

This unit is subject to the requirements set out in the Cogent Assessment Strategy.

This unit should not be taken prior to taking 'How to Contribute to Planned Maintenance on Mechanical Process Plant and Equipment.'

The assumed pre-requisite is that the learner will be an operator developing their skills and knowledge and seeking recognition of competence.

This unit is about the learner's competence in contributing to maintaining mechanical equipment in line with the manufacturer's and organisational practices and procedures. The learner will be required to contribute to the maintenance procedures in a timely manner, follow procedures and complete the appropriate documentation. The learner will be following the organisations safe working practices and working within the work permit procedures.

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

Scope

The level and extent of responsibility will involve the learner contributing to ensuring that the maintenance procedures are carried out safely by following company defined procedures. The learner will be contributing to the integrity of the work and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorised signatories within the permit to work system.

The plant or equipment to be maintained could include:

- pumps
- compressors
- valves
- process piping systems.

Maintenance schedules and related specifications to which the learner is expected to work could be expected to include:

- authorisation procedures
- product worksheets
- tests
- internal maintenance schedules
- safe working practices
- method statements
- records

- timescales.

The maintenance procedures and activities to be followed are fully defined within the company maintenance procedures. Typical procedures could include:

- replenishing/checking levels of consumables
- tightening of fasteners
- checking tensions
- lubricating
- inspection for damage/wear/corrosion movement
- replacement of worn/damaged/corroded components
- cleaning.

The quality standards and accuracy to be achieved are as set down in the Quality Assurance (QA) and Quality Control (QC) specifications.

Appendix 1 Relationships to other qualifications

Links to other qualifications

Mapping is provided as guidance and suggests areas of commonality between the qualifications. It does not imply that learners completing units in one qualification have automatically covered all of the content of another.

Centres are responsible for checking the different requirements of all qualifications they are delivering and ensuring that learners meet requirements of all units/qualifications.

These qualifications have connections to the:

- Level 2 Diploma in Jetty Operations (0640-21)
- Level 2 Diploma in Bulk Liquid Operations (0640-22)
- Level 2 Diploma in Processing Operations: Hydrocarbons (0640-23)
- Level 3 Diploma in Process Engineering Maintenance (0640-30)
- Level 3 Diploma in Jetty Operations (0640-31)
- Level 3 Diploma in Processing Operations: Hydrocarbons (0640-33)
- Level 3 Diploma in Processing Operations: Hydrocarbons (Control room) (0640-34)
- Level 3 Diploma in Downstream Control Room Operations (0640-34)
- Level 3 Diploma in Downstream Field Operations (0640-35)

Literacy, language, numeracy and ICT skills development

This [these] qualification[s] can develop skills that can be used in the following qualifications:

- Functional Skills (England) – see **www.cityandguilds.com/functionalskills**
- Essential Skills (Northern Ireland) – see **www.cityandguilds.com/essentialskillsni**
- Essential Skills Wales – see **www.cityandguilds.com/esw**

Appendix 2 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage** on **www.cityandguilds.com**.

Centre Manual - Supporting Customer Excellence contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification, as well as updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document includes sections on:

- The centre and qualification approval process
- Assessment, internal quality assurance and examination roles at the centre
- Registration and certification of learners
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Management systems
- Maintaining records
- Assessment
- Internal quality assurance
- External quality assurance.

Our Quality Assurance Requirements encompasses all of the relevant requirements of key regulatory documents such as:

- Regulatory Arrangements for the Qualifications and Credit Framework (2008)
- SQA Awarding Body Criteria (2007)
- NVQ Code of Practice (2006)

and sets out the criteria that centres should adhere to pre and post centre and qualification approval.

Access to Assessment & Qualifications provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for learners who are eligible for adjustments in assessment.

The **centre homepage** section of the City & Guilds website also contains useful information such on such things as:

- **Walled Garden**: how to register and certificate learners on line
- **Qualifications and Credit Framework (QCF)**: general guidance about the QCF and how qualifications will change, as well as information on the IT systems needed and FAQs
- **Events**: dates and information on the latest Centre events
- **Online assessment**: how to register for e-assessments.

City & Guilds

Believe you can

www.cityandguilds.com

Useful contacts

UK learners **General qualification information**	**T: +44 (0)844 543 0033** **E: learnersupport@cityandguilds.com**
International learners General qualification information	T: +44 (0)844 543 0033 F: +44 (0)20 7294 2413 E: **intcg@cityandguilds.com**
Centres Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **centresupport@cityandguilds.com**
Single subject qualifications Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 F: +44 (0)20 7294 2404 (BB forms) E: **singlesubjects@cityandguilds.com**
International awards Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **intops@cityandguilds.com**
Walled Garden Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **walledgarden@cityandguilds.com**
Employer Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	T: +44 (0)121 503 8993 E: **business@cityandguilds.com**
Publications Logbooks, Centre documents, Forms, Free literature	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413

If you have a complaint, or any suggestions for improvement about any of the services that we provide, email: feedbackandcomplaints@cityandguilds.com

About City & Guilds

As the UK's leading vocational education organisation, City & Guilds is leading the talent revolution by inspiring people to unlock their potential and develop their skills. We offer over 500 qualifications across 28 industries through 8500 centres worldwide and award around two million certificates every year. City & Guilds is recognised and respected by employers across the world as a sign of quality and exceptional training.

City & Guilds Group

The City & Guilds Group operates from three major hubs: London (servicing Europe, the Caribbean and Americas), Johannesburg (servicing Africa), and Singapore (servicing Asia, Australia and New Zealand). The Group also includes the Institute of Leadership & Management (management and leadership qualifications), City & Guilds Licence to Practice (land-based qualifications), the Centre for Skills Development (CSD works to improve the policy and practice of vocational education and training worldwide) and Learning Assistant (an online e-portfolio).

Published by City & Guilds, a registered charity established to promote education and training

City & Guilds
1 Giltspur Street
London EC1A 9DD
T +44 (0)844 543 0000
F +44 (0)20 7294 2413
www.cityandguilds.com

HB-05-0640